The Syntax of Relativization

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The Syntax of Relativization

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door **Mark de Vries**

geboren te Hoogezand-Sappemeer.

Promotor: prof. dr. W.G. Klooster
Co-promotor: dr. J.B. den Besten

Faculteit der Geesteswetenschappen
Universiteit van Amsterdam

Commissie: prof. dr. H.J. Bennis
prof. dr. L.L.-S. Cheng
prof. dr. A.C.J. Hulk
prof. dr. J. Koster
prof. dr. H.C. van Riemsdijk
dr. C.J.-W. Zwart

Contents

Preface

During the past five years I have benefitted from the knowledge and/or friendship of many people. In general, I would like to mention:

- The members of the Holland Institute of generative Linguistics (HIL).
- The staff of the chair group of Dutch linguistics at the University of Amsterdam.
- The teachers of the HIL, the national research institute of linguistics (LOT), and the university of Groningen (RuG).
- The participants of the discussion groups at the universities of Amsterdam (UvA) and Leiden (UL).
- My colleagues and friends of the union of PhD students (OBP).

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1 Introduction

This study addresses the relative construction. It mainly concerns the syntax of relative clauses. Considerable attention is also paid to the typology of relativization, and its repercussions on the grammar. Section 1 below introduces the topic of relativization; section 2 delineates the objectives and contents of this thesis; and section 3 discusses the syntactic framework used.

1. Preamble: the problem of the pivot

Relative constructions have received much attention by linguists, and not without reason. They are highly interesting from a syntactic, typological, and semantic point of view. As an introduction consider the 'problem of the pivot'.

What distinguishes relative clauses from other subordinate clauses is that there is a direct link between an element in the relative and in the matrix. To put it even stronger: there is a pivot element that plays a role in both. For instance, in (1) this pivot is *books*.

(1) Jack never reads ***books*** *I recommend to him*.

It may be problematic to put it this way. How can *books* have two functions at the same time? And what is the position of the relative clause in the matrix? A potential solution is to assume the representation in (2), where an empty element that is coreferent with *books* occupies the direct object position within the relative clause. This makes *books* an antecedent, which takes the position of the direct object in the matrix. The relative is somehow attached to this antecedent.

(2) Jack never reads ***books***$_i$ *I recommend ø*$_i$ *to him.*

The existence of relative pronouns may justify such a move. A relative pronoun may be the overt counterpart of the empty element. If a relative pronoun is used, it must be fronted within the relative. This suggests that it is raised from the object position, as an interrogative pronoun does in questions. See (3), where the base position of *which* is indicated with the trace *t*.

(3) Jack never reads ***books***$_i$ *[which*$_i$ *I recommend t*$_i$ *to him]*.

If the empty element in (2) is equivalent with the relative pronoun, it could be that it is raised, too. The adjacency reached may facilitate the link between *books* and *ø/which*; see (4).

(4) Jack never reads ***books***$_i$ *[ø*$_i$ *I recommend t*$_i$ *to him]*.

But if there is raising in (4), why would the empty element be raised, and not simply *books* itself, as in (5a)? Subsequently, it could even be lifted to the main clause; as shown in (5b).

(5) a. Jack never reads *[**books**$_i$ I recommend t_i to him]*.
b. Jack never reads ***books***$_i$ *[t_i I recommend t_i to him]*.

Alternatively, both could be raised together; see (6).

(6) a. Jack never reads *[**books** ø]$_i$ I recommend t_i to him.*
b. Jack never reads *[**books** which]$_i$ I recommend t_i to him.*

Finally, it is possible to approach the problem from the opposite side and assume that it could be the empty element that is in the matrix, and the noun *books* that is in the relative; see (7).

(7) Jack never reads ø$_i$ *[[**books** (which)]$_i$ I recommend t_i to him]*.

This naïve exposé shows that there are several strategies to cope with the 'problem of the pivot'. Therefore it is not surprising that languages have found different but related ways to express the relative construction. A cross-linguistic typological survey indicates that there are four syntactic main types: the postnominal, prenominal, and circumnominal relative, and the correlative. The literal equivalents of these in English are illustrated in (8a) through (8d), respectively. The intended meaning is the same in each case.

(8) a. Jack never reads ***books*** *(which) I recommend to him*.
b. < Jack never reads *[I recommend to him]* ***books***. >
c. < Jack never reads *[I recommend* ***books*** *to him]*. >
d. < *[Which* ***books*** *I recommend to him]* Jack never reads *them*. >

Hence the position where the pivot is pronounced, is variable across languages.

Furthermore, there is variation concerning the use of relative elements, as indicated. English itself has three out of four obvious variants:

(9) Jack never reads books ø/which/that I recommend (*them) to him.

The first is called 'zero relativization'. Second, a relative pronoun *which* can fill the 'gap' in the relative. Third, the relative clause can be introduced by a relative complementizer *that*. Fourth, some languages use a resumptive pronoun. This variation can be used to determine the position and function of potential empty elements.

Thus there is a clear interaction between the syntax and typology of relative clauses in the sense that the typological variation offers invaluable information to determine the right analysis, and, on the other hand, syntax has the ability to explain

– or at least describe – the attested variation, and to show the relation between the different constructions.

2. Goals and contents of this thesis

Here I will first set out the primary objectives of this thesis in section 2.1. Next, section 2.2 provides an overview of the contents of the separate chapters.

2.1. Objectives

Acknowledging the danger of passing over important work, I believe the following studies can be viewed as major breakthroughs in the conception of the relative construction:

– Chomsky (1977), regarding the *internal syntax* of relative clauses;
– Lehmann (1984), regarding the *typology* of relative clauses;
– Grosu & Landman (1998), regarding the *semantics* of relative clauses.

In practice there turn out to be several types of relatives, both syntactically and semantically. In this context, I must mention in particular:

– Carlson (1977), regarding the syntax and semantics of *degree relatives*;
– Culy (1990), regarding the syntax and semantics of *circumnominal relatives*;
– Srivastav (1991), regarding the syntax and semantics of *correlatives*.

For an explanation of the relevant notions, see Chapter 2.

Other important references are the paper collection in Peranteau et al. (1972), which focuses on relative elements; Smits (1988), an overview volume with detailed descriptions of Germanic and Romance relatives; Bianchi (1999), regarding the promotion theory of relative clauses; and the paper collection in Alexiadou et al. (2000). Apart from these, there is a large amount of articles on relative constructions by various authors.

At present there is still a debate in generative syntax between the proponents of the 'standard analysis' and those of the 'raising analysis'. These are illustrated in a simplified form in (10a/b), respectively.

(10) a. Jack never reads ***books***$_i$ *[ø$_i$ I recommend t$_i$ to him]*.
b. Jack never reads *[**books**$_i$ I recommend t$_i$ to him]*.

The major difference is that the head noun *books* is generated in the matrix clause in (10a), but it is raised from within the relative in (10b). The raising or 'promotion' analysis has originally been proposed by Schachter (1973) and Vergnaud (1974,1985). It has been revived and modernized by Kayne (1994) within a general antisymmetric framework of syntax. In fact, Kayne combines raising with the D-complement hypothesis, which states that the relative clause is the complement of

the outer determiner. The promotion theory is worked out in more detail by Bianchi (1995,1999) and De Vries (1996). Matters that are addressed are e.g. the categorial status of the projections involved, the position of relative elements, the way Case is accounted for, and the triggers for the movements involved.

Kayne (1994) is the first who seriously tries to generalize over several relative clause types, although the discussion is still rudimentary. I believe that this is the right track to follow. It seems that it is made possible by the characteristics of the promotion theory. Therefore a priori this theory appears to be preferable over the variants of the standard analysis. However, in the present study – cf. De Vries (1997) for an early description – I will not simply take it for granted and focus on the details, nor will I follow the antisymmetry hypothesis without discussion.

In short, the primary objectives of this thesis are the following (in order of treatment):

- to provide a systematic and accessible typology of relative constructions as a background for this and future inquiries;
- to compare extensively the competing syntactic approaches to relativization;
- to provide a detailed and consistent account of the syntax of various types of relative constructions;
- to provide an independently motivated solution to potential problems not satisfactorily addressed before (from the perspective of the promotion theory); these are:
  - the syntax of appositive relative clauses,
  - extraposition of relative clauses,
  - the syntax of possessive relatives.

The next subsection discusses briefly the contents of the separate chapters of this book.

2.2. Overview

The first part of the book, which consists of four chapters (2 through 5), discusses the typology and the theory of relative constructions.

Chapter 2 provides a typology of relative constructions. It defines and exemplifies the main types of relative clauses, shows the parametric freedom there is, systematizes classifications, and unifies the terminology. It discusses Grosu & Landman's semantic classification of relatives, Lehmann's functional scales, and Downing's universals and general implications. It introduces special types of relatives, viz. correlatives, circumnominal relatives, free relatives, adverbial relatives, and non-finite relatives; and the cleft and pseudo-cleft construction. Finally, several aspects of the relative construction are treated briefly: relative pronouns and particles, the position of the external determiner, recursive and linear multiple embedding (including stacking), pied piping and preposition stranding, extraposition, and multiple relativization (including split antecedents).

Chapter 3 works its way towards the syntax of relative clauses. It sketches the historical development of the theory on the syntax of relativization, and explains and

defends the D-complement hypothesis and the raising analysis. The most important competing theories are defined and systematically evaluated on the basis of possible derivations of the syntactic main types of relatives and their word order variants, and on the basis of relevant properties of relative constructions, mainly concerning the relation between the antecedent and the gap. It is concluded that the promotion theory is the most promising.

Chapter 4 elaborates the promotion theory in detail. It discusses *wh*-movement, Case and agreement, the relation between N and D, the role of relative pronouns, and triggers for movements. The derivation of word order variants of the postnominal relative construction is discussed, as well as the derivation of prenominal relatives, circumnominal relatives and correlatives.

Chapter 5 is on relative elements. Lehmann's classification of these is revised on the basis of the syntax of relatives. Somewhat tentatively an analysis of resumptive pronouns and relative markers is proposed. Finally, a fine-grained typology of relative elements is presented.

The second part of the book (Chapters 6 through 8) contains three related detailed studies which focus on relative constructions, but also have a more general character.

Chapter 6 discusses the syntax of apposition, and of appositive relatives in particular. It contains a large collection of properties of appositive relatives, especially those in which they deviate from restrictives. It is argued that apposition is specifying coordination. This leads to an analysis in which appositive relatives are so-called false free relatives that are specifying conjuncts to the 'antecedent'. In this conjunct an empty pronoun is promoted.

Chapter 7 treats extraposition, in particular of relative clauses. It systematically evaluates a number of competing theories on the basis of a substantial amount of properties associated with extraposition. It is concluded that extraposed phrases are part of a specifying conjunct to the matrix, in which deletion takes place. This approach can be generalized to all instances of extraposition. Crucially, the promotion theory of relatives can be maintained, since promotion is performed within this second conjunct.

Chapter 8, finally, addresses possessive constructions, and possessive relatives in particular. It is argued that all possessive configurations are syntactically derived from the periphrastic genitive. Given this framework, promotion in possessive relatives can be analysed along the lines of pied piping with prepositional phrases. Eventually, cases of heavy pied piping are discussed.

3. The theory of grammar

This section briefly describes the general syntactic framework within which this thesis must be understood. The way I implement specific ideas (i.e. about relative constructions) does not differ substantially from general practice these days, which can be characterized as 'inclined to the Minimalist Program, with a flavour of Antisymmetry'. Nevertheless, I would like to add some details and critical remarks here.

3.1. Phrase structure

Syntactic phrase structures are derived by concatenating elements from the lexicon. For non-linguists this sounds like stating the obvious. Therefore it is remarkable, to say the least, that it lasted until the nineties before the idea was implemented in a direct way in generative linguistics. In principle, there are two ways to proceed: top-down and bottom-up. If the procedure is top-down, the equivalent of a D-structure is derived first. After lexical insertion, the necessary movements must be performed, hence the derivation turns around and works its way from the bottom to the top again (now involving movement, not structure building). This gives an S-structure representation. This procedure is somewhat laborious, and indeed, it can be done in a more clever way, namely if the procedure is bottom-up from the beginning. This is also the standpoint of the Minimalist Program (Chomsky 1995), in which lexical insertion and movement are structure building. Another difference with the top-down method is that the strict separation of selection from the lexicon and movement is lost, in the sense that both are performed interchangeably during the derivation. Depending on the particular feature setting and the intended meaning, one of three possible elements is merged with the phrase structure at a particular point of the derivation: an element from the lexicon, a moved element from the phrase structure itself, or another partial phrase structure.

At this point I want to introduce the theory-external notion *selection structure*, which is used for notation only. The selection structure of a (partial) sentence structure is the hypothetical equivalent of a D-structure, i.e. a structure that shows all Merge operations that access the lexicon, but not those that involve movement. Obviously this has no reality at all within the derivational theory described, but it is still useful to show what selects what.

Following general practice, I assume that the phrase structure is binary branching. In general, it can be demonstrated that for any pair of constituents in a sentence either there is a hierarchical relation between them, or they are coordinated.[1] Binary branching is encoded in the formulation of the operation

[1] It is shown in Chapter 7 that a binary branching phrase structure cannot handle coordination in a satisfactory way. Therefore a three-dimensional approach is developed, following Van Riemsdijk (1998) and others. In Chapters 6 and 7 I will also introduce the concept of *specifying coordination* as a basis of the analysis of both apposition and extraposition.

Merge. Furthermore, the phrase structure is organized according to the recursive X'-schema: $[_{XP}$ ZP $[_{X'}$ X YP]], where the linear order between sister constituents might be parametrically interchangeable (but see below). The complement of the head X is YP; the specifier is ZP. The categorial status of X(P), Y(P) and Z(P) follows from their feature setting. For the ease of representation, I will name particular projections according to the setting of their heads throughout this book. Adjuncts, if possible at all, are attached at the highest XP level.

I have no objections to encoding the simple X'-template directly in the grammar, but there are several attempts in the literature to derive it, or its most important properties, from more basic assumptions; see e.g. Chomsky (1995:Ch4). Of course, if tenable, this is to be preferred. These matters do not directly concern the subject of this book, therefore I will not discuss them any further, with one exception: Kayne's (1994) argument concerning the "Antisymmetry of syntax". He claims that the order of spec-head-comp is fixed, and that this follows from the Linear Correspondence Axiom, which involves the mapping of the syntactic phrase structure hierarchy onto a linear order. In other words: the fact that sentences must be linearized at or beyond the phonological interface imposes restrictions on the syntactic hierarchy.[2] (Of course this is only true from the perspective of Kayne's premises, since a tree scanning algorithm can linearize any tree, including those that are not antisymmetric; see below.) Kayne suggests that the LCA is part of Universal Grammar. He is not very clear about the way it is encoded in the grammar. To me, the LCA looks like a filter, hence there could be an 'LCA checking procedure' that filters out phrase structures that are wrong (i.e. not linearizable). If so, we find that, although the LCA is a beautiful theory, it is not very efficient, compared to a primitive X'-template in combination with a simple tree scanning algorithm,[3] since the complexity of a scanning procedure grows linearly with the size of a phrase structure, whereas that of an LCA checking procedure grows exponentially.[4]

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2 Notice that, strictly speaking, the tree structure [spec [head comp]] *and* the structures with the same hierarchy – [spec [comp head]], [[head comp] spec] and [[comp head] spec] – are all linearly projected as spec-head-comp. Notationally, only the first is workable, hence I will use that one.

3 An example of such an algorithm is the following:
start at top; create new string
→ *if there exists an unexplored node one step down left go there*
else if there exists an unexplored node one step down right go there
else if possible go one step up
else stop
mark present node as explored
if terminal then add lexical material to string
loop →

4 If a certain small phrase structure can be linearized in x steps, where x depends on the algorithm and the number of terminals and non-terminals, then a larger structure which is about y times as big can be scanned in roughly $x \cdot y$ steps. By contrast, if it takes z steps to check if the small phrase structure can be mapped on a linear order according to the LCA, it takes roughly $z \cdot y^3$ steps to perform the same procedure on the larger structure. Consider for instance the transitivity property of a linear order: ∀a∀b∀c: if (a,b) and (b,c) then (a,c). Here a, b and c are elements from the set of terminals, and the relation is precedence. The checking of this condition requires a triple loop over all elements. Furthermore, the LCA checking procedure requires to establish the set of all pairs of non-terminals <X,Y> that are related by asymmetrical c-command. Given that c-command (of Y by X)

to be continued...

Therefore a filter version of the LCA probably cannot have any neuro-psychological reality. This does not mean that syntax is not antisymmetric. It may very well be that the X'-schema is rigidly fixed as [spec [head comp]], which is a rule of thumb translation of the LCA that can be accessed during the derivation. (This would make the original LCA to an extra-grammatical theory.) In Chapters 3 and 4 I will show on an empirical basis that (most probably) at least specifiers and functional heads are on the left. I will remain agnostic concerning full antisymmetry.

With respect to functional projections I will take the conservative standpoint that they cannot be used without extensive motivation. For my purposes I do not need any other projections than CP, IP, AgrOP and DP (next to the lexical NP, AP, VP and PP), even though quite complicated constructions will be dealt with. Of course this does not mean that I reject other possible projections across-the-board.

3.2. Movement and features

A head consists of at least three things: i) syntactic features, ii) semantic features and/or a pointer to the relevant semantic part in the lexicon, iii) phonological features and/or a pointer to the relevant part in the lexicon. Syntactic movement is driven by the need for syntactic feature checking. Unchecked features lead to a crash of the derivation at the conceptual/intentional interface (or LF). By assumption, there are two ways of checking a feature: i) in a spec-head configuration; ii) in a head incorporation configuration. I will assume that features that are checked simply receive a check mark.[5] Since incorporation signifies the merger of two heads, there may not be contradictory features, and checking is obligatory. By contrast, I assume that in a spec-head configuration checking is neither obligatory, nor necessarily complete (in the sense that all relevant features that could be checked are checked).[6] Obviously the possibilities of (temporary) incomplete checking are severely limited by the constraint that eventually all features must have a check mark. Notice that incomplete checking is necessary for intermediate landing positions.

... continued

involves the condition *for each category C such that C c-commands X, it is the case that C also dominates Y*, this, too, requires a triple loop over all relevant elements (here: non-terminals).
Matters get worse when it is taken into account that the LCA is a filter. This means that it has to be checked upon each potential derivation. If the number of nodes in a tree is n, the number of possible derivations is n^p, where p is the number of possible choices per projection. The LCA procedure then takes $(c \cdot n^3) \cdot n^p$ steps for a certain phrase structure, where c is the constant depending on what counts as a step in the algoritm. In a phrase structure y times as large, $(c \cdot (n \cdot y)^3) \cdot (n \cdot y)^p$ steps are required, which is $y^{(3+p)}$ times as many steps. Thus the complexity of the LCA account, or rather the processing time that it requires, gets quickly out of control.

5 Hence if necessary, they are accessible again. I do not favour a deletion mechanism, an erasure mechanism, and the rather stipulative difference between interpretable and uninterpretable features as in Chomsky (1995).

6 Hence I will not use the term spec-head agreement, which would be misleading. I will show that the contrast between spec-head and incorporation is useful. Notice, furthermore, that it would require an additional assumption to *force* complete checking in a spec-head configuration (which is assumed by many authors), rather than the opposite.

An important way to encode differences between languages is the distinction between strong and weak features. By assumption, strong features require checking by overt movement; weak features may be checked covertly. The latter is explained by an important economy condition, which states that overt movement is more expensive than covert movement. Covert movement implies that the phonological features/pointer are left behind, hence it is 'lighter'.[7]

A derivational syntax implies strict cyclicity for structure building operations, hence for Merge *and* Move (which implies Merge). However, most people assume that LF movement (covert movement) is possible, which is completely at odds with the spirit of the approach.[8] Instead I propose to give the 'strict cycle condition' (which is a simple consequence of Merge) a central place in the syntactic theory. Covert movement can then be viewed as 'overt' feature movement, or 'partial head movement', an option that is present in the theory anyway. This has many consequences. In general, it makes the theory less complicated. I will tentatively mention some of the issues at stake, although they require an elaborate discussion each.

First, the strange T-model of grammar can be abandoned, in which the derivation proceeds after spell-out/S-structure. Instead, the completed derivation is sent to the phonological and semantic interfaces. Second, since reconstruction at LF is impossible, it is necessary that at least some of the interpretation is done during the derivation. Especially binding facts come to mind. I have argued in De Vries (1998a) that indeed it is preferable that the binding conditions apply during the derivation.[9] In fact, I believe that the semantic derivation proceeds parallel with the syntactic derivation. This can be accomplished, for instance, by feeding the semantic component at certain points of the derivation, e.g. after the completion of each predication (i.e. a maximal (extended) lexical projection).[10] If all this is correct, there may be no use in keeping track of the origin of moved constituents in syntax, hence the concept of *trace* (or *copy*), and perhaps even *chain*, can potentially be eliminated from the theory.[11,12] I will not discuss these matters any further here.

Finally, I assume that features are associated with heads. This, and the concept of overt feature movement offers an explanation for the phenomenon of pied piping. First, notice that the features of a head must be accessible to the level of the maximal projection. This is sometimes called 'feature percolation', and in fact it is the most elementary form of pied piping. If an XP moves to the specifier of Y, this may be viewed as pied piping of the XP, as an alternative to potential head

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7 Since economy preferences are overridden if the cheaper option leads to a crash of the derivation, it is predicted that it is possible that a weak feature must be checked overtly in exceptional circumstances. An example of this is discussed in Chapter 4.

8 Notice that LF-movement implies going over the entire derivation a second time. As I see it, this means throwing away a major advantage over pre-Minimalist approaches.

9 Others have made comparable claims. See e.g. Zwart (1999).

10 A similar idea has been proposed by Chomsky (1999).

11 For instance, the fact that a trace behaves as an anaphor can be derived from other notions, such as a 'shortest step condition of movement' and the fact that movement is always to a c-commanding position due to the character of Merge.

12 Nevertheless, for the ease of representation traces are indicated throughout this book.

movement of X to Y.[13] XP and Y are in a spec-head configuration, then, so there is checking between some features of XP and Y. 'True' pied piping can be the result of percolation (i.e. overt feature movement) to a higher head. For instance, the *wh*-feature of a nominal phrase may move to a higher prepositional head, which causes pied piping of the whole PP to SpecCP. Percolation is only possible if the target does not bear a similar kind of feature; see Chapter 4. Another possible cause of pied piping is head movement. This serves to check some feature(s), but some other feature(s) of the moved head may still be unchecked. In turn this would cause movement, which results in pied piping (either of a complex head or a maximal projection). See further Chapter 8 on possessive relatives.

[13] Therefore it may be that there is no primitive distinction between X and XP features. (The landing position for XP movement is different from that of head movement, however.) Notice that many potential head movements are impossible. For instance, the head D of a subject argument cannot move to I, since there is no word that expresses a determinerhood with temporal inflection. Put more generally: incorporation is impossible if there are contradictory features, as noted before. Thus, in this case, the subject DP moves to SpecIP where some features are checked (here: number and person), but not those that are contradictory (e.g. +/- V).

Part A

Relative constructions: typology and theory

2 A typology of relative constructions

1. Introduction

As an introduction to the topic, I will provide an overview of relative clause types. The goal of this chapter is five-fold; I aim at:

- providing a background for the syntactic analyses in the subsequent chapters;
- establishing a complete and systematic typology of relative clause constructions;
- (by doing so) discovering which gaps there are in our knowledge, and filling them wherever possible;
- making order out of chaos in the huge amount of literature on the subject by unifying all terminology, and systematizing classifications;[1]
- (by doing so) facilitating and suggesting possible directions for future research.

I start with the definition of relative constructions, give some examples of important types, and systematically list the parametrical freedom there is. Section 3 treats the semantics of relative clauses in some more detail, where I focus on the less well-known 'relatives of a third kind', as described in Carlson (1977) and Grosu & Landman (1998). Section 4 discusses the functional classification of relatives by Lehmann (1984). Section 5 comments on the cross-linguistic universals and tendencies concerning relative clauses as reported in Downing (1978). Section 6 is an introduction to some special types of relative clauses: correlatives, circumnominal relatives, free relatives, adverbial relatives, non-finite relatives, and cleft and pseudo-cleft sentences. Section 7 is a summary of some important aspects of the relative construction: the use of relative pronouns and particles, the position of the external determiner, recursive and linear embedding (stacking), pied piping and preposition stranding, extraposition, and multiple relativization. Section 8 concludes the chapter. Many (but not all) constructions described here will be treated in full syntactic detail in the subsequent chapters.

2. Overview: definitions, examples, and parametric freedom

For most (western) linguists a typical example of a relative construction would be like (1).

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[1] This chapter builds on Lehmann (1984), Keenan (1985), Smits (1988) and work by many others. I have included many useful references throughout this book. However, I have not tried to make a *complete* bibliography on relative clause constructions, simply because this would be too large a task, unfortunately.

(1) Please hand this over to **the man** *who is wearing a red jacket*.

Here *the man* is a definite nominal antecedent, *who* a relative pronoun (referring to the antecedent), and *who is wearing a red jacket* a restrictive relative clause, where the relative pronoun has the subject role.

However, cross-linguistically – but also language-internally – there are many types of relative clauses. I intend to discuss the range of possibilities and present a coherent classification. Section 2.1 provides a definition of relative clauses. As an introduction, the major kinds are briefly illustrated in 2.2. Subsequently, section 2.3 briefly discusses the parametric space in a systematic way. Section 2.4 summarizes the syntactic main types of relatives. Finally, section 2.5 contains some terminological remarks.

2.1. The definition of 'relative construction'

Relative clauses manifest themselves in many different ways. Therefore, Downing (1978:378) states that a universal *syntactic* characterization of relatives is impossible: it can only be given in semantic terms. According to Downing, these are *coreference* and *assertion*: there is coreference between terms inside and outside the relative clause, and the relative is an assertion about the relative NP. A third universal characterizes restrictives only: *modification*. Since our perspective is more general, we cannot use the latter. But the first two are not precise enough. In a conversation like 'I saw $John_i$. He_i looked sad.' the second clause meets the first two conditions, but it is not a relative clause.

I think two properties are essential to relative clauses. These are both semantic and syntactic in nature:[2]

(2) *Defining properties of relative constructions:*
   a. A relative clause is subordinated.[3]
   b. A relative clause is connected to surrounding material by a pivot constituent.

Here the *pivot* is a constituent semantically shared by the matrix clause and the relative clause. These defining properties are stronger than just coreference. If the pivot (usually a noun phrase) appears to be spelled out inside the matrix clause – often the main clause, but it can also be a subordinate clause itself – it can be recognized as an antecedent. This yields [$_{matrix}$ … [N RC] …], where the relative clause contains a gap, which may be filled by a relative pronoun. If the pivot is spelled out inside the relative clause, the construction is head-internal: [$_{matrix}$ … [$_{RC}$ … NP …] …]. In this case the matrix contains the gap, which is filled by the

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2 See section 4 for a definition based on functional scales.

3 Correlatives are one level less deep embedded than nominalized relative constructions. They are subordinated to the matrix clause, hence – in this respect – comparable to adverbial clauses such as *[because ...]*. See section 6.1.

whole relative construction (as sketched),[4] or – if the relative clause is preposed – by a demonstrative: a correlative construction; see below.

In my view, variation concerning the position and content of the gap is expected, since there are different strategies to cope with the dimensionality problem that the second property (2b) poses – considering the fact that every linguistic construction must be linearized. (If this were not so, no gap would be needed at all, i.e. the pivot would be like the connecting letter of two perpendicular words in a crossword.)

There is a third universal property of relative clauses. Although it may not be a defining property, it is essential in the sense that the whole concept of relativization would be rather limited in use if it were invalid.[5]

(3) *Additional essential property of relative constructions:*
The semantic θ-role and the syntactic role that the pivot constituent plays in the relative clause, are in principle independent of its roles outside the relative.

This property is briefly illustrated in (4). *Mouse* is the pivot NP. It is an experiencer in the main clause and a patient in the relative. Syntactically, it is the subject in the main clause and the direct object in the subordinate.

(4) The mouse that I caught _ yesterday was hungry.

Hence the gap in the relative representing the mouse is both semantically and syntactically independent of its roles in the matrix clause. This does not mean that every role is available in every language. Languages can restrict the number of available *internal* roles – I am not aware of any limitations on *external* roles – i.e. they can be scaled differently on a *grammatical function hierarchy* (cf. Keenan & Comrie, 1977; Lehmann, 1984:219; Bakker & Hengeveld, 2001; and section 4 of this chapter). For instance, in many languages prepositional objects and lower functions are not possible relative positions. There are also language-dependent constraints that have to do with the possibility of recovering the function of the relative 'gap' (see e.g. Givón 1984:Ch15). Furthermore, in free relatives the number of roles can be restricted by Case matching effects (see e.g. Groos & Van Riemsdijk 1981). Nevertheless, these limitations do not fundamentally alter the role *independency* stated in (3).

2.2. Examples of important relative clause types

In this section I will give some examples of important relative clause types.

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4 The relative clause is then nominalized (hence type-lifted). This yields a circumnominal relative. See below.

5 Givón (1984:651) states: "[…] an *equi-case constraint* on relativization […] would entail a great reduction in the expressive power of language, one that apparently no language has attempted to impose."

Semantically, there is at least a tripartition, which is to be discussed in more detail in section 3. The first two kinds are well-known. *Restrictive relatives* restrict the meaning of the antecedent. *Appositive relatives* specify the meaning of the antecedent. The difference is illustrated by (5a/b).

(5) a. (Jill spoke to) the lecturers that failed the test on didactics. *[restrictive]*
b. (Jill spoke to) the lecturers, who failed the test on didactics. *[appositive]*

In (5a) Jill only spoke to the group of lecturers that failed the test; she does not address possible lecturers that passed the test. In (5b) she spoke to all lecturers in the domain of discourse, who (by the way) all failed the test.

A third group is the group of *degree relatives* ('amount relatives' in Carlson's 1977 terms). An example is given in (6).

(6) (Jill spilled) the milk that there was in the can. *[degree relative]*

The subordinate refers to the *amount* of milk, rather than to the fact that there was milk in the can. In fact, Jill spilled *all* the milk. Hence Grosu & Landman (1998) analyse degree relatives as involving a maximalization operation; see section 3.

Syntactically, one distinguishes *prenominal, postnominal and circumnominal relatives*. These are illustrated in (7a-c). Sentence (7a) is Mandarin Chinese, taken from Lehmann (1984:64); (7c) is Dagbani, from Lehmann (1984:117).[6]

(7) a. Wǒ bǎ nǐ gěi wǒ de shū diūdiào-le. *[prenominal RC]*
I ACC you give I NR book loose-PERF
'I have lost the book that you gave me.'
b. (Jill lost) the present that I gave to her. *[postnominal RC]*
c. A mi [o nə ti saan-so ləgri] la. *[circumnominal RC]*
you know he SR give stranger-SPC/LIV money PTL
'You know the stranger whom he gave the money.'

Postnominal and prenominal relatives are treated in detail in Ch4§3 and Ch4§4 respectively. Circumnominal relatives are often called *internally headed relatives*. They are discussed in more detail in section 6.2 and especially Ch4§5. In the particular case of (7c) it is the specific morpheme *so* that betrays which constituent is the head. However, in general it is clear that this kind of construction gives rise to ambiguities.

Furthermore, there are some other types of relatives that do not automatically fit into the picture: *free relatives*, *participial relatives* and *correlatives*. A free relative (8) does not have an overt antecedent; it is implicit.

(8) Jill liked [what I gave to her]. *[free relative]*

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6 'Trans-translations' into English of Lehmann's German glosses and translations are mine. See Appendix I regarding abbreviations in glosses.

Here *what* includes a covert antecedent; it means *the thing that*. See further section 6.3.

Participial relatives are relatives of which the verb has participial inflection, that is, unlike normal finite inflection. In my opinion a true participial relative does not simply show participle-adjective conversion, because the subject of the relative may be an entity different from the head noun, which is an object for instance. See (9), which is Telugu (a Dravidian language), taken from Lehmann (1984:50).

(9) [M̄iru nāku ic-cin-a] pustukamu cirigipŏ-yin-adi. *[participial RC]*
you$_{pl}$ me give-PRET-PART book$_{nom}$ tear.up-PRET-3.SG
'The book you gave me has been torn up.'

Many languages use a simplified form of this strategy, where the head noun must be a subject. For instance, *de gevallen man* 'the fallen man' in Dutch.

Finally, a correlative is a relative in a left-adjoined position that is separated from its correlate in the matrix clause. Therefore the correlative contains the antecedent (it is head-internal) and the correlate is usually a pronoun or determiner. This is illustrated with a Hindi example in (10), taken from Grosu & Landman (1998:164). The final translation is mine.

(10) [jo laRke KhaRe hai], ve lambe haiN. *[correlative]*
wh boys standing are those tall are
lit. 'Which boys are standing, they are tall.'
'The boys who are standing are tall.'

The correlative construction will be considered in more detail in section 6.1 and especially in Ch4§6.

This short exposé suffices to get a first impression of the typological richness of the relative construction. The following section explores the parametric space in a more systematic way.

2.3 Parametric freedom

Differences between relative clauses can be found on any imaginable aspect of the construction. See the chart in (11), to be illustrated directly below. It is based on the sample of patterns described in Appendix II that consists of 223 relative strategies in 172 languages around the world. They are compiled from typological data in Comrie (1981), Culy (1990), Downing (1978), Givón (1984), Keenan (1985), Keenan & Comrie (1977), Lehmann (1984), Peranteau et al. (1972), and Smits (1988).

(11) a. *Kind of modification/relation:* restrictive/appositive/maximalizing
b. *Hierarchical status of RC:* embedded within DP, correlative
c. *Presence of head:* headed/free relatives
d. *Presence of relative pronoun:* yes/no
e. *Presence of complementizer:* yes/no
f. *Presence of resumptive pronoun:* yes/no

g. *Hierarchical position of head:* externally/internally headed RCs
h. *Linear order of head and RC:* head-initial/final relatives
i. *Inflectional completeness of RC:* finite/non-finite relatives
j. *Position of determiner w.r.t. N and RC:* initial/middle/final
k. *Position of (Case) marker, if any:* on N, on N *and* RC

Given these eleven degrees of freedom, one might expect $3^2x2^9 = 4608$ types of relative constructions, even apart from related ones such as cleft and pseudo-cleft sentences, and extraposed relatives. This is comparable to the number of languages on earth. Clearly, this estimate is a little exaggerated, since there are correlations between the parameters mentioned.

I will briefly illustrate the contrasts mentioned in (11) by example sentences (12) through (22). Several of these contrasts have been shown in the previous section, too.

(12) *Kind of modification/relation:*[7]
a. (I saw) the soldiers that lost the war. *[restrictive]*
b. (I saw) the soldiers, who lost the war. *[appositive]*
c. (They are not quite) the warriors that their parents were. *[maximalizing]*

(13) *Hierarchical status of the relative clause:*[8]
a. [$_{DP}$ The [man who I saw]] is selling the piece of cloth. *[embedded]*
b. [$_{CP}$ n ye tyɛ̀ mìn ye], ò be fìnì fère *[correlative]*
I CMPL man *wh* see DEM IMPF cloth:DEF sell
lit. 'The man whom I saw, he is selling the (piece of) cloth.'

(14) *Presence/absence of the head:*
a. Jill ignored the **advise** which I gave to her. *[headed relative]*
b. Jill ignored what I told her. *[free relative]*

(15) *Presence/absence of a relative pronoun:*[9]
a. Jill visited the museum **which** I recommended. *[relative pronoun]*
b. Jill visited the museum I recommended. *[no relative pronoun]*

(16) *Presence/absence of a complementizer:*
a. Jill visited the museum **that** I recommended. *[complementizer]*
b. Jill visited the museum I recommended. *[no complementizer]*

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7 To be precise, the example in (12c) is a *kind relative*, which is related to degree relatives. Both are subtypes of the *maximalizing* group. See further section 3.

8 The Bambara example (13b) is taken from Lehmann (1984:135).

9 Relative elements are treated in detail in Chapter 5.

(17) *Presence/absence of a resumptive pronoun:*[10]

a. ha-isha she-Yoav ohev **ot-a** … *[resumptive pronoun]*
the-woman REL-Yoav loves ACC-her

b. 'the woman that Yoav loves …' *[no resumptive pronoun]*

(18) *Hierarchical position of the head:*[11]

a. [Nuna **bestya-ta** ranti-shqa-n] alli bestya-m ka-rqo-n. *[IHRC]*
man horse-ACC buy-PERF-3 good horse-EVID be-PAST-3

b. 'The **horse** that the man bought was a good horse.' *[EHRC]*

(19) *Linear order of the head and the relative clause:*[12] *[prenominal]*

a. Aita-k irakurri nai d-u [ama-k erre d-u-en **liburu-a**].
father-ERG (DEF) read wants ABS-PRES 3-(ERG.3) mother-ERG (DEF) burnt ABS-PRES-NR 3-(ERG.3) book-DEF

b. 'Father wants to read [**the book** that mother burnt].' *[postnominal]*

(20) *Inflectional completeness of the relative clause:*[13]

a. iç-in-den sîk-tîğ-îm-îz ev *[non-finite]*
inside-POSS.3-ABL leave-NR-POSS.1-PL house

b. 'The house from which we came out.' *[finite]*

(21) *Position of the external determiner (if any) with resp. to N and the RC:*[14]

a. I spoke with **the** *man* who knows you. *[initial]*

b. Jag talade med *mann*-**en** vilken känner dig. *[middle]*

c. Dia menulis *buku* yang tebal **itu**. *[final]*
he ACT-write book REL thick DEF
'He wrote the book which is thick.'

(22) *Position of (Case) markers, if any:*[15]

a. Ich fürchte den Herr-**n** der eine Pistole trägt. *[on N]*
I fear the gentleman-ACC who a gun carries

b. … tu"ku-**i** [u^{n} t**ɨ** "ka-"p**ɨ**h]-**a**. *[on N and RC]*
… meat-ACC [POSS.3 eat-PART.PERF]-ACC
'… the meat that he ate.'

---

10 The Israeli Hebrew example (17a) is taken from Givón (1984:655). The English example in (17b) is used as a translation and a contrastive example at the same time.

11 The Ancash Quechua example (18a) is taken from Cole (1987:277); it is a circumnominal relative. Prenominal and postnominal relatives are *externally* headed. Circumnominal relatives and correlatives are *internally* headed.

12 The Basque example (19a) is taken from Lehmann (1984:59).

13 Non-finite relatives, including infinitival ones are discussed in section 6.5.

14 Example (21b) is Swedish; (21c) is Indonesian, taken from Lehmann (1984:95). The position of the determiner will be treated in section 7.2 and especially Ch3§3.2 and Ch4§3.6,4-7.

15 Example (22a) is German; (22b) is Shoshoni, taken from Lehmann (1984:79). The influence of Case on the syntax of relative clauses is treated in Chapter 4. However, I will not further discuss the position of Case markers as such.

The acknowledgement of these eleven 'parameters' facilitates an easy classification of individual relative constructions. The general question, then, is how these options relate to other properties of the language in question, and how they relate to each other. In the subsequent sections and chapters I try to illuminate the deeper nature of these parameters and their relations.

2.4. Syntactic main types of relatives

On the basis of the parameters mentioned above, one may distinguish four syntactic main types of relatives. In a nutshell, these are: postnominal relatives, prenominal relatives, circumnominal relatives, and correlatives. Their syntactic structures are sketched in (23).

(23) a. postnominal relatives $[_{\text{S-matrix}} \ldots [\text{N RC}] \ldots]$
b. prenominal relatives $[_{\text{S-matrix}} \ldots [\text{RC N}] \ldots]$
c. circumnominal relatives $[_{\text{S-matrix}} \ldots [[_{\text{RC}} \ldots \text{N} \ldots]] \ldots]$
d. correlatives $[_{\text{S-matrix}} [_{\text{RC}\ (\cdots)} \text{N} \ldots] [_{\text{S-matrix}} \ldots (\text{Dem}) \ldots]$

Each type has a headed and a free variant. It has been shown for postnominal relatives in (14) above; see further section 6.3. Two important differences between the four types are summarized in table 1.

Table 1. *Important properties of syntactic main types of relatives.*

property ↓	*postnominal*	*prenominal*	*circumnominal*	*correlative*
internal head	no	no	yes	yes
nominalized	yes	yes	yes	no

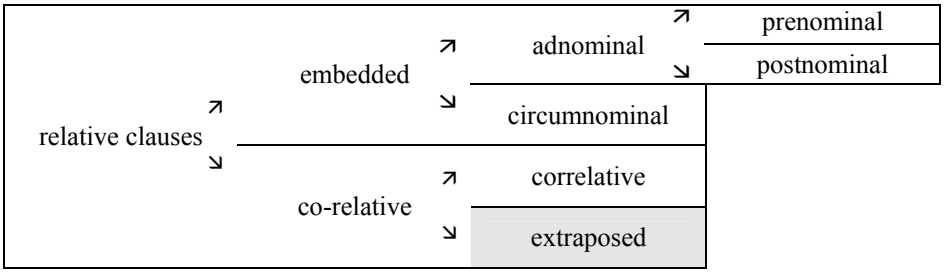
As illustrated above, circumnominal relatives and correlatives have an internal head. The circumnominal construction is nominalized, like postnominal and prenominal relative constructions. That is, it is a DP – hence there can be an external Case marker or determiner; see further section 6.2. Thus only correlatives are bare sentences, which are almost always left-adjoined to the matrix clause.

Although postnominal relatives are the most common, the other types occur in different language families across the world; see Appendix II, figure 1. The syntax of these four main types of relatives will be treated extensively in the subsequent chapters.

2.5. Terminological remarks

Before I go on, some terminological remarks are in order. I will use the following terminological schema of dependencies, adapted from Lehmann (1984:49) and Downing (1978:382). The extraposed group in figure 1 is shaded grey because it does not form a natural class with correlatives in any analytical way (cf. Chapter 7 and Srivastav 1991).

Figure 1. *Relative terminology I: syntactic main types of relatives.*



Some other useful terminological classifications are depicted in figures 2, 3 and 4.

Figure 2. *Relative terminology II: internally and externally headed relatives.*

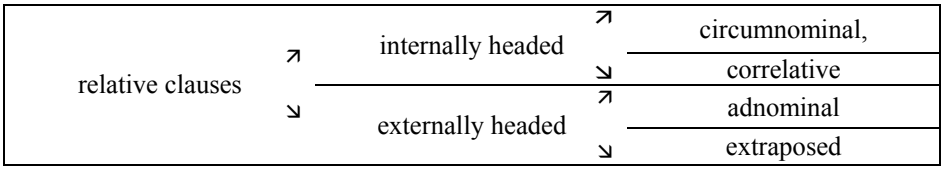


Figure 3. *Relative terminology III: headed and free relatives.*

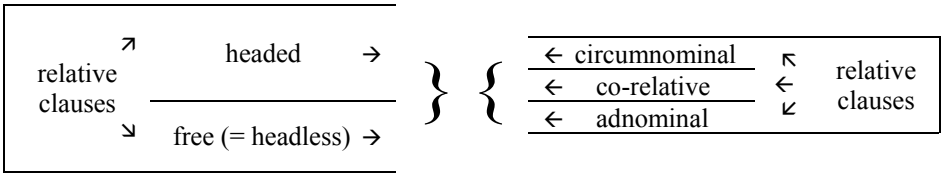
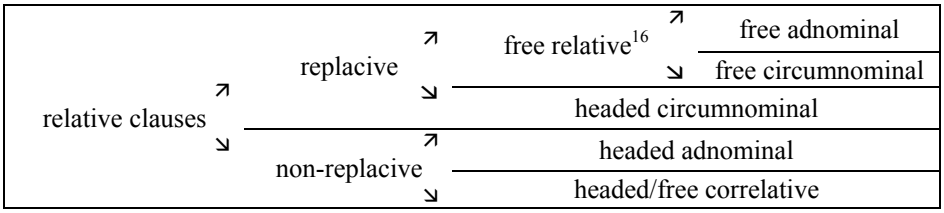


Figure 4. *Relative terminology IV: replacive and non-replacive relatives.*



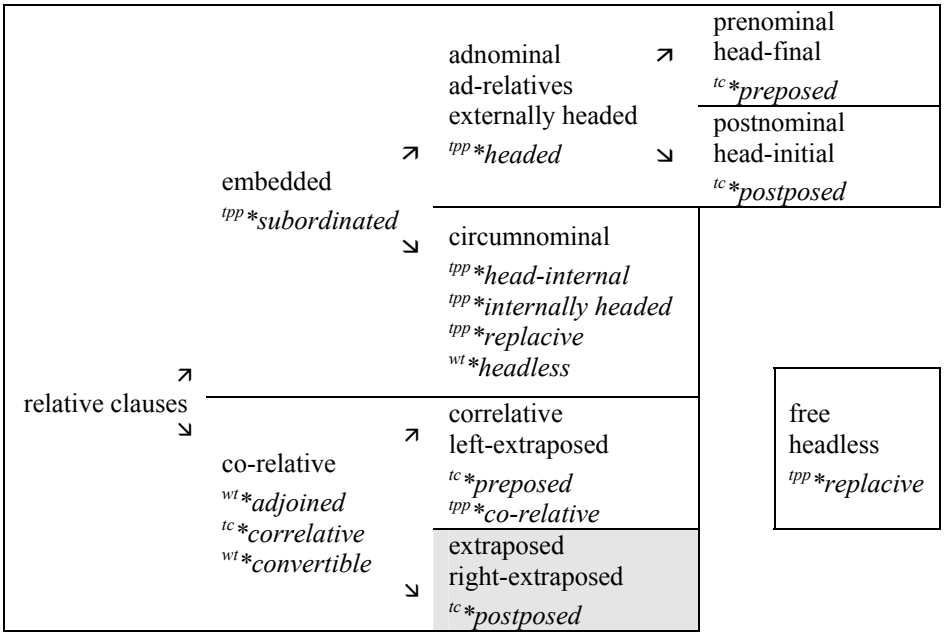
[16] Free correlatives are also free relatives, but not replacive, strictly speaking.

In order to prevent terminological confusion, I want to stress the following points:

- *Embedded* is sometimes called *subordinated*.
- *Co-relative* is sometimes called *adjoined*.
- Of course *co-relatives* are also subordinate sentences, but not subordinate to DP_{rel}. In Chapter 7 I argue that extraposed relatives are not adjoined. I will not use the terms *subordinated* and *adjoined* to avoid confusion.
- The term *co-relative* is not to be confused with *correlative*.
- The terms *prenominal, postnominal* and *circumnominal* are equivalent to *head-final, head-initial,* and *head-internal (*or *internally headed)*, respectively.
- *Prenominal* and *postnominal* relatives as a group are referred to as *adnominal relatives* or *ad-relatives*.
- *Pre-* or *postnominal* should never be called *pre-/postposed*, because that leads to confusion with co-relatives. Therefore I will not use these terms at all.
- A commonly used abbreviation for *circumnominal relatives* is *IHRC* (internally headed relative clause), or *head-internal relative*. (Strictly speaking this is incorrect, since correlatives are also head-internal.)
- Hence an *EHRC* (externally headed relative clause) is an adnominal relative.
- *Circumnominal* relatives are also called *replacive*, but since this term is also used for *free relatives*, I will not use it.
- *Headless relatives* are *free relatives*, in opposition to *headed relatives*, i.e. all relatives with an overt head (whether adnominal, circumnominal or correlative).
- Therefore the terms *headed* versus *headless relatives* must not be used for adnominal and circumnominal relatives, respectively. Notice that there are free circumnominal relatives (cf. Culy 1990:24-25).
- *Preposed* and *extraposed* are also called *left-extraposed* and *right-extraposed*. I will not use these terms.
- *Preposed co-relatives* are *correlatives*.
- The idea that correlatives and extraposed relatives are *convertible* is refuted in e.g. Srivastav (1991).

All this information is depicted systematically in figure 5. I indicated which synonyms are admissible and which are dispraised – and why: *tpp* means ‘toto pro pars’, *tc* ‘terminological confusion’, and *wt* ‘wrong term’.

Figure 5. *Relative terminology V: admissible and dispraised synonyms.*



Where necessary, additional 'relative terminology' is introduced in the subsequent sections. See Appendix IV for a full overview.

Finally, some commonly used abbreviations are listed in (24).

(24) *Some frequently used abbreviations regarding relative constructions:*

RC	=	relative clause
ARC	=	appositive relative clause
RRC	=	restrictive relative clause
FR	=	free relative
EHRC	=	externally headed relative clause
IHRC	=	internally headed relative clause (used for circumnominal relatives)
REL	=	relative element (i.e. a relative pronoun or particle)

A complete list of abbreviations can be found in Appendix I.

3. On the semantics of relative clauses: Grosu & Landman's scale

The semantics of relative clauses is treated insightfully in Grosu & Landman (1998). Relative constructions can be put on a scale that weighs the importance of external and internal material for the meaning of the whole construction. Consider the scale depicted in (25), where the "sortal" of a relative construction is the semantic

equivalent of the head noun (which is not necessarily at the same position). The dichotomy sortal-internal/external will become clear in a moment.

(25) *Grosu & Landman's scale*

sortal-external				*sortal-internal*
(simplex XPs →)	appositives	→ restrictives	→	maximalizers (→ simplex CPs)

A *simplex XP* has no modifying relative CP at all: there is only 'external material', hence the term *sortal* is meaningless here. Appositives and restrictives are truly sortal-external. This means that the semantic content of the head noun cannot be derived from material within the relative clause.

Regarding *appositives*, the external material (the antecedent) is more important than the relative clause, since the relative is anaphorically linked to the antecedent at a discourse level only (namely, by 'cospecification'; cf. Ch6 and Sells 1985); hence the semantic relation is indirect. Obviously, this does not mean that a relative and its antecedent are syntactically unrelated. See Chapter 6 for more discussion on the syntax of appositives.

Restrictives are in the middle of the spectrum: both the internal and the external material is crucial.[17] Again, the scale is a semantic scale. In principle, the semantic presence and importance of outside material does not necessarily coincide with the syntactic presence of external material. A relevant point in case are circumnominal relatives. At least some of them can have a restrictive meaning. That is, although the head noun is syntactically internal, it is semantically construed outside the relative clause.

The sortal-internal group contains relative constructions of which the content of the relative clause is more important than possible external material. Hence the external material can be semantically derived from the internal material. Grosu & Landman (1998:148) state: *"if the head is semantically CP-internal, no semantically independent CP-external material is allowed"*. So *"the sortal and cardinality properties are fixed CP-internally"* (ibid. page 127). Free relatives are clear instances of sortal-internal constructions.

The end of the scale is the *simplex CP*. Obviously, there is only CP-internal material. Since simplex CP's are not relative clauses, they are not relevant here.[18] Notice that free relatives contain an (implicit) head noun, hence there is a sortal, at least semantically. Normal free relatives are not simplex CPs; they are classified as maximalizers.

So, finally, there is the group of *maximalizers*. Here the internal material is most important. To a large extent, it determines the external material (if present), partly through a maximalization operation (to be explained below) – hence the name. The group of maximalizers can be split into several subtypes, among which

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17 The meaning of a restrictive relative construction is obtained by combining the meaning of the head noun and the relative CP through intersection, which is a symmetric operation.

18 However, there is one exception: Grosu & Landman (1998) argue that irrealis free relatives are bare CPs, contrary to normal (realis) free relatives, which are are DPs. See also section 6.3.

degree relatives, free relatives and correlatives. I will illustrate the concept using the first.

Degree relatives are non-restrictive, non-appositive relatives. They are first discussed as 'relatives of a third kind' in Carlson (1977), albeit under the name of *amount relatives*. Consider the Dutch and English example in (26). The presence of presentative *er/there* forces a degree reading instead of a restrictive reading.

(26) a. Ik bekeek de muizen die er in de kooi zaten.
b. I looked at the mice that there were in the cage.

The example means that I looked at *all* mice in the cage – there are no other mice in the domain of discourse – not at the group of mice in the cage contrary to a possible free group of mice, which would be a restrictive reading, as in (27).

(27) a. Ik bekeek de muizen die in de kooi zaten.
b. I looked at the mice that were in the cage.

If the trace of a relative pronoun or operator is an individual variable, sentences like (26) ought to cause an indefiniteness effect. This point can be shown directly if we use an English *wh*-pronoun as in (28); see also Carlson (1977), Heim (1982) and Grosu & Landman (1998).[19]

(28) I looked at the mice which (*there) were in the cage.

This indefiniteness effect can be by-passed if a degree reading becomes available. This is represented in (29).

(29) the mice that there were (d many mice) in the cage

The degree expression *d many mice* as a whole fits the indefiniteness context. The degree variable is bound by the relative pronoun or operator. It seems that English *that* but not *which* can bind a degree variable.[20]

The representation in (29) shows that the head noun *mice* is derivable from the content of the relative clause, which contains the more complex expression *d many mice*.[21] Hence degree relatives are clear instances of sortal-internal constructions.[22]

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19 A comparable contrast is: *the mice that/*which were in the cage at all.*

20 For unknown reasons the Dutch relative pronouns *welke* and *die* behave differently from English *which*; see (i). Hence *die* and *welke* can bind a degree variable.
(i) Ik bekeek de muizen welke/die er in de kooi zaten.

21 I follow Grosu & Landman (1998) in that the degree of x is not simply its cardinality |x|, but a triple <|x|, P, x> where P is the measure scale. This is important because a degree should keep track of what it measures. If not, one could not explain the unacceptability of, for instance, the hypothetical meaning of (29) expressed in (i).
(i) the mice that there were (d many rats) in the cage

22 A direct syntactic parallel to this semantics is a promotion analysis of degree relatives, and actually it is proposed by both Carlson (1977) and Grosu & Landman (1998).

The meaning of the relative clause is not simply a set of degrees compatible with its content. A maximalization operation is needed, too. For instance, if there are four mice in a cage, then it is also true that there are three or two mice in the cage. But this is not intended in (26). The sentence is only true if the maximum is taken: I looked at *all* mice there were in the cage. If so, it is predicted that only a subset of determiners is compatible with the head noun, see (30) and (31). These facts are due to Carlson (1977). Particular examples are mine.

(30) a. Ik bekeek {de/de vier/vier van de/de vele/de weinige/
*vier/*weinige/*vele/*enkele/*de meeste} muizen die er in de kooi zaten.
b. Ik bekeek {elke/*geen} muis die er in de kooi zat.

(31) a. I looked at {the/the four/four of the/the many/the few/
*four/*few/*many/ *some /*most /} mice that there were in the cage.
b. I looked at {every/any/*no} mouse that there was in the cage.

In general it seems clear that maximalization inside the relative leads to definite and universal DPs only. I refer to Grosu & Landman (1998) for formal semantic details.

Notably, these restrictions on determiners do not count for restrictives; compare the sentences in (32) and (33). Therefore they are a diagnostic for maximalization.

(32) a. Ik bekeek {sommige/enkele/vier} muizen die in de kooi zaten. *[restr.]*
b. * Ik bekeek {sommige/enkele/vier} muizen die er in de kooi zaten. *[max.]*

(33) a. I looked at {some/few/four} mice that were in the cage. *[restr.]*
b. * I looked at {some/few/four} mice that there were in the cage. *[max.]*

Another important diagnostic is that maximalizers do not stack, contrary to restrictives and appositives.[23] This is illustrated in (34).

(34) a. Ik bekeek de muizen die er in de kooi zaten
(* die er gisteren vrij in huis rondliepen).
b. I looked at the mice that there were in the cage
(* that there had been freely walking in the house yesterday).

Both relatives are acceptable if attached to the head noun alone, but not in combination. This is understandable, since the sortal cannot be interpreted RC-internally at two places the same time. Moreover – given that i) the semantics of stacking involves set intersection; ii) maximalization creates a singleton set (i.e. a set with one member) – stacking of degree relatives would lead to intersection of two singleton sets, which is a semantically vacuous operation because the result is either empty or identical. On the other hand, intersection of non-singleton sets is a logical possibility, hence stacking of restrictives (where there is no maximalization) is

[23] Without *er/there* the relative clauses in (34) are restrictive, hence stacking is acceptable.

acceptable. Stacking of appositives is also possible, because there can be more than one anaphoric relation with respect to one antecedent. More on stacking follows in section 7.3 and Ch6.

Given the concepts of sortal-internal interpretation, maximalization and their diagnostics, I will briefly indicate the types of relative clauses that fit this pattern. First, there are the *substance degree relatives*, as illustrated above. Next to these, there are *quantity degree relatives*, e.g. (35) or (36).

(35) Er valt niet op te planten tegen de bomen die ze elders omhakken.
there is not up to plant against the trees which they elsewhere down.chop
'It is impossible to plant the amount of trees that is elsewhere chopped down.'

(36) Je kunt dagelijks een container vullen met het papier dat hier verspild wordt.
you can daily a container fill with the paper which here wasted is

In (35) and (36) it is the amount of trees or paper that is relevant in the matrix clause, not the actual trees or paper that the relative mentions. If (36) is taken more literally, it may also get a substance degree reading.

Similar to degree relatives are *kind relatives* (cf. Heim 1982), as illustrated by the examples in (37).

(37) a. Bush is not the politician that his father was.
b. De typmachines die er vroeger waren veroorzaakten geen muisarmen.
the typwriters which there in.the.past were caused no mouse.arms

Next, Grosu & Landman (1998) analyse data from Rothstein (1995) that involves quantification over events, as undergoing relative maximalization, too. If true, these may be called *event relatives*.[24] Examples are given in (38).

(38) a. Every (/*no) time {that/ø/when/*which} the bell rang, I opened the door.
b. De keren dat er iemand op bezoek kwam, leefde mijn tante op.
the times that there somebody on visit came, revived my aunt .

[24] Although this construction fits the diagnostics, I am not sure if it is a relative construction at all. In Dutch 'every time that' is: *elke keer dat…*, but there is a clear mismatch between the relative pronoun *dat* and *keer*. (Recall that standard Dutch has no relative complementizers.) Since *keer* is non-neuter, it should be **de keer die*, but that is impossible. Moreover, *dat* as a relative pronoun is generally replaceable by *wat*, but **de keer wat* is clearly out. So perhaps *de keer dat…* is a noun plus complement construction (where *dat* is a complementizer), similar to *the fact that…, the claim that…*, etc. Since a noun has one complement, stacking is impossible. Obviously, a relative pronoun like *which* is out because there is no relative gap. (However, notice that *which* is impossible anyway because *time* is not pronominalizable.) Against this view is the fact that a complementizer cannot be left out in noun-complement constructions in English: *the fact {that/*ø}*, contrary to relative constructions. The event sentence patterns with the relatives in this respect. Concerning the determiner restrictions, the meaning of (38) indeed points to maximalization. However, maximalization is independent of relativization. For instance, it occurs in comparatives like *this elephant is bigger than any mouse is* (cf. Rullmann 1995). So the question is if maximalization can also take place in non-relative complements of nouns, or that other factors lead to comparable results in this respect. This question falls outside the scope of this book.

This concludes my discussion of degree relatives and closely related sentence types.

There are also syntactically distinct constructions that are relevant here. *Correlatives* are subject to a maximalization operation, too. This is shown by using the diagnostics concerning determiner restrictions and stacking in the Hindi examples in (39) and (40), taken from Grosu & Landman (1998:164/5).

(39) [jo laRke KhaRe hai], ve/dono/sab/*do/*kuch/*adhiktam lambe haiN.
wh boys standing are those/both/all/*two/*few/*most tall are
lit. 'Which boys are standing, they/both/all/*two/*few/*most are tall.'

(40) [jo laRkii KhaRii hai] [* jo ravii kii dost hai], vo bahut lambii hai.
wh girl standing is wh Ravi GEN friend is DEM very tall is
'What girl is standing, [* who is Ravi's friend], she is very tall.'

Hence correlatives are sortal-internal relatives. Notice that they are also syntactically head-internal (although the correlate may contain a copy of the head noun).

Finally, free relatives are sortal-internal. Stacking is impossible; see (41) for instance. Both free relatives are correct by themselves, but the combination is false.

(41) * Jill likes [whatever I give her] [whatever is green].

There are no overt determiners, but the interpretation is either definite or universal (see e.g. Jacobson 1995). This proves that maximalization is involved. Note that a free relative can also have a degree reading, e.g. (42).

(42) Wat er op tafel ligt aan giften, is onvoldoende.
what there on table lies as.for donations, is insufficient

What is 'insufficient' in (42) is the *amount* of donations. The sentence can have a quantity reading (metaphorical) or a substance reading (literal).

This concludes a short overview of semantic types of relative clauses. Some important results are summarized in table 2.

Table 2. *Semantic types of relative clauses and their properties, based on Grosu & Landman (1998).*

property ↓	*semantic type* →	*sortal-external* appositives → restrictives →	*sortal-internal* maximalizers
stacking		yes	no
determiners		all types	only definite and universal

The next step is to determine which syntactic structures correspond to which semantic types. (Grosu & Landman (1998) are not very explicit about this.) I have mentioned the maximalizing nature of free relatives and correlatives, and I have shown that postnominal relatives can be of many semantic types. The following

table summarizes possible mappings between syntactic and semantic types. For completeness's sake I included information on the lacking syntactic main types here: circumnominal and prenominal relatives. These are discussed further in Chapter 4.

Table 3. *Mapping between syntactic and semantic types of relative clauses.*

syntactic type ↓ / *semantic type* →	appositive	restrictive	maximalizing
postnominal[25]	+	+	+
prenominal[26]	-	+	+
circumnominal[27]	-	+	+
correlative[28]	-	-	+
free relatives	-	-	+

Here a plus means that the combination exists; a minus that it does not. Recall that free relatives can be of any syntactic main type, i.e. postnominal, prenominal, circumnominal, or correlative (see section 6.3). The maximalizing group can be split into several semantic subtypes. Clearly, more research is necessary on this issue.

4. Lehmann's functional classification of relative constructions

According to Lehmann (1984), there are five main types of relative clauses: prenominal, postnominal, circumnominal, correlative and extraposed.[29,30] These main types are related in the way figure 6 suggests:

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25 Maximalizing postnominal and prenominal relatives are degree relatives, for instance.

26 Prenominal appositive relatives are marginal at best. Lehmann (1984:277/8) states that they are probably restricted to proper names. In Basque they are preferably postposed. Turkish uses a postnominal or extraposed (finite) variant especially for appositives. In De Vries (2000a) I predicted that they cannot exist, if I am correct that apposition is specifying coordination. This can be maintained if what seem to be appositive prenominal RCs are really free relatives followed by a specifying name, comparable to e.g. *[she who is our director], (viz.) Jill…* See further Chapter 6.

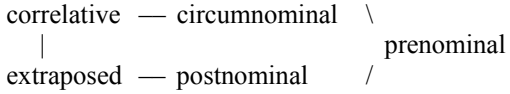
27 Appositive circumnominal RCs are marginal, too. Lehmann (1984: 278) states that they do not occur, except that there are examples from Mohave; but these always have a sentence-initial head noun, which makes them suspect. The same is the case for the rare examples Culy (1990:251-254,256) provides for Dogon and Japanese. Again, given the idea that apposition is specifying coordination, it follows that appositives cannot be circumnominal.

28 Grosu & Landman (1998) explain why correlatives must be maximalizing. Lehmann's (1984:279) examples of would-be correlative appositive free relatives are parenthetical sentences in my view. For instance, they can be interjected at any position in the sentence. This would not be possible if they were true correlatives.

29 In fact, Lehmann uses the term *vorangestellt* 'preposed' instead of *correlative*. Wherever relevant, I use the standardized terminology advocated for throughout this book (cf. section 2.5). At some points it deviates from Lehmann's terms.

30 I do not acknowledge extraposed relatives as a separate main type; see Chapter 7.

Figure 6. *Main types of relative clauses (Lehmann 1984:149)*



Correlative and prenominal relatives are diametrically opposed. Circumnominals are somewhere in between. Postnominal relatives are clearly related to prenominals on the one hand, and to extraposed relatives on the other hand, which in turn are connected to correlatives. This is based on some essential properties concerning relativization; see table 4. (The explanation follows directly below).

Table 4. *Absolute properties of main types of relative clauses, compiled from Lehmann (1984).*

property	**correlative**	**extraposed**	**circumN**	**postN**	**preN**
nominalization of RC (**yes/no**)	no	no	yes	yes	yes
RC is satellite to **N_{rel}** or **S_{matrix}**	S	S	-	N	N
N_{rel} is present in RC (**yes/no**)	yes	no	yes	no	no
RC is **open** or **closed** (variable or N)	closed	open	closed	open	open
gap/quasi-anaphor in RC represents N_{rel} , *or* **anaphor** in S_{matrix} represents N_{rel}+RC	anaphor	gap	-	gap	gap

Embedded relatives (prenominal, postnominal, circumnominal) are nominalized, that is, the head noun and the relative are combined in a higher nominal projection (DP_{rel} in my terms); co-relatives (correlative, extraposed) are not.[31] According to Lehmann, co-relatives are satellites of the higher clause, adnominal relatives are satellites of N_{rel} (but see the following chapters for a more precise characterization). Circumnominal relatives are neither: they are a constituent of the matrix clause. Finally, the presence or absence of the head noun in the relative clause directly anti-correlates with the presence of a bound variable.

At this point I need to expand on the picture in figure 6. Notably, it is not circular, but linear with a vertical dimension added to it. From left to right there are three groups: i) correlative + extraposed, ii) circumnominal + postnominal, and iii) prenominal.[32] The usefulness of this way of representing things will become clear if we look at some further properties. Importantly, these are not absolute (as in table

[31] The fact that circumnominal relatives are nominalized may not be immediately obvious. See section 6.2.

[32] From this perspective I would draw a vertical line between circumnominal and postnominal in figure 6, but that is not how Lehmann represents it.

4), but scalar tendencies. See table 5, where SR means 'subordinator'. Notice that the scales do not represent continuous functions, but step functions.

Table 5. *Scalar properties of main types of relative clauses, compiled from Lehmann (1984).*

scale	prenominal	postN	circumN	extraposed	correlative
nominalization phenomena	strong ←		medium ←		weak
subordination	affixal SR →	final SR →	initial SR →		relative pronoun

This can be explained as follows. Nominalization leads to nominalization phenomena, which can be put on a scale from weak to strong (cf. Lehmann 1984:168-173). The phenomena involved are: limitations in sentence type (illocutional) → modal limitations → temporal/aspectual limitations → implicit subject → infinite verb form → genitive (oblique) subject → limitations in possible complements. Regularly, prenominal relatives show strong nominalization phenomena: often there is a nominalizing affix, there can be temporal and modal limitations, etc. This is much less so for correlatives.

The subordination scale is anti-correlated with the nominalization phenomena scale. It indicates which element functionally represents the fact that the relative clause is subordinated (if there is such an element at all). In prenominal relatives there is often only a verbal affix which has this subordinating function. On the other edge of the scale are correlatives, which often have a relative pronoun. (According to Lehmann subordination is one of the possible functions of a relative pronoun. I will argue differently in Chapter 5.) A sentence-initial subordinator, i.e. a relative complementizer is often found in postnominal relatives. I will return to relative elements in a moment.

The patterns in table 5 can be put in a 3-dimensional graph, where the main relative clause type according to figure 6 is on one axis and the nominalization phenomena and subordination scales are on the others. Then the relativization strategy of a language is a point in this 3-dimensional space. If the correlations indicated were perfect, all points would be on the grand hypotenuse from {prenominal, strong, gap} to {correlative, weak, rel. pronoun}. However, this is not exactly so; there is much scatter, since table 5 only represents scalar tendencies. Hence the points in the graph are like the stars in an E6 galaxy (according to the Hubble sequence) with its axis along the hypotenuse mentioned. See also Lehmann (1984:172).

The main types of relatives can be put on yet another scale: *attribution*, which indicates how tightly the relative is attributed to the head; see table 6. (On the same scale, leftward of correlative is e.g. predication; rightward of prenominal are adjectives, compounds, etc.) I have indicated a subscale in the postnominal and prenominal department, where RP, RC, RA and Ø mean 'relative pronoun', 'relative complementizer', 'relative affix' and 'gap', respectively.

Table 6. *Main types of relative clauses on a scale of attribution, compiled from Lehmann (1984).*

property	**correlative / extraposed**	**circumN**	**postnominal** RP → RC → Ø	**prenominal** RC → RA → Ø
attribution scale	loose →		medium →	tight
			identification →	concept building
			← ease of dissociation ←	

Post- and prenominal relatives have an explicit nucleus, the others need an operation of 'nucleus building' in Lehmann's terms. Within the adnominal group there is a (weak) correlation with a scale of *identification* (which indicates appositive relativization in this context) through *concept building* (restrictive relativization). There is also an anti-correlation with 'ease of dissociation' of the head and the relative clause, i.e. the (im)possibility of extraposition and the interference of other attributes.

The more explicit the attribution, the more implicit the (quasi-)anaphor can be. Postnomimal, prenominal and extraposed relatives have the anaphor in the relative, correlatives in the matrix clause.[33] See table 7. Here *free pronouns* are relative (*wh*-moved) pronouns or resumptive (in situ) pronouns.

Table 7. *Attributivity and the anaphoric scale, from Lehmann (1984).*

correlative / extraposed	**circumnominal / postnominal**	**prenominal**
(implicit) →	*attributivity* →	(explicit)
(explicit) ←	*anaphoric scale* ←	(implicit)
NP ← free pronoun ←	pronominal affix ← verbal agreement ←	gap

Hence relative pronouns are likely in extraposed relatives, but not (in fact, impossible) in prenominal relatives. On the contrary, verbal agreement or a gap is common in prenominal relatives but not in correlatives. Compare the subordination scale in table 5.

At this point it is possible to give Lehmann's general definition of relative clauses. The translation (from German) is mine.

(43) *Definition of relative clauses according to Lehmann (1984:401)*
"A clause is a relative clause if the operations of Subordination/Nominalization, Anaphor/Gap Construction, and Attribution/Nucleus Building have been applied to it; and the closer to the middle of the scales the effect of the three operations involved is, the more of a relative clause it will be."

[33] It is not entirely clear to me how the function Anaphor/Gap Construction relates to circumnominal relatives. One might say that the 'gap' is filled with the head NP, hence they are on the edge of the lower scale in table 7. Anyway, a variable is constructed semantically (cf. Grosu & Landman 1998), hence there is construction of a gap at this level.

This definition is in terms of grammatical functional scales. In fact, apart from the specific terminology, it is close to the definition I have given in section 2.1.

If Lehmann's subordination and anaphoric scales are combined, we get a more concrete 'relative elements scale'. I show this in table 8.

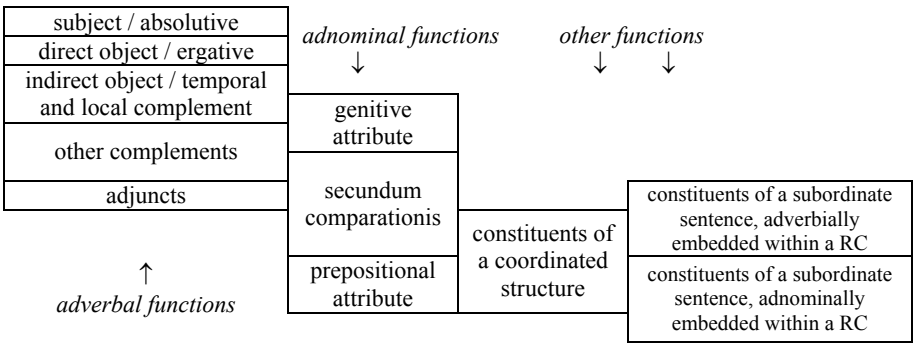
Table 8. *The relative elements scale.*

scale	prenominal	postN	circumN	extraposed	correlative
relative elements	gap → relative affix → rel. complementizer → rel./demonstr. pron.				

Relative elements are discussed further in Chapter 5.

Finally I would like to mention Lehmann's *syntactic function hierarchy*, depicted in figure 7. This hierarchy is used to indicate which syntactic positions *internal* to a relative clause are available to the relative head in a particular language.[34] Notice that there are no known limitations to the *external* role of the head, i.e. the syntactic position in the matrix clause. Lehmann's hierarchy is an extension of Keenan & Comrie's (1977) *accessibility hierarchy*. It consists of four related scales of adverbal, adnominal and other functions. In figure 7 the scales are vertically represented. The position of a particular language in this hierarchy can be represented by drawing an imaginary horizontal line.

Figure 7. *Syntactic function hierarchy, from Lehmann (1984:219).*



With respect to this hierarchy, several conclusions can be drawn:

- If a language can assign a syntactic function x to the representative of the head in a relative clause, then it can assign all functions higher than x.
- Languages only use a subset of the hierarchy for relativization.
- The size of this subset anti-correlates with the grade of nominalization of the relative construction (i.e. in general co-relatives can be used for more – hence lower – syntactic functions than prenominal relatives).

[34] So in a way the hierarchy is an ordering of language-dependent (sub-)limitations on *wh*-movement.

- If a language uses a resumptive pronoun as the representative of a head with syntactic function x in a relative clause, then it uses resumptive pronouns for all functions lower than x.

There are a few exceptions to these statements. Hence they must be considered universal tendencies rather than universal laws. For further discussion, see Lehmann (1984).

In response to Keenan & Comrie (1977) and Dik (1997), Bakker & Hengeveld (2001) argue that the accessibility hierarchy should have three dimensions: syntactic function, semantic function and embeddedness. They follow Dik's critique that many languages do not have clearly defined subjects or objects, and that other syntactic functions are ill-defined anyway. The results are given in (44).

(44) *The accessibility hierarchy according to Bakker & Hengeveld (2001):*

a.	Syntactic function:	Subject > Object > other
b.	Semantic function:[35]	Arg-1 > Patient > Recipient > Beneficiary > other
c.	Embeddedness:	non-Possessive > Possessive
		[*generalized to:* non-embedded > embedded]

Unfortunately, Bakker & Hengeveld do not address Lehmann's much more fine-grained hierarchy, which incorporates embedded functions and the absolutive/ ergative system. Nevertheless I think that they may be right in claiming that a semantic function scale plays a role, too – at least as a subdivision of the overall syntactic function hierarchy presented by Lehmann, and possibly even more prominently.

5. Downing's universals and general implications

Downing (1978) discusses universal properties and tendencies concerning restrictive relative clause constructions. Here I will state some important ones, in my terms, with several additions and corrections. Downing (1978:411) concludes: *"The generalizations which have been stated in this paper […] are subject, of course, to modification or refutation on the basis of additional language data."* At present much more data are available than in 1978; therefore this section tries to supplement Downing's work.[36]

Claims from Downing are referred to in the format D-X:Y, where X is the letter (combination) referring to Downing's (1978) own alphabetical ordering and Y

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35 *Patient* is comparable to *Goal* in Dik's terms. In Functional Grammar Arg-1 is a collective name for a number of semantic functions that can act as the only argument of a one-place predicate, or as the 'most central' argument of a more-place predicate. These are: Agent, Positioner, Force, Processed, Zero.

36 See also Appendix II for an overview of properties of relative constructions in a large sample of languages. As discussed there, the sample is not balanced – neither is Downing's – therefore precise statistical conclusions cannot be drawn. Nevertheless, the sample contains information from many different language families, which suffices for the present purposes.

can be AU: absolute universal, GT: general tendency, IU: implicational universal, or IT: implicational tendency. Again, I do not cite literally, unless indicated specifically. Claims not from Downing are also provided with an AU/GT/IU/IT label. Claims without reference are mine. Refuted, disputable or weak claims are preceded by stars and/or question marks.

A. ***In general:***

A1. *All languages use relative clauses* (D-A:AU). This is confirmed by Lehmann (1984). Problematic is perhaps that a few relative types on the edges of Lehmann's scales (i.e. very non-typical relatives) are hardly recognizable as such. It is claimed, e.g. by Bakker & Hengeveld (2001), that Hixkaryana (Ge-Pano-Carib) does not have relative clauses, but this assumption is denied by Lehmann (1984:401). I am not sure if the disagreement is a matter of definition only. Anyway, A1 is certainly true as a general tendency. See further B below.

A2. *Most languages use free relatives* (GT, Lehmann 1984). This is plausible, since free relatives are only a syntactic variant of headed relatives (although the semantics can be different; recall section 3 again). Known exceptions are Japanese, Djirbal and Bambara.

A3. ** For all languages: prenominal RCs then no correlatives (hence correlatives then no prenominal RCs)* (D-Z:IU). [The prenominal and correlative strategy exclude each other.] This is simply not true: see Appendix II, table 26. Counterexamples are e.g. Hurric, Sanskrit, Tamil, Kannada.

B. ***Concerning the semantics:***

B1. ** If a language has relatives, it has restrictive relatives* (D-A:IU).[37] This statement seems to be undisputed, but it is partially incorrect. If Grosu & Landman (1998) – treated in section 3 above – are basically correct, correlatives, for instance, are maximalizing (not restrictive). Hence B1 must be revised as B1':

B1.' *If a language has relatives, it has restrictive or maximalizing relatives* (IU). Downing's idea that appositives are less basic is true, of course. In other words: if a language has appositives, it also has restrictives – but not necessarily the other way round.

Question: do most languages use appositive relatives? Obviously, many do – appositives are found in languages from very distinct families. But the answer is *no*: the semantics of appositives is hardly compatible with the correlative, the circumnominal and the prenominal strategy (cf. section 3, table 3 and Chapter 6). Hence only postnominal relatives can have a true appositive strategy:

B2. *If a relative is semantically appositive, it is syntactically postnominal* (IU). Question: do all (or most) postnominal relatives allow for an appositive reading? My guess is: *yes*; but the answer is unknown, really.

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[37] In fact, Downing's statement D-A:AU is *"all languages make use of restrictive relative clauses"*. I have split it up in A1 and B1, because B1 must be revised as B1'.

C. ***Concerning word order:***[38]

C1. *?* For most languages: postnominal RC ↔ VO* (D-B:IT). [If and only if relative clauses are postnominal, the basic word order is verb-object.] This claim is *not* correct, or at least the tendency is very weak. Appendix II, table 24, contains a large list of postnominal relatives in OV and other non-SVO languages. Some counterexamples are Hopi, Bora and Farsi. Concerning the inverse implication: Appendix II, tables 21-23, lists several VO languages with non-postnominal (i.e. circumnominal, correlative or prenominal) relatives, e.g. Dagbani, ancient Greek, Mandarin Chinese and Palauan.

C2. *? For most languages: prenominal RC → OV* (D-O:IT).[39] [Prenominal relatives occur in verb final languages only.] The tendency is not very strong. Exceptions are in Appendix II, table 23, e.g. Mandarin Chinese, Palauan, and Finnish.[40]

C3. ** For all languages: correlative → OV* (D-Y:IU). [Correlatives occur in verb-final languages only.] This is not a correct universal. Appendix II, table 22, lists two counterexamples: ancient Greek and Medieval Russian. Nevertheless, C3 may be reformulated as an implicational tendency:

C3.' *For most languages: correlative → OV* (IT).

C4. ** For all languages: circumnominal RC → OV* (D-V:IU). [Circumnominal relatives occur in verb final languages only.] Again, this is not a correct universal, which is also stressed by Culy (1990), given the counterexamples in Appendix II, table 21, e.g. Mooré, Dagbani and ASL. The statement may be reformulated as a weak tendency:

C4.' *?? For most languages: circumnominal RC → OV* (IT).

D. ***Concerning postnominal relatives:***

D1. *For all languages: the head noun is not fully repeated in a postnominal relative* (D-D:IU). [So we have *N[…N…].] This is correct; see Appendix II, table 7. Notice that there are some rare cases with an epithet NP in appositive relatives; see Chapter 6.

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[38] Just for clarity a note on equivalences and notations in first order logic:

A if and only if B	≡ A ↔ B	≡ A iff B	
A if B	≡ B → A	≡ (if) B then A	[B is a sufficient condition for A]
A only if B	≡ A → B	≡ only if B then A	[≠ B → A, B is *not* a suff. cond. for A]

[39] Notice that C2 does *not* imply OV → prenominal RC, which is correct since the correlative and circumnominal strategy occur in OV languages, too.

[40] Another suggestion from Downing is that if the word order is not OV, there must be a clause-final marker (D-S:IU), e.g. *de* in Chinese. There is no other example, except perhaps in Tagalog. Finnish could be a counterexample, again, but this is a participial strategy. It seems to me that at present there is not enough data to support any claim concerning the prenominal strategy in non-SOV languages.

D2. *For all languages: relative pronouns are sentence-initial (although they are sometimes embedded in a PP or NP)* (D-F:IU). In other words: relative pronouns are *wh*-moved. This property has become the definition of relative pronouns (which contrasts with resumptive pronouns), so it is not surprising that it is a universal. Nevertheless there are exceptions of relative pronouns (with a question word format) *in situ*, viz. in the (closely related) languages Bambara, Maninka, Mandinka and Vai.[41] Thus perhaps the universal is a tendency after all.

D3. *? For most languages: a relative pronoun excludes a resumptive personal pronoun* (D-E:IT). Actually this should be a universal. See Chapter 5, sections 3.2 and 4.2, and Appendix II, tables 8 and 9. The Rumanian counterexample Downing notes involves clitic doubling (cf. Smits 1988:56-60). Hence D3 can be reformulated as D3':

D3.' *For all languages: a relative pronoun excludes a resumptive pronoun or clitic* (IU).

D4. *?* For most languages: a subject relative demands a sentence-initial relative element* (D-C:IT): zero relativization is disallowed if the gap is the subject. This is true for some Germanic languages, but as a general linguistic generalization it is wrong. Several languages even use zero relativization as a main strategy, e.g. Lakota and Yucatecan (cf. Lehmann 1984:80-85). See Appendix II, table 15, for a list; and Ch5§3.1 for more discussion.

E. ***Concerning prenominal relatives:***

E1. *For all languages: the head noun is not fully retained in a prenominal relative* (D-Q:IU). [Hence *[…N…] N.] This is correct, cf. Appendix II, table 5.[42]

E2. *For all languages: prenominal RC→ no relative pronoun* (D-P:IU). [There are no relative pronouns in prenominal relatives.] Correct, cf. Appendix II, tables 5 and 8. We may add to this:

E3. *For most languages: prenominal RC→ no resumptive pronoun* (IT). [Prenominal relatives do not use resumptive pronouns.] Exceptions are Chinese and Nama. See Appendix II, tables 5 and 9.

E4. *For all languages: prenominal RC→ no initial complementizer* (IU). [Prenominal relatives do not use sentence-initial (relative) complementizers.] See Appendix II, tables 5 and 10.

E5. *For all languages: prenominal RC→* $SR_{f,rel} \neq SR_{f,compl}$ (IU, Keenan 1985). [A clause-final relative particle never equals the normal complementizer of sentential complementation in prenominal relatives.] Probably correct.

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41 These languages disprove D-L:IU: *"If a language uses relative pronouns of interrogative form in ad-relative clauses, then in that language interrogative pronouns are placed in initial position in questions."*

42 Notice, however, that a mysterious construction with a doubled head noun has been reported for Hewa (Givón 1984) and Diegueño (Culy 1990). Further data and analysis are necessary before conclusions can be drawn here.

F. ***Concerning circumnominal relatives:***

F1. *For all languages: circumnominal relative → head-internal* (IU). In fact, this is part of the definition. The internal head is not always *in situ*. See section 6.2, Ch4§5 and Appendix II, table 3.

F2. *For all languages: a language has circumnominal relatives only if it has at least one other type of nominalized sentences with the same morphological properties* (IU, Culy 1990:203). See section 6.2 and Ch4§5.

F3. *For all languages: circumnominal → no relative pronoun* (IU). See Appendix II, tables 3 and 8.

F4. *For all languages: circumnominal → no resumptive pronoun* (IU). See Appendix II, tables 3 and 9.

F5. *For all languages: circumnominal → no relative complementizer* (IU). See Appendix II, tables 3 and 10. One possible exception is Dagbani, however.

F6. *?? For all languages: if there is a clause-final 'relative marker', there is a prenominal strategy with the same clause-final marker* (D-W:IU). This can be checked by comparing tables 3 and 5 in Appendix II. It is correct for Quechua, Hopi, etc. A 'relative marker' must be understood as a relative suffix on the verb. There is one clear counterexample: Japanese. Hence we can reformulate F6 as a tendency:

F6.' *For most languages: if the circumnominal strategy uses a clause-final relative affix, there is a prenominal strategy with the same affix* (IT).[43]

F7. *For all languages: if the external determiner of a circumnominal relative construction is visible, it follows the RC* (IU, Culy 1990). See Appendix II, tables 3 and 18.

F8. *For all languages: the internal head of a circumnominal relative is indefinite* (IU, Williamson 1987; Culy 1990). See also Ch4§5.

G. ***Concerning correlatives:***

G1. *For all languages: correlative → internal head* (IU). The internal head is almost always fronted. See section 6.1, Ch4§6 and Appendix II, table 4.

G2. *For most languages: correlative → relative pronoun* (IT). See Appendix II, tables 4 and 8. Exceptions are e.g. Diegueño and Wappo.

G3. *For most languages: correlative → no relative complementizer* (IT). See Appendix II, tables 4 and 10. Exceptions are Gaididj and Warlpiri.

G4. *For all languages: correlative → no relative affix* (IU). See Appendix II, tables 4 and 12. One possible exception is Hurric, however.

G5. *For all languages: correlative → maximalizing* (IU, Grosu & Landman 1998). [Correlatives have a maximalizing semantics.] See section 3 above.

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43 There is no support for yet another claim: *"If a relative marker is attached to Rel NP in a replacive relative clause, Rel NP is not moved to the beginning or the end of the clause by any process of relativization."* (D-X:IU). It is based on only one example, Bambara, which is shown to be wrongly analysed by Culy (1990:30-36).

H. ***Concerning participial relatives:***
   H1. * *For all languages: participial relatives are prenominal* (D-U:IU, implicit). This is not correct: there are postnominal participial relatives in several languages. See Appendix II, table 6. Some examples are Djirbal, Greenlandic, Ute and Lushai.
   H2. * *For all languages: participial relatives are restricted to subject relatives* (D-U:IU). According to Downing a special strategy is used if the head noun is not a subject, e.g. a possession strategy. However, not all languages with participial relatives use a special strategy in the sense Downing indicates, e.g. Telugu, cf. Lehmann (1984:49-58). In my view a complete participial strategy (which indeed exists) presumes the possibility of non-subject relatives. Moreover, the use of specific strategies in order to deal with possible recoverability problems does not alter the fact that the relevant examples *are* participial non-subject relatives. Nevertheless, since many languages (including English) allow for an incomplete participial strategy that is restricted to subjects, we may claim the following:
   H2.' *For most languages: independently of other relative strategies, there is an incomplete participial strategy that is restricted to subjects* (GT).

I. ***Concerning extraposition:***
   I1. *For all languages: "if a language has both postnominal and extraposed relatives, the internal structure of the relative is the same in both positions"* (D-CC:IU).
   I2. *For all languages: extraposed → adnominal RCs or correlatives* (D-II:IU).[44] [If a language has extraposed relatives, then it also has adnominal or correlative relatives.] It may be possible to reduce extraposition to other strategies; i.e. they are not an independent type.[45]

J. ***Concerning combinations of relative elements:***
   J1. *Relative pronouns and resumptive pronouns exclude each other* (IU). [Repeated from D3' above.] See Ch5§4.2 and Appendix II, tables 8 and 9.
   J2. *Relative pronouns and relative affixes exclude each other* (IU). See Ch5§4.2 and Appendix II, tables 8 and 12. However, Hurric is a possible counterexample.
   J3. *Relative complementizers and relative affixes exclude each other* (IU). See Ch5§4.2 and Appendix II, tables 10 and 12.

In general one may say that the more data becomes available, the less universals can be maintained. However, there are many interesting tendencies, and there are a

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[44] Combined with the word order correlations mentioned in C, this leads to:
D-GG:IU (OV & extr.) → (preN ∨ corr)
D-HH:IU (VO & extr.) → postN
However, given that the word order correlations are (weak) tendencies only, these implications are probably not universals, but tendencies, too. I do not have clear information on this matter.

[45] Downing himself (1978) does not believe so, because i) there are sentences with split antecedents; ii) extraposed relatives may look like adverbial clauses in some languages. I do not consider these to be valid arguments. See further Chapter 7.

number of universals that demand an explanation. I will return to some of them in the subsequent chapters.

6. Special types of relative clauses

This section is a short introduction to some special types of relative clauses: correlatives, circumnominal relatives, free relatives, adverbial relatives, non-finite relatives, and cleft and pseudo-cleft sentences, to be treated in separate subsections. Only the first two, correlatives and circumnominal relatives, will be discussed in some detail in this book. The others are listed in order to complete the picture.

6.1. Correlatives

A Hindi example of a correlative is repeated in (45).

(45) [jo laRke KhaRe hai], ve lambe haiN.
wh boys standing are those tall are
lit. 'Which boys are standing, they are tall.' = 'The boys who are standing are tall.'

The syntactic structure is sketched in (46).

(46) $[_{\text{matrix}} [_{\text{CP-correl}} [_{\text{DP-rel}}$ *wh* NP$]_i$ … t_i …$]$ $[_{\text{matrix}}$ … Dem …$]$

I have mentioned five basic properties of correlatives before:

(47) *Some basic properties of correlatives:*
a. The head is internal.
b. The semantics is maximalizing.
c. They are left-adjoined to the matrix clause.
d. The matrix contains a personal or demonstrative pronoun (the correlate) that refers to the modified relative head.
e. They are *not* nominalized (i.e. not DPs), but they are bare sentences.

The assumption that correlatives are bare sentences in (47e) is stressed by several authors, e.g. Keenan (1985:164). It is proved by the facts in (48).

(48) a. Correlatives do not occur in DP positions.
b. Correlatives never have an external determiner.
c. Correlatives never have an external Case ending or another nominal marking.
d. Correlatives never have an external (affixed) adposition.

Thus correlatives show no signs of 'DP-hood'. This contrasts with circumnominal relatives. Hence a correlative cannot be a left-extraposed circumnominal relative.

The syntax of the correlative strategy is treated in more detail in Chapter 4, section 6. On possible secondary correlative strategies and the transition to free relatives, see section 6.3.2 of this chapter.

6.2. Circumnominal relatives

Circumnominal relatives have the structure sketched in (49).

(49) $[_{\text{matrix}} \ldots [_{\text{DP}} [_{\text{CP-rel}} \ldots \text{NP}_{\text{rel}} \ldots] \text{D}] \ldots]$

A Mohave example is given in (50), taken from Lehmann (1984:111). Notice that is it ambiguous.

(50) [Hatčoq ʔavi:-m ʔ-u:ta:v]-n^{y}-č n^{y}əʔi:l^{y}-pč.
[dog stone-INST SBJ.1-hit]-DEF-NOM black-REAL
'The stone with which I hit the dog was black.' *or*
'The dog which I hit with the stone, was black.'

Essential properties mentioned so far are the following:

(51) *Some basic properties of circumnominal relatives:*
a. The head is internal.
b. The semantics is maximalizing or restrictive.
c. The internal head is indefinite.
d. There are no relative elements, except relative affixes.
e. They are nominalized (i.e. DPs).

The last point is stressed by many authors, e.g. Culy (1990) or Keenan (1985:161). It is proved by the following facts, which contrast with correlatives – cf. (48) above:

(52) a. Circumnominal relatives occur in DP positions.
b. There can be an external determiner.
c. There can be an external Case marker.
d. There can be an external adposition (e.g. a locative postpositional suffix).

Of course (52b-d) is language-dependent: not all languages have overt determiners, etc.

There are a few misconceptions on circumnominal relatives, which, unfortunately, are often cited. For instance, Cole (1987) argues that circumnominal relatives occur only in those languages that are OV and that licence *pro* drop. These assumptions are proven wrong in Culy (1990); cf. C4 in section 5 above. See further Chapter 4, section 5.

6.3. Free relatives

Free relatives are relatives without an overt nominal head. All syntactic main types of relatives can be construed as a free relative. This is illustrated in (53). Example (53a) is Malagasy, taken from Lehmann (1984:97), (53b/c) are Lahu resp. Yavapai, from Lehmann (1984:295), and (53d) is Hittite (Lehmann 1984:124).

(53) a. Saka [izay tia trondo]. *[postnominal]*
cat REL loves liquor
'Who loves liquor is a cat.'

b. [Bùʔ phîʔ ā ve] cɔ̀ mâ hɛ́. *[prenominal]*
wrong write PERF NR are many probably
'There are probably many wrongly written ones.'

c. [Kuʔu puva-k k-ono:-ha] Tokatoka lowa:-v-č yu-m. *[circumN]*
basket braid-SS REL-AUX-FUT Tokatoka wife-DET-NOM be-ASS
'Who will braid a basket, is Tokatoka's wife.'

d. [Nu kwit LUGALu-s tezzi] nu apāt iyami. *[correlative]*
CON REL:ACC.SG.NLIV king-NOM says CON D3.ACC.SG.NLIV do:I
'What the king says, I do even that.'

Notice that in (53a/b) – apart from the fact that headed relatives are postnominal in Malagasy and prenominal in Lahu – it is the position of the relative element which indicates within which main strategy (prenominal or postnominal) the free relative falls, since initial relative complementizers (if any) are used in postnominal relatives, and final nominalizing elements (if any) in prenominal ones (cf. Appendix II, table 10).

There are different types of free relatives, with somewhat different properties. These are discussed in section 6.3.1. Subsequently, the confusing transition between free relatives of the postnominal type, correlatives and circumnominal relatives is treated in 6.3.2. Section 6.3.3 contains a systematic classification of free relatives.

6.3.1. Types and properties of free relatives

It is possible to add a determiner or quantifier to a relative without an overt nominal head. This can be clearly shown in German.

(54) a. der [der zu spät gekommen ist]…
D3 D_{rel} too late come has

b. alles/vieles [was du willst]…
all/much what you want

According to Lehmann (1984) there are also free relatives with a pronominal head…

(55) a. solche [die zu spät kommen]…
such D_{rel} too late come

b. etwas [was du willst]…
something what you want

c. jemand [der zu spät kommt]…
someone D_{rel} too late comes

… and relatives with a combination of both:[46]

(56) der-jenige [der zu spät kommt]…
the-one D_{rel} too late comes

Moreover, Lehmann states that a free relative with an indefinite relative pronoun, e.g. (57a), is also a free relative with a pronominal head.

(57) a. [wer zu spät kommt]… *[FR with pronominal head]*
b. [der zu spät kommt]… *[FR without nominal head]*

The difference between (57a) and (57b) is that the former has a default indefinite, non-specific reading and the latter a default definite reading. If, however, in a certain language a relative pronoun *always* has the indefinite interrogative format (e.g. *who* in English), the difference between a pronominal and a zero nominal head vanishes.

However, in my view pronouns and determiners are combined in one major class of elements with categorial status D, see the subsequent chapters.[47] If so, the difference between (54) and (55) is a little arbitrary. I think the relevant distinction to be made between the types mentioned is the presence or absence of D material. This gives the picture in (58).

(58) *A classification of (free) relatives (provisional):*

relative clauses	↗	headed relatives:	with overt head N
	→	true free relatives:	no overt head N, no overt head D
	↘	false free relatives:	no overt head N, with overt head D

False free relatives are called *semi-free relatives* in Smits (1988). The pronominal/demonstrative antecedent is also called *prop-antecedent.* There is support for this classification from several independent sides.

First, the semantics of free relatives has been argued to be maximalizing, i.e. the interpretation is definite or universal (cf. Jacobson 1995; Grosu & Landman 1998). But this is only so for true free relatives. A false free relative can easily be assigned an indefinite, non-generic reading, depending on the head D; cf. (59).

(59) Einer/jemand [der zu spät kam] wurde gestraft.
'One/someone who came late, has been punished.'

Whether the head D is a determiner or a pronoun is irrelevant. This reading is impossible for (57a/b) – again, whether there is a pronominal head or not.

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46 Note that *jenige*, which derives from *jen-* 'that' cannot exist as an independent pronoun.

47 This does not mean that there is no difference at all. Perhaps incorporation of an empty noun into D plays a role in pronouns, cf. Klooster (1997).

Second, true free relatives can be subject to Case matching effects. This is shown in (60), where there are contradictory Case requirements on the relative pronoun. If there is no morphological difference between the two Cases, as in (60b), the problem disappears. This is called *Case syncretism* in Van Riemsdijk (2000).

(60) a. * Ich kenne [$d_{/w}$en/$d_{/w}$er dort steht]. [$d_{/w}er_{\text{NOM}}$ or $d_{/w}en_{\text{ACC}}$?]
I know whom/who there stands

b. [Was er sagte] kam mir unglaubhaft vor. [*was*: NOM / ACC]
what he said appeared. to.me implausible

The sentence in (60a) can be repaired by adding an external determiner, i.e. by using a false free relative:

(61) Ich kenne den [der dort steht].
I know D3 who there stands

In (61) the right Case can be assigned in the matrix and the subordinate clause separately. Thus again, false free relatives behave on a par with headed relatives.[48]

All types discussed above are syntactically grouped together in the sense that they are instances of DPs. This means that true free relatives (like circumnominal relatives) are type-lifted, as argued by Groos & Van Riemsdijk (1981), Lehmann (1984) and others (*contra* some older work, e.g. Bresnan & Grimshaw, 1978).

Grosu & Landman (1998) argue that there is a also a really different type of free relative: the *irrealis* free relative. Contrary to the *realis* ones mentioned so far, irrealis free relatives are bare CPs. As the name indicates, they display an irrealis verb form. Syntactically, they are like interrogatives. For instance, they do not show matching effects. They do not have the distribution of normal DPs, but one mainly limited to indefiniteness contexts. Moreover, extraction out of an irrealis free relative is possible, as from embedded questions. A Rumanian example is given in (62), taken from Grosu & Landman (1998:157).

(62) Despre ce (nu) ai [cu cine să vorbești _]?
about what (not) you-have with whom SUBJ talk
'What do(n't) you have with whom to talk about _?'

On the other hand, extraction is not possible from headed relatives or realis free relatives, a property that is traditionally subsumed under the Complex NP Constraint. This difference can be related to the absence of a DP-shell in irrealis free

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48 Next to Case matching effects, there are *category matching effects*, described e.g. in Van Riemsdijk (2000). In (i) the matrix verb selects a DP, but the raised *wh*-constituent is a PP.
(i) * The police arrested [[PP to whom] the witness pointed].
If there is no pied piping the sentence is correct. Furthermore, if a false free relative is used, there is no category matching effect; see (ii). Similar examples can be construed in German.
(ii) The police arrested him to whom the witness pointed.
Hence again false free relatives behave like headed relatives.

relatives. I do not know if irrealis free relatives occur in languages with non-postnominal relatives, too.

Finally, there is a fourth type of free relatives, described in Wilder (1998) and Van Riemsdijk (1998, 2000): the *transparent free relative*. This is a relative *"in which the initial wh-element (always 'what' [in English]) is almost like a dummy element, while the relative clause contains a small clause predicate that has most of the properties of the pivotal element"* (Van Riemsdijk 2000:24). Two examples are given in (63):

(63) a. What appeared to be *a jet airliner* had landed on the freeway.
b. They served me what they euphemistically referred to as *a steak*.

Wilder and Van Riemsdijk list several properties in which transparent free relatives differ from true free relatives. Importantly, an indefinite interpretation is possible, hence there is no maximalization. All properties point to the idea that the relative clause is not really there: it is the small clause predicate inside the relative that interacts with the matrix. Hence the name *transparent free relative*, due to Chris Wilder. Transparent FRs are treated like Right Node Raising constructions in Wilder (1998). The 'internal head', the small clause predicate, is conjoined with a free relative in which the relevant constituent is elided. Van Riemsdijk's approach is somewhat different: he uses a multi-dimensional tree structure, where the internal head (often a DP) is selected in the matrix *and* in the free relative, which is a parallel sentence. (I will apply similar ideas to extraposed relatives and appositive relatives in Chapters 6 and 7.) For more details I refer to the authors cited.

Some important properties of free relatives are summarized in table 9.

Table 9. *Properties of (free) relatives.*

property	*headed relative*	*false FR*	***true FR***	*irrealis FR*	*transparent FR*
overt head	yes	yes, but D/pron-like	**no**	no	no, but int. SC pred. acts as internal head
overt external D	yes	yes	**no**	no	no
maximalizing (only definite/universal)	no	no	**yes**	yes	no
matching effects	no	no	**yes**	no	yes, but with int. SC predicate
nominalized (DP)	yes	yes	**yes**	no	irrelevant
extraction from RC	no	no	**no**	yes	yes
distribution as	DP	DP	**DP**	CP	depends on category of int. SC pred.

Notice that false free relatives differ in no respect from headed relatives (except, of course, that the head noun is not fully represented). Therefore it is dubious to classify them as free relatives (which is why I have called them *false* FRs). However, whether they are called 'deflated headed relatives' or 'false free relatives' is only a matter of definition, as long as it is clear which properties are associated with them. Finally, (58) can be revised at this point; it is shown in figure 8.

Figure 8. *A classification of (free) relatives* (second version).

relative clauses	↗	headed relatives		
	↘	free relatives	↗	**true free relatives**
			→	irrealis free relatives
			→	transparent free relatives
			↘	false free relatives

The next subsection discusses the distinction between free relatives of the postnominal type, correlatives, and circumnominal relatives.

6.3.2. The transition between free relatives of the postnominal type, correlatives, and circumnominal relatives

Many languages seem to have a secondary correlative strategy. A Dutch example is (64a), which is to be compared with the normal free subject relative in (64b).

(64) a. Wie dit gedaan heeft, die krijgt straf. *[free correlative?]*
Who this done has DEM gets punishment
b. Wie dit gedaan heeft krijgt straf. *[free subject relative]*

The construction in (64a) contains a headless correlative at first sight. The demonstrative *die* is the subject of the matrix clause. In (64b) the whole free relative occupies the subject position in the matrix. It would not be surprising if languages use a secondary correlative strategy (with headless correlatives) as an alternative to free relatives, since i) the semantics of correlatives and free relatives is similar (viz. maximalizing), and ii) headless correlatives are construed in the same way as normal free relatives in languages with a postnominal main strategy.

Sentence (64a) looks like a left-dislocation construction such as *die man, die krijgt straf* 'that man, he gets punishment'. The examples in (65) show that the pertinent construction is also possible with objects, like the left-dislocation construction. I will call these sentences *hanging free relatives*.

(65) a. Wat jij van oma kreeg, dat heeft hij gestolen.
what you from grandma got, that has he stolen
b. Dat ding, dat heeft hij gestolen.
that thing, that has he stolen

Interestingly, the demonstrative must be sentence-initial; it cannot be in situ. See (66).[49] This is quite unlike the situation in normal correlative constructions.

[49] There are two types of exceptions to this claim. First, in imperatives and *yes/no* questions the verb must be initial, and the demonstrative (*die* or *that*) is in situ:
(i) Die jongen, ken je die/*hem wel? [that boy, know you that/*him indeed?]
to be continued...

(66) a. * Wat jij van oma kreeg, hij heeft dat gestolen.
b. * Dat ding, hij heeft dat gestolen.

Furthermore – given a possible connection with correlatives – one may wonder if an internal head is possible in the hanging free relative construction. The examples in (67) show that this is indeed the case.

(67) a. Welke onverlaat zoiets doet, die krijgt straf.
what miscreant such.a.thing does, DEM gets punishment
b. Welke onverlaat zoiets doet, die zal ik straffen.
what miscreant such.a.thing does, DEM will I punish

These examples look exactly like correlatives. However, the equivalent constructions which are supposed to be free relatives show the internal head, too; see (68).[50] (Obviously the existence of headed free relatives is strange, since the definition of a free relative is that it is headless. See below.)

(68) a. [Welke onverlaat zoiets doet] krijgt straf.
b. [Welke onverlaat zoiets doet] zal ik straffen.

In general, left-dislocation is related to topicalization, which is not the case for correlatives. Some additional examples with free relatives are in (69).

(69) a. Ik lees welk boek hij ook maar leest.
'I read whichever book he reads.'
b. Welke idioot zoiets doet, verdient straf!
'Whichever idiot does such a thing, deserves punishment!'

Examples with an internal head are a little marked, but acceptable in general. Now the question is: when can an internal head be used in a normal free relative or hanging free relative? It seems to me that it only works with generic meanings, not with definite specific ones. Compare the examples in (70) and (71).

(70) a. * Welke bakker hier op de hoek zit (die) heeft witbrood.
which baker here on the corner is (DEM) has white.bread
b. * Welke bedelaar ik vandaag tegenkwam (die) gaf ik geen geld.
which beggar I today met (DEM) gave I no money

... continued

(ii) Dat boek, geef dat/*het terug! [that book, ruturn that/*it (back)!]
In my intuition this is another type of construction and I will ignore it here.
Another type of (apparent) counterexample is illustrated in (iii). I will return to it in the next subsection.

(iii) Wat Joop ook koopt, Susanne vindt het altijd mooi.
what(ever) Joop NPI buys, Susanne regards it always beautiful

50 Koster (1978) argues that "subject sentences do not exist". The structure of (67) and (68) would be similar, then. The difference is that in (68) an empty operator replaces the demonstrative.

(71) a. Welke bakker zo'n grote winkel heeft (die) verkoopt witbrood.
which baker such.a big store has (DEM) sells white.bread
b. Welke bedelaar je ook maar tegenkomt(die) behoor je geld te geven.
which beggar you NPI meet (DEM) ought you money to give

The same contrast can be obtained with free relatives at an object position:

(72) a. * Ik gaf geen geld aan welke bedelaar ik vandaag tegenkwam.
I gave no money to which beggar I today met
b. * Je kunt witbrood kopen bij welke bakker hier op de hoek zit.
you can white.bread buy at which baker here on the corner is

(73) a. Je behoort geld te geven aan welke bedelaar je ook maar tegenkomt.
you ought money to give to which beggar you NPI meet
b. Je kunt witbrood kopen bij welke bakker je ook maar kunt verzinnen.
you can white.bread buy at which baker you NPI can imagine

True correlatives are not subject to this limitation to generic contexts.

A third difference with correlatives is that a hanging free relative is impossible in a subordinate clause (contrary to a normal free relative):

(74) a. Wie zoiets doet (die) krijgt straf.
who such.a.thing does (DEM) gets punishment
b. We raden het je af, omdat wie zoiets doet (*die) straf krijgt.
we advise it you against, because who such.a.thing does (DEM) punishment gets

This difference may follow automatically if correlatives are adjoined to IP (hence below a complementizer) – cf. Ch4§6 – but hanging free relatives combined with the demonstrative are in SpecCP.[51] In Dutch it is verb second that opens up the SpecCP position, hence in subordinate clauses (where there is no verb second) no constituent can precede a complementizer. If in (74b) the free relative is *not* hanging (hence if *die* is absent) it could occupy the normal subject position, SpecIP, which is below *omdat*. Therefore (74b) is only correct with a normal free relative.[52]

The results up to this point are summarized in table 10.

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[51] One may analyse hanging free relatives and left-dislocated DPs like appositions. All three are combinations of two DPs that occupy one position. This is possible if the two DPs are coordinated in a special way. See also Chapters 6 and 7 on asyndetic specifying coordination. See however Koster (1978) for a different view on left-dislocation.

[52] A little less bad than the hanging free relative in (74b) is (i) – only in spoken language – where the subordinate has verb second:

(i) ?? We raden het je af, omdat wie zoiets doet, die krijgt straf.
we advise it you against, because who such.a.thing does, he gets punishment

Actually, this involves a special discourse connection such that there is an imaginary colon after *omdat* 'because', which invokes a syntactic main clause (like in a citation), hence a hanging free relative becomes available. Compare Gaertner (1998) about V2 relative clauses in German.

Table 10. *The distinction between (hanging) free relatives and correlatives.*

property	*correlatives*	*left-dislocated DP*	*hanging FR*		*normal FR*
			non-headed	*int. headed*	*non-headed*
semantics	definite & universal	definite & universal	definite & universal	only universal	definite & universal
internal N head	yes	d.n.a.	no	yes	no
DEM/correlate	yes	yes	yes		no
position RC	sentence-initial		sentence-initial		in situ
position 'antecedent' DP		sentence-initial			
position DEM	in situ	adjacent to DP	adjacent to RC		d.n.a.
possible in sub-ordinate clauses	yes	no	no		yes

I conclude that hanging free relatives are not correlatives; they are special instances of left-dislocation.

Another issue is the internal head in (67)-(74). Free relatives are supposed to be headless. Therefore, a possibility to verify is the idea that 'internally headed free relatives' are a (secondary) circumnominal relative strategy instead. I do not think that this is the case. First, the semantics is different (e.g. circumnominal relative constructions can be specific). Second, the internal head in free relatives is accompanied by a relative (interrogative) pronoun and it is *wh*-moved. This contrasts with circumnominal relatives. Third, in several languages circumnominal relatives allow for an overt external determiner. This is not the case for internally headed free relatives; see (75a), which also contrasts with the false free relative in (75b).

(75) a. * Degene/hij welke onverlaat zoiets doet (die) krijgt straf.
the.one/he what miscreant such.a.thing does, (DEM) gets punishment
b. Degene/hij die zoiets doet (die) krijgt straf.
the.one/he who such.a.thing does, (DEM) gets punishment

A schematic comparison between several types of internally headed relative clauses is provided in table 11.

Table 11. *The distinction between internally headed free relatives, circumnominal relatives and correlatives.*

property	***internally headed relatives***			
	correlative	*circumnominal*	*internally headed free relative*	
			normal	*hanging*
position RC	sentence-initial	in situ	in situ	sentence-initial
DEM/correlate	yes	no	no	yes
position DEM	in situ			adjacent to RC
semantics	definite & universal	[free]	only universal	
RC nominalized	no	yes	yes	
overt external D	no	possibly	no	
relative pronoun	yes	no	yes	
position internal head	RC-initial	in situ	RC-initial	

Most probably, internally headed free relatives exist in languages with a postnominal relative main strategy only, because in correlatives and circumnominal relatives the head is internal anyway, and in prenominal relatives there are no relative pronouns.

Thus languages with a postnominal relative strategy allow for a strange type of internally headed free relatives that differ from correlatives and circumnominal relatives.

6.3.3. A systematic classification of free relatives

From the previous sections it is clear that a type of free relative is constructed from the setting of at least five parameters: realis/irrealis, transparent/opaque, true/false, hanging/independent, (internally) headed/non-headed. It is possible to view these as special characteristics that can be turned on or off. If all are off, we have a normal ('true') free relative. In principle there are $2^5 = 32$ possible settings. They are listed in table 12. Further explanation follows below.

Table 12. *Types of free relatives.*

name	*irrealis*	*overt external D*	*hanging*	*transparent*	*internally headed*
true FR	–	–	–	–	–
internally headed FR	–	–	–	–	+
transparent FR	–	–	–	+	–
[excluded]	–	–	–	+	+
hanging FR	–	–	+	–	–
hanging internally headed FR	–	–	+	–	+
hanging transparent FR	–	–	+	+	–
[excluded]	–	–	+	+	+
false FR	–	+	–	–	–
[excluded]	–	+	–	–	+
false transparent FR	–	+	–	+	–
[excluded]	–	+	–	+	+
false hanging FR	–	+	+	–	–
[excluded]	–	+	+	–	+
false hanging transparent FR	–	+	+	+	–
[excluded]	–	+	+	+	+
irrealis FR	+	–	–	–	–
?	+	–	–	–	+
?	+	–	–	+	–
[excluded]	+	–	–	+	+
?	+	–	+	–	–
?	+	–	+	–	+
?	+	–	+	+	–
[excluded]	+	–	+	+	+
[excluded]	+	+	+/–	+/–	+/–

The six singular types are *true*, *false*, *hanging*, *transparent, irrealis*, and *internally headed* free relatives. They have been discussed in the previous sections. Mixtures are also possible, but some combinations are excluded:

- Irrealis excludes an overt external D, since irrealis free relatives are (non-nominalized) CPs, so there is no D position.
- An overt external D excludes an internal head, e.g. **Diegene welke idioot zoiets doet, verdient straf!* '*The one whichever idiot does such a thing, deserves punishment!' This confirms the intuition that false free relatives are not really free.
- A transparent relative excludes an internal head, e.g. **What/which machine appeared to be a jet airliner had landed on the freeway.* This is probably because the small clause predicate fulfils the role of an internal head already.

The characteristics *hanging* and *false* can be added to most other types (except perhaps to the irrealis type). An example of mixed types not yet illustrated is provided in (76). I have no information on the possible existence of mixed irrealis types.

(76) *Examples of all types of free relatives*
   a. True free relatives: see (53), (57), (60b), (64b).
   b. Internally headed free relatives: see (68), (69), (73).
   c. Transparent free relatives: see (63).
   d. Hanging free relatives: see (64a), (65a).
   e. Hanging internally headed free relatives: see (71).
   f. Hanging transparent free relatives:
      Wat een straalvliegtuig bleek te zijn, dat was geland op de snelweg.
      'What appeared to be a jet airliner, that had landed on the freeway.'
   g. False free relatives: see (54)-(56), (59), (61).
   h. False transparent free relatives:
      Dat/iets wat een straalvliegtuig bleek te zijn was geland op de snelweg.
      'That/something what appeared to be a jet airliner had landed on the freeway.'
   i. False hanging free relatives: see (75b), with the demonstrative.
   j. False hanging transparent free relatives:
      Iets wat een straalvliegtuig bleek te zijn, dat was geland op de snelweg.
      'Something what appeared to be a jet airliner, that had landed on the freeway.'
   k. Irrealis free relatives: see (62).

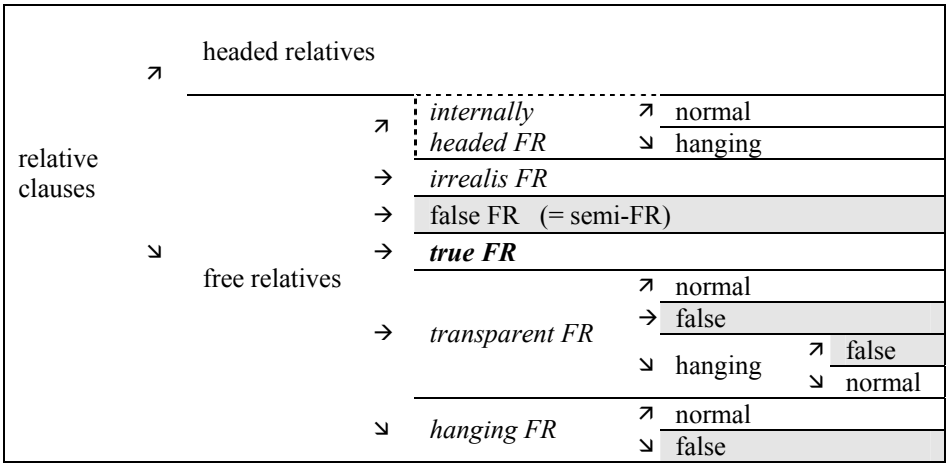
The properties of all these types are summarized in table 13. Here IH means 'internally headed', T 'transparent', H 'hanging', F 'false', and Irr 'irrealis'.

Table 13. *Properties of free relatives.*

property	*true*	*IH*	*T*	*H*	*H-IH*	*H-T*	*F*	*F-T*	*F-H*	*F-H-T*	*Irr*
RC nominalized	yes	yes	irrelevant	yes	yes	irrel.	yes	yes	yes	yes	no
overt internal head	no	yes	no	no	yes	no	no	no	no	no	no
overt external D	no	no	no	no	no	no	yes	yes	yes	yes	no
additional DEM	no	no	no	yes	yes	yes	no	no	yes	yes	no
position RC (+DEM)	in situ	in situ	in situ	CP-initial	CP-initial	CP-initial	in situ	in situ	CP-initial	CP-initial	in situ
semantics	def.& un.	univ. only	[free]	def.& un.	univ. only	[free]	[free]	[free]	[free]	[free]	def. &un
relative pronoun	*wh/ (d)*	*wh* only	*'what'* only	*wh/ (d)*	*wh* only	*what* only	*wh/ (d)*	*what* only	*wh/ (d)*	*what* only	*wh* only
matching effects	yes	yes	yes, but with int. SC pred.	?	?	?	no	no	no	no	no
distribution	DP	DP	depends on cat. of int. SC predicate	DP topic	DP topic	DP topic	DP	DP	DP topic	DP topic	CP

At this point the classification schema of free relatives can be revised to its final version.

Figure 9. *A classification of (free) relatives* (final version).



As will be clear, not all types of free relatives are compatible with every syntactic main strategy of relativization. In fact, most of them are only attested as a substrategy of the postnominal type. Hence the following additional schema is necessary; see table 14.

Table 14. *A tentative mapping of types of free relatives on relative main strategies.*

free relative	*postnominal main strategy*	*prenominal main strategy*	*correlative main strategy*	*circumnom. main strategy*
True FR	+	+	+	+
Internally Headed FR	+	?	–	–
Transparent FR	+	–	–	–
Irrealis FR	+	?	?	?
Hanging FR	+	?	–	?
Hanging Internally Headed FR	+	?	–	–
Hanging Transparent FR	+	–	–	–
False FR	+	+	+	+
False Transparent FR	+	–	–	–
False Hanging FR	+	?	–	?
False Hanging Transparent FR	+	–	–	–

Importantly, all main types have free relatives. From Lehmann (1984) it is also clear that all types have false free relatives. Furthermore, I have shown that correlatives are not hanging. Since correlatives are maximalizing, they cannot be transparent either (because these can be indefinite). Transparent relatives use a *wh* relative pronoun, hence prenominal and circumnominal relatives – which do not have relative pronouns – cannot be transparent. Finally, correlatives and circumnominal relatives cannot have internally headed free relatives, since these could not be distinguished from headed relatives.

The above results are tentative. Further study of different types of free relatives is required, especially in languages with non-postnominal relative main strategies. Perhaps some of these use interesting equivalents of strategies assumed to be non-existent so far, with somewhat different properties.

6.4. Adverbial relatives

A subject or object relative is a relative of which the head has the subject resp. object role within the relative clause. Analogously, an *adverbial relative* is a relative of which the head has an adverbial role within the relative clause, usually temporal, local or pertaining to manner. I will stick to this definition, although some authors use a more restricted one; see below.

An adverbial relative can be formed in different ways. If there is a head noun, there are three possibilities concerning the relative element:

(i) A normal relative pronoun is used. An adposition in the relative clause determines the internal role of the head. The construction is unambiguously a relative construction.
(ii) A specialized relative pro-adverb or conjunction is used.[53] It is this element that determines the internal role of the head. The difference with a nominal complement or adjunct clause is subtle, sometimes absent.
(iii) There is only a standard relative complementizer. Hence the head itself determines its internal role. This construction is more or less grammaticalized, hence unambiguously a relative construction.

Some examples from three Germanic languages – English, German and Dutch – are given in (77).[54]

(77) a.	(i)	the time on which	die Zeit zu der	(het tijdstip waarop)
	(ii)	the time when	die Zeit als/da	de tijd toen
	(iii)	the time that	–	de tijd dat
b.	(i)	(the city in which)	der Ort an dem	de plaats waarop
	(ii)	the place where	der Ort, wo	de plaats waar
	(iii)	–	–	–
c.	(i)	the way in which	die Art auf die	de manier waarop
	(ii)	–	die Art wie	de manier hoe
	(iii)	the way that	–	–
… it happened / … es passierte / … het gebeurde				

In several languages there is a semantically bleached noun for time, place, or manner. Some use a locative or temporal affix.

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53 Relative adverbs in English are *when*, *where*, *how*, *why, whence* and perhaps *as*, cf. Smits (1988:289-290).

54 Note that there is R-inversion in Dutch if there is a preposition; cf. Ch8§5. Furthermore, see section 3, especially footnote 24, concerning the interpretation of event relatives, etc.

An adverbial relative can be *free*, too. The way to construct it is with method (ii), since (i) and (iii) make crucial use of the head noun. Some examples are given in (78).[55]

(78) a. Wanneer hij komt zal het tien uur zijn.
when he comes will it ten o'clock be
b. Waar hij woont is het een bende.
where he lives is it a mess
c. Hij heeft het gedaan hoe Jan het wilde.
he has it done how Jan it wanted

Here the role of the implicit relative head (the pivot) must be the similar (viz. adverbial) in the relative and the matrix clause. Note that some authors refer only to these kind of sentences as adverbial relatives, e.g. Lehmann (1984).

Adverbial relatives differ from normal adverbial clauses, because the latter type does not contain a gap. Conjunctions such as *because*, *while*, etc, which introduce normal adverbial clauses, are not relative. The difference is exemplified in (79) and (80).

(79) The doctor came when Judy broke her leg. *[adverbial relative clause]*

(80) The doctor came because Judy broke her leg. *[normal adverbial clause]*

In (79) there is a point of time on which two things happen: the doctor's arrival and Judy's accident. The point of time is used as a pivot constituent for this proposition; the gap in the relative clause is the adverbial temporal slot. In (80) there is no gap in the relative clause. The reason for the doctor's arrival is not the reason why Judy broke her leg, hence there is no pivot constituent; the construction is not relative at all.

The difference between an adverbial relative and a normal adverbial clause can be subtle or even absent. This gives rise to ambiguities in many languages. In general three types of clauses can be easily confused with relative clauses, as is well-known:

- noun complement clauses;
- (normal) adverbial clauses;
- embedded questions.

The differences and ambiguities are treated in e.g. Lehmann (1984). On the interpretation of embedded questions and free relatives see also Schoonenboom (2000).

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[55] See also Bresnan & Grimshaw (1978), Groos & Van Riemsdijk (1981), Lehmann (1984), Smits (1988) and others.

Finally, I want to point out some difficult cases; consider (81).

(81) Wie dit ook gedaan heeft, ik ga weg.
who(ever) this NPI done has, I go away

The example in (81) seems to start with a free relative. The function of the subordinate clause is adverbial with respect to the matrix.[56] The *wh*-word *wie*, however, does not express this function, which implies that it cannot be the pivot. (Notice also that **the one who has done this, I go away* is totally impossible.) Hence the pertinent clause is a kind of adverbial clause with respect to the matrix. One might argue that there is an unexpressed preposition such as *regardless*. Then the sentence is like *Regardless (of) who did it, I am leaving*. The next question is what the phrase *who did it* is within the larger adverbial constituent. Even there it is not a free relative, since the meaning is not *regardless the one who did it*, but rather *regardless the issue who did it*. Therefore the clause *who did it*, or *wie dit ook gedaan heeft* in (81) is an embedded question. This is confirmed by the fact that the complementizer *of* 'if', which is used in embedded questions, can be inserted in several variants of Dutch. I conclude that what looks like a free relative in (81), is really an embedded question in a hidden adverbial phrase. Whether the implied material is syntactically present may be subject to discussion. In my view it could be, but if this is untenable and the subordinate clause is a bare CP, one has to introduce a term like *adverbial (circumstantial) embedded question*.

Related to (81) are the following examples. Notice that a pronoun in the matrix refers to *wat* in the subordinate.

(82) a. Wat Joop ook koopt, Susanne vindt het altijd mooi.
what(ever) Joop NPI buys, Susanne regards it always beautiful
b. Wat voor bakker je ook opzoekt, witbrood heeft hij altijd.
what for baker you NPI visit, white.bread has he always

Again it is clear that the subordinate has an adverbial function with respect to the matrix. (In (82a) one may insert the complementizer *of*, again.) Hence the sentences are not hanging free relatives or correlatives (cf. especially (66) in section 6.3.2 above). The *wh*-word does not have this adverbial function, so the clauses are adverbial clauses, or rather embedded clauses in a larger adverbial phrase. This explains why pronominal reference is possible, since pronouns can refer to a constituent in a preceding adverbial constituent, e.g. *Because Susanne brought flowers, Joop liked her*. Finally the question is what the *wat* clause is within the adverbial phrase.[57] This time the difference between an embedded question and a free relative is more subtle than in (81). In (82a) we have *regardless the*

[56] Moreover, since there is no inversion in the main clause, the 'adverbial' clause is left-dislocated or asyndetically coordinated to the matrix, hence it is not even truly subordinated, but rather a kind of parenthetical.

[57] There is a whole literature about the syntax of *wat (...) voor* clauses; see e.g. Corver (1990). The discussion focuses on the '*wat voor*-split'; it does not address the issues I have raised, as far as I know.

question/issue/fact what Joop buys… resp. *regardless (of) what [= the thing which] Joop buys…*[58] The analysis as a free relative seems more appropriate here, but perhaps sentences like these are ambiguous in principle.

In general I think adverbial relatives deserve much more study. However, this falls outside the scope of this book.

6.5. Non-finite relatives

A non-finite relative is a relative of which the verb does not inflect like a finite verb. In general, non-finite relatives can be participial or infinitival, where the first type can be formed with a past participle or a present participle (the gerundival type). It is believed that this can be illustrated in English, at least for simple cases. See (83).

(83) a. the washed clothes *[(past) participial relative?]*
b. the washing man *[gerundival (= present participial) relative?]*
c. the clothes to wash *[infinitival relative]*

Non-finite relatives are hard to separate from other attributive structures; there are no clear criteria to decide what is what, according to Smits (1988:41/42). Is (83a) a relative clause or simply a deverbal adjective? More complex cases of would-be participial relatives are the Dutch examples in (84):

(84) a. de door Joop gewassen kleren *[participial relative?]*
the by Joop washed clothes
b. de de kleren wassende man *[gerundival relative?]*
the the clothes washing man
c. de door Joop te wassen kleren *[infinitival relative?]*
the by Joop to wash clothes

Kayne (1994) treats all adjectival constructions as relative clauses. If this is correct, the question raised above is answered. However, I will not follow this radical line of thought. In the Germanic and Romance languages structures like (84) are only possible if the supposed relative head is a subject (where of course the phrase with a past participle acts as the equivalent of a passive sentence). This makes a relative clause analysis suspect. However, an analysis using participle-adjective conversion is always possible.

I have stated before that a true participial relative strategy can have non-subjects as the head; see the Telugu example in (85), repeated from (9) above.

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[58] In the periphrastic versions of (81) and (82) the negative polarity item (which makes the clause generic) disappears. It must be discounted in the choice of the preposition (here: *regard**less***). A sentence like **regarding the issue whatever Joop buys…* is unacceptable, perhaps because the right scope marking of *whatever* is blocked by the presence of the noun. The phrase *regarding the issue what Joop buys* does not have the necessary generic interpretation.

(85) [Mīru nāku ic-cin-a] pustukamu cirigipŏ-yin-adi. *[participial RC]*
you$_{pl}$ me give-PRET-PART book$_{nom}$ tear.up-PRET-3.SG
'The book you gave me has been torn up.'

Some more true participial strategies are exemplified in Lehmann (1984:49-58). See also Appendix II, table 6. Hence it seems that the relevant criterion is whether non-subject relatives are possible. A further discussion of participial relatives falls outside the scope of this book.

Concerning infinitival relatives, Lehmann (1984:157-159) states that there is not much knowledge about this type, with the exception of English and Italian. Here, I wish to illustrate some of the behaviour of an apparently equivalent construction in Dutch; see (86), where *om* means approximately 'so as (to)'.

(86) a. een/het boek om te lezen
a/the book *om* to read
b. een boek *(om) te lezen
a book *(*om*) to read
c. een boek (*d$_{/w}$at) om te lezen
a book (*which) *om* to read
d. een slaf om het werk te doen
a slave *om* the work to do
d.' een jongen om mee te dansen
a boy *om* with to dance
d.'' iemand om naast wakker te worden
someone *om* next.to awake to be(come)

Example (86a) shows that the construction can be indefinite or definite (depending on the right context); (86b) that *om* is obligatory; (86c) that a relative pronoun is impossible; (86d/d'/d'') that the relative head can be a subject, a prepositional object, or an adverbial phrase in the subordinate clause – apart from a direct object.

Curious is that the construction can be prenominal, too, in Dutch. In that case, *om* is obligatorily absent.

(87) een (*om) te lezen boek
a (*om*) to read book

But there are other differences between the prenominal and the postnominal construction. Like a participial clause or phrase, e.g. (83a/84a), the 'prenominal infinitival relative' is passive. This explains why (86d/d') cannot be prenominal, since only direct objects survive in a passive sentence in Dutch.

(88) a. een (door de commissie) te lezen boek
a (by the committee) to read book
b. * een het werk te doen slaf
a the work to do slave
c. * een mee te dansen jongen
a with to dance boy

The postnominal construction does not have to be passive at all.[59] Obviously, (86d/d'/d'') cannot have a *by*-phrase, but neither can (86a) – contrary to a non-agent *for*-phrase for example.[60] This pattern is shown in (89).

(89) a. een boek om te lezen (voor/*door de commissie)
a book *om* to read (for/*by the committee)
b. de beste mogelijkheid om te benutten (voor/*door ons)
the best possibility *om* to use (for/*by us)

Finally, notice that a possible adjective or adverb behaves differently depending on whether it modifies the 'head' noun directly or the predicate in the infinitival clause; see (90). (Phrase (90c) is correct in a different reading.)

(90) a. een mooi boek om te lezen
a nice book *om* to read
b. * een boek om mooi te lezen
c. # een boek *(,) mooi om te lezen
d. * een mooi te lezen boek
e. * een te lezen mooi boek

a.' een verplicht boek om te lezen
an obligatory book *om* to read
b.' een boek om verplicht te lezen
c.' een boek *(,) verplicht om te lezen
d.' een verplicht te lezen boek
e.' * een te lezen verplicht boek

The surprising example is (90a'), where *verplicht* is raised to the (prenominal) adjective position of *boek*.

At present I am not sure how to analyse 'infinitival relatives', and how to explain the differences between the prenominal and postnominal type. The fact that relative pronouns are forbidden (except a pronoun in question format if a preposition is used in English), and that the existence of infinitival relatives has not been reported outside the Germanic or Romance language family – as far as I know – casts doubt on an analysis as relative clauses at all.[61] The presence of the prepositional complementizer *om* in Dutch also points in the direction of another type of complement. Example (91a) shows that the infinitival clause can be the complement of an adjective. This is impossible for a finite relative clause (91b).

(91) a. [Leuk om te lezen] is dat boek.
nice *om* to read is that book
b. * [Leuk die/wat je leest] is dat boek.
nice which you read is that book

I will leave the analysis of non-finite relatives for further research.

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59 There are some examples where a passive is allowed, e.g. *een stok om mee geslagen te worden* 'a stick to be hit with'.

60 Notice that the *for*-phrase is not even part of the subordinate clause: * *een boek om voor de commissie te lezen.*

61 Broekhuis & Dekkers (2000), too, argue that 'infinitival relatives' are not relative clauses in Dutch. Nevertheless there may be *wh*-movement (of an operator) in this construction; cf. Van Riemsdijk (1978a) and Broekhuis & Dekkers (2000).

6.6. Cleft and pseudo-cleft sentences

The cleft and pseudo-cleft construction are illustrated in (92).

(92) a. It was Joop who lost the game. *[cleft]*
b. A: What we enjoyed most was the candy-bar. *[pseudo-cleft]*
B: The candy-bar was what we enjoyed most.

Schematically, we have (93).

(93) a. (expletive) copula XP_{focus} YP_{wh} *[cleft]*
b. A: YP_{wh} copula XP_{focus} *[pseudo-cleft]*
B: XP_{focus} copula YP_{wh}

The reading of a pseudo-cleft can be *predicational* or *specificational*. The difference is illustrated in (94).[62]

(94) What Hans told me was a secret.
(i) 'H. told me a secret.' *[specificational]*
(ii) 'H. told me something – say, a joke – and this joke is secret' *[predicational]*

Smits (1988:216-223) argues that the particular reading is irrelevant for the syntactic analyis: all pseudo-clefts are free relatives (i.e. YP_{wh} in (93a/b) is FR). However, Meinunger (1997) argues on the basis of connectivity effects and parallels with question-answer pairs, that specificational pseudo-clefts are quite different from free relatives, and quite like normal clefts. The whole construction is analysed (within a Minimalist framework) as monoclausal; from a normal sentence a cleft is derived by moving the focus up and adding a copula and an expletive on top; then an additional procedure – topicalizing the remnant sentence – may turn the construction into a pseudo-cleft.[63] Unfortunately, Meinunger does not refer to Smits (1988:203-216), who argues that a cleft sentence is an extraposed appositive relative.[64]

The approach to pseudo-clefts is developed further and changed in Den Dikken, Meinunger & Wilder (1999). First, they separate type A pseudo-clefts from type B; cf. (93b). Type B pseudo-clefts are tentatively analysed as inverse predicational ones, i.e. as small clause predicates. This leaves type A specificational pseudo-clefts as 'true' pseudo-clefts. These are analysed as *wh*-sentences (not free relatives) in topic position; the focus XP is an IP where some deletion may take place. How pseudo-clefts relate to clefts in this approach is not discussed.

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62 Clefts can also be predicational instead of specificational, cf. (i).
(i) Het was (een) geheim, wat hij me vertelde. [it was (a) secret, what he told me]

63 It is kind of ironic that a present-day analysis like Meinunger's derives a pseudo-cleft from a cleft, whereas an older analysis such as Gundel's (1977) tries to do exactly the opposite.

64 In particular, the fact that clefts are clearly extraposed (e.g. think of the order expl, Aux, XP_{foc}, V_{cop}, Cleft in Dutch and German) seems problematic for the monoclausal approach. Furthermore, Meinunger's analysis does not explain the presence, Case and position of relative pronouns. On the other hand, Smits does not explain, or even address the connectivity effects.

The literature on cleft-sentences is based almost entirely on English examples, where Smits (1988) is an important exception. Translation and construction of examples in e.g. Dutch makes me seriously doubt the validity of the arguments based on connectivity effects in English. Moreover the fact that what seem to be non-predicative pseudo-cleft sentences can be construed with false and/or hanging free relatives, is completely ignored in the literature, as far as I know.[65] Hence no final conclusions are possible about these already hotly debated constructions. A further discussion of (pseudo-)cleft constructions is far beyond the scope of this book, however. At present I must refer to the works cited and references therein.

7. Aspects of the relative construction

This section briefly summarizes important aspects of the relative construction: the use of relative pronouns and particles, the position of the external determiner, recursive and linear embedding (stacking), pied piping and preposition stranding, extraposition, and multiple relativization.

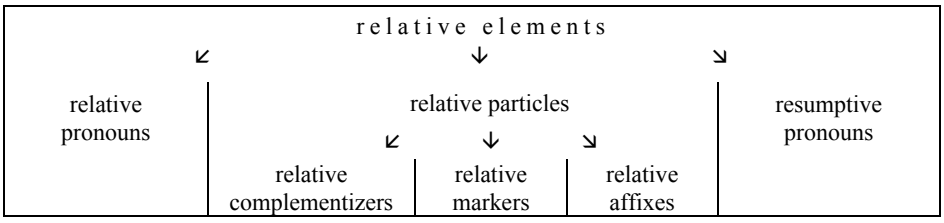
7.1. Relative pronouns and particles

Relative clauses are often marked by a relative element. In English there are three possible strategies, as is well-known: the use of a relative pronoun, a relative particle, or nothing at all; see (95).

(95) Do you know the woman *who/that/ø* we met this morning?

In Chapter 5 I will show that relative elements can be classified as in figure 10.

Figure 10. *Relative elements.*



Relative pronouns are for instance English *which* or *who*. Resumptive pronouns are demonstrative or personal pronouns that occupy the position of the gap in the relative clause. They are not *wh*-moved. A canonical relative particle is the English relative complementizer *that*. Relative markers are sentence-initial particles which

[65] Just one example:
(i) Wat elke boer deed, dat was mest uitrijden op zijn land.
what [every farmer]$_i$ did, that was manure spread on his$_i$ land

are not complementizers, because they show characteristics of pronouns (in particular, ϕ-features), but they are not *wh*-moved, hence do not occupy the gap. They can be found in classifier languages such as Wolof, but also in Éwé, Geez, etc. A relative affix is a verbal affix that indicates in one way or another that the clause is a relative clause, e.g. in Hopi or Kongo. There are many subtypes of this class. See further Chapter 5.

7.2. The position of the external determiner

Consider the linear order of relative clause (RC), head (N) and definite determiner (D) in adnominal relative constructions. From Appendix II, tables 16 and 17 it is clear that all logically possible orders are attested (see also Keenan 1985):

(96) *The order of D, N and RC in adnominal restrictive relatives*

a.	postnominal RCs:	(i)	D	N	RC	Dutch, English
		(ii)	N	D	RC	Swedish, Albanian
		(iii)	N	RC	D	Éwé, Indonesian
b.	prenominal RCs:	(iv)	D	RC	N	Tigré, Yurok
		(v)	RC	D	N	Korean, Abkhaz
		(vi)	RC	N	D	Basque, Ijo

If I understand Lehmann (1984:280-286) correctly, he suggests that (i) and (vi) should be ambiguous between a restrictive interpretation (where D takes scope over N+RC) and an appositive interpretation (where D only takes scope over N), since there are two ways of bracketing: [D [N $_{R}$RC]] or [[D N] $_{A}$RC] for (i), and, mirrored, [[$_{R}$RC N] D] or [$_{A}$RC [N D]] for (vi).[66]

Therefore, options (iii) [[N $_{R}$RC] D] and (iv) [D [$_{R}$RC N]] should be the unmarked and most widespread order for restrictive relatives. The same languages should use options (ii) [[N D] $_{A}$RC] and (v) [$_{A}$RC [D N]] respectively for appositives. Unfortunately, this is perhaps seldom the case, but data on appositives are scarce. Moreover, as shown in (96), some (but perhaps not many) languages use (ii) and (v) for restrictives.

Concerning circumnominal relatives, there are two logically possible orders: [D cir] and [cir D], but only [cir D] has been attested so far. The definite determiner cannot be within the circumnominal relative, since the nucleus must be indefinite, (and non-generic), see also Williamson (1987).

The position of the external determiner is discussed further in Chapter 3, section 3.2 and Chapter 4, sections 3.6 and 4-7.

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66 See Chapter 6 for extensive discussion on the scope of D. Note that [D RC] or [RC D] excluding N is a meaningless hierarchy (except if N is embedded within RC; see below).

7.3. Recursive and linear multiple embedding

One constituent can contain more than one relative clause. This phenomenon is called *multiple embedding*. There are two types: *recursive* and *linear* multiple embedding. The latter type is better known as *stacking*. Both are illustrated in (97).

(97) a. [The woman that saw [the dog that had bitten the man]], ran away. *[recursive ME]*
b. [The dog [that saw the woman] [that had bitten the man]], ran away. *[linear ME]*

Recursive multiple embedding means that there are two or more head nouns with a corresponding relative clause, each one level deeper embedded than the previous one(s). Linear embedding attaches two or more relative clauses to one head. Both types lead to centre embedding, hence to performance problems (cf. Givón 1984:Ch15).

The recursive type is not particularly spectacular, but stacking is quite interesting. Relevant questions are:

- Does the second relative modify the head noun or the head noun plus the first relative?
- Do all semantic main types of relatives stack?
- Do all syntactic main types of relatives stack?
- What is the syntactic representation/derivation?

In section 3 above I have mentioned that maximalizing relatives (including correlatives) do not stack. Appositives do; see Chapter 6. Clearly, stacking – but also recursive multiple embedding – is complicated in circumnominal relative constructions. It is known to be possible in Lakota, but much more data are needed. See the references in Ch4§5, e.g. Culy (1990), for some comment. The syntax of multiple embedding is treated further in Chapter 6.

7.4. Pied piping and preposition stranding

Like in questions, relative clauses can display preposition stranding or pied piping, depending on the particular language.

(98) a. the man *whom* I gave the flowers *to* [*Whom* did he give the flowers *to*?]
b. the man *to whom* I gave the flowers [*To whom* did he give the flowers?]

A possessive relative construction also involves pied piping:

(99) the man *whose flowers* she stole [*Whose flowers* did she steal?]

Especially within a ‘promotion theory of relative clauses’ this behaviour could potentially complicate the syntactic analysis of these sentences. Possessive relatives

are treated in Chapter 8. On (heavy) pied piping and preposition stranding, see Ch8§5 in particular.

7.5. Extraposition

In many languages relative clauses can be extraposed to the right. This phenomenon is illustrated in Dutch:

(100) a. Ik heb **de man** *die zijn tas verloor* gezien.
I have the man who his bag lost seen
b. Ik heb **de man** gezien *die zijn tas verloor*.

Relevant questions are the following:

- What conditions are there on extraposition?
- What is the syntax of extraposition?
- Do all syntactic main types allow for extraposition?
- Do all semantic main types allow for extraposition?

These questions are treated in Chapter 7.

Here, I would like to add a note on extraposed appositives and so-called *pseudo-relatives*. An example of a pseudo-relative is (101), taken from Smits (1984:181).

(101) Marie est là, qui pleure comme une Madeleine.
Marie is there, who cries like a fountain
'Marie is there, and she is crying her heart out.'

According to Smits a pseudo-relative – also known as a *relative attribute* – looks exactly like an extraposed relative, but it is interpretationally different. This primarily French and Italian clause type exists in presentative constructions and in the complement of perception verbs. The relative gap must be a subject and the verb in the relative clause non-stative.

Extraposed appositives can be very close to pseudo-relatives. The meaning is continuative, resultative, contrastive, or something else. An example is (102), from Smits (1988:185).

(102) Ik wilde mijn zuster opzoeken, die echter niet thuis was.
I wanted my sister visit, who however not at.home was.

Smits (1988:186) writes: *"Typically, the 'continuative, resultative, contrastive' or whatever other meaning of the 'extraposed appositive' modifies the whole state of affairs that is expressed in the main clause, rather than some nominal antecedent. […] I feel justified in concluding that what we have so far called extraposed appositives are not instances of the rule of extraposition at all, but adverbial clauses base-generated in their observed position, like pseudo-relatives."*

I think that this conclusion is not correct. Note first that extraposition of appositives is quite normal in Dutch:

(103) a. Gisteren heb ik mijn zuster, die blond haar heeft, bezocht. *[app]*
yesterday have I my sister, who blond hair has, visited
b. Gisteren heb ik mijn zuster bezocht, die blond haar heeft. *[extr]*

Even in English normal appositives can be extraposed, cf. (104), from Fabb (1990:59). See also Chapter 6.

(104) I met John yesterday, who I like a lot.

Hence I would say that a range of meanings is compatible with extraposed appositives, rather than distinguishing three syntactically distinct categories: pseudo-relatives, extraposed adverbial appositives and normal extraposed appositives. It is clear that there are special reasons why sentences like (102) are preferably extraposed, but no general conclusions about appositive relatives can be drawn from that. Nevertheless, some further study concerning pseudo-relativity, etc. may be desirable.

Finally I must mention the 'extreme consequence' of appositive extraposition: the *relative junction*. This construction contains two 'main clauses', where the second looks like a relative clause, i.e. it starts with a relative element. An example is (105), taken from Lehmann (1984:274).

(105) Dieser Wagen ist nicht mehr verbesserungsfähig.
this car is not anymore improvable.
Weshalb wir ihn unverändert weiterbauen.
for.which.reason we it unchanged further.build

Notice that the second sentence is verb-final, which is the clause structure of subordinate clauses in German. At the same time the intonation pattern at the junction differs from that in appositive relative constructions, and perhaps may equal one where a new main clause starts out. The relative junction is a special case of a more general pattern whereby, for stylistic reasons, the junction between a main clause and a subordinate clause looks like one between main clauses, as in *"I hate Wubbe. Because he is mad."* Therefore, I regard it as not very relevant for the syntactic analysis of relative constructions.

7.6. Multiple relativization

A relative construction has a pivot. This pivot constituent plays a role in the matrix and in the subordinate relative clause. Usually, the two roles are syntactically marked separately. For instance, there can be an antecedent in the matrix and a *wh*-element in the subordinate. There is a one-to-one correspondence between these two phrases. For instance, if there is one singular antecedent, there is one singular *wh*.

Multiple relativization is the break of this one-to-one correspondence. Some rare examples in English are like (106). Notice that there is obligatory extraposition.

(106) A boy_i entered the room and a $girl_j$ went out who_{i+j} were the same age.

In (106) there are actually two antecedents, whereas there is only one plural *wh*-phrase. This type of symmetric examples can be construed in several languages, e.g. in Dutch (cf. De Vries 1996:17). The construction with a so-called *split antecedent* must not be confused with complex plural antecedents as in *[the boy_i and the $girl_j$]$_{k=i+j}$ who_k met yesterday*. The latter type is called *hydra* by Link (1984). This construction which may be seen as pseudo-multiple relativization, or *type zero* MR, is also quite interesting, but I will not go into it.

If constructions like (106) are somehow legitimate, logic dictates that there are three possibilities in general:

(107)	a.	two antecedents	↔	one plural relative *wh*	*[split antecedent]*
	b.	one plural antecedent	↔	two relative *wh*s	
	c.	two antecedents	↔	two relative *wh*s	

Here *two* must be understood as "two or more". Relevant examples could be the ones in (108).

(108) a. * The boy_i looked at the $girl_j$ who_{i+j} both like sports.
b. * (I saw) the two $people_{i+j}$ who_i was shaking hands with who_j.
c. * The boy_i saw the $girl_j$ who_i was waving at who_j.

In most languages this is not possible, however. Nevertheless, Grosu & Landman (1998:165) report multiple relativization of all three types in Hindi correlative constructions. In that case, the 'antecedent' in (107) must be understood as the pronominal correlate in the matrix, since correlatives are head-internal.

Multiple *wh*-phrases can also be found in Rumanian and Russian irrealis free relatives (cf. Grosu & Landman 1998:157). A final example of multiple relativization I came across, is in Japanese circumnominal relatives (see Itô 1986:118). It is of type B: there are two internal heads in the relative, and there is one plural determiner in the matrix. (Clearly, the structure of circumnominal relatives predicts that only type B could exist: there cannot be more than one matrix role since the relative clause occupies this very position, and it can only be in one position at the same time.)

The four types of multiple relativization are not very clearly distinguished in the literature. Terminology that I have found for multiple relativization is *multiple headed, multiple antecedent, multiple wh, split antecedent* and *hydra*. In table 15 I tried to map these terms on the relevant syntactic types in order to facilitate future research.

Table 15. *Multiple relativization: types and terminology.*

type	*syntactic characterization*				*terminology*				
	in matrix		**in relative**		multiple head	multiple antecedent	multiple *wh*	split antecedent	hydra
	(external) antecedent	(correlative) pronoun or determiner	*wh* or gap	internal head (& *wh*)					
0	1 complex		1 plural		+?	+?	–	–	+
		1 complex		1 plural	–	–	–	–	+
A	2		1 plural		+	+	–	+	+
		2		1 plural	–	–	–	–	+?
B	1 plural		2		–	–	+	–	–
		1 plural		2	+	–	(+)	–	–
C	2		2		+	+	+	+?	+?
		2		2	+	–	(+)	–	+?

Here a question mark means that the use of the term is a little odd; a plus between brackets means that it may not be visible.

Simple split antecedents of the English type are discussed in Ch7§5.2.12, but the syntax of multiple relativization in general is beyond the scope of this book. A relevant observation is that similar constructions are found with result clauses, degree phrases and conjunctions (cf. Rijkhoek 1998) and other phrases. This suggests that the phenomenon of split dependencies is of a more general nature.

8. Conclusion

This chapter has presented a near-complete typology of relative clauses, grounded on earlier work by Lehmann, Smits, Grosu and Landman, Keenan and Comrie, Downing, Givón, and many others. I have compared, modernized, added on and systematized their work, and I have noticed and filled gaps wherever possible, in accordance with the goals set out in the introduction. Crucial characteristics of relatives from a large sample of languages are given in Appendix II. For actual data from particular languages I refer to the authors cited. (This book contains examples from the Germanic languages, mostly.)

The typological information discussed here then serves as a basis for the syntactic analyses in the subsequent chapters. In my view several approaches are necessary at the same time: semantic, functional and syntactic. In this dissertation I will focus on the syntactic side. It should both be based on a thorough and complete typology, and on the other hand be well-founded in a general syntactic theory.

3 Towards the syntax of relativization

1. Introduction

From now on I will focus on the syntax of relativization. Especially the pivot function that is inherent to a relative clause construction is intriguing from a syntactic point of view. Therefore it is not surprising that throughout the years many linguists have worked on relativization. Important questions are for instance:

- At which level is a relative clause attached? Is it an adjunct? Or rather a complement (and if so, is it a complement of the head or the determiner or something else)?
- Are all relative pronouns *wh*-moved? Is there always a relative pronoun, even if it is not visible?
- What is the nature of the link between the head noun and the relative element(s), if any? Is there raising of the head noun?
- How is the Case of the head, the matrix determiner and the relative pronoun licenced?

In short, I will argue that a relative is a complement of D, that there is always *wh*-movement (overt or covert), and that there is raising of the head noun.

Most discussions on the syntax of relative constructions concern the restrictive postnominal one. However, it is far from obvious if and how the approach to this type, once established, translates to the other kinds of relatives. Thus the following questions must be answered as well:

- Is the syntax of the three semantic main types of relative clauses – viz. restrictive, appositive and maximalizing relatives – similar, or is it different (and if so, how exactly)?
- (How) are the four syntactic main types of relative clauses – viz. postnominal, prenominal, circumnominal, correlative – related?

I will argue in this and the subsequent chapters that there is a common syntactic basis to all types of relatives, and I will show what the 'parameters' and additional mechanisms are that cause the differences.

Section 2 of this chapter sketches the historical development of the syntax of relative constructions. I try to evaluate it and find the right premises and questions. I will focus on the D-complement hypothesis and the raising analysis. Section 3 compares different versions of raising and standard analyses in more detail. The comparison is based on possible derivations of important word order differences across the four syntactic main types of relatives, and on the relation between the antecedent and the gap in a relative construction. I will conclude that the promotion

theory is the most promising. It is shown to be compatible with several (but not all) hypotheses on phrase structure, a priori. These are narrowed down to a 'light' form of antisymmetry in the next chapter, where a full-fledged version of the promotion theory is developed.

2. General discussion

There are three subsections: 2.1 discusses the theoretical history of the syntax of relative clauses, 2.2 focuses on the D-complement hypothesis, and 2.3 on the raising analysis.

2.1. The historical development of the theory on the syntax of relativization

As mentioned above, many authors have written about the syntax of relativization. This section is a short discussion of the theoretical development. See also Appendix III for some structural details of specific theories; see Ch4§5 for references on circumnominal relatives in particular; see Ch4§6 concerning correlatives; and Ch6§4 on appositive relatives.

The oldest generative approach to the syntax of relative clauses (in English) I will consider, is Smith (1964). She recognizes that it is the determiner (hence the definiteness/specificity) which determines what kind of relative clause is acceptable, appositive or restrictive; see e.g. (1). Therefore she assumes that a relative clause (or rather a relative marker; cf. Appendix III) originates as the complement of D.

(1) a. The book $_{(,)}$ which is about linguistics, is interesting. [restrictive/appositive]
b. Any book $_{(*,)}$ which is about linguistics, is interesting. [restrictive/*appositive]

At present, this idea is known as the D-complement hypothesis. Unfortunately, Smith's ideas were ignored until Kayne (1994) revived them, with the exception of Carlson (1977).

The development of what may be considered as the standard theory has its origin in Ross (1967). He assumes a relative to be a right adjunct to NP. Jackendoff (1977) develops this idea further. He shows that restrictives must be in the scope of the determiner, whereas appositives cannot be (see Chapter 6 for a detailed discussion). Therefore appositives are attached at a higher level than restrictives. Smits (1988) translates this approach into the standard X'-theory with binary branching.[1] Thus appositives are adjoined to NP, whereas restrictives are adjuncts at the N'-level; the determiner is in SpecNP. Since the 'invention' of the DP-shell (see Chapter 4 for more discussion), restrictives can be viewed as adjoined to NP, appositives to DP; see e.g. Toribio (1992).

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[1] In Jackendoff (1977) there is a third bar level; there is no binary branching constraint. Restrictives are daughters of N'', appositives of N'''. They are explicitly not 'Chomsky-adjoined'. Nevertheless, in retrospect Jackendoff's representation is similar to adjunction in a more recent (less powerful) phrase structure.

Meanwhile, Chomsky (1977) focused on the internal syntax of relatives. He relates relative clauses to questions and other constructions by the operation of *wh*-movement. That is, the variable (i.e. the 'gap') and the COMP-position (which is the closest to the antecedent) in the relative clause, are related by *wh*-movement of a relative pronoun or an empty operator. Movement is subject to 'Bounding'; therefore, this puts into perspective a series of observations put in the form of constraints in Ross (1967), which in effect state that the distance between the gap and the antecedent cannot be too large. A well-known example is the 'complex NP constraint'.

Whereas there has been a fairly good agreement on the structure of restrictives, this is not the case for appositives. Appositive relatives have been assumed to be right-hand adjuncts (Jackendoff 1977, Perzanowski 1980, Smits 1988, Demirdache 1991, Toribio 1992), parenthetical sentences coordinated to the matrix (Ross 1967, Thompson 1971, Emonds 1979, McCawley 1982, Stuurman 1983), parenthetical radical orphans (Safir 1986, Fabb 1990, Canac-Marquis & Tremblay 1997), complements of D (Smith 1964, Kayne 1994, Bianchi 1999), complements of an empty N (Platzack 1997), small clause predicates (Lipták 1998), and specifying conjuncts to the antecedent (Sturm 1986, Koster 2000c, De Vries 2000a). I will leave the analysis of appositives here and return to it in detail in Chapter 6.

It appears that until 1990 the predominant idea on restrictive relativization is that restrictive relatives are right-hand adjuncts: the 'NP-S theory' and all its variants. It can be argued that this is incorrect. First, notice that one implicit reasoning used is the following: a relative is a modifier, modifiers can be left out, hence they are adjuncts. This argument contains several flaws. Contrary to sentences, nominal constituents allow for the elimination of almost everything else than the head, even constituents that are generally seen as complements, see e.g. (2).

(2) a. the destruction (of Roombeek)
    b. The explosion destroyed *(Roombeek).

Hence possible deletion of a constituent within NP is not an argument for adjuncthood. Second, consider that although non-restrictive appositions *specify* a head – e.g. *Kok, our prime minister* – and, similarly, adverbial constituents specify a proposition, this is not the case for restrictive relatives. A restrictive does not plainly specify its head, it *restricts* the meaning of the head noun in a direct way, as the name says. For instance, the sentences in (3) are not simply about hating men, admiring headway and punishments for paper.

(3) a. I hate men who drive cars.
    b. I admired the headway they made.
    c. They should be punished for all the paper they waisted.

This is particularly clear for the degree relatives in (3b/c) but also for normal restrictives (3a). I am convinced that the difference between *specification* and *restriction* is crucial. This distinction could be represented by adjunction versus complementation (but see Chapters 6 and 7 for a partial revision of the idea). Third,

other NP-modifiers such as adjectives are usually not analysed as adjuncts. They could be in the specifier of NP or an extended projection of NP, or they constitute a shell of their own; see e.g. Kester (1996) for a discussion on the structural position of APs. All this casts doubt on the analysis of restrictive relatives as adjuncts.

The obvious alternative is the 'Nom-S theory': the idea that a relative clause is a complement of the head noun. For an early description see e.g. Carlson (1977) – who rejects it for his purposes – and some references there. It is defended on a semantic basis in Partee (1975).[2] Furthermore, Fabb (1990) explores Chomsky's (1977) idea that a restrictive relative is a predicate of the head noun.[3] In Fabb's theory this is represented by a (rather complicated) mechanism of co-indexing; cf. Appendix III for some details. What is relevant here is that it requires the head to c-command the predicate (i.e. the relative clause) directly. Hence they must be sisters. So in this approach, which is followed by Meinunger (2000), a restrictive relative is the complement of the head noun.

Platzack (1997,2000) investigates the relative clause in Swedish. He, too, assumes that a relative clause is the complement of N. After *wh*-movement within the relative, the complementizer (C) raises to the head noun (N) and subsequently to the outer determiner (D) – overtly or covertly, depending on the strength of D. This procedure accounts for the distribution of (in)definite determiners in Swedish; for some details see Appendix III. It also links the relative clause to the determiner, which is necessary according to Smith (1964), as mentioned above. Platzack does not assume raising of the head noun, but his theory is compatible with an antisymmetric phrase structure. Furthermore, notice that since there is head movement of C from inside the relative to the external D, the relative clause cannot be an adjunct, because adjuncts are islands for extraction.

In conclusion, Fabb (1990), Platzack (1997) and Meinunger (2000) – but also Carlson (1977) and Lipták (1998) – show that (restrictive) relativization involves complementation, not adjunction.[4] We may perceive this as the 'revised standard theory'.[5]

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2 However, Bach and Cooper (1978) intend to show that the NP-S theory may also lead to the right interpretation.

3 Rather intuitively, this can be understood as follows: in *the man who wore a red coat* 'wear a red coat' is a property of 'the man', just as in *the man is ill,* or *the man is a carpenter* 'ill' or 'carpenter' is a property of 'the man'. I don't think the idea is correct, e.g. because * *the man is (who) wore a red coat* is downright ungrammatical. Of course *the man is the one who wore a red coat* is acceptable, but then the question remains what the relation is between *the one* and the relative clause.

4 The idea of complementation instead of adjunction is shared by those who adopt the D-complement hypothesis, e.g. Smith (1964), Kayne (1994), De Vries (1996), Bianchi (1999), Schmitt (2000), and Zwart (2000); furthermore, Carlson (1977) assumes so for amount relatives. In all these cases the relative is a complement of D(et), not N.

5 Notice that in this approach a noun must be able to have more than one complement, e.g. *the book on physics that we bought yesterday*. This should not be a problem, since verbs can have more than one object, too. How multiple object constructions are represented in syntax is a different matter. See e.g. Chapter 8:App§2 for discussion.

(4) *The revised standard theory of restrictive relativization:*
   a. the structure: $[_{DP}\ [_{D'}\ D\ [_{NP}\ [_{N'}\ N_i\ [_{CP}\ wh_i\ \ldots\ t_i\ \ldots]]]]]$
   b. assumptions:
      – CP_{rel} is the complement of N
      – there is *wh*-movement to SpecCP (by an empty operator or a relative pronoun)
      – there is co-indexing between *wh* and the head N.

It is (4) that I will often refer to as the standard theory, and which I will compare with the promotion theory of relative clauses.

Next to this development of the standard theory, there have been other ideas. Thompson (1971) is, as far as I know, the only one who defended a coordination theory of restrictive relatives. It is not clear to me how to translate this idea into the present general syntactic framework. The approach has been commented in e.g. Jackendoff (1977), and I will not discuss it here. An approach that has been picked up in the literature is Vergnaud's (1974,1985) *raising analysis*, inspired by Schachter (1973). It is also called *promotion analysis*. Although *raising* and *promotion* are, strictly speaking, synonymous in this context, I will reserve the term *raising analysis* for Vergnaud's theory and the term *promotion theory* for the analyses along the lines of Kayne (1994) that also involve complementation to D. The main idea is that the head noun is raised from within the relative clause, thus 'promoted' to the matrix clause, as shown in (5).

(5) the citizens of Heerlen looked for *the cricetus c. canescens* in vain →
[the cricetus c. canescens]$_i$ (that) the citizens of Heerlen looked for t_i in vain

Carlson (1977) and Grosu & Landman (1998) argue that this is the right procedure for amount relatives. Vergnaud's particular theory is incompatible with present-day assumptions (see section 3.1.3 below), but the main idea, in combination with Smith's (1964) D-complement hypothesis, is revived by Kayne (1994), and followed by Bianchi (1995), De Vries (1996), Alexiadou et al. (2000:Intro), Zwart (2000) and others, as an alternative to the (revised) standard theory. The first who tried to generalize over many relative clause types is Kayne (1994). I am convinced that this is the right thing to do – although I will not go so far as generalizing the relative clause structure to adjectives, etc.

At this point it is crucial to distinguish the different competing proposals. A priori, it is not necessary to combine the D-complement hypothesis with the raising analysis, as Kayne (1994) does. This is also stressed by Alexiadou et al. (2000:Intro). It is shown in (6) and (7). The assumptions in (6) concern the position of the CP; those in (7) the position of the pivot. In principle, (6) and (7) are independent of each other.[6]

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[6] Notice, furthermore, that an antisymetric phrase structure does not automatically lead to the promotion theory; see e.g. the proposals in Platzack (1997), Lipták (1998), Murasugi (2000), Schmitt (2000) and Koster (2000c). In fact every theory except the old standard may be compatible with antisymmetry.

(6) a. *The adjunction hypothesis* [a relative is adjoined to an (extended) projection of N]
b. *The noun complement hypothesis* [a relative is the complement of N]
c. *The determiner complement hypothesis* [a relative is the complement of D]

(7) a. *The base-generated head hypothesis* [The head noun of a relative clause is base-generated outside that clause]
b. *The raising hypothesis* [A nominal phrase raises from inside the relative clause towards the matrix and becomes the head noun]

All combinations of (6) and (7) are logically possible. In fact, they have all been proposed; see also Appendix III:

– (6a) and (7a): the 'old standard theory', e.g. Smits (1988);
– (6b) and (7a): the 'revised standard theory', e.g. Fabb (1990);
– (6c) and (7a): the 'D-complement analysis', e.g. Smith (1964);[7]
– (6a) and (7b): the 'raising analysis', e.g. Vergnaud (1985);
– (6b) and (7b): the 'revised raising analysis', see section 3.1.3;
– (6c) and (7b): the 'promotion theory', e.g. Kayne (1994).

Clearly, two matters deserve further discussion: the D-complement hypothesis and the raising analysis. These are the subject of the next two subsections.

2.2. The D-complement hypothesis

This section evaluates the D-complement hypothesis, which states that a relative clause is the complement of D. As mentioned before, it finds its origin in Smith (1964), and it has been revived by Kayne (1994). I will argue that it is correct.

An appositive relative is incompatible with a non-specific antecedent; a restrictive cannot have a unique antecedent (cf. Ch6§2.1). A relevant example is (8), based on Smith (1964).

(8) a. I saw the queen of Holland $*_{(,)}$ who is called B. [*restrictive/appositive]
b. Any article $_{(*,)}$ which is about B., is interesting. [restrictive/*appositive]

Since definiteness/specificity is associated with determiners, one may assume that a relative clause is related to the external determiner. The most direct way to express this relation is to generate a relative as the complement of D.[8]

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[7] I may add that Schmitt (2000) proposes a modern anlysis of this hybrid type: the relative clause is the complement of D, but there is no raising. The head noun is base-generated in an extended projection of CP_{rel}. (Hence DP-internal extraposition of the relative CP, which is what Smith (1964) must assume, is not necessary here.)

[8] As mentioned above, this may be problematic for appositives; see further Chapter 6.

Kayne (1994) provides more evidence for Smith's position. Consider the examples in (9).

(9) a. I found (*the) two pictures of John's.
b. I found the two pictures of John's that you lent me.

Since in (9a) the determiner cannot co-occur with the particular nominal constituent (a double genitive: cf. Ch8:App§2), it probably does not select it in (9b), either. This would be the case if *the* takes a sentential complement in which *two pictures of John's* is embedded. In other words: the determiner concerns the definiteness of the whole construction, not only of the head. A similar example can be provided with collocations; see (10), where the equivalent in Dutch gives the same pattern.

(10) a. We made (*the) headway.
We boekten (*de) voortgang.
b. The headway we made, was great.
De voortgang die we boekten, was geweldig.

The expression is 'to make headway', not 'to make the headway'. Therefore the occurrence of the determiner in (10b) is strange, unless D selects CP (in which *headway* could be embedded).[9] Notice that if relative clauses were adjuncts, it should be possible to remove them without changes in acceptability. This is at odds with (9) and (10).

One could ask whether there is independent evidence for the assumption that D may select a category different from NP. This is indeed the case. Why these possibilities differ from language to language, I do not know. Example (11b) is taken from Borsley (1997:631).

(11) a. [$_{DP}$ Het [$_{VP/IP}$ elke morgen naar muziek luisteren]] bevalt me goed. *[Dutch]*
the every morning to music listening pleases me well
'Listening to music every morning pleases me very much.'
b. To, [$_{CP}$ kogo Maria widziała] jest tajemnicą. *[Polish]*
that-NOM who-ACC Maria saw is secret
'Whom Mary saw is a secret.'

The definite article nominalizes its complex complement. The whole may be replaced by a simple DP, e.g. a pronoun like *that*. Borsley objects that the interpretation of (11) is quite different from relative clauses. This is entirely besides the point. The examples do not provide direct evidence for the D-complement hypothesis of relative constructions, they merely show that the syntactic configuration D+XP is possible in general, hence there is no negative counter-evidence.

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9 A third argument by Kayne concerns the contrast between (i) and (ii).
(i) (*the) Paris
(ii) the Paris that I knew
However, this does not prove much, since a PP modifier gives the same effect, e.g. *the Paris of the twenties*. See also Ch6§2.1.

The most clear-cut piece of evidence for the D-complement hypothesis comes from the circumnominal relative construction, in my opinion. A Mohave example is (12), cf. Ch2§6.2.

(12) [$_{DP}$ [$_{CP}$ Hatčoq ʔavi:-m ʔ-u:ta:v]-n^{y}-č] n^{y}əʔi:l^{y}-pč.
[[dog stone-INST SBJ.1-hit]-DEF-NOM] black-REAL
'The stone with which I hit the dog was black.'
(*or* 'The dog which I hit with the stone, was black.')

Here the head noun is visible within the relative CP and the determiner outside it. According to Culy (1990) and others, this is the usual pattern. If a definite determiner is overt, it is outside the relative CP, on its right.[10] See also Appendix II, table 18. All circumnominal relatives are nominalized sentences, hence CPs surrounded by a DP-shell; cf. Ch4§5. Clearly, we could generalize the circumnominal pattern to other types of relatives in this respect, but not the other way around.

I conclude that the D-complement hypothesis is not only a possible alternative to the standard theory; it is to be preferred – provided of course that it can be maintained in a detailed syntactic analysis of relativization; see the next chapter.[11]

2.3. The raising analysis of relative clauses

The raising analysis is illustrated in (13), where I abstract away from structural details and the use of relative elements. Recall that this section concerns head raising only, and not the promotion theory, which I have defined as 'raising plus D-complement'.

(13) a. I only like [my granny has cooked *sprouts*]. *[selection order]*
b. I only like [*sprouts*$_i$ my granny has cooked t$_i$]. *[surface order]*

The head noun *sprouts* originates in the subordinate clause, and is subsequently promoted towards the matrix clause. The standard theory corresponding to (13) is given in (14).

(14) I only like [sprouts [OP$_i$ my granny has cooked t$_i$]].

The question is thus, whether it is important that the pivot *sprouts* has actually been at the position t$_i$ at some point of the derivation, or that the operator movement indicated in (14) is sufficient. In four short subsections I will show that there are some advantages of head raising in relative constructions. More details are provided in the following sections and chapters.

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[10] In some languages, including Mohave, it is cliticized on the verb; in others it is not. This is not relevant here. Furthermore, not all languages with circumnominal relatives have overt definite determiners, cf. Appendix II, table 3.

[11] Some further aspects of the D-complement hypothesis are discussed in Schmitt (2000). See also Bianchi (1999). Borsley's (1997) objection that it would lead to selectional problems is treated in Chapter 4.

2.3.1. Circumnominal relatives

Decisive evidence for the raising analysis may again come from the circumnominal relative construction. In fact it displays the overt equivalent of what is proposed to be the selection structure for e.g. the English postnominal one, i.e. the structure *before* raising. An example from Ancash Quechua is (15), repeated from Ch2§2.3.

(15) [Nuna **bestya-ta** ranti-shqa-n] alli bestya-m ka-rqo-n.
man horse-ACC buy-PERF-3 good horse-EVID be-PAST-3
'The horse that the man bought was a good horse.'

From the perspective of the (revised) standard theory the mere existence of this sentence is bizarre. The raising analysis, however, implies base generation of the head *bestya* 'horse' inside the relative clause; the raising itself is simply not performed, or it is an LF-phenomenon in languages like Ancash Quechua. Thus the raising analysis offers an explanation for the occurrence of the circumnominal relative strategy. Moreover, it creates the possibility of viewing the circumnominal and the postnominal relative construction as two variants of the same phenomenon, whereas this is impossible in the standard theory. Notably, the meaning of a circumnominal relative is equivalent to a postnominal one, although there seem to be some additional constraints on its use, depending on the grammar of the language in question; cf. Ch4§5 for some discussion.

2.3.2. The pivot function of the head noun

The head noun is semantically part of both the relative clause and the matrix clause (cf. Ch2§2.1). The most direct way to express this pivot function in syntax is to actually relate the head to both positions. In the early generalized transformations framework, cf. Chomsky (1957), this was accomplished by generating the two clauses separately (each containing the relevant noun) and then melting them together by some relative transformation. For example (16a) and (16b) are fused; this gives (17). The transformation includes fronting of the head in the relative clause (16b), and replacement by a relative pronoun (or simply deletion) of the second occurrence of the head in the complex sentence (17).

(16) a. I only like *sprouts*.
b. My granny has cooked *sprouts*.

(17) I only like *sprouts* (which) my granny has cooked.

In the raising analysis, the head is generated and interpreted in the relative clause; after raising it is semantically part of the main clause, too.

The standard theory is essentially different: the head noun has to be semantically linked to the gap in the relative clause via the relative operator. Several authors have proposed a 'closest antecedent' or 'relative interpretation' rule and/or some

mechanism of co-indexing that establishes this relation.[12] It may very well be that these can be independently motivated, but it should be clear that it is the standard theory, not the raising analysis, that a priori needs "additional mechanisms" in this respect (contra Borsley 1997).

2.3.3. Collocations

Although 'real' idioms cannot be split across a relative construction (e.g. * *the bucket he kicked, was horrible*), collocations can.[13] This argument is due to Schachter (1973) and Vergnaud (1974,1985).[14] Consider (18).[15]

(18) a. The *headway* we *made*, was great.
b. The *advantage* he *took* of me, I will never forgive him for.
c. La *part* que Jean a *prise* aux débats, nous a surpris.
the part that Jean has taken in the debates, us has surprised
d. De *streek* die hij me *leverde*, riep om wraak.
the nasty joke which he me delivered, cried for revenge

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12 I would like to add three remarks. First, what is sometimes underestimated, I think, is the obligatory character of the link. It must not only be shown that the gap and the head *can* be related, but also that they *have to* be. Second, a co-indexing mechanism is in danger of violating the *i-within-i* filter. For instance, Fabb's (1990) representation $[_{NPi}$ Det $[_{N'i}$ N_i $[_{CPi}$ $[_{NPi}$ rel. pron] $[_{C'i}$ C_i $[_{IP}$ … t_{npi} …]]]]] does so. Third, binding of an anaphor (here: the relative operator) across a clause boundary is unusual.

13 There is a wealth of types of fixed expressions. For an overview see e.g. Makkai (1972), Everaert (1993,1995) and Jackendoff (1995). What concerns us here are the types that contain a verb plus an object. There is a sliding scale from completely opaque idioms such as *kick the bucket* to simple collocations like *make progress*; see Fraser (1970) and Schenk (1995). According to Schenk semantic idioms cannot undergo meaningful operations such as topicalization or relativization, but they can be subject to meaningless operations as verb second. By contrast, collocations may undergo all sorts of operations. This has been shown already in Quang (1971).
Abeillé (1995) argues against Fraser's view; see also Ernst (1980). Examples (in French) that might be relevant here are:
(i) C'est une sacrée veste que Paul a prise hier.
it's a holy jerkin that Paul has taken yesterday
"it's a gigantic cropper that Paul has come yesterday."
(ii) C'est sur ton dos que Jean a cassé du sucre.
it's on your back that Jean has broken sugar
"It is you that Jean has spoken evil of"
(iii) C'est le taureau des privatisations qu'il a pris par les cornes de l'actionariat populaire.
"It's the bull of the privatizations that he has taken by the horns of the public shareholder"
However, I agree with Schenk (1995) that these are obvious examples of word play, hence irrelevant to the discussion.

14 See also Bianchi (1999) for some discussion.

15 Carlson (1977) notes that examples like (18a) are degree relatives. This is not necessarily the case for split idioms. For instance, (18d) is a normal restrictive relative. Recall from Ch2§3 that the difference can be shown with the determiner test: * *some headway we made* versus *een gemene streek die iemand je levert (moet je altijd vergelden)* 'a nasty joke which someone you delivers (must you always repay)'.

Here the collocations (sometimes referred to as 'idiom chunks') *to make headway, to take advantage of, prendre part à* (French: 'take part in'), *een streek leveren* (Dutch: 'play tricks') are separated.[16]

A collocation is a fixed verb-object pair. Therefore it is reasonable to assume that the verb must select the object. In the raising analysis this requirement is fulfilled even in the sentences in (18). At the selection structure (before raising), *headway* is the complement of *made* in the relative clause in (18a), etc.

This is not possible in the standard theory. The embedded verb takes the relative operator as its complement, the head noun is selected in the matrix clause. Although the operator is coreferential with the head noun, this is not sufficient to explain the acceptability of the sentences in (18). In many cases, pronominal reference to a collocational noun is not possible, or marked at least; see e.g. (19).[17]

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16 Two more examples by Vergnaud are:

(i) Le parti que Max a tiré de cette situation, a soulevé de l'inquiétude.
the advantage that Max has taken from this situation, has aroused commotion

(ii) Le cas que Luc a fait de cette affaire, nous a porté préjudice.
the attention that Luc has given to this affair, us has brought damage

I have collected some additional examples in Dutch. The English equivalents are acceptable as well.

(iii) De duik die hij nam, verfriste hem. 'The dive he took, refrehed him.'
(iv) De douche die hij nam, friste hem op. 'The shower he took, freshed him up.'
(v) De ruzie die he maakte, veroorzaakte heibel. 'The quarrel he made, caused a row.'
(vi) De suggestie die hij deed, was goed. 'The suggestion he made, was good.'
(vii) Het advies dat hij gaf, was verstandig. 'The advise he gave, was sensible.'
(viii) De voortgang die hij boekte, was groot. 'The progress he made, was great.'
(ix) De vraag die hij stelde, was niet zo slim. 'The question he asked, was not so smart.'
(x) De conclusie die hij trok, sloeg nergens op. 'The conclusion he drew, made no sense.'
(xi) Het tukje dat hij deed, had hij wel nodig. 'The nap he took, he needed badly.'
(xii) De rol die hij speelde, was belangrijk. 'The role he played, was important.'
(xiii) Het ommetje dat hij maakte, duurde niet lang. 'the stroll he took, didn't take long.'
(xiv) De scheet die hij liet, was duidelijk hoorbaar. 'The fart he blew, was clearly audible.'
(xv) De rel die hij schopte, veroorzaakte commotie. 'The row he kicked, caused commotion.'
(xvi) De flater die hij sloeg, maakte iedereen aan het lachen.
'The blunder he made, made everybody laugh.'
(xvii) De poets die hij me bakte, veroorzaakte hilariteit.
'The trick he played on me, caused hilarity.'

Idioms that cannot be split are e.g. *bot vangen* 'bone catch = to be turned down', *de draak steken met iemand* 'the dragon thrust with someone = to fool someone', *de plaat poetsen* 'the plate clean = to clear out', *de kastanjes uit het vuur halen* 'the chestnuts from the fire take = to do the dirty work', *de pijp aan Maarten geven* 'the pipe to Maarten give = to die'. Contrary to the collocations above, the meaning of these examples is established holistically and deviates from the literal meaning of the components. It is rather obvious why semantic idioms cannot be split across a relative construction, since it is not possible to relate two meanings at once to the head noun: an idiomatic one in the relative and a literal (or 'decomposed') one in the matrix. This is independent of the type of syntactic analysis of relative clauses: standard or raising.

17 Of course pronominal reference to the predicate as a whole is possible, e.g. *Hij leverde mij een streek. Dat was gemeen.* Here *dat* 'that' refers to playing tricks. Notice furthermore that not every example behaves as (19), e.g. *Hij had zijn conclusies$_i$ al getrokken. Die$_i$ sloegen echter nergens op*. 'He had already drawn his conclusions. Yet they made no sense.' See also Quang (1971). It is not always easy to distinguish reference to the noun or the predicate, because many collocations contain a semantically bleached/light verb like *take*, etc. The fact that different collocations behave differently with respect to the number of operations they allow for, seems to support a hierarchy like Fraser's (1970), contra Quang (1971).

(19) a. We made headway$_i$. # It$_i$ was substantial.
b. Hij leverde mij een streek$_i$. # Die$_i$ was gemeen.
he delivered me a joke. it was nasty

Therefore, (18) is a potential problem for the standard theory.[18,19]

2.3.4. Binding facts

Binding facts provide another indication that the relative head must be related to the relative gap directly, not via a relative operator. This was first noted, I believe, by Schachter (1973). Consider (20), a relevant example in Dutch.

(20) De verhalen over *zichzelf* die *Paul* hoorde, waren pure leugens.
the stories about SE-SELF which Paul heard, were mere lies

The anaphor *zichzelf*, which is part of the antecedent, is bound by *Paul*, the subject of the relative clause. In the raising analysis, *verhalen over zichzelf* is the object of the embedded verb *heard* at the selection structure. Therefore it can be bound, either after reconstruction at LF, as Kayne (1994) and others claim, or during the derivation, as I argue in De Vries (1998a). This is not possible in the standard theory; see the representation in (21).

(21) [De [[verhalen over zichzelf$_k$]$_{j=i}$ [$_{RC}$ die$_i$ Paul$_m$ hoorde t$_i$]]]

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[18] In very exceptional cases the problem is even worse, because the matrix without the relative is unacceptable to begin with; see (i).
(i) The headway *(we made) was great.
A Norwegian example is provided by Åfarli (1994:86):
(ii) Vatn *(som ein tek seg over hovudet) utviklar seg lett til alvorlege problem.
water (that one takes SE over head.the) develops SE easily into serious problems
Here *ta seg vatn over hovudet* means 'take on too difficult or big commitments'.
However, this is not usually so. Nouns that can be used as the object of a collocation can almost always exist independently as well, cf. (iii) or (iv).
(iii) De voortgang (die we maakten) was geweldig.
the progress (which we made) was great
(iv) Die gemene streek (die hij me leverde) riep om wraak.
that nasty joke (which he me delivered) cried for revenge
It is extremely difficult to find examples that pattern like (i) and (ii). In Duth we might have the following ones. (Without the relative the meaning changes to a literal meaning.)
(v) De olie #(die hij op het vuur gooide) vergrootte de ellende alleen maar.
the oil (which he on the fire poured) enlarged the misary only
(vi) De bok #(die hij schoot) veroorzaakte hilariteit.
the goat (which he shot) caused hilarity 'the blunder he made…'
However, not everybody accepts them, and they can also be considered to be word play; cf. fn. 13.

[19] Some authors argue for *en bloc insertion* of idiomatic expressions, e.g. Jackendoff (1995) and Van Gestel (1995). This means that idiomatic phrases are lexicalized as a whole, and inserted in syntax as a whole. (By the way, Van Gestel shows that this does not necessarily mean that they are opaque.) In a way this is confirmed by psycholinguistic research, which shows that idioms are processed faster then normal predicates; cf. Van de Voort & Vonk (1995). If so, this is a direct argument for the raising analysis of relative clauses.

The relative operator, which is the relative pronoun *die* in this case, refers to the whole antecedent *verhalen over zichzelf*. The anaphor *zichzelf* has another index. *Paul* does neither c-command *zichzelf*, nor an element that is co-indexed with it. Therefore *zichzelf* remains unbound, and so violates Principle A of the Binding Theory, or a more recent equivalent of it.

Examples comparable to (20) are confirmed for Norwegian by Åfarli (1994), and for Italian by Bianchi (1999).[20] In order for the argument to go through, two potential pitfalls must be avoided. First, the anaphoric element must be a true short or medium distance anaphor. The possibility of pronominal coreference or logophoric licencing must be excluded. In Dutch, *zichzelf* is a true anaphor beyond doubt.[21] Notably, English *himself* is fourfold ambiguous, hence completely unsuitable to test a pattern like (20), contrary to what Schachter (1973), Kayne (1994) and others seem to think.[22]

Second, the possibility of a coreferential PRO subject in the antecedent prase must be excluded. Chomsky (1986) suggests that event nouns could have a PRO subject; see also Williams (1985). If so, reconstruction into a relative clause is unnecessary if PRO is already coreferent with the anaphor in a picture noun antecedent, since PRO can be a binder. I have excluded this possibility in (20). If there is a PRO at all, it must be someone else than Paul: the story-teller is another person (or persons) than the hearer Paul.

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20 Åfarli (1994) reports a small difference between *der* and *som* relatives concerning binding into a relative clause. I consider it too insignificant to justify an entirely different derivation for them (i.e. raising for *som* relatives and a standard theory for *der* relatives).

21 *Zichzelf* is supposed to be a Short Distance anaphor, not to be confused with the Medium Distance anaphor *zich*. (See the collection of articles edited by Koster & Reuland (1991) for an international breakthrough concerning anaphoric domains, about a decade after that these insights have been registered for individual languages, e.g. Vat (1980) in Dutch.) The SD domain has been described in terms of coargumenthood in Reinhart & Reuland (1993), Pollard & Sag (1992), Dalrymple (1993), De Vries (1998a) and others. (A different method is e.g. Broekhuis (1992:Ch7).) However, in 'picture noun contexts', e.g. *Joop hoorde een verhaal over zichzelf* 'Joop heard a story about himself', *zichzelf* is not a coargument of the antecedent, since it is embedded. I do not favour weakening of the coargument condition. Furthermore, it is easy to show that Dutch *zichzelf*, unlike *hemzelf* or English *himself* (see the next footnote), can never be used logophorically, see e.g. De Vries (1999b), contra suggestions in Reinhart & Reuland (1993). A solution is offered in De Vries (1998b). On the basis of intonation and adjectival prepositional object constructions it is argued that in specific contexts *zichzelf* is not necessarily a SD anaphor, but it can also be the MD anaphor *zich* plus the emphatic morpheme *zelf*, just as *-zelf* can be attached to pronouns and R-expressions; see also De Vries (1998a,1999b) on *zich+zelf* in accusativus-cum-infinitivo constructions. For more on *zich/SE* itself see e.g. Everaert (1986), Koster & Reuland (1991), and De Vries (2000b).

22 English *himself* means SE, SE-SELF, SELF or PRON-SELF, depending on the context; see e.g. De Vries (1999b). In the last case, *himself* as an 'Identifying Emphatic Expression', no syntactic binder is necessary, but certain discourse conditions must be fulfilled. The relation between perspective (logophoricity, viewpoint,…) and the use of English IEEs, especially in picture noun contexts, has been recognized by several authors, viz. Ross (1967), Cantrall (1974), Kuno (1987), Zribi-Hertz (1989), Huang (1994), Brinton (1995), Kemmer (1995), Baker (1995), Van Hoek (1997), and others. I argue in De Vries (1999b) that there is a (subtle) difference between proper logophors (cf. Clements 1975, Sells 1987) and IEEs.

(22) de [PRO$_k$ verhalen over *zichzelf*$_i$] die *Paul*$_i$ hoorde

Hence selection of the antecedent within the relative (i.e. the raising analysis) is necessary to explain the binding of *zichzelf*.

I consider examples with anaphor binding the most convincing, but there are also other 'reconstruction' effects, such as the Principle C effect in (23).

(23) De verhalen over Paul$_i$ die hij$_{k/*i}$ hoorde, waren pure leugens.
the stories about Paul which he heard, were mere lies

These, too, can be explained if the antecedent originates in the relative clause. See further Bianchi (1999) and the references there. Notably, appositive relatives give a completely different pattern; see Ch6§2.4ff.

Finally, it must be noticed that the 'reconstruction' is sometimes disturbed if there is a preceding possible antecedent. Example (24) in Dutch is acceptable.

(24) Joop$_i$ verafschuwde de verhalen over zichzelf$_i$ die de ronde deden.
Joop loathed the stories about SE-SELF which the round(s) were.doing

Platzack (2000:267) even gives (25) in Swedish, where reconstruction is excluded or overruled. For me, (26) in Dutch is ambiguous, however.

(25) Eva$_i$ besökte det av sina$_{i/*k}$ slott som kungen$_k$ bor i.
Eva visited that of her/his.REFL castles that king.the lives in

(26) De kunstenaar$_i$ vervaardigde de buste van zichzelf$_{i/k}$ die de koning$_k$ had besteld.
the artist made the bust of SE-SELF which the king had ordered

The judgements concerning sentences of this kind are difficult and vary with the particular example, context, intonation and speaker. (The internal reading in (26) is easier to get after topicalization of the object.) What is important, is that the anaphor embedded in the antecedent of the relative clause *can* take its antecedent in the matrix; in some cases this is even preferred. Hence 'reconstruction' is not obligatory. In other words: the anaphor is also able to establish a referential relation after promotion. In no way do these facts provide counterevidence for the raising analysis, as Platzack claims; they only show that matters are more complicated than initially thought. By contrast, the pattern exemplified by (20) remains a problem for the standard theory.

In short, there are clear indications for a raising analysis in general.

2.4. Conclusion

I have briefly reviewed the history of relative clause syntax and indicated which direction is to be taken. I have shown that both the D-complement hypothesis and the raising analysis are not only promising as an alternative to the (revised) standard theory, but also provide the means to explain patterns that are ill understood in the

standard theory, and, most importantly, allow for cross-linguistic generalizations that are unthinkable from the point of view of the standard theory.

I am aware that the promotion theory, that is, Kayne's (1994) version of it, has been subject to severe criticism, e.g. in Borsley (1997). However, it is fair to say that i) the critique generally refrains from acknowledging the advantages of promotion indicated above, and fails to point out how the standard theory could deal with the relevant issues; ii) much of the critique is aimed at details of the analysis, which can be improved (cf. Chapter 4); iii) the critique takes the standard theory for granted and ignores the fact that there are many unsolved and problematic details in this approach, too (cf. section 3 below); iv) the critique justly indicates some apparently fundamental problems with the promotion theory – however, these are based on conservative ideas on apposition, extraposition and possession; and I will show in Chapters 6, 7 and 8 that a fundamentally different approach to these topics is required in general, which has as a major side-effect that it solves the problems concerning relativization from the perspective of promotion.

3. The standard theory versus the promotion theory

I have shown that it is worthwhile to investigate the promotion theory in more detail, since there is evidence for both the D-complement hypothesis and the raising analysis. Therefore this section provides a more thorough comparison between several alternatives: standard, promotion and mixed. Section 3.1 starts with an outline of the competing theories; 3.2 is an evaluation based on syntactic main types and word order; 3.3 is an evaluation on the basis of the relation between antecedent and the gap, etc. Section 3.4 is the conclusion. It will turn out that a promotion analysis in combination with left-hand specifiers and left-hand functional heads is the most promising theory.

3.1. Outline of the different analyses

In section 2.1 it has been shown that there is neither one standard theory nor one promotion analysis. Several underlying hypotheses must be distinguished. The ones in (27) and (28) – repeated from §2.1 – concern relative clauses directly; (29) and (30) are indirectly involved.

(27) a. *The adjunction hypothesis* [a relative is adjoined to an (extended) projection of N]
b. *The noun complement hypothesis* [a relative is the complement of N]
c. *The determiner complement hypothesis* [a relative is the complement of D]

(28) a. *The base-generated head hypothesis* [The head noun of a relative clause is base-generated outside that clause]
b. *The raising hypothesis* [A nominal phrase raises from inside the relative clause towards the matrix and becomes the head noun]

(29) a. *The NP hypothesis* [Nominal phrases are NPs. Det is in spec-position]
b. *The DP hypothesis* [Nominal phrases are DPs]

(30) a. *The free X' hypothesis* [X' theory but no rigid universal linear ordering; adjunction is allowed]
b. *The Antisymmetry hypothesis* [Phrases are universally spec-head-comp; adjunction is not allowed]

I will consider five possible theories based on different combinations of these assumptions. They are listed in table 1.

Table 1. *Theories on relative clauses.*

theory	*adj. / compl.*	*b.-g. head / raising*	*NP/DP*	*free X' / antisymm.*
I old standard theory	adjunction	b.-g. head	NP	free X'
II revised standard theory	N-compl.	b.-g. head	DP	free X'
III revised raising analysis	N-compl.	raising	DP	free X'
IV promotion theory	D-compl.	raising	DP	free X'
V antisymmetric promotion theory	D-compl.	raising	DP	antisymmetry

These theories are briefly explained below. They are illustrated with respect to the postnominal D N RC construction, e.g. *the man whom he saw* in English.

3.1.1. The old standard theory

The structure of the old standard theory is given in (31). A restrictive relative is right-adjoined to N'. The determiner is in SpecNP, hence takes scope over the relative, as required. The head is base-generated in N.

(31) $[_{NP}$ Det $[_{N'}$ $[_{N'}$ N] $[_{CP}$ *wh*$_i$ … t$_i$ …]]]

Within the relative CP there is *wh*-movement of a relative pronoun or an operator.

3.1.2. The revised standard theory

As explained in section 2.1 above, the relative may be the complement of N. Following Abney (1987) and others, a determiner is generated in its own DP layer, an extended projection of NP. The head is base-generated in N and there is *wh*-movement. See (32).

(32) $[_{DP}$ $[_{D'}$ D $[_{NP}$ $[_{N'}$ N$_i$ $[_{CP}$ *wh*$_i$ … t$_i$ …]]]]]

Probably, the complement relation between N and CP facilitates an indexing mechanism that accounts for the link between *wh* and N.

3.1.3. The revised raising analysis

Raising without the D-complement hypothesis seems quite problematic at first. Originally, Vergnaud (1974/1985) proposed the following:

(33) $[_{S'}\ [_{comp}\ [_{NP}\ \textit{wh}\text{-det N}]_i\ ]\ [_S \ldots t_i \ldots]\ ] \quad \rightarrow$
$[_{NP_i}\ NP_i\ [_{S'}\ [_{comp}\ \textit{D-rel}_i\ ]\ [_S \ldots t_i \ldots]\ ]\ ]$

An NP that contains a *wh*-feature, a determiner and the head noun N, raises to COMP. In modern terms: DP_{rel} moves to SpecCP. Then NP moves out of the clause and projects (!); the index is transferred to the maximal projection. This produces an adjunction structure: S' is now right-adjoined to NP. The trace of NP is spelled out as a relative pronoun because the *wh*-feature stays behind.

Unfortunately, this approach faces several problems. Consider the following six comments:

(i) According to general assumptions, moved constituents never project.
(ii) How can a part of a moved constituent be left behind and spelled out?
(iii) How can a *wh*-feature be spelled out as a relative pronoun (which is more than just that)?
(iv) The NP does not c-command its trace, since S' is not excluded from (the higher layer of) NP.
(v) The *i-within-i* filter is violated.
(vi) The determiner in NP does not take scope over the relative clause, whether before or after raising. Therefore (33) should have the interpretation of an appositive relative, which is not what is intended.

I do not know how to solve these drawbacks without substantially changing the analysis. Part of the problem is that the relative pronoun and the outer determiner compete for the same position. Therefore Det should be outside the relative clause. Consider the following possible derivation:

(34) $[_{CP}\ [_{NP}\ D_{rel}\ [_{N'}\ N]]_i\ [_{C'} \ldots t_i \ldots]\ ] \quad \rightarrow$
$N_k \quad [_{CP}\ [_{NP}\ D_{rel}\ [_{N'}\ t_k\ ]]_i\ [_{C'} \ldots t_i \ldots]\ ] \quad \rightarrow$
$[_{NP}\ Det\ [_{N'}\ N_k \quad [_{CP}\ [_{NP}\ D_{rel}\ [_{N'}\ N]]_i\ [_{C'} \ldots t_i \ldots]\ ]$

DP_{rel} contains a relative pronoun and N'. First it is *wh*-moved. Then N (instead of NP) is raised and projects as N', which is subsequently combined with Det into NP. Notice that an N-complement structure is obtained automatically.[23] This solves problems (ii) through (vi). In order to solve (i), too, a second substantial revision is necessary. There must be an external head that selects CP. Suppose this is an empty N (*pro*). Then the raised constituent could move to SpecNP and agree with *pro*; it does not project itself. If, conforming to present-day standards, DP layers are used,

[23] If X'-projections were able to move, N' could be raised and projected, which leads to an adjunction structure. This gives us problem iv) again, hence I will put the possibility aside.

the raised constituent can be an NP. In short, the selection structure is (35a), and the movements are indicated in (35b):

(35) a. $[_{DP}\ [_{D'}\ D\ [_{NP}\ \ [_{N'}\ \textit{pro}\ \ [_{CP}\ \ \dots\ \ [_{C'}\ \dots\ [_{DP\text{-}rel}\ D_{rel}\ NP_k]\ \dots\ ]]]]]]$
b. $[_{DP}\ [_{D'}\ D\ [_{NP}\ NP_k\ [_{N'}\ \textit{pro}_k\ \ [_{CP}\ [_{DP\text{-}rel}\ D_{rel}\ t_k\ ]_i\ [_{C'}\ \dots\ \ t_i\ \ \dots\ \ ]]]]]]$

Notice that the structure in (35) resembles the revised standard theory (32), apart from the raising part. Moreover, it keeps as close as possible to Vergnaud's original idea. It is the analysis in (35) that I will refer to as the *revised raising analysis*.

3.1.4. The promotion theory

I will use the term *promotion theory* to indicate a theory that covers both raising and the D-complement hypothesis, as illustrated in (36).

(36) $[_{DP}\ [_{D'}\ D\ [_{CP}\ [_{DP\text{-}rel}\ NP_k\ [D_{rel}\ t_k\ ]]_i\ [_{C'}\dots\ t_i\ \dots\ ]]]]$

The relative CP is selected by the outer determiner. DP_{rel} is *wh*-moved to SpecCP. In addition, NP is moved to $SpecDP_{rel}$. This is discussed in detail in the next chapter. A difference with the (revised) raising analysis is that the antecedent NP is not moved out of the relative CP (that is, not in the English variant).

3.1.5. The antisymmetric promotion theory

The analysis in (36) can be used within a free X' system, or in an antisymmetric phrase structure with a universal spec-head-comp order. The latter option will be referred to as the *antisymmetric promotion theory*. The relevance of this difference will become clear in the next section.

3.2. Evaluation: syntactic main types and word order

The five theories described above can be evaluated with respect to the main types of relative clauses and their properties as discussed in the previous chapter. If additional assumptions are needed in order to derive a certain type or property, this may be scored as a minus point. Below I will systematically do so. Potential problems may be divided into two classes: word order phenomena, and the relation between the antecedent and the gap. These are discussed in two sections, starting with possible derivations of syntactic main types and their word orders.

What is of interest here is the ordering of the outer determiner (D), the head noun (N) and the relative clause (RC). For instance, in an English postnominal relative the surface order is D N RC, whereas the Basque prenominal relative shows the mirror order RC N D (cf. Ch2§7.2). I will show how and on what costs these and all other types can be derived, given a certain theory on phrase structure, a certain theory on relativization and, consequently, a certain underlying order.

Section 3.2.1 starts with some preliminaries on phrase structure rules and underlying orders. Section 3.2.2 shows how relative constructions can be derived in

VO languages, 3.2.3 in OV languages; 3.2.4 summarizes and concludes the discussion.

3.2.1. Preliminaries: phrase structure rules and underlying orders

It is necessary to start off from some basic assumptions concerning the underlying structure. In an antisymmetric theory there is a rigid spec-head-comp order, hence the 'base' for relative clauses in antisymmetric promotion theory is always the same. After raising the order is D N RC, where in fact the head noun is in the highest specifier in the relative CP, cf. (36) above. Different surface orders have to be derived from this one. Notice that 'RC' is used only descriptively here; it indicates the relative clause including relative elements (if any), but excluding the head noun.

The other theories use a free X' theory (cf. table 1 above). For each individual language the position of complements with respect to heads is fixed (see below). In VO languages complements follow the head, so, for instance, the base is N RC in the revised standard theory; in OV languages it is RC N. By contrast, adjuncts can be freely right-hand or left-hand without further restrictions. For example, the old standard theory, where a relative is an adjunct, can therefore choose RC N or N RC as the underlying order in a particular language, independently of the basic word order (VO/OV) in that language.

The position of the determiner is less clear. It is either a specifier or a (semi-)functional head. Concerning specifiers and functional heads, several positions can be taken:

- There is a (global) *uniform branching* direction, determined by the basic head-complement order. So in VO languages the order is [spec [head [comp]]], in OV languages it is [[[comp] head] spec].
- There is a separate and independent parameter controlling the specifier position. This leads to *spec left* or *spec right*. Functional heads follow the VO/OV parameter.
- Specifiers and functional heads are always left: *rigid left*. So this is partial antisymmetry. (Only lexical heads are on the right in OV languages.)
- Functional heads are always left *func left*, but specifiers vary according to the OV parameter so that there is uniform branching in lexical projections, but not necessarily in functional projections.
- Functional heads are always left *and* there is local uniform branching: *fl-lub*, so that there is uniform branching in each projection. Hence the specifier position is not fixed.

I don't think there are many proponents of *rigid right*, *func right*, or *f-right-lub* so I leave these out of the discussion.[24] (Notice that the results for these options would mirror the results for the *rigid left, func left*, and *fl-lub* discussed below.)

[24] There are some other simplifications here. All lexical projections are treated as a group, and all functional projections as another group. Nevertheless, it might be that more complicated patterns are

to be continued...

Schematically, the different phrase structure theories under consideration are given in table 2.

Table 2. *Basic Spec-Head-Comp orders in different phrase structure theories.*

phrase structure theory	*VO languages*	*OV languages*	
	lexical/functional head	*lexical head*	*functional head*
antisymmetry	S [$H_{L/F}$ C]		
uniform branching	S [$H_{L/F}$ C]	[C $H_{L/F}$] S	
spec left	S [$H_{L/F}$ C]	S [C $H_{L/F}$]	
spec right	[$H_{L/F}$ C] S	[C $H_{L/F}$] S	
rigid left	S [$H_{L/F}$ C]	S [C H_L]	S [H_F C]
func left	S [$H_{L/F}$ C]	[C H_L] S	[H_F C] S
fl-lub	S [$H_{L/F}$ C]	[C H_L] S	S [H_F C]

When applied to relative clauses, it is clear that the 'basic' order for VO languages is D N RC in most cases, but the situation for OV languages is much more complicated.

All possible underlying orders are summarized in table 3. Here the first column gives the simplified underlying order; the third column shows the detailed structure associated with it. The structure is assigned a reference number. The second column specifies the relevant theory on relative clauses: as before, I is the old standard theory, II the revised one; III is the revised raising analysis, IV the promotion theory, and V the antisymmetric promotion theory. The language type is the descriptive designation VO or OV. Finally, it is indicated with which assumptions on phrase structure the underlying order is compatible.

Notably, the underlying representations associated with theories III, IV, and V indicate the structure *after* raising,[25] hence they are in fact intermediate representations, from which the relevant surface orders discussed in the next subsections must be derived.

... *continued*

possible. For the discussion on relativization this is not very relevant, since e.g. the only lexical projection under consideration is NP.

25 Except of course for circumnominal relatives, where there is no overt raising.

Table 3. *Basic orders of relative clause systems depending on theory and language type…*

underlying order	*used for RC theory*	*detailed underlying structure: spec,* **head,** comp, (adj)	nr. ↓	*language type*	*position specifier and functional head*					
D N RC	I	[$_{NP}$ *D* **N** (RC)]	1	VO	unif. br.	spec left	rigid left		(f. left)*	(fl-lub)
				OV		spec left	rigid left			
	II	*spec* **D** [$_{NP}$ *spec* **N** RC]	2	VO	unif. br.	spec left	rigid left		func left	fl-lub
		D [$_{NP}$ **N** RC *spec*] *spec*	3	VO				spec right		
	III	*spec* **D** [$_{NP}$ *NP* **N**$_{pro}$ RC]	4	VO	unif. br.	spec left	rigid left		func left	fl-lub
		spec **D** [$_{NP}$ *NP* RC **N**$_{pro}$]	5	OV			rigid left			
	IV	*spec* **D** [$_{CP}$ *NP* RC]	6	VO	unif. br.	spec left	rigid left		func left	fl-lub
				OV			rigid left			fl-lub
	V	*spec* **D** [$_{CP}$ *NP* RC]	7	VO / OV			antisym			
D RC N	I	[$_{NP}$ *D* (RC) **N]**	8	VO	unif. br.	spec left	rigid left		(func left)	(fl-lub)
				OV		spec left	rigid left			
	II	*spec* **D** [$_{NP}$ *spec* RC **N**]	9	OV			rigid left			
		D [$_{NP}$ RC **N** *spec*] *spec*	10	OV					func left	
		spec **D** [$_{NP}$ RC **N** *spec*]	11	OV						fl-lub
	III	**D** [$_{NP}$ **N**$_{pro}$ RC *NP*] *spec*	12	VO				spec right		
		D [$_{NP}$ RC **N**$_{pro}$ *NP*] *spec*	13	OV					func left	
		spec **D** [$_{NP}$ RC **N**$_{pro}$ *NP*]	14	OV						fl-lub
	IV	**D** [$_{CP}$ RC *NP*] *spec*	15	VO				spec right		
		D [$_{CP}$ RC *NP*] *spec*	16	OV					func left	

* This is irrelevant in a sense, because there is no functional projection involved.

... continued.

underlying order	*used for RC theory*	*detailed underlying structure: spec,* **head,** comp, (adj)	nr. ↓	*language type*	*position specifier and functional head*					
RC N D	I	[$_{NP}$ (RC) **N** *D*]	17	VO				spec right		
				OV	unif. br.			spec right	(func left)	(fl-lub)
	II	*spec* [$_{NP}$ *spec* RC **N**] **D**	18	OV		spec left				
		[$_{NP}$ RC **N** *spec*] **D** *spec*	19	OV	unif. br.			spec right		
	III	[$_{NP}$ RC **N**$_{pro}$ *NP*] **D** *spec*	20	OV	unif. br.			spec right		
	IV	[$_{CP}$ RC *NP*] **D** *spec*	21	OV	unif. br.			spec right		
N RC D	I	[$_{NP}$ **N** (RC) *D*]	22	VO				spec right		
				OV	unif. br.			spec right	(func left)	(fl-lub)
	III	*spec* [$_{NP}$ *NP* RC **N**$_{pro}$] **D**	23	OV		spec left				
	IV	*spec* [$_{CP}$ *NP* RC] **D**	24	OV		spec left				

From these representations the required surface orders may be derived by the following types of movements, which I will assign an abbreviation:

H	*Head movement: X movement to a left-hand position at a higher head.*[26]
H'	*Head movement: X movement to a right-hand position at a higher head.*
M	*XP movement to a left-hand specifier position.*
M'	*XP movement to a right-hand specifier position.*
rM	*XP remnant movement to a left-hand specifier position.*
rM'	*XP remnant movement to a right-hand specifier position.*
A	*Adjunction: XP movement to a left-adjoined position.*
A'	*Adjunction: XP movement to a right-adjoined position.*
rA	*Adjunction: XP remnant movement to a left-adjoined position.*
rA'	*Adjunction: XP remnant movement to a right-adjoined position.*

Movement to a left-hand position is the default; the prime is used to indicate movement to a right-hand position. Notice that adjunction is not base-generated adjunction here, but transformationally derived adjunction.

A further notational convention is necessary. It is indicated by means of subscripts and superscripts which constituent is moved to which position. A subscript designates the constituent to be moved, a superscript the position moved to. Thus X_y^z means that y is moved to z by movement of type X. For instance, $rM'_{cp}{}^{dp}$ is remnant movement of CP to the right-hand specifier of DP.

3.2.2. The derivation of relative constructions in VO languages

Given these preliminaries, consider **postnominal** relatives first. It concerns VO languages mainly. The OV variants will be discussed below. Postnominal relatives come in three surface variations: D N RC, N D RC and N RC D (cf. Ch2§7.2 and Appendix II, table 16). The first order (D N RC, the English one) is massively dominant. And in fact, in many theories it reflects the basic order.[27] Therefore, the second order (N D RC, e.g. in Swedish or Godié) must be derived, the problem being that N precedes D. The solution is probably head movement of N to D, i.e. H_n^d in the notation explained above. This has been argued for independently by Delsing (1993) and others. Notice that head movement in the raising/promotion theories refers to N within the head NP (and not e.g. to N_{pro} in the revised raising analysis). Furthermore, note that the old standard theory (variants 1 or 8), which does not have a DP layer, suffers from the problem that a head is moved to a specifier position (abbreviated as HS). This violates the structure preserving principle, because a specifier is an XP position.

The third order (N RC D, e.g. in Indonesian or Yoruba) has the problem that the relative clause precedes the determiner. The promotion theory (variant 6 or 7)

26 Strictly speaking the configuration $[_Y$ X Y] is also a kind of adjunction, but I will not refer to it as such, in order to prevent confusion.

27 Nevertheless, I agree with Newmeyer (2000) that formal syntax need not (or, perhaps even stronger, *should not*) explain typological trends. Thus in this case it just happens to be so that syntax reflects typology in some way.

may use additional mechanism $M_{cp+}{}^{dp}$: CP movement to SpecDP (where CP contains the head noun, which is indicated by the +). This procedure takes advantage of the idea that CP contains the head. The (simplified) structure then becomes $[_{DP}\ [_{CP}\ N\ RC]_i\ [_{D'}\ D\ t_i]]$. The internal structure of CP is irrelevant here. (It is given in section 3.1.4 above.) The revised standard theory and the raising analysis (bases 2 and 4) might try movement of $[_{NP}\ N\ CP]$ to SpecDP: assumption $M_{np+}{}^{dp}$. This gives $[_{DP}\ [_{NP}\ N\ RC]_i\ D\ t_i]$. In the old standard theory movements of this type are impossible because there is no specifier available: the DP-shell lacks alltogether, hence the only possibility is left-adjunction of $[_{N'}\ [_{N'}\ N]\ RC]$ to NP (i.e. $A_{n'+}{}^{np}$), a strange move. Notice that this involves X' movement, which is generally considered unwanted.

I will not extensively discuss the derivations needed for the alternative theories 8, 17, 22, 3, 12 and 15; they are in table 4. For clarity, the movements needed in the derivations are listed below.

$H_n{}^d$	*The head N is moved to a left-hand position at D.*
$H'_n{}^d$	*The head N is moved to a right-hand position at D.*
HS	*Movement of a head to a specifier position.*
$M_{cp+}{}^{dp}$	*CP movement to a left-hand SpecDP (where CP contains the head noun, which is indicated by +).*
$M_{np+}{}^{dp}$	*NP movement to a left-hand SpecDP (where NP contains the RC, which is indicated by +).*
$rM_{rc}{}^{dp}$	*Remnant movement of a RC to a left-hand SpecDP.*
$A_{rc}{}^{np}$	*Movement of a RC to a position left-adjoined to NP.*
$A'_{rc}{}^{np}$	*Movement of a RC to a position right-adjoined to NP.*
$A_{np+}{}^{dp}$	*Movement of NP (that includes a RC) to a position left-adjoined to DP.*
$A_{np}{}^{cp}$	*Movement of NP to a position left-adjoined to CP.*
$A_{n'+}{}^{np}$	*Movement of $[_{N'}\ [_{N'}\ N]\ RC]$ to a position left-adjoined to NP.*
$A'_{n'+}{}^{np}$	*Movement of $[_{N'}\ RC\ [_{N'}\ N]]$ to a position right-adjoined to NP.*

The results up to now are summarized in table 4. A tick (✓) means that no additional assumptions are required. Two question marks indicate that I can't even think of a possible derivation. The first column contains the surface order to be derived (not to be confused with the underlying orders in table 3).

Table 4. *Additional movements/assumptions required for word order in postnominal relative constructions in VO languages.*

RC ↓ / analysis → / basis →		*old standard*				*revised standard*		*revised raising*		*promotion*		*antisymm. prom.*
		1	8	17	22	2	3	4	12	6	15	7
post	D N RC	✓	A_{rc}^{np} *	$H'_n{}^{d}$ HS $A'_{rc}{}^{np}$	$H'_n{}^{d}$ HS $A'_{rc}{}^{np}$	✓	✓	✓	rM_{rc}^{dp} **	✓	$H'_n{}^{d}$ ***	✓
	N D RC	H_n^d HS	H_n^d HS	$A'_{rc}{}^{np}$	$A'_{rc}{}^{np}$	H_n^d	H_n^d	H_n^d	H_n^d	H_n^d	H_n^d	H_n^d
	N RC D	$A_{n'+}^{np}$	??	??	✓	M_{np+}^{dp}	A_{np+}^{dp}	M_{np+}^{dp}	A_{np+}^{dp}	M_{cp+}^{dp}	A_{np}^{cp} A_{cp+}^{dp}	M_{cp+}^{dp}

* Movement of a left-adjoined RC to a right-adjoined position seems strange. An alternative is $H'_n{}^{d}$ + HS.
** Or $H'_n{}^{d}$.
*** Or $rM'_{ip}{}^{dp}$.

VO languages do not only display postnominal relatives. Appendix II, table 21, shows that the VO languages Dagbani, Mooré, ancient Greek, and American Sign Language have **circumnominal** relatives. Of these Mooré and Dagbani (cf. Appendix II, table 18) have an overt determiner, namely to the right of the relative clause. Hence 'circumN D' (i.e. $[_{RC}$ … N …] D) must be derivable.

Furthermore, there are some examples of VO languages that have **prenominal** relatives: e.g. (Mandarin) Chinese or Finnish; cf. Appendix II, table 23. Regularly, these languages do not use a definite determiner, but still there are examples in Chinese with a D-initial or D-middle determiner (e.g. demonstrative). Thus D RC N and RC D N must be derivable. See table 5 below. For completeness the order RC N D is also included (shaded grey), although it is not in my sample. The necessary movements have already been defined, except the following ones:

$M_{rc}{}^{np}$	*Movement of a RC to a left-hand SpecNP.*
$M_{rc}{}^{dp}$	*Movement of a RC to a left-hand SpecDP.*
$rM_{ip}{}^{dp}$	*IP remnant movement to a left-hand SpecDP.*
$rM_{cp}{}^{dp}$	*CP remnant movement to a left-hand SpecDP.*
$rA_{cp}{}^{np}$	*CP remnant movement to a position left-adjoined to NP.*

Finally, notice that **correlatives** are not relevant for the discussion here, since i) the head is relative-internal in the correlative construction, and ii) there is no outer determiner which forms a constituent with the relative – instead, there is a correlate pronoun/demonstrative in a separate position in the matrix.

Table 5. *Additional movements/assumptions required for word order in circumnominal and prenominal relative constructions in VO languages.*

RC ↓ analysis → / basis →		*old standard*				*revised standard*		*revised raising*		*promotion*		*antisymm. promotion*
		1	8	17	22	2	3	4	12	6	15	7
	D RC N	??	✓	$A'_{n'+}{}^{np}$	??	$M_{rc}{}^{np}$	$A_{rc}{}^{np}$	$rA_{rc}{}^{np}$	✓	$rA_{ip}{}^{cp}$	✓	??
pre	RC D N	$A_{rc}{}^{np}$	$A_{rc}{}^{np}$	$H'_n{}^{d}$ HS	$H'_n{}^{d}$ HS	$M_{rc}{}^{dp}$	$A_{rc}{}^{dp}$	$rM_{rc}{}^{dp}$	$rA_{rc}{}^{dp}$	$rM_{ip}{}^{dp}$	$rA_{ip}{}^{dp}$	$rM_{ip}{}^{dp}$
	RC N D	$H_n{}^{d}$ HS $A_{rc}{}^{np}$	$H_n{}^{d}$ HS $A_{rc}{}^{np}$ **	✓	$A_{rc}{}^{np}$	$H_n{}^{d}$ $M_{rc}{}^{dp}$	$H_n{}^{d}$ $A_{rc}{}^{dp}$	$H_n{}^{d}$ $rM_{rc}{}^{dp}$	$A_{np+}{}^{dp}$	$H_n{}^{d}$ $rM_{cp/ip}{}^{dp}$	$A_{cp+}{}^{dp}$	$H_n{}^{d}$ $rM_{cp/ip}{}^{dp}$
circumN D		$A_{rc}{}^{np}$ *	$A_{rc}{}^{np}$ *	✓ *	✓ *	$M_{rc}{}^{dp}$ *	$A_{rc}{}^{dp}$ *	$M_{np/rc+}{}^{dp}$	$A_{np/rc+}{}^{dp}$	$M_{cp+}{}^{dp}$	$A_{cp+}{}^{dp}$	$M_{cp+}{}^{dp}$

* Assuming that the external N is empty and that the RC contains a lexical head noun. Movement of larger constituents is also conceivable.

** Or $A_{n'+}{}^{np}$.

This concludes the set of possible derivations of relative clauses in VO languages. They are combined with those for OV languages and evaluated in section 3.2.4 below.

3.2.3. The derivation of relative constructions in OV languages

Next consider **prenominal** relatives in OV languages (the regular case). The ones that have a regularly overt definite determiner display all permutations (like postnominal relatives): D RC N (e.g. in Tigré), RC D N (e.g. in Korean or Abkhaz) and RC N D (e.g. in Ijo or Basque); cf. Appendix II, table 17. The third variant (RC N D) is the least problematic in many theories. It is the mirror order of postnominal D N RC, which is the predominant variant. See table 6.

Furthermore, several OV languages have **circumnominal** relatives, cf. Appendix II, table 3. If the determiner is overt, it follows the relative clause – for instance in Lakota or Dogon; cf. Appendix II, table 18. The results of the 'calculations' are also in table 6.

Several OV languages use **postnominal** relatives (see Appendix II, table 24). Some of these do not regularly use a determiner. Nevertheless, the D N RC order exists, e.g. in Yaqui or Hindi (and also Dutch and German if they are OV in the relevant sense); cf. Appendix II, table 16. Lakota (and perhaps Lushai) displays the N RC D order; and even N D RC seems possible, e.g. in Oromo or Urhobo (and perhaps Farsi). So again all permutations must be derivable, even though some may be rare. See table 7.

Notice that the theories 1, 6, 7, 8, 17 and 22 do not distinguish between OV and VO languages. Therefore the results for these are simply copied from tables 4 and 5. For that reason they are shaded grey.

Table 6. *Additional movements/assumptions required for word order in prenominal and circumnominal relative constructions in OV languages…*

analysis → / RC ↓ basis →		*old standard*	*revised standard*					*revised raising*				
		1, 8, 17, 22	9	10	11	18	19	5	13	14	20	23
p r e	D RC N	see table 5	✓	✓	✓	$A'_{np+}{}^{dp}$	$M'_{np+}{}^{dp}$	$rA_{rc}{}^{np}$	✓	✓	$M'_{np+}{}^{dp}$	$rA_{rc}{}^{np}$ $A'_{np+}{}^{dp}$
	RC D N		$M_{rc}{}^{dp}$	$A_{rc}{}^{dp}$	$M_{rc}{}^{dp}$	$H'_{n}{}^{d}$	$H'_{n}{}^{d}$	$rM_{rc}{}^{dp}$	$rA_{rc}{}^{dp}$	$rM_{rc}{}^{dp}$	$H'_{n}{}^{d}$	$H'_{n}{}^{d}$
	RC N D		$M_{np+}{}^{dp}$	$A_{np+}{}^{dp}$	$M_{np+}{}^{dp}$	✓	✓	$H_{n}{}^{d}$ $rM_{rc}{}^{dp}$	$A_{np+}{}^{dp}$	$M_{np+}{}^{dp}$	✓	$rM_{rc}{}^{dp}$
circumN D			$M_{rc}{}^{dp}$ *	$A_{rc}{}^{dp}$ *	$M_{rc}{}^{dp}$ *	✓ *	✓ *	$M_{np/rc+}{}^{dp}$	$A_{np/rc+}{}^{dp}$	$M_{np/rc+}{}^{dp}$	✓	✓

… continued.

analysis → / RC ↓ basis →		*promotion*				*antisymmetric promotion*
		6	16	21	24	7
p r e	D RC N	$rA_{ip}{}^{cp}$	✓	$M'_{cp+}{}^{dp}$	$rA_{ip}{}^{cp}$ $A'_{cp+}{}^{dp}$	??
	RC D N	$rM_{ip}{}^{dp}$	$rA_{ip}{}^{dp}$	$H'_{n}{}^{d}$	$H'_{n}{}^{d}$	$rM_{ip}{}^{dp}$
	RC N D	$H_{n}{}^{d}$ $rM_{cp/ip}{}^{dp}$	$A_{cp+}{}^{dp}$	✓	$H_{n}{}^{d}$ **	$H_{n}{}^{d}$ $rM_{cp/ip}{}^{dp}$
circumN D		$M_{cp+}{}^{dp}$	$A_{cp+}{}^{dp}$	✓	✓	$M_{cp+}{}^{dp}$

* Assuming that the external N is empty and that the RC contains a lexical head noun.
** Or $rM_{ip}{}^{dp}$.

Table 7. *Additional movements/assumptions required for word order in postnominal relative constructions in OV languages…*

RC ↓ / analysis → / basis →		*old standard*	*revised standard*					*revised raising*				
		1, 8, 17, 22	9	10	11	18	19	5	13	14	20	23
post	D N RC	see table 4	$H'_n{}^{d}$	$H'_n{}^{d}$ *	$H'_n{}^{d}$ **	$H'_n{}^{d}$ $A'_{rc}{}^{dp}$	$H'_n{}^{d}$ $M'_{rc}{}^{dp}$	✓	$rM_{rc}{}^{dp}$ ***	$H'_n{}^{d}$	$H'_n{}^{d}$ $rM'_{rc}{}^{dp}$	$A'_{np+}{}^{dp}$
	N D RC		$H_n{}^{d}$	$H_n{}^{d}$	$H_n{}^{d}$	$A'_{rc}{}^{dp}$	$M'_{rc}{}^{dp}$	$H_n{}^{d}$	$H_n{}^{d}$	$H_n{}^{d}$	$rM'_{rc}{}^{dp}$	$rA'_{rc}{}^{dp}$
	N RC D		$A'_{rc}{}^{np}$ $M_{np+}{}^{dp}$	$M'_{rc}{}^{np}$ $A_{np+}{}^{dp}$	$M'_{rc}{}^{np}$ $M_{np+}{}^{dp}$	$A'_{rc}{}^{np}$	$M'_{rc}{}^{np}$	$M_{np+}{}^{dp}$	$rA'_{rc}{}^{np}$ $A_{np+}{}^{dp}$	$rA'_{rc}{}^{np}$ $M_{np+}{}^{dp}$	$rA'_{rc}{}^{np}$	✓

…continued.

RC ↓ / analysis → / basis →		*promotion*				*antisymmetric promotion*
		6	16	21	24	7
post	D N RC	✓	$H'_n{}^{d}$ ****	$H'_n{}^{d}$ $rM'_{cp/ip}{}^{dp}$	$A'_{cp+}{}^{dp}$	✓
	N D RC	$H_n{}^{d}$	$H_n{}^{d}$	$rM'_{ip}{}^{dp}$	$rA'_{ip}{}^{dp}$	$H_n{}^{d}$
	N RC D	$M_{cp+}{}^{dp}$	$A_{np}{}^{cp}$ $A_{cp+}{}^{dp}$	$A_{np}{}^{cp}$	✓	$M_{cp+}{}^{dp}$

* Or $M_{rc}{}^{np}$ or $M_{rc}{}^{dp}$. ** Or $M_{rc}{}^{np}$.
*** Or $H'_n{}^{d}$. **** Or $rM'_{ip}{}^{dp}$.

This concludes the set of possible derivations of relative clauses in OV languages. They are combined with those for VO languages above and evaluated in the next subsection.

3.2.4. Summary and conclusion

Many movements discussed before, although different in the details, establish the same effect. These can be summarized as follows:

N → D:	$H_n^{\ d}$	$M_{np}^{\ dp}$				
RC → DP:	$M_{rc}^{\ dp}$	$rM_{cp}^{\ dp}$	$rM_{ip}^{\ dp}$	$A_{rc}^{\ dp}$	$rA_{cp}^{\ dp}$	$rA_{ip}^{\ dp}$
RC → NP:	$A_{rc}^{\ np}$	$rA_{cp}^{\ np}$				
N+RC → DP:	$M_{cp+}^{\ dp}$	$M_{np+}^{\ dp}$	$A_{cp+}^{\ dp}$	$A_{np+}^{\ dp}$		
N+RC → NP:	$A_{n'+}^{\ np}$					

In order to be able to compare the 24 sets of derivations, all results concerning word order are joined in table 8.

Each column is given an evaluation score. I will simply assume that every movement counts as one minus point. Adjunction (of non-heads) is two minus points, since in general movement to an adjoined position is quite arbitrary, and very hard to motivate. An underivable structure (indicated by two question marks) is five minus points. This method – although not very sophisticated, because not all movements are equally bad – suffices to draw some conclusions.

Table 8. *Additional movements/assumptions required for word order in relative constructions…*

	analysis → / RC ↓ / basis →	*old standard*				*revised standard*						
		1	8	17	22	2	3	9	10	11	18	19
post	D N RC	✓	A_{rc}^{np}	H'^{d}_{n} HS A'^{np}_{rc}	H'^{d}_{n} HS A'^{np}_{rc}	✓	✓	H'^{d}_{n}	H'^{d}_{n}	H'^{d}_{n}	H'^{d}_{n} A'^{dp}_{rc}	H'^{d}_{n} M'^{dp}_{rc}
	N D RC	H_{n}^{d} HS	H_{n}^{d} HS	A'^{np}_{rc}	A'^{np}_{rc}	H_{n}^{d}	H_{n}^{d}	H_{n}^{d}	H_{n}^{d}	H_{n}^{d}	A'^{dp}_{rc}	M'^{dp}_{rc}
	N RC D	$A_{n'+}^{np}$	??	??	✓	M_{np+}^{dp}	A_{np+}^{dp}	A'^{np}_{rc} M_{np+}^{dp}	M'^{np}_{rc} A_{np+}^{dp}	M'^{np}_{rc} M_{np+}^{dp}	A'^{np}_{rc}	M'^{np}_{rc}
pre	D RC N	??	✓	$A'^{np}_{n'+}$	??	M_{rc}^{np}	A_{rc}^{np}	✓	✓	✓	A'^{dp}_{np+}	M'^{dp}_{np+}
	RC D N	A_{rc}^{np}	A_{rc}^{np}	H'^{d}_{n} HS	H'^{d}_{n} HS	M_{rc}^{dp}	A_{rc}^{dp}	M_{rc}^{dp}	A_{rc}^{dp}	M_{rc}^{dp}	H'^{d}_{n}	H'^{d}_{n}
	RC N D	H_{n}^{d} HS A_{rc}^{np}	H_{n}^{d} HS A_{rc}^{np}	✓	A_{rc}^{np}	H_{n}^{d} M_{rc}^{dp}	H_{n}^{d} A_{rc}^{dp}	M_{np+}^{dp}	A_{np+}^{dp}	M_{np+}^{dp}	✓	✓
circumN D		A_{rc}^{np}	A_{rc}^{np}	✓	✓	M_{rc}^{dp}	A_{rc}^{dp}	M_{rc}^{dp}	A_{rc}^{dp}	M_{rc}^{dp}	✓	✓
score		**-17**	**-17**	**-15**	**-15**	**-7**	**-12**	**-8**	**-11**	**-7**	**-10**	**-6**

...continued...

RC ↓ / analysis → / basis →		*revised raising*						
		4	5	12	13	14	20	23
post	D N RC	✓	✓	rM_{rc}^{dp}	rM_{rc}^{dp}	H'_{n}^{d}	H'_{n}^{d} rM'_{rc}^{dp}	A'_{np+}^{dp}
	N D RC	H_{n}^{d}	H_{n}^{d}	H_{n}^{d}	H_{n}^{d}	H_{n}^{d}	rM'_{rc}^{dp}	rA'_{rc}^{dp}
	N RC D	M_{np+}^{dp}	M_{np+}^{dp}	A_{np+}^{dp}	rA'_{rc}^{np} A_{np+}^{dp}	rA'_{rc}^{np} M_{np+}^{dp}	rA'_{rc}^{np}	✓
pre	D RC N	rA_{rc}^{np}	rA_{rc}^{np}	✓	✓	✓	M'_{np+}^{dp}	rA_{rc}^{np} A'_{np+}^{dp}
	RC D N	rM_{rc}^{dp}	rM_{rc}^{dp}	rA_{rc}^{dp}	rA_{rc}^{dp}	rM_{rc}^{dp}	H'_{n}^{d}	H'_{n}^{d}
	RC N D	H_{n}^{d} rM_{rc}^{dp}	H_{n}^{d} rM_{rc}^{dp}	A_{np+}^{dp}	A_{np+}^{dp}	M_{np+}^{dp}	✓	rM_{rc}^{dp}
circumN D		$M_{np/rc+}^{dp}$	$M_{np/rc+}^{dp}$	$A_{np/rc+}^{dp}$	$A_{np/rc+}^{dp}$	$M_{np/rc+}^{dp}$	✓	✓
score		**-8**	**-8**	**-10**	**-12**	**-8**	**-7**	**-10**

...continued.

RC ↓ / analysis → basis →		*promotion* 6	15	16	21	24	*antisymmetric promotion* 7
post	D N RC	✓	$H'_n{}^{d}$	$H'_n{}^{d}$	$H'_n{}^{d}$ $rM'_{cp/ip}{}^{dp}$	$A'_{cp+}{}^{dp}$	✓
	N D RC	$H_n{}^{d}$	$H_n{}^{d}$	$H_n{}^{d}$	$rM'_{ip}{}^{dp}$	$rA'_{ip}{}^{dp}$	$H_n{}^{d}$
	N RC D	$M_{cp+}{}^{dp}$	$A_{np}{}^{cp}$ $A_{cp+}{}^{dp}$	$A_{np}{}^{cp}$ $A_{cp+}{}^{dp}$	$A_{np}{}^{cp}$	✓	$M_{cp+}{}^{dp}$
pre	D RC N	$rA_{ip}{}^{cp}$	✓	✓	$M'_{cp+}{}^{dp}$	$rA_{ip}{}^{cp}$ $A'_{cp+}{}^{dp}$	??
	RC D N	$rM_{ip}{}^{dp}$	$rA_{ip}{}^{dp}$	$rA_{ip}{}^{dp}$	$H'_n{}^{d}$	$H'_n{}^{d}$	$rM_{ip}{}^{dp}$
	RC N D	$H_n{}^{d}$ $rM_{cp/ip}{}^{dp}$	$A_{cp+}{}^{dp}$	$A_{cp+}{}^{dp}$	✓	$H_n{}^{d}$	$H_n{}^{d}$ $rM_{cp/ip}{}^{dp}$
circumN D		$M_{cp+}{}^{dp}$	$A_{cp+}{}^{dp}$	$A_{cp+}{}^{dp}$	✓	✓	$M_{cp+}{}^{dp}$
score		**-8**	**-12**	**-12**	**-7**	**-10**	**-11**

At this point it is possible to compile the final evaluation table, which shows how each of the 25 theories under consideration performs. These are the five main theories on relativization, each specified for several possible phrase structures. The score for the derivation of all types of relatives in both VO and OV languages, based on the relevant 'underlying structures' out of 24 possibilities, is averaged.

Table 9. *An evaluation of theories on relative constructions on the basis of word order derivations in different syntactic main types.*

theory		**VO**		**OV**		**mean**
		base	score	base	score	
I old standard	uniform branching	1/8	- 17	17/22	- 15	- 16
	spec left	1/8	- 17	1/8	- 17	- 17
	rigid left	1/8	- 17	1/8	- 17	- 17
	spec right	17/22	- 15	17/22	- 15	- 15
	func left	1/8	- 17	17/22	- 15	- 16
	func left-local un. br.	1/8	- 17	17/22	- 15	- 16
II revised standard	uniform branching	2	- 7	19	- 6	- 6 ½
	spec left	2	- 7	18	- 10	- 8 ½
	rigid left	2	- 7	9	- 8	- 7 ½
	spec right	3	- 12	19	- 6	- 9
	func left	2	- 7	10	- 11	- 9
	func left-local un. br.	2	- 7	11	- 7	- 7
III revised raising	uniform branching	4	- 8	20	- 7	- 7 ½
	spec left	4	- 8	23	- 10	- 9
	rigid left	4	- 8	5	- 8	- 8
	spec right	12	- 10	20	- 7	- 8 ½
	func left	4	- 8	13	- 12	- 10
	func left-local un. br.	4	- 8	14	- 8	- 8
IV promotion	uniform branching	6	- 8	21	- 7	- 7 ½
	spec left	6	- 8	24	- 10	- 9
	rigid left	6	- 8	6	- 8	- 8
	spec right	15	- 12	21	- 7	- 9 ½
	func left	6	- 8	16	- 12	- 10
	func left-local un. br.	6	- 8	6	- 8	- 8
V antisymmetric promotion	antisymmetry	7	- 11	7	- 11	- 11

The first thing to notice from table 9 is that the old standard theory in whatever variant is not good. (This justifies in another way the decision to formulate a revised standard theory.) Thus I must reject the old standard theory. Therefore it is shaded grey in table 9, and it is not referred to in the discussion directly below. (For completeness, it will be a contestant in the next section just decoratively.)

Second, consider the scores for some different theories on phrase structure. Relatively bad options are *spec right* in VO languages (-12, -10, -12) for the revised standard, the revised raising and the promotion theory, respectively; and, to a lesser extent, *spec left* in OV languages (-10, -10, -10). This suggests that there is no

independent parameter for the specifier position. The specifier must either be fixed on the left, or it is dependent on the OV parameter. The latter leads to *uniform branching*. Clearly, from a parsing perspective *uniform branching* is also preferred over a parametrical specifier. *Spec left* shows good scores in VO languages, as does *spec right* in OV languages. This is because the underlying structures coincide with the *uniform branching* option. Where they diverge from it, *spec left* (in OV languages) and *spec right* (in VO languages) score relatively bad, as mentioned. In short, I conclude that on the basis of possible derivations of relative constructions we must reject an independent parametrical specifier position, i.e. *spec left* and *spec right*.

Third, *func left* in OV languages leads to bad scores (-11, -12, -12), too. Again there are poor parsing conditions. Moreover, in the base structure, D RC N, the noun and the determiner are split by the relative clause, whilst there is no designated position left of D that can serve as a landing position for the head noun phrase or the relative. Hence *func left* must be dismissed.

Fourth, notice that the only reason why *antisymmetric promotion* scores badly (namely -11) is that prenominal D RC N structures cannot be derived with the means provided (see e.g. table 8). This might be fatal to the theory. However, there could be a way out. If there were an intermediate projection XP between DP and NP, there could be remnant CP or IP (hence RC) movement to SpecXP. If so, the score would be lifted to -7 (one of the best). This move may seem unmotivated, but I allowed for strange adjunctions, etc. in the other theories, so the tables may be flawed in favour of these. I leave this matter unsettled here, and will return to it in Chapter 4.

Fifth, consider *uniform branching*, *rigid left* and *fl-lub* in the main theories II, III and IV. The mean scores are (-6½, -7½, -7½), (-7½, -8, -8) and (-7, -8, -8), respectively. Hence there is virtually no difference, neither between the main theories (II, III, IV), nor between the subtheories *uniform branching*, *rigid left* and *fl-lub*. Each theory has its particular difficulties with the derivation of certain word orders, but on average there is almost no difference, hence there is no ground to prefer one theory over another on the basis of the derivations of different relative clause constructions as discussed.

I conclude that on the basis of word order derivations several theories can be excluded. These are: i) the *old standard theory* of relativization (in combination with whatever phrase structure theory), ii) the phrase structure theory *func left* (independently of the relativization theory), and iii) the phrase structure theories that assume a parametrical specifier position: *spec left* and *spec right* (independently of the relativization theory). Conceivable, however, is any combination of main theory II (the *revised standard*), III (*raising*) or IV (*promotion*) with X' subtheory *uniform branching*, *rigid left* or *fl-lub*. Moreover, theory V (*antisymmetric promotion*) might be maintained. Below these options are substantially reduced further. In the next section I will argue that *promotion* is preferred over II and III; Chapter 4 shows that *uniform branching* is untenable in a more detailed analysis.

3.3. Evaluation: the relation between the antecedent and the gap

This section continues the evaluation of relativization theories on the basis of criteria other than word order differences; most of these concern the relation between the antecedent and the gap in some way. The findings are collected in table 10 below. The topics of apposition, extraposition and possession are left out of the discussion here, since these require a much more general treatment; see chapters 6 through 8.

First consider correlatives, which are bare CPs. The first potential problem is a **selectional** problem. The relative is neither selected by an external determiner (since that is an independent correlate in the matrix) nor by the head noun (which is relative-internal). The question is therefore: what forces the relative clause to be present (by selection)? I will list it as potential problem A.

A. *A correlative is not directly selected by the external determiner or the head.*

In fact, all theories suffer from A.

Correlatives are **internally headed**, as are circumnominal relatives, by definition. This deviates from the situation in postnominal or prenominal relatives in a crucial way. Thus this difference may be considered as potential problem B.

B. The head of a circumnominal relative or correlative is internal.

In non-raising analyses (which are in fact designed on the basis of postnominal relatives) B is unexplained, if not downright mysterious.

Another relevant criterion is the set of **binding facts** discussed in section 2.3.4 above. Recall (37) for instance, which combines two patterns in one sentence. The bust is either a bust that represents the king or a 'self-bust' of the artist.

(37) De kunstenaar$_i$ vervaardigde de buste van zichzelf$_{i/k}$ die de koning$_k$ had besteld.
the artist made the bust of SE-SELF which the king had ordered

In the first reading there is no 'reconstruction' of the antecedent into the relative clause, in the second there is. Hence Ca/b is a potential problem:

Ca. *In some cases an argument internal to the relative clause can bind a reflexive embedded in the antecedent.*
Cb. *In some cases this is not the case, or even impossible.*

The analyses that involve raising straightforwardly derive Ca, but still need to explain Cb. The standard analyses must have some additional mechanism to cope with Ca, and once they do, they also suffer from Cb.

The same type of reasoning is valid with respect to **idioms** (in the broad sense of the word). Recall (38) from section 2.3.3.

(38) a. The headway we made, was great.
b. * The bucket he kicked, was horrible.

In the first example there must be reconstruction of the head into the relative, in the second this seems to be impossible. This is potential problem Da/b:

Da. *Some idioms (i.e. collocations) can be split across a relative construction.*
Db. *Some (i.e. 'semantic idioms') cannot.*

Again, the analyses that involve raising straightforwardly derive Da, but still need to explain Db (but see footnote 16). The standard analyses must have some additional mechanism to cope with Da, and once they do, they also suffer from Db.

Next, consider the **gap** in adnominal restrictive relatives.[28] It may be an operator or a pronoun, but obviously not a full lexical NP (***** *the man that I saw (the) man*).

E. *The gap in adnominal restrictive relatives is at most a pronoun, but not fully lexical.*

This follows automatically from the analyses that involve raising. In the revised standard theory it follows perhaps from the fact that the head N c-commands the gap in combination with Principle C of the binding theory. (In the old standard theory there is no c-command relation, hence another explanation is needed.)

The gap in an adnominal relative construction may be associated with an overt relative pronoun or an empty operator (which is a covert pronoun). It is a bound pronoun, since it must refer to the antecedent. This deviates from the behaviour of demonstrative and interrogative pronouns, which can have a free reference. Hence F is the following property that needs an explanation:

F. *The gap is obligatorily anaphoric to the antecedent.*

Again, this is trivial in the raising analyses, because the head has its origin in the relative. (See also section 2.3.2 above.) On the contrary, the standard analyses need some kind of **co-indexing** mechanism to insure coreference of the gap and the antecedent. Complementation may facilitate such a mechanism; cf. the discussion in section 2.1 concerning the revised standard theory. If, however, the relative is an adjunct, co-indexing may be difficult to explain.

Next, recall that there must be **ϕ-feature agreement** between the antecedent and the gap, but no identity in **Case or θ-role**; cf. e.g. Ch2§2.1.

G. *There is ϕ-feature agreement between the antecedent and the gap.*
H. *There is Case and θ-role independency between the antecedent and the gap.*

Hence the co-indexing mechanism indicated, which will take care of the ϕ-feature agreement, must not transfer a Case feature or a θ-role. Similarly, agreement is

28 Here I use the term *gap* in the pretheoretic sense of 'substitute of the antecedent in the relative clause'. Of course from the perspective of a raising analysis this is a little odd.

obvious in the raising approaches, but these, too, have to explain the role independency – see Chapter 4 for discussion.

As noted in section 2.2, there seems to be a **selectional relation** between the external determiner and the relative clause. This, among other things, has led to the D-complement hypothesis.

I. *D seems to select a relative clause semantically.*

The analyses in which the relative is not the complement of D have to explain I in another way.

Finally, it is useful to examine the explanatory power of relativization theories in the sense that the structure should not contain stipulative elements. In particular, the use of **empty elements** must be kept under control:

J. *Empty elements must have a well-defined function.*

In this respect the revised raising analysis is conspicuous. It suffers from the following potential problem: there is an additional empty noun that does not contribute to the meaning of the construction; cf. the structure in §3.1.3:(35) above. In the other theories there is no such problem.

This concludes the discussion on the potential need of "additional mechanisms" – in Borsley's terms – in the five theories on relativization under consideration (I have included the old standard analysis for completeness). The potential problems are collected and represented as exclamation marks in table 10. I have simply scored each mark as a minus point; between brackets, it is half a minus point.

Table 10. *Potential problems for theories on relative clauses.*

potential problem ↓ / analysis →		*old standard*	*revised standard*	*revised raising*	*promotion*	*antisymm. promotion*
A:	selection of correlative	!	!	!	!	!
B:	internal head (corr/cir)	!	!	✓	✓	✓
Ca:	binding from RC	!	!	✓	✓	✓
b:	*binding from RC	!	!	!	!	!
Da:	split collocations	!	!	✓	✓	✓
b:	*split semantic idioms	!	!	!	!	!
E:	restricted gap lexicalization	!	(!)	✓	✓	✓
F:	co-indexing antecedent/gap	!	(!)	✓	✓	✓
G:	ϕ-feature agreement ant./gap	!	(!)	✓	✓	✓
H:	Case/θ-role independency	!	!	!	!	!
I:	D selects RC	!	!	!	✓	✓
J:	empty elements	✓	✓	!	✓	✓
score		**-11**	**-9½**	**-6**	**-4**	**-4**

Again the old standard theory scores the worst of all, hence it can be definitively put aside. The revised standard analysis is not much better here, hence I reject it as well. Finally, it turns out that the promotion analyses are to be preferred over the revised raising analysis.

3.4. Summary

I have systematically compared the most important competing theories on relative constructions. Five main strategies have been outlined; they are based on combinations of independent properties such as +/-raising, +/-complementation, and +/- antisymmetry. They are: the *old standard theory*, the *revised standard theory*, the *revised raising analysis*, the *promotion theory*, and the *antisymmetric promotion theory*. A comparison is possible on the basis of i) potential derivations of the syntactic main types of relative constructions and their word order variants, and ii) potential explanations concerning a number of relevant properties of relative constructions.

With respect to i) it has been shown that several substrategies on phrase structure must be taken into consideration, apart from *antisymmetry*. These concern the position of specifiers and functional heads: *uniform branching* (where the specifier position is anti-correlated with the position of the complementizer), *spec left* or *spec right* (which implies a parametrical specifier position), *func left* (where functional heads are on the left), *rigid left* (where both specifiers and functional heads are on the left), and *fl-lub* (where functional heads are left, in combination with local uniform branching). I have shown that, independently of the particular theory on relativization, uniform branching, rigid left and fl-lub are much better than func left, spec left and spec right (that is, on the basis of derivations of relative constructions). Thus, either the positions of complements and specifiers are anti-correlated, or the phrase structure in general is rigidly left (or even antisymmetric). Furthermore, it has turned out that the old standard theory of relativization is untenable.

With respect to ii), I have counted the number of potential problems for each theory, or rather the "additional mechanisms" necessary to explain the properties of relative clauses reviewed. These properties mainly concern the relation between the antecedent and the gap in a relative construction. The evaluation has shown that the old and revised standard theory must be rejected. Moreover, the promotion theory is to be preferred over the revised raising analysis.

4. Conclusion

This chapter has focused on the syntax of relative constructions in general. I have sketched the historical development of syntactic ideas about relatives, and undertaken to disentangle the relevant independent assumptions. The D-complement hypothesis and the raising analysis have been discussed in some detail. I have concluded that there is evidence for both assumptions, especially if cross-linguistic data are taken into account. The circumnominal relative construction is crucial in

this respect. I believe that the syntax of the different main types of relatives can be related, depending, of course, on the right choice of a theory on relativization. In order to do so, I have defined five competing theories: the *old standard theory*, the *revised standard theory*, the *revised raising analysis*, the *promotion theory*, and the *antisymmetric promotion theory*. A rather complex comparison between these five different theories, as well as between subtheories concerning phrase structure, has then been performed on the basis of potential derivations of the syntactic main types of relatives and their word order variations, and on several properties concerning the relation between the antecedent and the gap, etc. It has turned out that the analyses that involve raising need less "additional mechanisms" than the standard analyses. To be precise, the promotion theory has received the best score; it may be combined with any of the following assumptions on phrase structure: rigid left, fl-lub, or perhaps antisymmetry. (I have refuted func left, spec left and spec right; uniform branching will be excluded in Chapter 4.) Thus on closer examination the promotion theory turns out to be the best candidate to be worked out in detail; and this will be the subject of the next chapter.

4 The promotion theory of relative constructions

1. Introduction

Taking the conclusions of Chapter 3 as a starting point, this chapter discusses the syntax of (restrictive) relative clause constructions in terms of the promotion theory of relativization in detail. Section 2 is an introduction to the promotion theory, and an outline of earlier work by Kayne (1994) and Bianchi (1999), upon which this chapter is based in part. The core of my proposal concerning postnominal restrictive relatives is outlined in section 3. Sections 4 through 6 explain how it can be extended to the other syntactic main types of relatives: prenominal, circumnominal and correlative. Relative pronouns and particles are discussed separately in the next chapter. Section 7 summarizes and concludes the chapter.

2. The promotion theory: previous scholarship

The promotion theory has its roots in Schachter (1973) and Vergnaud (1974/1985). As discussed in Ch3§3.1.3, the raising analysis as proposed by these authors suffers from serious problems from the perspective of present-day syntax. Subsequently, in Ch3§3.2/3, I have shown that even the revised raising analysis performs less well than the promotion theory, which combines raising with the D-complement hypothesis. Therefore I will take Kayne's (1994) original proposal of the promotion theory as a starting point here.

2.1. Kayne's (1994) analysis and Borsley's (1997) criticism

In Kayne's system a relative construction like *the house (that) I painted* is represented as in (1). The relative CP is selected by the outer determiner *the*, and the antecedent *house* by the subordinate verb *painted*. The selection structure is shown in (1a). The antecedent *house* is moved to SpecCP; see (1b).

(1) a. $[_{DP}\ [_{D'}$ the $[_{CP}$ (that) I painted house]]] →
b. $[_{DP}\ [_{D'}$ the $[_{CP}$ house$_i$ $[_{C'}$ (that) I painted t_i]]]]

If there is a relative pronoun (D_{rel}), e.g. in *the house which I painted*, the situation is a little more complex. The pronoun originally takes the position that normally a determiner does: $[_{D'}\ [_{D}$ *which*$]$ $[_{NP}$ *house*$]]$. It is this complex that raises; see (2b). But the word order is still not the final one: the head *house* needs to precede *which*. Therefore NP moves to SpecDP, as shown in (2c).

(2) a. $[_{DP}\ [_{D'}$ the $[_{CP}$ I painted $[_{DP\text{-}rel}$ which $[_{NP}$ house]]]]] →
b. $[_{DP}\ [_{D'}$ the $[_{CP}\ [_{DP\text{-}rel}$ which $[_{NP}$ house]]$_i$ $[_{C'}$ I painted t_i]]]] →
c. $[_{DP}\ [_{D'}$ the $[_{CP}\ [_{DP\text{-}rel}\ [_{NP}$ house]$_k$ $[_{D'\text{-}rel}$ which t_k]]$_i$ $[_{C'}$ I painted t_i]]]]

One may wonder why the relative pronoun is not simply put in the position of C, as in (3).

(3) $[_{DP}\ [_{D'}$ the $[_{CP}\ [_{NP}$ house]$_i$ $[_{C'}$ which $[_{IP}$ I painted t_i]]]]]

But this is impossible. Several languages show both a relative pronoun and a complementizer (cf. Chapter 5, sections 3.1 and 4.2). For instance, (4a) is translated Middle English, (4b) is an example from a dialect of Dutch (i.e. Aarschot), taken from Dekkers (1999:58).

(4) a. the man who that I saw
b. de stoelen di da kapot zijn
the chairs which that broken are

So the complementizer position is already occupied. Also see Lehmann (1984), Hoekstra (1994), Pittner (1996), Bianchi (1999), Broekhuis & Dekkers (2000), and others for data on this matter.

Could not a relative pronoun have its own projection, then? This idea is sketched in (5), where the antecedent and the relative CP are the specifier and the complement of the relative pronoun head, respectively.

(5) $[_{RelP}$ *antecedent* $[_{Rel'}$ who [*relative CP*]]]

The suggestion in (5) can have many theoretical variants, with or without raising. All are clearly wrong, for several reasons. First, in Lehmann's terms (cf. Ch2§4), one of the functions of a relative pronoun is *Gap Construction* (German: 'Leerstellenbildung'). In many languages this can be detected easily, since a relative pronoun bears subordinate clause Case. This is shown by the German example in (6).

(6)	Ich	sah	den	Herrn	der	einen	Hut	trug.
	I	saw	the.ACC	gentleman.ACC	who.NOM	a	hat	wore

Hence the Case on the pronoun shows that it is part of the relative clause.[1] Therefore (5) cannot be the basic structure of a relative construction. Second, the relative pronoun can be part of a larger pied piped constituent, e.g. *whose mother*, or *in*

[1] However, in a non-raising theory there could be a relative operator inside the relative CP which transmits subordinate clause Case to the relative pronoun (a suggestion by Hans Broekhuis). A very laborious procedure indeed: why would we not rather generate D_{rel} below itself and then move it up, as in the standard theory?

which. Hence the *wh*-phrase cannot be a head. It must be a maximal projection which is moved to the front of the relative clause: SpecCP.

Thus consider again (1b) and (2c), repeated in (7a/b). In Kayne's original proposal there is no DP_{rel} projection in (7a). Raising applies just to NP (or QP if there is an additional quantifier).

(7) a. $[_{DP}\ [_{D'}$ the $[_{CP}\ [_{NP}$ house$]_i\ [_{C'}$ (that) I painted $t_i\ ]]]]$
b. $[_{DP}\ [_{D'}$ the $[_{CP}\ [_{DP\text{-}rel}\ [_{NP}$ house$]_k\ [_{D'\text{-}rel}$ which $t_k\ ]]_i\ [_{C'}$ I painted $t_i\ ]]]]$

It is bothersome that the derivation in (7a) differs from (7b). In De Vries (1996) I have argued that the two sentences have the same structural analysis: (7b). The only difference is that the first sentence has a zero relative pronoun. This is confirmed in a sense by Borsley (1997). He shows that the gap position in the relative clause is a DP position for several reasons. First, the gap is an argument position, and arguments are DPs (cf. Abney 1987, Longobardi 1994 and others). Second, the trace acts as a variable, hence as a DP-trace, with respect to several tests: binding, control, licencing of parasitic gaps, Case marking and weak islands. This is illustrated below, where I use Borsley's (1997:632/3) data.

In (8), the trace of a non-*wh*-relative can be co-indexed with a pronoun, provided that the pronoun does not c-command it. This parallels the data in (9) with DP-traces in *wh*-questions.

(8) a. the man$_i$ that t_i thought he$_i$ saw a UFO
b. the man$_i$ that he$_{*i}$ thought t_i saw a UFO

(9) a. Who$_i$ t_i thought he$_i$ saw a UFO?
b. Who$_i$ did he$_{*i}$ think t_i saw a UFO?

In (10) the trace controls a PRO subject.

(10) a. the man$_i$ that t_i tried PRO$_i$ to fool everybody.
b. Who$_i$ t_i tried PRO$_i$ to fool everybody?

In (11) it licences a parasitic gap.

(11) a. the book$_i$ that Bill criticized t_i without reading e_i
b. Which book$_i$ did Bill criticize t_i without reading e_i ?

The trace (or chain of traces) must occupy a Case-marked position, hence expletive constructions like (12) are excluded. Again, this is similar to the situation in *wh*-questions as in (13).

(12) a. the man$_i$ that (*it) was arrested t_i
b. the man$_i$ that (*it) seemed t_i to know the answer

(13) a. Which man$_i$ was (*it) arrested t_i ?
b. Which man$_i$ {seemed}/*{did it seem} t_i to know the answer?

Finally, some languages allow extraction of referential phrases from weak islands. Extraction is also possible in non-*wh*-relatives; see (14).

(14) a. the book$_i$ that we wondered how to afford t_i *[infinitival wh-compl]*
b. the book$_i$ that we regretted that John read t_i *[factive complement]*

If it is assumed that referential phrases are DPs, the gap in a relative clause is probably also a DP.

Thus I conclude with Borsley that the gap in a relative clause must be a DP, whether there is an overt relative pronoun or not. This is confirmed by Bianchi (2000a).

Apart from the issue concerning the categorial status of the gap, questions like the following must be answered:

- What forces the movements indicated in (7b)?
- How can the Case patterns in relative constructions be explained?
- Why can a determiner head be empty in a relative DP in a *that*-relative, but not elsewhere?

Kayne (1994) hardly addresses these matters. Borsley (1997) assumes that the promotion theory needs many additional ad hoc mechanisms to get things right, and therefore he rejects it altogether. However, his critique was anticipated upon and partly countered in Bianchi (1995) and De Vries (1996). Moreover, in Ch3§3 of this book I have shown that the standard theory actually needs more additional mechanisms. The second part of Borsley's critique concerns apposition and extraposition. These subjects are treated separately in Chapters 6 and 7, respectively, where I show them to be *independent* of the specific theory of relativization chosen.

2.2. Bianchi (1999/2000a)

At this point, consider Bianchi's (1999/2000a) revision of Kayne (1994). She also distinguishes *that*-relatives from *wh*-relatives, but in another way. The relevant structures are given in (15), cf. Bianchi (2000a:125/130).

(15) a. $[_{DP}\ D_{rel}$+the $[_{CP}\ [_{DP}\ t_{D\text{-}rel}$ picture$]_i\ [_{C'}$ that Bill liked $t_i\ ]]]$
b. $[_{DP}$ the $[_{CP}\ [_{NP}$ picture$]\ [_{C'}$ C $[_{XP}\ [_{DP}$ which $t_{np}]_i\ [_{X'}$ X $[_{IP}$ Bill liked $t_i\ ]]]]]]$

Bianchi argues the following:

(i) The antecedent is raised to SpecCP, because the outer D has a strong selectional feature that can only be checked by a [+N] category in its minimal domain.
(ii) The empty D_{rel} in *that*-relatives is licenced by incorporation into the external D.

(iii) *Wh*-relatives have a split CP à la Rizzi (1997). DP_{rel} is only raised to SpecXP; NP moves on to SpecCP (instead of $SpecDP_{rel}$, as Kayne assumed).

Although Bianchi's analysis has its advantages, I will not follow her exactly on these points.

In my view, selection cannot be feature checking as Bianchi presents it. In fact, Bianchi seems to introduce a third type of feature (a 'subcategorization feature'?), which combines traditional selectional features of the lexicon with formal syntactic features that drive movement. But there are also practical problems with respect to (i). In (15b), for instance, D's selectional feature [+N] must checked eventually by the raised noun phrase. At a certain point of the derivation, D and CP are merged, but at that very moment no checking can be performed, since NP is still in SpecXP. Thus NP must be raised to SpecCP first. This could not have happened before the merging of CP with D, since there is no trigger for it within CP. However, overt movement of NP to SpecCP *after* merging CP with D is countercyclic movement. Moreover, it is not clear what has caused the presence of the CP level to begin with. These problems do not occur in my analysis, as will be explained in the next section.

Concerning (ii), the licencing of D_{rel} by incorporating it into the external D is only legitimate if their features are compatible. Their ϕ-features match, so that is all right. Furthermore, Bianchi argues that D_{rel} is underspecified for definiteness, hence it cannot disagree with D's feature specification in this respect. The problem may be the Case feature. Whether it is empty or not, D_{rel} gets Case in the subordinate clause. Since the external D checks its Case in the matrix clause, the two Case features are generally incompatible (unless accidentally). According to Bianchi, D_{rel}'s Case feature is already checked and erased before D_{rel} is raised. Unfortunately this procedure is incompatible with the general view on features presented in Chapter 1 (where I claim that there is no 'erasure' of features).

As for (iii), I consider it particularly unattractive that *wh*-relatives and *that*-relatives get different analyses. For instance, why do *wh*-relatives have a split CP and *that*-relatives not? Moreover, (iii) raises other problems. Sentences like (4) above with both a complementizer and a relative pronoun show that D_{rel} must be in the highest projection. The representation in (15b) leads to wrong word orders, viz. those where C would precede D_{rel}, which is never attested.[2] Second, if NP can move alone, what forces pied piping of DP_{rel} (which is necessary for the raising of D_{rel} later on) in (15a) except a backtracking procedure? Finally (but that may be a matter of execution), we need to know what forces movement of DP_{rel} to SpecXP in (15b), which implies a precise answer to the question what XP actually is.

I will not discuss Bianchi's analysis at length. Clearly, it is far more elaborate than Kayne's original proposal and obviates a substantial part of Borsley's critique. Nevertheless, it is not completely compatible with the general assumptions in this book. In the next section I will present an alternative to her approach, the basis of

[2] There may be one exception, though. Hoekstra (1994) reports the order *of die* 'if who' in the Amsterdam dialect of Dutch. However, notice that *of* is the wrong complementizer in this context. It is normally used in questions; in relative clauses we expect *dat* 'that'. This makes these data suspect.

which was laid in De Vries (1996). Subsequently, I will apply it to a large range of relative constructions in sections 4 through 6.

3. Postnominal relatives

This section treats of the basic syntax of postnominal relative constructions, the most common type of relativization. The derivation is presented in terms of *feature checking*. The rationale behind it is based on *wh*, Case and agreement facts. In order to be clear about the necessary assumptions, I have split up the analysis in small parts. First, section 3.1 deals with *wh*-movement; 3.2 explains the relevance of Case and agreement; 3.3 discusses the relation between D and N; 3.4 shows a detailed derivation of a canonical postnominal restrictive relative; 3.5 is on *that*-relatives; 3.6. discusses word order variation; 3.7 concludes the argument.

3.1. Wh-movement

Many relative pronouns are morphologically identical to interrogative pronouns (at least in the Indo-European languages; cf. Appendix II, table 8). Examples are *which* and *who* in English. Therefore the assumption that there may be *wh*-movement in relative clauses is plausible. In fact, since Chomsky (1977) it is generally accepted that relative clauses involve *wh*-movement. The diagnostics for it are listed in (16), quoted from Chomsky (1977:86).

(16) *Wh-movement*[3]
- a. It leaves a gap.
- b. Where there is a bridge, there is an apparent violation of Subjacency, the Propositional-Island Condition (PIC), and the Specified Subject Condition (SSC).
- c. It observes the Complex Noun Phrase Constraint (CNPC).
- d. It observes *wh*-island constraints.

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[3] The definitions of the conditions in (16b/c) are stated below. I will not illustrate them separately here; see e.g. Chomsky (1977), Bach (1977), Ross (1967) and Van Riemsdijk & Williams (1986) for discussion.
Subjacency, taken from Chomsky (1977:73): "a cyclic rule [i.e. move NP/*wh*] cannot move a phrase Y to X (or conversely) in the structure … X … [$_\alpha$ … [$_\beta$ … Y …]$_\beta$ …]$_\alpha$ … X… where α, β are cyclic nodes [i.e. S', NP]."
PIC, taken from Bach (1977:145): "given a structure … X … [$_\alpha$ … Y …] … X … where α is a cyclic node (S', NP possibly S, S''), no rule may involve X and Y if α is a propositional island (for English = finite clause)." [Note that this is a parametrized version of the so-called Tensed-S Condition.]
SSC, taken from Van Riemsdijk & Williams (1986:118): "No rule may relate X and Y in the structure … X … [$_\alpha$ … Z … W_1 Y W_2 …]$_\alpha$ … (or … [$_\alpha$ … Z … W_1 Y W_2 …]$_\alpha$ … X …) where Z is the subject of W_1 Y W_2."
CNPC, taken from Ross (1967:76): "No element contained in an S dominated by a noun phrase with a lexical head noun may be moved out of that noun phrase by a transformation."

What is particularly interesting is that *that*-relatives satisfy the criteria as well, although there is no overt *wh*-word. Below, all elements of (16a-d) will be illustrated, for both types: *wh*-relatives and *that*-relatives. The examples are mine. Whenever OP is used, this designates a moved *wh*-operator: the empty counterpart of a relative pronoun.[4]

Property (16a) is rather obvious:

(17) a. the meal which$_i$ you ate t_i /*beans
b. the meal OP$_i$ (that) you ate t_i /*beans

Since *which* is the moved object of *ate*, there cannot be another object.

Diagnostic (16b) means that if the movement seems unbounded (i.e. crossing sentence boundaries in one swoop) it involves successive cyclic movement via the COMP position (SpecCP). This possibility is illustrated in (18).

(18) a. the meal which$_i$ you predicted t_i'' that Luke believed t_i' that Nana ate t_i
b. the meal OP$_i$ (that) you predicted t_i'' that Luke believed t_i' that Nana ate t_i

Constructions like (18) are marked or even impossible in some languages. In fact, they are often marked in English as well. What is important, though, is that the acceptability judgements exactly parallel those for parallel *wh*-question sentences, e.g. *Which meal did you predict that Luke believed that Nana ate?*

The effect of the Complex NP Constraint is shown in (19).

(19) a. * the meal which$_i$ I heard the story that Luke ate t_i
b. * the meal OP$_i$ (that) I heard the story that Luke ate t_i

Finally, a *wh*-island construction is given in (20).

(20) a. * the meal which$_i$ I wondered who ate t_i
b. * the meal OP$_i$ (that) I wondered who ate t_i

Here *who* is in SpecCP, hence it occupies the necessary bridge for movement of *which*/*OP*, thus causing a Subjacency violation.

Clearly, both types of relative clauses (*that*-relatives and *wh*-relatives) meet the criteria for *wh*-movement.[5] In the present framework of syntax, *wh*-movement may be seen as movement of a constituent that bears a *wh*-feature to SpecCP, where the feature is checked. Given that there are empty operators that perform *wh*-movement, a *wh*-feature does not need morphological support: it has a more abstract nature.

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[4] According to Safir (1986:678), parasitic gaps offer additional proof for the existence of an operator in the COMP position in non-*wh*-relatives; see (i).
(i) every man [*wh*$_i$ [John saw e_i] [without meeting pg_i]]
Notice that Borsley (1997) uses the same argument to show that the gap is a DP; cf. (11) above.

[5] See further Chomsky (1977) for extensive discussion, or Van Riemsdijk & Williams (1986:93-101) for an overview.

Cross-linguistically, many relative pronouns have a *w(h)*-format, e.g. *which*/*who* in English or *wat*/*(de)welke* in Dutch. Many relative pronouns morphologically equal – or are derived from – interrogative pronouns. A second class of relative pronouns resembles demonstrative pronouns, e.g. Dutch *die*, *dat* or German *der*, *die*, *das*. Relative constructions containing one of these pronouns also meet the criteria for *wh*-movement. Therefore, relative pronouns in *d*-format also possess a *wh*-feature. Somewhat superfluously, a further indication for this is, for instance, that Dutch *die* may be interchanged with (old-fashioned) *(de)welke* (with an optional *d* and a visible *w*) and that *dat* may be replaced by (colloquial) *wat*.[6] Also some dialectal forms show a visible *w*, instead of standard Dutch *d*.

In short, we may state the following:[7]

Theorem I
a. Relative pronouns can have various formats: w(h)-, d-, empty or otherwise.
b. All relative pronouns bear a [+wh] feature.

Theorem II
All postnominal relative constructions undergo wh-movement of a relative pronoun.

This concludes the discussion on *wh*-movement for the moment. I will return to it at several points of the discussion in later sections.

3.2. Case and agreement

Consider the Case and agreement facts in relative constructions. A relative pronoun agrees with the head noun, i.e. they bear the same ϕ-features, i.e. number, gender and person. However, there is a possible difference in Case between the two, as is illustrated with the German sentence in (21).

(21)	Ich	fürchte	den	Herrn	der	eine	Pistole	trägt.
	I	fear	the.ACC MASC.3SG	gentleman.ACC MASC.3SG	who.NOM MASC.3SG	a	gun	carries

Borsley (1997) states that this is a principal problem for the promotion theory, but in my view it is only a problem of execution. Kayne (1994) does not really address the issue. I will give a derivational analysis for (21) in terms of *feature checking*.

First, let me clearly state in general what (21) shows for German, where both the agreement and the Case features can be seen overtly.

Theorem III
Relative pronouns – like nouns, determiners, and other sorts of pronouns – bear ϕ-features (person, number, gender) and Case features.

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6 The analysis of *dewelke* is unclear, as yet: does it consist of one or two heads?

7 For the moment, I ignore the complications that relative particles and resumptives raise. These are treated in Chapter 5.

Consequently, relative pronouns that do not show a morphological reflex of these features (such as the English ones, or empty operators), still bear them in an abstract sense. This is of course similar to the common statement that all noun phrases bear abstract Case. Notice that in my terms a noun has its own features (including a Case feature). In Bianchi's work, a noun has Case because it is governed by a determiner.

The next step is to establish the syntactic status of relative pronouns. In this book I follow Abney (1987) and others in that a determiner is the head of a nominal constituent. In other words: a nominal argument is a DP. The head D contains an article or some other determiner, and it selects an NP. I don't think it would be very bold to assume that a relative pronoun is a D head as well. In fact, the standard theory of relative clauses would be perfectly happy to hear that relative pronouns are D heads. I will show that this is exactly the right assumption for the promotion theory, too.[8]

Theorem IV
a. Nominal arguments are DPs, where the determiner D selects NP.
b. A relative pronoun is a determiner.

The next subsection shows how the syntax of Case and agreement can be implemented in a derivational DP framework.

3.3. The relation between N and D

This subsection discusses the syntax of Case and agreement in DPs outside a relative context; §3.4 will continue with relative DPs, and show how Borsley's problem is naturally solved. I will treat Case and agreement together, since they are closely related.

There is a clear interaction between D and N. There is not only a selectional relation. Normally, D and N also bear similar Case and agreement features. Certain determiners, namely articles, cannot even exist without a noun:

(22) a. *The book* is on *the kitchen table*.
b. * *The* is on *the*.

The tight connection between D and N can also be illustrated with a Swedish example. In (23b) the noun has incorporated into the determiner.

(23) a. ett hus [$_{DP}$ ett [$_{NP}$ hus]] 'a house'
b. hus-et [$_{DP}$ hus$_i$-et [$_{NP}$ t$_i$]] 'the house'

[8] In Bianchi's work this assumption is emphasized by the use of the term *relative determiner* to indicate a relative pronoun.

According to Delsing (1988/1993) there is overt N-to-D raising (incorporation of N into D) in Scandinavian.[9] This is indicated in (23). The same kind of incorporation can be seen in other languages, e.g. Bulgarian, Basque or Erzya. Delsing assumes that there is a head raising parameter. If we submit this parameter to the logic of the Minimalist Program, it follows that there is abstract (covert) incorporation of N into D in other languages (e.g. Dutch or English).[10] The difference between the Swedish and the English data may be encoded in the theory as a strong/weak distinction of a feature on D.[11] If the feature is strong, N incorporates into D overtly and checking takes place. This gives (23b) for instance. If the feature is weak, only the formal features of N raise to D, as in English *the house*.

What kind of feature does this involve? This question is not difficult to answer. Determiners bear ϕ-features, as can be seen overtly in many languages, for instance in German (cf. theorem III). If features on functional heads need to be checked – a common assumption – these ϕ-features are exactly what is needed theoretically. The incorporation relation between N and dependent D makes sure that they agree and bear the same Case. If the Case and ϕ-features were not compatible, incorporation would lead to a crash of the derivation. Or, from the opposite perspective: incorporation is only possible if there are no contradictory features. This, too, is a very common assumption, cf. Bianchi (2000a).

At this point, consider the necessary assumptions that are part of the derivational framework used. These are listed in theorem V, which is a summary of Chapter 1, section 3:

Theorem V

a. *Derivations are strictly cyclic.*
b. *Formal features must be checked.*
c. *Checking of a feature (i.e. comparison with a similar feature) can take place*
  (i) *in a spec-head configuration,* or
  (ii) *in a head incorporation structure.*
d. *Features of a head X are visible in all projections of that head: X, X', XP.*[12]
e. *Features are parametrically 'strong' or 'weak'.*
f. *Strong features force overt checking, i.e. with PF-related ('lexical') material.*
g. *Weak features may be checked covertly, i.e. without PF-related material.*
h. *Incorporation does not tolerate contradictory features.*
i. *Excorporation is not possible.*

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9 This analysis is inspired by earlier work by Szabolcsi (1984), Hellan (1986), Abney (1987) and Ritter (1988).

10 For pre-Minimalist ideas along the same lines cf. Longobardi (1994).

11 In Swedish a definite determiner has a strong feature. (23a) shows that an indefinite determiner has a weak feature. If there is an adjective there may be doubling of the determiner. The intricacies of Swedish double definiteness are outside the scope of this discussion; but see Delsing (1993:Ch4).

12 This is prerequisite for theorem Vc, which describes checking between heads, and checking between a head and a specifier. Since a specifier contains a maximal projection according to the X'-theory, features must be visible in projections of a head. This is often described with the pretheoretical notion of *percolation*; see also Ch1§3.2.

j. Covert movement is 'partial head movement' of formal features.[13]
k. Covert movement is more economical than overt movement.

The consequence of Va and Vb is that formal features force movement of a constituent or head that contains the feature needed, if it cannot be obtained by merging from the lexicon (or another partial derivation).

Given this framework, consider the role of ϕ-features in the analysis of a simple DP. A DP like *the house* in English has the surface structure (24), where the ϕ-features of D force incorporation into D of N's formal features (FF), which include equal ϕ-features. This creates a proper checking configuration. N's phonological features (PF) are stranded. Incorporation is indicated by a '+'.[14]

(24) $[_{DP}\ [_{D}\ FF(N)+D]\ [_{NP}\ PF(N)]]$.
the house

Crucially, (24) is the only possible derivation that survives:

If nothing moves, i.e. the structure remains $[_{DP}\ D\ [_{NP}\ N]]$, there is no checking configuration and D's ϕ-features cannot be checked. Therefore the derivation crashes (at the LF-interface).

If N moves overtly, the structure becomes $[_{DP}\ [_{D}\ N+D]\ [_{NP}\ t_{n}]]$. All features can be checked. The derivation does *not* crash, but it is less economical than (24). If D's ϕ-features were strong (as in Swedish *hus-et*), this option would survive.

If NP moves overtly, the structure becomes $[_{DP}\ [_{NP}\ N]\ [_{D'}\ D\ t_{np}\ ]]$. This is a checking configuration. Features can be checked, hence the derivation does *not* crash, but again, it is less economical than (24). Notice that in Swedish, this option competes with the former (that is, without further assumptions).

If there is movement but no checking, the derivation crashes (at the LF-interface), because of Theorem Vb.

Next, consider how the distribution of Case is justified. The consequence of the DP-theory is that it must be DP (the outer shell of a nominal argument) that is responsible for argument-external checking relations. In other words, checking of a Case feature on I, AgrO, AgrS, V or P (depending on the particular construction and theory) is performed by DP.[15]

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13 This is the consequence of the idea that derivations are strictly cyclic (theorem Va). LF-movement would be countercyclic; cf. Ch1§3.2.

14 X+Y can be analysed as $[_{Y}\ X\ [Y]]$, which is 'head adjunction'.

15 One might think that if D checks Case with a functional head in the clause, it is possible that it also checks ϕ-features there. For instance, if DP is a subject, there is agreement with the verb, so number and person could be checked with I (or AgrS). The question is then if checking with N is still necessary. This is certainly so, e.g. because there is also a gender feature. As far as I know, verbs never show gender agreement, so D is forced to enter into a checking relation with N. In the remainder of the text I will not discuss a possible decomposition of ϕ-features and simply state that D needs to check ϕ-features with N.

In a nominal phrase like *the house* there are at least four relevant features: ϕ on N, ϕ on D, Case on N, Case on D. Externally, there is a Case feature on, say, AgrO. The accusative Case on AgrO must be checked, hence DP moves to SpecAgrOP. If D is not accusative, the derivation would crash, so consider the case where DP is accusative. D's ϕ-features must be checked by N. This is described above. If these features do not match, the derivation crashes, hence suppose ϕ(D) equals ϕ(N). Regarding Case, there are in principle two possibilities: N is also accusative, or N has the 'wrong' Case, say nominative.

First suppose that N is accusative. This leads to (24) for English, or (23b) for Swedish. N is attracted by D overtly or covertly because D's ϕ-features must be checked. Since there are no contradictory features, N may incorporate into D. Hence D's Case feature is also checked.[16]

Second, suppose that N is nominative. If so, N cannot be incorporated into D, because there is a contradictory Case feature (cf. theorem Vh). Nevertheless, D's ϕ-features must be checked in order to prevent a crash. Thus a less economical derivation comes into consideration: movement of NP to SpecDP:

(25) $[_{DP}\ [_{NP}\ N_{(NOM,\phi)}]\ [_{D'}\ D_{(ACC,\phi)}\ \ t_{np}]]$

In this spec-head configuration the ϕ-features can be checked. (N's nominative Case is discussed below.) D's accusative feature cannot be checked, but that is no problem, since DP as a whole moves to SpecAgrOP anyway, hence accusative Case can be checked with AgrO there.[17] Thus, whether D's features are weak or strong, (25) is a converging derivation, as far as D is concerned. Still, in normal circumstances (25) will crash, because N's Case feature remains unchecked.[18]

However, the reader will have noticed that (25) is exactly the structure proposed by Kayne for a relative DP, cf. (7) above, where N is the antecedent and D a relative pronoun. The next subsection resumes the discussion on relative clauses and shows why (25) does not crash in a relative context. In short: because of raising, N can be linked to a higher D.[19]

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16 Notice that D's features should not be 'erased' after checking (*contra* Chomsky 1995), because they are still necessary, because, when the derivation proceeds, AgrO must be checked with DP. Therefore, I assume that D's checked features receive a check-mark, as argued also in Ch1§3.2.

17 Recall from Ch1§3.2 that a feature *can* be checked in a spec-head configuration. This implies that not all features *need* to be checked. *Complete* spec-head agreement ("SHAGR") is not a desirable theoretical concept, because it blurs the difference between incorporation (head movement) and spec-head relations (XP-movement). This is not difficult to prove. If spec-head agreement were to involve all features, it would in general not be possible to generate an XP in SpecYP, or to move it there, because the categorial and other features (almost) never match. For instance, if a DP [+N,-V] is generated as the external argument of a verb in SpecVP [-N,+V] the derivation crashes before it even starts, so to speak.

18 Theorem Vb states that formal features must be checked. In the Minimalist Program this is often interpreted as: only formal features of functional heads must be checked. I reject this additional assumption; see also Ch1§3.2.

19 Notice that the view presented here differs in some respects from De Vries (1996).

3.4. A detailed derivation of postnominal restrictive relatives

Given the above premises, the derivation of a relative clause like (21) is straightforward. This is illustrated in (26), which is a *merge*-and-*move* schema, starting with the embedded clause. A detailed explanation is given immediately below. I will discuss the derivation of this German sentence first and consider other possibilities right after that.[20] Notice that the derivation in English is exactly the same.

(26) Ich fürchte den Herrn der eine Pistole trägt.
'I fear the gentleman who carries a gun.'

a. $[_{DP\text{-}rel}$ der $[_{NP}$ Herrn$]]$ →
b. $\mathbf{[}_{DP\text{-}rel}$ $[_{NP}$ Herrn$]_h$ der $t_h\mathbf{]}$ →
c. $[_{VP}$ $\mathbf{[}_{DP\text{-}rel}$ Herrn$_h$ der $t_h\mathbf{]}$ $[_{V'}$ eine Pistole trägt$]]$ →
d. $[_{IP}$ $\mathbf{[}_{DP\text{-}rel}$ Herrn$_h$ der $t_h\mathbf{]}_i$ $[_{I'}$ I $[_{VP}$ t_i eine Pistole trägt$]]]$ →
e. $[_{CP}$ $\mathbf{[}_{DP\text{-}rel}$ Herrn$_h$ der $t_h\mathbf{]}_i$ $[_{C'}$ C $[_{IP}$ t_i' I $[_{VP}$ t_i eine Pistole trägt$]]]]$ →
f. $[_{DP}$ den $[_{CP}$ $\mathbf{[}_{DP\text{-}rel}$ Herrn$_h$ der $t_h\mathbf{]}_i$ C $[_{IP}$ t_i' I $[_{VP}$ t_i eine Pistole trägt$]]]]$ →
g. $[_{DP}$ FF$_h$+den $[_{CP}$ $\mathbf{[}_{DP\text{-}rel}$ Herrn$_h$ der $t_h\mathbf{]}_i$ C $[_{IP}$ t'$_i$ I $[_{VP}$ t_i eine Pistole trägt$]]]]$ →
h. $[_{CP}$ Ich fürchte $[_{DP}$ FF$_h$+den $[_{CP}$ Herrn$_h$ der eine Pistole trägt$]]]$

The (future) head noun *Herrn* originates in the subordinate clause, viz. as the complement of the relative pronoun *der*; see (26a). This is one of the basic assumptions of the raising/promotion analysis. It reflects the fact that the head noun plays a semantic role in the relative clause. D_{rel} and N will be ultimately disconnected in a way, so they do not necessarily match in every respect (*read:* their Cases may be different). Nevertheless, the categorial selection of NP by D is as usual; moreover they must agree in ϕ-features.

The ϕ-feature agreement between D_{rel} and N needs to be checked. This licences movement. In this context there cannot be N-to-D raising, since N and D_{rel} have a contradictory Case feature (i.e. D_{rel} is nominative, N accusative). Therefore incorporation is not allowed. Still, D_{rel}'s ϕ-features need to be checked. Therefore NP is attracted to $SpecDP_{rel}$, in accordance with theorem Vc(i) above; see (26b). This is a normal checking configuration and the ϕ-feature agreement is settled. The contradictory Case features cannot be checked at this point. Structure (26b) is like (25). If nothing else happens, the derivation would crash because of unchecked Case features. Notice that although D's ϕ-feature is weak in German, the system forces overt movement of NP in this context. As explained, incorporation – i.e. (abstract) head movement – is not an option here. Hence a less economical derivation must be chosen, because the more economical one would crash; cf. Ch1§3.2.

Next, DP_{rel} as a whole is selected as the subject of the predicate *eine Pistole trägt* in (26c). Thus the requirement that an argument position must be occupied by a DP is fulfilled.

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[20] Here, a spec-head-comp order is assumed in the functional domain. The argument abstracts away from the VO/OV discussion in Dutch and German. See further section 3.6.

When I (or AgrSP if one likes) is merged with VP in (26d), it attracts the subject DP_{rel} in order to check nominative Case (probably along with the EPP – if that is a feature – and other features, e.g. person/number agreement). Obviously, the Case associated with N (which is accusative) does not enter in any checking relation at this point.

In (26e) the CP-level is added. The relative pronoun possesses a *wh*-feature; therefore DP_{rel} moves to SpecCP and the *wh*-features are checked in spec-head configuration.

Then, in accordance with the D-complement hypothesis, the whole CP is merged as the complement of D (*den*); see (26f).

At this point it becomes clear why a structure like (25) is allowed in a relative clause. The derivation does not crash, because N can be associated with a higher determiner. Since the head noun is in the specifier of DP_{rel} in the specifier of CP, there is no barrier between D (*den*) and N (*Herrn*).[21] D's ϕ-features attract N. In German these features are weak, so the movement is covert (because that is more economical than overt movement). This is indicated in (26g) by moving the formal features of N to D. Hence the agreement between D and N is checked in an incorporation structure. Incorporation is only possible if all features match, therefore N and D must also bear the same Case – accusative in this example. Hence the Case features are checked, too.

Finally, the whole DP is inserted into the matrix clause in (26h). DP is accusative, since its complex head FF_h+D is accusative. Hence the matrix clause AgrOP (not indicated in (26)) can check its accusative Case feature with DP.

Although D and N originate separately, they end up together. They agree and bear the same Case, which may differ from the Case of the relative pronoun.

Next, some relevant other possible derivations will be considered. First, take a Swedish sentence like (27).

(27) Jag talade med mann-en vilken känner dig.
I spoke with man-the who knows you
'I spoke with the man who knows you.'

Up to (26g) the derivation exactly parallels the one in German or English. The final two steps are sketched in (28).

(28) a.-f. … compare (26a-f) … →
g. $[_{DP}$ $mann_h$+en $[_{CP}$ $[_{DP\text{-}rel}$ t_h vilken t_h $]_i$ C $[_{IP}$ t'_i I $[_{VP}$ t_i känner dig]]]] →
h. $[_{CP}$ Jag talade med $[_{DP}$ mann+en $[_{CP}$ vilken känner dig]]]

[21] See also Kayne (1994), Barbiers (1995), De Vries (1996), and Bianchi (1999/2000a). Notice that there is no intermediate head.

Since the outer D has strong ϕ-features, the head noun *mann* incorporates overtly into this determiner *en*.[22]

Second, consider the possibility that all relevant Cases happen to be equal, as in *the$_{NOM}$ man$_{NOM}$ who$_{NOM}$ saw you, left.* The relative DP is [[$_{D\text{-}rel}$ who] [$_{NP}$ [$_{N}$ man]]] initially. Then, there are three options:

(i) N incorporates into D_{rel} overtly.
(ii) N incorporates into D_{rel} covertly, i.e. the formal features of N move to D_{rel}.
(iii) NP moves to $SpecDP_{rel}$.

Each of the three options is a valid step at this point of the derivation, because it leads to a checking configuration; hence the ϕ-features and nominative Case are checked. However, in Swedish (ii) would not be allowed because D's features are strong. In English, (ii) will eventually be preferred over (i), because it is more economical. But the distinction between (i) and (ii) on the one hand and (iii) on the other is more interesting. When the derivation proceeds, DP_{rel} moves to SpecCP. $D_{matr(ix)}$ selects CP_{rel}. At this point the relation between N and D_{matr} is crucial. D_{matr} needs to check its ϕ-features with N, so the latter is attracted. Therefore N incorporates into D and the features are checked. In Swedish this is overt, in English covert. If initially step (iii) was taken, this is no problem: the whole procedure is similar to the one described in (26). However, if initially (i) or (ii) was performed, N or FF(N) has to excorporate from D_{rel} before it can incorporate into D_{matr}. Many linguists assume that excorporation is not a possible step (cf. theorem Vi). If so, the derivation built from (i) or (ii) eventually crashes, because N is locked in D_{rel}, so D_{matr}'s ϕ-features remain unchecked. Therefore the derivation starting with (iii) – although less economical than (ii) – is probably the only survivor in a relative context.

Third, consider the hypothetical possibility that three different Cases are selected: *...D-matr$_{DAT}$ N$_{NOM}$ D-rel$_{ACC}$ ...*, which is wrong. Since the Cases do not match, incorporation is impossible. Therefore initially NP moves to $SpecDP_{rel}$ and the ϕ-features are checked. DP_{rel} checks Case in the clausal domain, in this example with AgrO. DP_{rel} moves to SpecCP. D_{matr} selects CP. Then NP moves to $SpecDP_{matr}$, so that D_{matr}'s ϕ-features can be checked. (Again, incorporation is impossible because dative and nominative do not match.) DP_{matr} will check dative in the matrix clause. The relevant configuration is now (29), (where NP has been raised from within CP):

(29) [$_{DP\text{-}matr}$ [$_{NP}$ N_{NOM}] [$_{D'}$ D_{DAT} CP_{rel}]]

This structure is comparable with (25) above. I have shown that it will survive only if N can be associated with a higher D. Since there is no such D available in the

[22] As noticed before, the option that NP moves to SpecDP instead of overt N-into-D incorporation cannot be excluded a priori. It establishes the same word order and an equivalent feature checking configuration. Nevertheless, an argument for head movement could be the fact that *mannen* is phonologically one word.

matrix, the derivation will crash – as desired– because N's nominative Case feature remains unchecked.

Finally, I must mention that there is one possible derivation which gives a wrong result, but which I do not know how to exclude without further assumptions. Suppose N, D_{matr} and D_{rel} have equal ϕ-features; N and D_{rel} are nominative, and D_{matr} is accusative (or the other way round): e.g. **den Herr der…*'the_{ACC} gentleman_{NOM} who_{NOM}…'. Initially NP moves to $SpecDP_{rel}$; the ϕ-features *and* nominative Case (!) are checked. DP_{rel} moves to SpecCP; CP is selected by D_{matr}. Overt or covert incorporation is impossible, because the Cases do not match, hence NP moves to $SpecDP_{matr}$. D's ϕ-features are checked. The Case of DP_{matr} is checked with AgrO in the main clause. Thus all features are checked and the derivation survives. The problem compared to (29) is that here N's Case feature has already been checked in the relative clause, so it cannot cause a crash. A potential solution is to assume that if NP is raised into a new clausal domain, its features must be re-licenced; but I will leave this issue open for further discussion.

3.5. 'That'-relatives

What happens if there is no relative pronoun, as in (30b)?

(30) a. I fear the gentleman who carries a gun.
b. I fear the gentleman that carries a gun.

In my view these small variations in the COMP area are only surface effects. I prefer to treat the data in a uniform way, following in fact Chomsky (1977). The sole difference between (30a) and (30b) is that (30a) has an overt relative pronoun, whereas (30b) has an overt complementizer. Chomsky argues that (30b) has an empty operator which is the equivalent of a relative pronoun. The Doubly Filled COMP Filter makes sure that the relative pronoun and the complementizer cannot be overt both in standard English. See the next chapter for more discussion.

In the promotion theory the empty operator is represented as the determiner D_{rel}. It is phonetically empty, but it does have all the formal features of a relative pronoun, i.e. at least Case and ϕ-features and a *wh*-feature. Therefore the analysis for (30b) exactly parallels (30a) and (26).

Borsley (1997) objects that if there is an empty D_{rel}, there is a danger of it being filled with an article, as in (31). This would lead to a doubled article, superficially.

(31) * the $[_{CP}\ [_{DP\text{-}rel}\ \text{the gentleman}]_i\ \text{that I saw}\ t_i\ ]$

However, (31) is excluded for obvious reasons. An article is never [+*wh*], hence raising would not be possible at all. Therefore the external article *the* remains without a noun, and its ϕ-features cannot be checked. So the derivation crashes.

Borsley also objects to what seems to be the reverse of the same problem: if there can be an empty D in (30b), why is an empty determiner in a non-relative definite DP impossible, e.g. **(the) man*? The answer is, I think, that the question is

wrong. The phonetically empty D in (30b) is not an arbitrary D, it is an empty relative pronoun D_{rel}. In Dutch, there are no empty relative pronouns. Clearly, this is only a lexical difference. English happens not to have empty 3SG articles. Other languages do; Latin for instance.

3.6. Word order variation

In Chapter 3 I have stressed that many different word orders with respect to relative constructions have to be accounted for. Relevant is the basic word order of a language and the linear order of the external determiner, the head noun and the relative clause (which itself may contain a relative pronoun, et cetera). I have shown that all possible permutations are actually attested. For postnominal relatives, the patterns are repeated in (32) and (33). See also Appendix II, table 16.

(32) SVO languages
- a. D N RC e.g. in English
- b. N D RC e.g. in Swedish
- c. N RC D e.g. in Indonesian

(33) SOV languages
- a. D N RC e.g. in Hindi
- b. N D RC e.g. in Oromo
- c. N RC D e.g. in Lakota

The patterns in (32a) and (32b) have been treated extensively in the previous sections, the other ones remain to be explained.

In the previous chapter I have 'calculated' the movements necessary to derive these linear orders within several theories on syntactic structure. For the promotion theory the results are summarized in table 1. (See Ch3§3.2 for definitions, etc.)

Table 1. *Movements in promotion theories required to derive word order variations in postnominal relative constructions.*

subtheory →	antisymmetry, rigid left, func left-local uniform branching	uniform branching	
word order →	VO and OV	VO	OV
'basic' structure→	*spec* **D** [$_{CP}$ *NP* RC]		[$_{CP}$ RC *NP*] **D** *spec*
↓ linear order ↓			
D N RC	✓		$H'_n{}^{d} + rM'_{ip/cp}{}^{dp}$
N D RC	$H_n{}^{d}$		$rM'_{ip}{}^{dp}$
N RC D	$M_{cp+}{}^{dp}$		$A_{np}{}^{cp}$

With respect to the promotion theory of relatives, we can see that an antisymmetric phrase structure, but also 'rigid left' and 'fl-lub', do not distinguish VO languages from OV languages in any relevant sense. The surface linear order D N RC (the most common type) is derived in the way argued for in the previous sections (cf. (26) above); the order N D RC requires additional overt head movement of N to D,

as explained (cf. (28) above). The pattern N RC D can only be derived if CP with all its content is moved to SpecDP. The resulting structures are shown in some detail in (34), where the determiner and the head noun are printed in bold, and the relative clause (RC) is underlined.

(34) a. $[_{DP}\ [_{D}\ FF(N)+\mathbf{D}]\ [_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ \mathbf{N}]\ \underline{(D_{rel})\ t_{np}\ ]_{dp\text{-}r}\ (C)\ [_{IP}\ \ldots\ t_{dp\text{-}r}\ \ldots]}]]$

b. $[_{DP}\ [_{D}\ \mathbf{N}+\mathbf{D}]\ [_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ t_{n}]\ \underline{(D_{rel})\ t_{np}\ ]_{dp\text{-}r}\ (C)\ [_{IP}\ \ldots\ t_{dp\text{-}r}\ \ldots]}]]$

c. $[_{DP}\ [_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ \mathbf{N}]\ \underline{(D_{rel})\ t_{np}\ ]_{dp\text{-}r}\ (C)\ [_{IP}\ \ldots\ t_{dp\text{-}r}\ \ldots]}]_{cp}\ \mathbf{D}\ t_{cp}]$

The N RC D pattern can be represented as in (34c). Consider how the derivation might proceed. As discussed before, NP moves to SpecDP_{rel} and the ϕ-features are checked. DP_{rel} checks Case in the subordinate clause. DP_{rel} moves to SpecCP and *wh* is checked. CP is selected by D. D needs to check ϕ with N (and N needs to check ϕ and possibly Case with D), so there must be movement of some kind. At this point the derivation deviates from (34a/b). Instead of movement of NP to SpecDP (or incorporation of N into D), a large constituent in which N is contained moves to SpecDP, namely CP. Why is this possible? I don't think CP has a particular reason to be in SpecDP. A solution may be sought in the concept of *pied piping*. According to Koster (2000a) essential differences between languages are differences in pied piping. Although Koster's ideas are much more far-reaching than can be discussed here (he suggests that the whole overt/covert distinction can be captured by differences in pied piping), I propose to allow for at least some parametrization in pied piping.

Well-known differences with respect to pied piping are examples with prepositions; see (35).

(35) a. $[_{PP}$ In which city] does he live t_{pp} ?

b. $[_{DP}$ Which city] does he live [in t_{dp}] ?

Some languages prefer (35a), some (35b), and in some pied piping is optional. Of course pied piping is influenced by opacity effects. If PP is a barrier, (35b) is not an option.

Thus suppose – more or less in the spirit of Koster (2000a) – that a particular language prefers pied piping instead of N(P) movement. Then the whole CP in which NP is contained may be moved (similarly to the fact that PP is moved instead of DP in (35)). This is a pretheoretical statement, of course. Therefore consider what it means in terms of feature checking. Feature checking in a spec-head configuration is checking between a maximal projection XP in the specifier position of a head Y, and Y itself. So if XP is a pied piped constituent, the relevant features of an embedded head must have percolated to the head X (and consequently to XP, as noted before). For instance, in (35) the *wh*-feature of *which* has percolated up to P(P). The PP moves to SpecCP and checks *wh*.

In (34c) pied piping means that N's ϕ-features and Case percolate up to C(P). So CP moves to SpecDP and these features can be checked.

It is also clear why (36) is excluded. The derivation of (36) would force pied piping of DP_{rel} instead of CP:

(36) * … … … [$_{DP}$ [$_{DP\text{-}rel}$ [$_{NP}$ **N**] (D$_{rel}$) t$_{np}$]$_{dp\text{-}r}$ **D** [$_{CP}$ t$_{dp\text{-}r}$ (C) [$_{IP}$ … t$_{dp\text{-}r}$ …]]]
e.g. I know man (who) the (that) saw you

But that would mean that N's features percolate up to DP$_{rel}$, which already has the same type of features of its own. (Moreover, these may be contradictory.) I have argued before that features are not 'erased'. The idea that N's features can overwrite D$_{rel}$'s features (or duplicate if they happen to match) seems highly implausible to me. Hence suppose the following:

Theorem VI
Pied piping can be the result of feature percolation to a higher head (or projection) which itself does not bear this kind of features.[23]

Thus typical nominal features like Case or ϕ may percolate up to C(P), or *wh* may percolate to P(P), since these categories do not inherently bear this kind of features themselves.

These suggestions relate a particular word order regarding relative clause constructions (34c) to pied piping. A thorough examination of pied piping phenomena in the relevant languages is needed to further substantiate this kind of claims. This, however, is far beyond the scope of this book.

For now, this concludes the discussion of three versions of the promotion theory (antisymmetry, rigid left and fl-lub) with respect to the derivation of word order variation in postnominal relatives. As can be seen in table 1, the same conclusions can be drawn for the uniform branching version in VO languages. Thus what remains to be discussed is uniform branching with respect to postnominal relatives in OV languages. The surface representations for the three word orders, based on table 1, are given in (37). Recall that heads and specifiers are on the right here.

(37) a. [$_{DP}$ [$_{D'}$ t$_{cp}$ [$_{D}$ **D**+**N**]]$_{d'}$ [$_{CP}$ … t$_{dp\text{-}r}$ … (C) [$_{DP\text{-}rel}$ t$_{np}$ (D$_{rel}$) [$_{NP}$ t$_{n}$]]$_{dp\text{-}r}$]$_{cp}$]
b. [$_{DP}$ [$_{D'}$ [$_{CP}$ t$_{ip}$ (C) [$_{DP\text{-}rel}$ t$_{np}$ (D$_{rel}$) [$_{NP}$ **N**]]$_{dp\text{-}r}$]$_{cp}$ **D**]$_{d'}$ [$_{IP}$ … t$_{dp\text{-}r}$ …]$_{ip}$]
c. [$_{DP}$ [$_{CP}$ [$_{NP}$ **N**] [$_{CP}$ … t$_{dp\text{-}r}$ … (C) [$_{DP\text{-}rel}$ t$_{np}$ (D$_{rel}$) t$_{np}$]$_{dp\text{-}r}$]$_{cp}$]$_{cp}$ **D**]

Can these representations be derived in a plausible way? Consider (37a) first. Within CP the usual movements and checkings are performed. After selection of CP by D, N is incorporated into D. It is merged to the right of D, which is plausible since movement is also to the right due to right-hand specifiers. So Case and ϕ-features can be checked between N and D. After this, there is remnant movement of CP to SpecDP. I can think of no plausible trigger for this. Moreover, if there is a relative pronoun or particle it would be on the right (i.e. clause-final). However, Appendix II, table 16 or 24, shows that this pattern is not attested, whereas there are several

[23] There is another possible cause of pied piping: if there is head movement in order to check some feature, other features may be carried along. In turn this can cause movement, which would result in pied piping. See e.g. Chapter 6 on possessive relatives.

counterexamples where D_{rel} or C are clause-initial, e.g. in the Indo-Aryan languages Hindi, Bengali and Marathi, and in the Germanic languages Dutch, German and Frisian. This shows that it is not a viable strategy to have right-hand specifiers, at least in these languages. This casts serious doubt on the uniform branching hypothesis as defined.

Nevertheless, consider (37b). This, too, is not a plausible representation. The position of relative elements is structure-initial, which is impossible. Therefore another strategy must be found. Suppose that N moves to D and left-incorporates. If so, there can be CP remnant movement to SpecDP instead of IP remnant movement. This gives us (37a) again, except that D+N is replaced by N+D. Hence the potential problems are the same. There is no trigger for the CP remnant movement involved, and the position of relative elements would be clause-final. The clause-initial relative particles in Farsi, Urhobo and Oromo show that this is wrong.

The pattern N RC D in (37c) can only be derived by moving NP leftwards and leaving CP in situ as the left-hand complement of D. There is no regular landing position for NP, so it can only be left-adjoined to CP – an unmotivated movement. There is still no checking relation between N and D, so there must be additional (covert) formal feature movement of N to D. This is not indicated in (37c). Again, the position of relative elements is clause-final. There are neither examples nor counterexamples in the data set.

Thus, word order variations in postnominal relatives can be derived in an antisymmetric, rigid left or fl-lub promotion theory, but not in a uniform branching theory (that is, for OV languages). The latter uses unmotivated movements and, even worse, predicts clause-final relative particles, which is at variance with the data. Theories with left-hand specifiers and left-hand functional heads do not face this problem. The (relatively rare) pattern N RC D involves a special instance of pied piping. This seems to be an interesting phenomenon which requires more study in general.

3.7. Conclusion

In short, the various movements needed for the promotion theory can be derived straightforwardly within a framework based on feature checking. All Case and ϕ-feature agreement facts are accounted for in a coherent way. No additional features or projections are needed. Moreover, all restrictive postnominal relatives are analysed alike, regardless of the particular setting of the COMP area (which itself is discussed in more detail in Chapter 5). It seems that the cross-linguistic word order variations regarding head noun, external determiner and relative clause can be explained only if functional heads and specifiers are on the left. I will return to this issue.

4. Prenominal relatives

Prenominal relative constructions are rarer than postnominal ones.[24] Nevertheless they occur in different language families around the world; cf. Appendix II, figure 1 and table 5.

In principle, the analysis of postnominal restrictive relatives presented in the previous section can be extended to prenominal ones straightforwardly. The major difference with postnominal relatives is that the order of the head noun and the relative clause is switched. There are roughly two ways to derive this. Either there is a leftward branching comp-head-spec scheme, or there is an additional movement of the relative clause to a position left of the head noun. This is sketched in (38), where the head noun is in bold face and the relative clause is underlined.

(38) a. $[_{DP}\ [_{CP}\ \underline{\ldots\ t_{np}\ \ldots}\ \mathbf{NP}\ ]\ (D)\ ]$ ('comp-head-spec' base)
b. $[_{DP}\ \underline{[\ldots\ t_{np}\ \ldots]}_{i}\ (D)\ [_{CP}\ \mathbf{NP}\ t_{i}\ ]]$ ('spec-head-comp' base)

I will discuss (38) in detail below.

Three additional properties of prenominal relatives are stated in (39), repeated from Ch2§5; see also Appendix 2, tables 5/8/10/11.

(39) a. Prenominal relatives do not have relative pronouns.
b. Prenominal relatives do not have clause-initial relative particles.
c. If there is a clause-final relative particle, it does not equal the regular complementizer.

According to Kayne (1994:92-95) this is no coincidence. In his theory, which is like (38b), the prenominal relative is a raised IP. Since relative pronouns and complementizers are in SpecCP and C, there can be none in a prenominal relative IP. Thus at first sight it seems favourable to derive prenominal relatives from postnominals. Unfortunately, if we look at the details of the derivations, this is much less clear.

The position of the determiner may be important. Many languages do not have a regularly overt determiner, but several do. Therefore consider the possible word order variation. Prenominal relatives predominantly occur in OV languages, as one would expect. In previous chapters I have already mentioned that all permutations of the external determiner, the head noun and the relative clause are attested, cf. (40). See also Appendix 2, table 17.

(40) SOV languages
a. D RC N e.g. in Tigré
b. RC D N e.g. in Korean
c. RC N D e.g. in Basque

[24] Considering that Mandarin Chinese has prenominal relatives, we cannot conclude that there are few speakers of this variant.

There are some examples of prenominal relatives in VO languages (cf. Appendix 2, table 23). Unfortunately, in the language sample I have compiled, there is little information on the position of determiners in these languages. There is no example of a language that regularly uses a definite determiner. Nevertheless, there are examples with a quantifier or (demonstrative) determiner in Mandarin Chinese; these can be in an initial or middle position.[25]

(41) SVO languages [Note that RC N (without D) occurs regularly in e.g. Palauan, Finnish or Chinese]
- a. D RC N (e.g. in Chinese)
- b. RC D N (e.g. in Chinese)
- c. RC N D (not in the sample)

Recall from the previous section that D can take any position in postnominal relative constructions, whether in OV or VO languages. I am convinced that if more data becomes available, there will be clear(er) examples of all three patterns in (41), too. Therefore I will treat these on equal terms with (40), which implies that a theory on relative clause structures should be able to derive them.

Table 2 summarizes the (additional) movements necessary to derive the patterns above within a promotion theory of relative clauses, as discussed in Ch3§3.2. Again, antisymmetry, rigid left and fl-lub do not distinguish a different 'basic order' for OV and VO languages in this respect, hence (40) and (41) are treated as one group, which obliterates the lack of data concerning (41). Uniform branching on the other hand does make a distinction.

Table 2. *Movements in promotion theories required to derive word order variations in prenominal relative constructions.*

subtheory →	antisymmetry	rigid left, func left-l.u.b.	uniform branching	
word order→	VO and OV		VO	OV
'basic' structure→	*spec* **D** [$_{CP}$ *NP* RC]			[$_{CP}$ RC *NP*] **D** *spec*
↓ *linear order* ↓				
D RC N	??	$rA_{ip}{}^{cp}$		$M'_{cp+}{}^{dp}$
RC D N	$rM_{ip}{}^{dp}$			$H'_{n}{}^{d}$
RC N D	$H_n{}^{d} + rM_{ip/cp}{}^{dp}$			✓

Consider first the detailed derivation of prenominal relatives in OV languages within the uniform branching theory. The structures are in (42). Recall that they are left-branching, i.e. comp-head-spec.

(42) a. $[_{DP}\ t_{cp}\ \mathbf{D}\ [\underline{_{CP}\ldots t_{dp\text{-}rel}\ldots (C)\ [_{DP\text{-}rel}\ t_{np}\ (D_{rel})}\ [_{NP}\ \mathbf{N}]]_{dp\text{-}rel}\ ]_{cp}\ ]$
- b. $[_{DP}\ [\underline{_{CP}\ldots t_{dp\text{-}rel}\ldots (C)\ [_{DP\text{-}rel}\ t_{np}\ (D_{rel})}\ [_{NP}\ t_n]]_{dp\text{-}rel}\ ]_{cp}\ [_D\ \mathbf{D}\text{+}\mathbf{N}]]$
- c. $[_{DP}\ [\underline{_{CP}\ldots t_{dp\text{-}rel}\ldots (C)\ [_{DP\text{-}rel}\ t_{np}\ (D_{rel})}\ [_{NP}\ \mathbf{N}]]_{dp\text{-}rel}\ ]_{cp}\ [_D\ \mathbf{D}\text{+FF(N)}]]$

[25] See e.g. Lehmann (1984:67) for the first pattern, and Keenan (1985:149) for the second.

The structure in (42c) is the exact mirror of the English postnominal one in (34a). In (42b) there is overt head movement – incorporation of N into D – as in Swedish (34b). In (42c) there is pied piping of the whole CP to SpecDP as in Indonesian (34c). I will not repeat the discussion concerning feature checking here. Notice that, given the properties in (39), C and D_{rel} must be abstract. The derivations presumed in (42) are attractive in a way, because they mirror the ones for postnominal relatives and can be explained in the same way. However, the properties in (39) remain unexplained.

The derivations of prenominal relatives in VO languages (with spec-head-comp bases) are more difficult. The structures are given in (43). Notice that within the rigid-left, fl-lub and (except for (43a)) antisymmetry theories all prenominal relatives (in VO and OV languages) must be derived like this.

(43) a. $[_{DP}\ [_{D}\ FF(N)+\mathbf{D}]\ [_{CP}\ \underline{[_{IP}\ \ldots\ t_{dp\text{-}rel}\ \ldots]}\ [_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ \mathbf{N}]\ (D_{rel})\ t_{np}]_{dp\text{-}rel}\ (C)\ t_{ip}]]]$

b. $[_{DP}\ \underline{[_{IP}\ \ldots\ t_{dp\text{-}rel}\ \ldots]}\ [_{D}\ FF(N)+\mathbf{D}]\ [_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ \mathbf{N}]\ (D_{rel})\ t_{np}]_{dp\text{-}rel}\ (C)\ t_{ip}]]$

c. $[_{DP}\ \underline{[_{IP}\ \ldots\ t_{dp\text{-}rel}\ \ldots]}\ [_{D}\ \mathbf{N}+\mathbf{D}]\ [_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ t_{n}]\ (D_{rel})\ t_{np}]_{dp\text{-}rel}\ (C)\ t_{ip}]]$

c.' $[_{DP}\ \underline{[_{CP}\ [_{DP\text{-}rel}\ \underline{[_{NP}\ t_{n}]}\ (D_{rel})\ t_{np}]_{dp\text{-}rel}\ (C)\ \ldots\ t_{dp\text{-}rel}\ \ldots]_{cp}}\ [_{D}\ \mathbf{N}+\mathbf{D}]\ t_{cp}]$

First consider the derivation in (43b). It equals the one in English (cf. (34a) above), except for one final additional step: remnant movement of the relative clause to SpecDP. This derivation is the detailed variant of Kayne's proposal for prenominal relatives. I would like to make three remarks here. First, notice that it only describes one out of three possible word order variants. Second, the final remnant IP movement seems unmotivated. Third, the (abstract) relative pronoun and complementizer are stranded – because i) D_{rel} and IP do not form a constituent, and ii) an X'-level (here $[_{C'}$ C IP]) cannot be moved – but the linear order RC D N D_{rel}/C is never attested, hence it must be explained why D_{rel} and C are never overt in this context. In some footnotes, Kayne acknowledges this third problem. As for the complementizer, he suggests that there may be a *that*-trace effect. However, the *that*-trace effect is by no means universal, whereas the prohibition *RC D N C does seem to be so. As for the relative pronoun, Kayne suggests that it cannot be interpreted if it is stranded. If so, it must be possible to prove that there cannot be reconstruction in this context. However, if there is no reconstruction, the relative clause would be interpreted as appositive, which is not intended. For, the external determiner must take scope over the relative clause in a restrictive relative (see also Chapter 6). This is not the case in the surface structure of (43b).[26] Moreover, it seems to me that an abstract relative pronoun must also be interpreted.

For the moment, I will put these problems aside and proceed with (43c), which is a variant of (43b). To switch the linear order between D and N, N must overtly incorporate into D. This process has been discussed repeatedly above. Next, we may move IP to SpecDP in (43c), as in (43b). Another possibility is to move the whole remnant CP to SpecDP, as in (43c'). This latter option looks familiar. Movement of CP to SpecDP – cf. (34c) – has been described in terms of pied piping. N's formal

[26] Notice that in my theory there is no reconstruction, but rather cyclic feeding of the LF-component; cf. Ch1§3.2.

features must be checked with D. If they percolate up to the CP-level, CP moves to SpecDP. If both CP moves and N incorporates into D (as is the case here), it looks as if something is done twice. Double marking does sometimes occur in the grammar, but I do not wish to treat (34c') as heavily marked.

There is an alternative view, however. It is not one single feature that drives this process: a bundle of features (Case and ϕ-features) is involved. Suppose that one (group) of these percolates up and the other(s) remain where they belong – on N. This forces two movements: N head movement to D in order to check the remaining feature(s), and CP remnant movement to SpecDP in order to check the percolated feature(s) with D in spec-head configuration. So the formal features are not treated as a solid group. This is in contradiction with usual conventions, but I think nothing in the system actually prevents it.[27]

If so, there is a possible explanation for the movements in (43c'). On the contrary, there is no explanation for IP remnant movement as in (34c), because IP does not contain NP. It seems particularly implausible to me to assume that there is upward percolation to the main projection line first, and then downward percolation to IP. So assume that features cannot percolate down in general.

Theorem VII
Feature percolation is unidirectional. Since it starts from a head, there is only upward percolation. This causes pied piping.

There may be other advantages of (43c'). Recall that a specifier of XP c-commands the head X. According to Kayne's definitions, a specifier of a specifier also c-commands this head. If so, in (43c') DP_{rel} c-commands $[_D$ N+D]. Hence, if it is overt, (the head of) DP_{rel} is a (relative) pronoun referring to N, so Principle C of the Binding Theory is violated.[28] That explains (39a): prenominal relatives do not have relative pronouns. Unfortunately I don't see a straightforward explanation of (39b): prenominal relatives do not have clause-initial relative particles. As for (39c) – if there is a clause-final relative particle, it does not equal the regular complementizer – it may simply be noted that C is not clause-final. Hence a clause final particle cannot equal a regular complementizer.

As explained, (43b) cannot be justified like this. A way out may be the following: suppose that there can be incorporation to the right. If so, we can generalize over RC N D and RC D N. The derivations are exactly the same, except for one thing: in the latter case N incorporates to the right of D. This is shown in (44), which replaces (43b).

(44) $[_{DP}\ [_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ \underline{t_n}]\ (D_{rel})\ \underline{t_{np}}]_{dp\text{-}rel}\ (C)\ \ldots\ \underline{t_{dp\text{-}rel}}\ \ldots]_{cp}\ [_D\ \mathbf{D}\text{+}\mathbf{N}]\ t_{cp}]$

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27 This idea does not affect the results of the previous section. The relevant case is (34c), where there is pied piping of CP to SpecDP. If there were a split process, whereby N moves to D and the relative clause moves to SpecDP, the outcome would be a prenominal relative as in (43c'). Hence this parameter setting is not available. See also section 7.

28 See De Vries (1998a) for a discussion of Principle C in a derivational grammar. Until now, Principle C has always been used with respect to XP positions. Here, it is tentatively proposed that it may also apply to argument heads.

This structure departs from Kayne's original proposal, but it has the advantage that there is a possible explanation for the movements, and the properties in (39).

Finally, consider the D RC N order, as in (43a), repeated in (45). Here the difficulty is that the relative clause splits D and N apart.

(45) $[_{DP}\ [_{D}\ FF(N)+\mathbf{D}]\ [_{CP}\ [_{IP}\ \ldots\ t_{dp\text{-}rel}\ \ldots]\ [_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ \mathbf{N}]\ (D_{rel})\ t_{np}]_{dp\text{-}rel}\ (C)\ t_{ip}]]]$

So the relative IP must move to a position between D and N. Unfortunately, this position does not exist. Therefore adjunction is necessary (which is impossible in a strict antisymmetric structure), unless an intermediate projection FP is assumed, as shown in (46).

(46) $[_{DP}\ FF(N)+\mathbf{D}\ [_{FP}\ [_{IP}\ \ldots\ t_{dp\text{-}rel}\ \ldots]\ F\ [_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ \mathbf{N}]\ (D_{rel})\ t_{np}]\ (C)\ t_{ip}]]]$

In either case it remains to be explained i) what the motivation of IP-movement is; ii) why the stranded D_{rel} and C must be empty; and iii) how the relation between D and N can be established, i.e. how the formal features of N can move to D if there is intermediate material. I don't see how to answer these questions.

The nature of FP, if necessary, raises additional issues. In principle, it could belong to the DP domain or to the CP domain. That is, F could be a Q head or a split-CP head such as Topic or Focus. If one chooses the first option, the D-complement theory must be reconsidered. The second option may be in contradiction with the sentence-initial nature of relative pronouns and complementizers in general. Hence (46) is not very plausible.

I conclude that there is an attractive set of derivations available for prenominal relatives in OV languages within the uniform branching analysis. These exactly mirror the derivations for postnominal relatives in VO languages. With some additional assumptions, prenominal relatives in VO languages can also be derived. There is one remaining problem: prenominal relatives in VO languages in which the RC splits the determiner and noun apart.

The antisymmetric, rigid left and fl-lub theories treat prenominal relatives in OV and VO languages on a par. This has the consequence that there cannot be mirror-derivations: all derivations are like those described for VO languages in the uniform-branching theory. This puts more weight on the remaining problem for D RC N structures.

5. Circumnominal relatives

This section discusses the syntax of circumnominal relatives. It is divided into four parts. Section 5.1 introduces the topic and summarizes the properties of circumnominal relatives; 5.2 sketches the history of the analysis; 5.3 is on the derivation of circumnominal relatives within the present framework; and 5.4 briefly discusses some additional issues.

5.1. Introduction and properties

Culy (1990:27) states: "A restrictive internally headed relative clause is a nominalized sentence which modifies a nominal, overt or not, internal to the sentence."

Circumnominal relatives (often called IHRCs) have the following appearance (where the head noun and the external determiner are in bold face and the relative clause is underlined):

(47) $[_{DP}\ [\underline{_{CP}\ \ldots\ \mathbf{N}\ \ldots}]\ (\mathbf{D})]$

In short, they have the following properties:[29]

(48) a. Circumnominal relatives are nominalized sentences, i.e. DPs.
b. The head noun is in situ.[30]
c. As for relative elements:
(i) there is no relative pronoun or marker;
(ii) there is no resumptive pronoun;
(iii) there is no relative complementizer (except perhaps in Dagbani);
(iv) there can be a relative affix.
d. As for word order:
(i) circumnominal relatives occur in SOV, SVO (and other) languages;
(ii) they occur in N D languages, and in D N languages that do not regularly use an overt determiner.[31]
e. As for the external determiner:
(i) If D is visible, it follows the relative clause.
(ii) The use of determiners that must be pronounced is shunned in D N languages. Hence, D can only be overt in N D languages.
f. The internal head must be indefinite.

Regarding the syntax of circumnominal relatives, I will follow Culy's basic insights. Culy (1990:73-79) argues that a circumnominal relative is of category N'. This is because determiners, Case morphemes and other particles, if present, always follow the relative clause. This has been discussed before in Ch2§6.2. Thus the structure is like (49a), where a possible determiner is at the rightmost triple of dots. Culy (1990:68) notes that the exocentric nature of this representation can be overcome if a DP structure is used as in (49b). This is in line with the theory presented in this book.

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29 See Ch2§5, 6.2, Appendix II and Culy (1990). In particular, concerning (48a) see Ch2§6.2 and Culy (27-29, 200-206,264); for (48b) cf. Appendix II, table 3; for (48c) cf. Appendix II, tables 3 and 8-15, and Culy (1990:70-72); for (48d) cf. Appendix II, tables 3/21, and Culy (1990:207-229,261); for (48e) see Appendix II, table 18, and Culy (1990:207-229,261); for (48f) see Culy (1990:167-181).

30 Except for Yavapai, where the head noun is fronted. See below.

31 Note that the ordering of D and N is not necessarily correlated to the O/V parameter.

(49) a. $[_{NPi} \ldots [_{N'} [_{S'} \ldots NP_i \ldots]] \ldots]$
b. $[_{DP} \ldots [_{D'} S' \ D] \ldots]$

Culy (1990:82-93) argues, *contra* Williamson (1987), that the relation between the outer and inner NP (or DP) is the same as the relation between antecedent and relative pronoun such as in English postnominal relative constructions. Three important common properties are (in my terms):

(50) a. There is ϕ-feature agreement between $NP_{ant/out}$ and $NP_{wh/in}$.
b. Restrictive relatives (adnominal or circumnominal) can be stacked, so $NP_{ant/out}$ can relate to several $NPs_{wh/in}$.
c. The relation between $NP_{ant/out}$ and $NP_{wh/in}$ is unbounded in principle, but there are constraints. In other words, the well-known characteristics of *wh*-movement show up in circumnominal relatives, too.

Especially because of (50a), the two NPs are co-indexed. (Notice, however, that (49a) is an *i-within-i* configuration.)

Like an English *that*-relative, a circumnominal relative contains a covert *wh*-element, which must be moved to the COMP domain at LF (cf. Culy 1990:95-99). Culy's theory within a Government & Binding framework is given in (51).

(51) a. D/S-structure: $[_{NPi} \ldots [_{N'} [_{S'}$ comp $[_S \ldots [_{NPi} \ldots [N_i, wh_i] \ldots] \ldots]]] \ldots]$
b. LF-structure: $[_{NPi} \ldots [_{N'} [_{S'} [_{comp}\ wh_i] [_S \ldots [_{NPi} \ldots [\ N_i\ ] \ldots] \ldots]]] \ldots]$

This has the following advantages (in my terms):

(52) a. The *wh*-element mediates in the co-indexing relation between NP_{in} and NP_{out}.
b. The LF configuration with a *wh* in COMP generalizes over adnominal and circumnominal relative clause types.[32]
c. The LF configuration containing the *wh*-element is interpreted as a relative clause, contrary to other (nominalized) sentences.
d. The general theory about *wh*-movement explains (50c): the constrained unboundedness.

5.2. Historical developments concerning the analysis

Before I continue with the incorporation of these ideas into the present framework, a brief summary of the historical development of the syntax of circumnominal relatives is in order. See Appendix III, Culy (1990:103-110) and Basilico (1996) for some more details.

Wilson (1963) derives circumnominals from adnominal relatives in an early transformational framework. This would involve lowering (of NP) in contemporary

[32] Culy (1990:98) has a 'Relative Co-indexing Constraint' that generalizes over adnominal and circumnominal relatives.

terms. Gorbet (1976) and Hale & Platero (1974) represent circumnominal relatives as nominalized clauses, where nothing is moved. Platero (1974) and Weber (1983) represent them as sentences adjoined to an antecedent NP – i.e. there is an internal and an external NP – which is deleted. Peterson (1974) is perhaps the first who accommodates for an external determiner. Again, there is an internal and an external NP, where the latter is deleted.

Cole (1987) replaces deletion by covert LF movement of the internal to the external NP position. For similar ideas, see Broadwell (1985), Lefebvre & Muysken (1988) and Cole & Hermon (1994). Therefore at LF a circumnominal relative looks like an adnominal one. Unfortunately, Cole does not accommodate for the external determiner. Moreover, his account is based on crosslinguistic generalizations that turn out to be wrong. Therefore his approach is criticized in Culy (1990). Furthermore, Itô (1986), who discusses Japanese circumnominal relatives, has a theory comparable to Cole's, except that – for Japanese in particular – the PF-derivation is distinct from the LF-derivation (see Appendix III).[33]

Williamson's (1987) theory on Lakota circumnominal relatives does have an external determiner. In addition, there is head raising of the internal NP to a position adjoined to S'_{rel} at LF. Similar ideas can be found in Barss et al. (1990) and Bonneau (1992). The reason for this is – according to Williamson – that negative indefinites and irrealis determiners must be in the scope domain of a negative/irrealis marker, which is in the matrix clause. However, Culy (1990:182-197) has a more general semantic explanation for this phenomenon. I cannot repeat it here, since that would lead too far afield. Basilico (1996), too, argues that the head noun itself need not be raised out of its clause (see below for discussion).

Finally, Fontana (1989) argues that circumnominal relatives are like correlatives: they are supposed to be left-dislocated in the matrix sentence. The matrix sentence itself contains a pronoun, possibly zero. This is quite wrong: circumnominal relatives can be positioned at any argument position in the middle of the matrix clause. Moreover, there is no additional demonstrative, regularly. It is not even true for Lakota, because there *every* argument NP can get an additional demonstrative, optionally. The differences between correlative and circumnominal relatives are discussed further in the next section.

In short, I agree with Culy (1990) that i) circumnominal relatives are nominalized, ii) there is an external determiner position; iii) there is *wh*-movement; iv) circumnominal relatives are in several ways distinct from correlatives; v) there are generalizations covering the syntax and semantics of adnominal and circumnominal relatives.

5.3. The derivation of circumnominal relatives

At this point, consider how the present promotion theory of relative clauses applies to the syntax of circumnominal relatives in detail.

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[33] Culy (1990:254-259) criticizes Itô's treatment of *no* as a complementizer. According to Culy it is a nominalizing particle. Notice also that Murasugi (2000) claims that so-called circumnominal relatives in Japanese are misanalysed; they are not relatives at all. I cannot judge in this matter.

For once, the necessary movements to derive the word order appear to be simple. They are summarized in table 3, based on Ch3§3.2.

Table 3. *Movements in promotion theories required to derive the word order in circumnominal relative constructions.*

subtheory →	antisymmetry, rigid left, func left-l.u.b.	uniform branching	
word order→	VO and OV	VO	OV
'basic' structure→	*spec* **D** [$_{CP}$ *spec* … NP …]		[$_{CP}$ …NP… *spec*] **D** *spec*
↓ *linear order* ↓			
[$_{RC}$ … N …] D	$M_{cp+}{}^{dp}$		✓

Hence in an antisymmetric, rigid left or fl-lub promotion theory, circumnominal relatives are roughly like (53a) – to be extended below –, where the entire relative clause moves to SpecDP. This looks like a kind of pied piping again, such as discussed before. The uniform branching theory distinguishes between VO and OV languages. In the VO case the representation is like (53a), in the OV case, no movements are necessary, as in (53b), which is left-branching.

(53) a. [$_{DP}$ [$_{CP}$ (C) … [$_{DP\text{-}rel}$ (D_{rel}) [$_{NP}$ **N**]] …]$_{cp}$ (**D**) t_{cp}] ('spec-head-comp' base)
b. [$_{DP}$ [$_{CP}$ …. [$_{DP\text{-}rel}$ [$_{NP}$ **N**] (D_{rel})] …(C)] (**D**)] ('comp-head-spec' base)

The head noun is in situ, hence there is no overt promotion. This means that the relative DP does not move to SpecCP. Thus suppose that the *wh*-feature is weak, which leads to (covert) feature movement.

First, consider the derivation of circumnominal relatives in OV languages in the uniform branching theory (53b). Since all constituents are lexically in the right position, all feature checking must be covert. Therefore after the internal checking in $DP_{rel,}$ the formal features of D_{rel} move to C covertly for *wh*-checking. Next, they should be raised to the outer D for ϕ-feature checking. However, that is not possible, since it would imply excorporation (of FF(D_{rel}) from C). Thus the uniform branching theory, although attractive at first sight in this respect, has a checking problem. I will show directly below that the other theories do not meet this problem.

Thus consider (53a) in detail. What is the status of the ϕ-features of D/D_{rel}? Given property (48dii) I conclude that these are strong in some languages and weak in others. Namely, if in a VO language the normal order is D N, the ϕ-features must be weak: there is no overt N(P)-movement. If the order is N D, there is overt movement, hence the features are strong.

The first possibility I want to explore is: *wh* weak and ϕ strong on a spec-head-comp base. Initially, N incorporates into D_{rel} (or NP moves to SpecDP_{rel}), so that N and D_{rel}'s Case and ϕ-features can be checked overtly. DP_{rel} does not need to move to SpecCP overtly, since *wh* is weak. Instead, D_{rel}'s formal features move to C and *wh* is checked covertly. CP is selected by the matrix clause D. D's ϕ-features are strong hence something must be attracted. D_{rel}'s features are present in C, hence in CP, so what happens is that CP is moved to SpecDP, where the ϕ-features can be

checked in spec-head configuration. This derivation is indicated in (54) in some detail.

(54) $[_{DP}\ [_{CP}\ [_{C}\ FF(D_{rel})+(C)]\ [_{IP}\ldots\ [_{DP\text{-}rel}\ [_{D\text{-}rel}\ \mathbf{N}+(D_{rel})]\ [_{NP}\ t_{n}]]\ \ldots]]_{cp}\ (\mathbf{D})\ t_{cp}]$

Notice that this derivation explains (48e): the external D is final. It may also explain (48ci): there is no relative pronoun, i.e. D_{rel} must be covert. At least a part of D_{rel} c-commands N, hence there is a threat of a Binding Principle C violation.

Some unwanted possibilities must be excluded. First, the derivation crashes if only D_{rel}'s *wh*-feature moves to C, because then there are no available ϕ-features for the matrix D to check with. So all formal features of D_{rel} are pied piped to C, although only *wh* is attracted. This is in accordance with standard assumptions. Second, why doesn't $FF(D_{rel})$ move on to D, instead of moving the whole CP to SpecDP? This is because i) excorporation (here, of D_{rel} from C) is not possible in general; and ii) if the Cases of D_{rel} and D are different, incorporation of D_{rel} into D leads to a crash. Third, instead of CP movement, why does C – or more precisely $[_{C}\ FF(D)+C]$ – not move to D? I am not sure how to exclude this technically, but I cannot even think of a possible interpretation of incorporation of a complementizer into a determiner of a higher clause. (Whereas the other way round, movement of an argument to the CP domain is a way of scope-marking.) So suppose this is not an option. Then (54) is the only possible derivation given this feature setting, which is what is desired.

Next, consider what happens if the ϕ-features are weak, i.e. in the D N languages. This derivation only minimally differs from (54). It is shown in (55).

(55) $[_{DP}\ [_{CP}\ [_{C}\ FF(D_{rel})+(C)]\ [_{IP}\ldots\ [_{DP\text{-}rel}\ [_{D\text{-}rel}\ FF(N)+(D_{rel})]\ [_{NP}\ \mathbf{N}]]\ \ldots]]_{cp}\ (\mathbf{D})\ t_{cp}]$

The head noun moves covertly to D_{rel}, since the features are weak. As in (54), D_{rel} moves to C covertly. I have argued that excorporation of D_{rel} is impossible and that C cannot incorporate into the matrix D. (Whether this would be overt or covert is irrelevant.) Thus, even if ϕ is weak, CP must move to SpecDP in order to prevent a crash.

So even in D N languages, a determiner must be final in relative constructions. Perhaps this explains why it is never pronounced in these languages, at least not in those described in the data set,[34] since an overt D in these relative constructions would go against the normal pattern. In other words: the syntax of circumnominal relative constructions forces a determiner to be construction-final in all relevant languages. In those with a D N pattern, this is odd from a perceptional point of view, which may be the reason why an overt D is shunned in relative constructions. [35,36]

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[34] See Culy (1990:261) on Diegueño, Dogon, Lakota, Japanese, Navaho, the Quechua family, Moore, Dagbani and ASL. Four additional languages, Crow, Mohave, Tibetan and Yavapai (from Lehmann 1984) conform to this pattern.

[35] This may also be the explanation for the fact that circumnominal relatives generally do not occur in D N languages where D is regularly overt, since in that case every possible relative would have to be shunned, which makes the relative strategy vacuous.

5.4. Additional issues

Some aspects of circumnominal relatives deserve further discussion. I would like to add some notes on the indefiniteness effect, verb morphology, nominalization and cross-linguistic generalizations, internal head movement, island effects, and maximalization.

5.4.1. The indefiniteness effect

Williamson (1987) describes an indefiniteness effect for the internal head in Lakhota circumnominal relatives. It is confirmed by Culy (1990) for other languages. According to Culy there are several semantic explanations for this phenomenon. The most convincing one, I believe, is the following. DPs are generalized quantifiers, hence the circumnominal relative must contain a free variable to be bound by D. If the head noun phrase is a definite DP, the quantification by the outer D would be vacuous, so this is excluded. I will not further discuss the indefiniteness effect, but see Williamson (1987) and especially Culy (1990:Ch3), who also notes and explains some counterexamples.

5.4.2. Verbs and morphology

Culy (1990:128-150) discusses some morphological issues concerning nominalized sentences. Since these do not concern circumnominal relatives in particular, but also adnominal relatives and other nominalized sentences, I will not discuss them here, but simply list his conclusions:[37]

... continued

[36] Provided that the proposed syntax is correct, this functional claim is much stronger and more straightforward than Culy's (1990:207-239) proposal which makes use of the Consecutive/ Embedding Constraint (CEC) which states that centre embedding in combination with a consecutive order of equal lexical elements is ruled out. For instance, the CEC predicts that [$_{NP}$ Det [$_{N'}$ [$_{RC}$ [$_{NPsub}$ Det N] {Obj, V}]]] is impossible, but the simple addition of an adverb preceding the subject should annul the effect, which is not true. Similarly, if the two adjacent determiners are different, there is no violation. Therefore Culy proposes that configurations that potentially violate the CEC can be generalized to be ungrammatical. However, this generalization incorrectly includes SVO, N Det languages, which produce a potential CEC violating configuration. So Culy assumes that there is language variation on this point. My proposal does not have these problems, although much more detailed data are necessary for a good comprehension of the issue. (To mention just one difficulty: Culy claims on the basis of positive evidence only, that indefinite IHRCs like [$_{DP}$[$_{RC}$… [$_{obj}$ N indef]] indef] do not occur in the SVO, N Det language Moore, whereas definite ones do: [$_{DP}$[$_{RC}$… [$_{obj}$ N indef]] def]. This follows from the CEC. However, Culy seems to overlook that again an adverb – here sentence-final – would bypass the CEC effect. Hence more data, including negative judgements are necessary.) Still, I do not wish to claim that the CEC (or an equivalent functional filter) in the strict sense is not a real effect. It just seems not strong enough to explain the distribution of determiners in circumnominal relative constructions.

[37] See also the section on relative affixes in Ch5§4.1. For a list of relevant morphological characteristics of several circumnominal strategies, see Culy (1990:262).

(56) a. There may be a nominalizing or relative affix.
b. There may be verbal forms that are restricted to subject relatives or object relatives.
c. Verbal agreement in nominalized sentences may be i) the same as in main clauses; ii) different from main clauses; iii) completely absent.

5.4.3. Nominalization and cross-linguistic generalizations

In earlier work, e.g. Cole (1987) and Downing (1978), it is assumed that circumnominal relatives occur in languages with characteristics such as: SOV order and *pro* drop. Further research – in particular Culy (1990:Ch4) – has shown that neither is true; cf. (48) above, and – concerning pro drop – Culy (1990:240-242). Instead, it turns out that the presence of nominalized sentences is crucial. Culy (1990:203) states: "A language will have circumnominal relatives only if it also has other [read: at least one type of, MdV] similar nominalized sentences with the independency properties [i.e. independent reference of arguments, and independent tense, mood and aspect]." Examples of other clauses that can be nominalized are factive complements, indirect questions, complements of verbs of saying, etc. Culy (1990:264) lists for several circumnominal relative languages which other nominalized sentence types they have.[38]

5.4.4. Internal head movement

Circumnominal relatives have an internal head which is not *wh*-moved. However, according to Lehmann (1984:121), there are circumnominal relatives with a fronted head. As a main strategy this is only found in Yavapai (cf. Appendix II, table 3), but it is a secondary strategy in Gaididj, Mohave, Diegueño, Latin and Sanskrit. This phenomenon has remained unnoticed by Culy (1990). Lehmann argues that it may be compared with *attractio inversa*, where the antecedent of a postnominal relative gets subordinate clause Case. Perhaps this process marks the transition between the postnominal and the circumnominal strategy. If so, one might expect a link between circumnominal and prenominal relatives, too, namely by extraposition of the head within a circumnominal relative. Lehmann (1984:122, cf. 129) suggests that this may exist indeed in some (stylistically marked) literary variants in ancient Greek and Latin. There is a problem, however: there is a sentence-initial relative pronoun in the examples provided by Lehmann. Hence it looks like stranding of the antecedent in a left-oriented structure, which is therefore a 'failed' *post*nominal relative hence a circumnominal one. Thus this is another instance of the transition between circumnominal and postnominal relatives. (Moreover, it is another indication for a promotion theory of relatives.) A transition between prenominal and circumnominal relatives is not found, if it exists at all. Notice that *attractio inversa* is also not found in prenominal relative constructions, as far as I know.

Basilico (1996) discusses internal head movement in circumnominal relatives in more detail. He shows that there are two types of internal head movement:

[38] There is one exception: ASL has no other nominalized clause types. Perhaps this is explained by the fact that ASL is the only IHRC language with a relative marker; cf. Culy (1990:205-206).

movement to the front of the sentence and movement to an intermediate position. There are examples from the Yuman languages (Mohave, Cocopa, and Diegueño), Northern Athapaskan (Tanaina, Koyukon), and Gur (e.g. Moore). The effect of such a movement is that the relative clause is disambiguated (in case that there are more arguments that could be the head). In all examples, internal head movement is optional. Basilico argues that it is necessary (whether overt or covert) in order to avoid existential closure (the relevant NPs are specific). Hence it is comparable with scrambling and object shift in Germanic languages. Moreover, the internal variable of the indefinite noun needs to be bound locally by the external determiner. This is in line with Williamson (1987), Culy (1990) and Srivastav (1991). I will not further discuss this issue, but see Appendix III for some details of Basilico's approach.

5.4.5. Island effects

Circumnominal relatives, like adnominal relatives, are in principle unbounded, i.e. constructions of the type *the man whom I thought that you saw* are attested. If *wh*-movement is involved, one would expect that island effects play a role. There is at least some information concerning violations of the Complex Noun Phrase Constraint (both question word extraction and 'boundedness at LF', i.e. (covert) *wh*-movement in relative clauses), the Coordinate Structure Constraint, and the Empty Category Principle (subject/object asymmetry).[39] The relevant construction types are illustrated with well-known English examples in (57).

(57) a. CNPC (question extraction): * who do you love the child that saw _ yesterday?
b. CNPC (boundedness at LF): * the newspaper that we talk to many people who read _ is the Times.
c. CSC: * the dog which _ and the cat were fighting is barking.
d. ECP: * the man who I thought that _ saw you.
the man who I thought that you saw _.

The results of the tests are in table 4. The data are from Cole (1987), Itô (1986), Williamson (1987), Culy (1990:110-128, 261), and Basilico (1996).

[39] The ECP effect mentioned is known as the *that*-trace effect. In this light, the effect is a bit strange here, since circumnominal relatives do not contain complementizers. The English examples without the complementizer *that* do not display the effect: both are good. In Dutch, the complementizer cannot be omitted, but still both examples are equally questionable for me – but equally good for some others, see e.g. Bennis (1986).

Table 4. *Island effects in circumnominal relatives.*

language	unboundedness	CNPC(LF) obeyed	CNPC(qu) obeyed	CSC obeyed	ECP effect
Quechua	yes	yes	yes	yes	yes
Navaho	?	yes	?	yes	?
Japanese	yes	no	no	?	?
Lakota	yes	no	?	?	no
Mohave	?	no	?	?	?

As expected, there is some language variation, which is well-known from adnominal relative constructions. Culy stresses that, as far as can be seen, the effects are equal for adnominal and circumnominal relatives within one language. (Recall that most circumnominal relative languages also have adnominal RCs.) Of course they should also equal the effects in non-relative contexts. Notice that Japanese and Lakota seem to be quite liberal. If they do not obey any constraint whatsoever, this could be problematic for the theory of *wh*-movement. However, I do not expect so. Clearly much more data are needed on this issue. Hopefully, the results of a systematic investigation into island effects in a larger number of languages will be available some day.

5.4.6. Maximalization and subjacency

Grosu & Landman (1998) suggest that circumnominal relatives without an overt determiner are maximalizing (cf. Ch2§3 on Grosu & Landman's scale). If determiners are overt, the interpretation is restrictive. This hypothesis is based on Quechua and Lakota. It is not clear if this is cross-linguistically so, and why. Basilico (1996:518) predicts that if there are subjacency violations, stacking is possible. In order to check these two hypotheses, I have collected the following table. The data are from Cole (1987), Itô (1986), Williamson (1987), Culy (1990:110-128, 214-223, 261), Basilico (1996), and Grosu & Landman (1998). Recall that maximalization is indicated by (external) determiner restrictions (only definite and universal) and a prohibition of stacking.

Table 5. *Some characteristics in particular circumnominal relative strategies*

language	island violations (at least CNPC(LF))	overt D	stacking	determiner restrictions
Quechua	no	no	no	yes
Navaho	no	no	no	?
Japanese	yes	no	no?[40]	?
Lakota	yes	yes	yes	no
Mohave	yes	yes	?	?
Moore	?	yes	?	yes
Dagbani	?	yes	?	no

[40] Strangely, Japanese is reported to have multiple headed relatives (cf. Itô 1986).

If the data on Moore (from Culy 1990) are correct, they disprove Grosu and Landman's hypothesis partly. However, it may still be correct that the *absence* of a determiner forces a maximalizing reading. Second, if Japanese disallows stacking (a statement from Grosu & Landman 1998), Basilico's claim is incorrect. Nevertheless, more data are necessary before definitive conclusions can be drawn.

6. Correlatives

The fourth syntactic main type of relative constructions is the correlative one. It is discussed in three subsections: 6.1 is an overview of the properties of correlatives; 6.2 discusses briefly the history of the analysis; and 6.3 presents the derivation within the present framework.

6.1. Introduction and properties

Correlatives occur in various language families across the world (cf. Appendix II, figure 1 and table 4). Usually, they have a structure like (58), where the relative CP is left-adjoined to the matrix clause, the head noun is internal to the relative clause, and the matrix contains a demonstrative correlate.

(58) $[_{\text{matrix}} [_{\text{CP}} [_{\text{DP-rel}} \textit{wh}\ \text{NP}]_i \ldots t_i \ldots] [_{\text{matrix}} \ldots \text{Dem} \ldots]]$

Correlatives are preposed co-relatives (cf. the terminological chart in Ch2§2.5). In various publications (right-)extraposed relatives are also called correlatives, but I will not use this confusing terminology. Srivastav (1991) shows that extraposed relatives are clearly distinct from preposed correlatives; see below. Extraposed relatives behave like adnominal relatives. Thus I will refer exclusively to structures like (58) as *correlatives*. (Extraposition is treated separately in Ch7.)

Correlatives differ from circumnominal relatives (although on the basis of an individual sentence in a particular language the distinction may be hard to make); see table 4.

Table 4. *Differences between correlatives and circumnominal relative clauses.*

property	*correlative*	*circumnominal*
relative pronoun in RC	yes	no
pronoun in matrix	yes[41]	no[42]
RC is sentence-initial (in matrix)	yes	no[43]
RC is in a DP position (in matrix)	no	yes
category of RC construction	CP	DP
RC construction is nominalized	no	yes
external determiner	no	possibly
external Case marking	no	possibly
external adposition	no	possibly
indefiniteness restriction on head noun	no	yes
RC is maximalizing[44]	yes	not necessarily

Hence I agree with Culy (1990:26) that correlatives and circumnominals are separate phenomena, although of course both are relative constructions, and there are obvious and not-so-obvious similarities (cf. Lehmann 1984; Srivastav 1991 and Grosu & Landman 1998).

5.2. Historical developments concerning the analysis

Consider briefly the history of the analysis of correlatives (see Appendix III for some more details). One possible view is that they are generated as adnominal relatives and subsequently moved to a position left-adjoined to the matrix; see e.g. Verma (1966), Junghare (1973), Kachru (1973, 1978), Wali (1982), or Subbarao (1984). Another view is that correlatives are syntactically different from English-type relatives: they are generated in a left-peripheral position; cf. (58). This is advocated in Donaldson (1971), Downing (1973), Bach & Cooper (1978), Dasgupta (1980), Lehmann (1984), Keenan (1985), and Andrews (1985).

The first approach assumes that both the syntax and the semantics of adnominal and correlative relatives is basically the same. The second approach has a different syntax, but a similar semantics (cf. Srivastav 1991 for details). More recent research has shown that correlatives differ from adnominal relatives in important respects. Concerning the semantics, Srivastav (1991) argues that correlatives are quantificational expressions. Grosu & Landman (1998) extend her ideas into a more general perspective, in which correlatives are one of several construction types that are semantically maximalizing. Hence the demonstrative correlate in the matrix clause is definite or universal only. Moreover, stacking is impossible.[45,46] See e.g. the Hindi examples in (59) and (60), taken from Grosu & Landman (1998:164/5).

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41 But possibly null.

42 Except if the language allows for doubling pronouns, as in Lakota.

43 Unless accidentally, or if it is scrambled.

44 Cf. Ch2§3 on Grosu & Landman's scale.

45 I came across one counterexample: a triple stacked correlative in Sanskrit; see Lehmann (1984:131).

(59) [$_{CP}$ Jo laRke khaRe hai], ve(/sab/*do/*kuch) lambe haiN.
wh boys standing are those(/all/*two/*few) tall are
lit. 'Which boys are standing, they (/…) are tall.'

(60) [jo laRkii khaRii hai] [*jo ravii kii dost hai], vo bahut lambii hai.
wh girl standing is *wh* Ravi GEN friend is DEM very tall is
lit. 'What girl is standing (*who is Ravi's friend), she is very tall.'

A further difference is the presence or absence of the head noun in the internal and external position. This can be shown nicely in Hindi, which has correlative, adnominal and extraposed relatives. It turns out that extraposed relatives behave on a par with adnominal relatives. Concerning the head noun, Srivastav (1991) shows data that can be schematically summarized as follows:

(61) a. [*wh* N…] … Dem N … [correlative]
b. [*wh* N…] … Dem …
c. [*wh* …] … Dem N …

(62) a. * … Dem N [*wh* N…] … [postnominal/extraposed]
b. * … Dem [*wh* N…] …
c. … Dem N [*wh* …] …

In other words, postnominal relatives display an antecedent head noun only. In correlatives, there is possible variation: the head noun is either internal or external or both.

A third difference is that correlatives allow for multiple relativization such as *jis laRkiiNe jis laRkeKO dekhaa usNE usKO pasand kiyaa* 'Which girl saw which boy, she liked him.'[47] This kind of sentences are impossible to construct with adnominal or extraposed relatives. For those reasons, Srivastav (1991) proposes the following structure for correlatives:

(63) [$_{IP}$ [$_{CP}$ *wh* N …]$_i$ [$_{IP}$ … Dem$_i$ …]]

... continued

46 If I understand Bianchi (1999:90) correctly, recursive embedding as in *I saw the boy who saw the girl who saw you* is also impossible in correlative constructions. Clearly, it would lead to centre embedding, but I fail to see how it is excluded exactly. Bianchi (who refers to Srivastav) states that material intervenes between the correlative sentence and the variable in the matrix clause. This is indeed the case linearly, but not hierarchically.

47 In fact, there are three options (cf. Ch2§7.6): (i) with bijection: [wh$_1$ wh$_2$ … Dem$_1$ Dem$_2$], (ii) with a split correlate: [wh$_{plural}$ … Dem$_1$ Dem$_2$], and (iii) with a split *wh*: [wh$_1$ wh$_2$ … Dem$_{plural}$]; see Grosu & Landman (1998) for examples. Notice that the separated *wh* and/or *Dem* phrases can have different roles in the relative clause and matrix clause, respectively. Thus these are quite different from the rare examples with a split antecedent that can be found in languages with another relative strategy, e.g. English *a man$_i$ went out and a woman$_j$ came in who$_{i+j}$ were engaged*. In this kind of examples coordination and role equivalency is crucial. Impossible is for instance: *a man$_i$ saw a woman$_j$ who$_{i+j}$ were walking.*

Here the relative CP is left-adjoined to the matrix IP. This CP is a quantifier that binds the demonstrative in the matrix clause. The relative is adjoined to IP, since if the whole construction is embedded (e.g. in a factive context), it follows the complementizer. Hence the correlative cannot be in SpecCP or adjoined to CP.

If the head noun's number differs from Dem, the verb in the relative clause agrees with N, hence the relative is not in the scope of the matrix demonstrative. Srivastav's example is *Jo laRke khaRe hãĩ har ek meraa chaatr hai* 'Which boys *are* standing, each one *is* my student.' Again, this indicates that the correlative is base-generated in a left-adjoined position.

As for the internal syntax in Hindi correlatives, the relative *wh*-operator need not be moved overtly to $SpecCP_{rel}$. This corresponds to the fact that *wh*-questions are in situ. Strange, however, is the optionality involved.

Finally, the demonstrative in the matrix clause is like a variable. The distance between the correlative and the demonstrative cannot be too large: "Dem is a locally A'-bound pronominal" (Srivastav 1991:680). Grosu & Landman (1998:167) propose an improvement on this by stating that "we do not assume the correlate [= the demonstrative] itself to be a variable, interpreted in situ: there *is* a variable bound by abstraction in the position of the correlate, but the meaning of the correlate itself contributes to the building of a generalized quantifier outside the IP".

5.3. The derivation of correlative constructions

At this point consider how the correlative construction relates to the promotion theory of relative clauses. Essential facts for the syntax are the following ones:

(64) a. There is no 'external determiner': the correlative is a CP.
b. Usually there is a relative pronoun bearing subCase in the correlative.
c. The internal head noun accompanying D_{rel} (if present) bears subordinate clause Case.
d. Usually there is overt *wh*-movement in the correlative.
e. The matrix demonstrative (the correlate) bears matrix Case.
f. If there is a resumptive head noun – as in (61a/c) –, it bears matrix Case.

The grammar of the matrix clause is rather obvious. There is an argument position that is syntactically filled by a DP which is i) zero, if the language allows for *pro* drop, or ii) a (definite or universal) demonstrative/personal pronoun, or iii) a demonstrative plus a resumptive head noun (where of course this demonstrative must be usable as a dependent D). This DP checks Case in the matrix clause.

The correlative clause is adjoined at some point, probably IP (I will return to this). Since there is no external determiner, there is no trigger for head raising. Thus consider the feature checking internal to CP_{rel}, e.g. *which girls you saw*, to be concrete. The relative DP *which girls* is generated in the direct object position. D and N agree in ϕ-features and bear the same Case. If this were not the case, the derivation would crash, since there is no external determiner to rescue it. N's features need to be checked, hence the formal features of N incorporate into D_{rel} – the most economical solution. DP_{rel}'s accusative Case is checked with AgrO.

Finally, the *wh*-feature present (usually strong) triggers movement to SpecCP. This is indicated in (65).

(65) $[_{CP\text{-}correl}\ [_{DP\text{-}rel}\ [_{D}\ FF(N)+D_{rel}]\ [_{NP}\ N]]_i$ (C) $[_{IP}\ DP_{subj}\ [_{AgrOP}\ t_i$ AgrO $[_{VP}\ t_{subj}$ V $t_i]\ ]]]$
which girls you saw

I conclude that the syntactic derivation of correlatives is straightforward.

Bianchi (1999:86-88) notes that many languages with more than one relative strategy (among which Hindi) use the same relative pronouns in postnominal and correlative clauses. From the perspective of the standard theory of relatives this is not necessarily the case: in a correlative clause DP_{rel} is *[which girls]* (i.e. D_{rel} is a determiner selecting the head noun); in a postnominal relative DP_{rel} is just *[which]* (i.e. D_{rel} is an independent pronoun anaphoric to an antecedent). By contrast, in the promotion theory DP_{rel} is equal in both cases.

Finally, the position of CP_{correl} in the matrix clause must be considered somewhat more precisely. Potential base positions for CP are:

(66) a. the complement of D_{dem}
b. $SpecDP_{dem}$
c. $AdjDP_{dem}$
d. AdjIP
e. SpecCP
f. AdjCP

Option (66a) can be excluded immediately – even apart from Srivastav's semantic arguments. CP cannot not take the base position of an adnominal relative since that may already be filled with a resumptive head noun, as indicated before; cf. (61a/c). SpecCP and AdjCP (66e/f) are excluded, because a correlative follows a complementizer if the whole construction is embedded, as noted before. SpecDP (66b) and AdjDP (66c) are excluded because of the multiple relativization cases. (If there are two correlates, to which DP_{dem} should CP_{correl} be connected?) Thus I agree with Srivastav and others that AdjIP (66d) is a plausible base position.[48,49]

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[48] Generally, AdjIP is a position open for extra material. For instance, temporal adverbs and adverbial clauses can also be generated there. This can be shown in Dutch, where, in main clauses, the subject and the finite verb are in SpecCP and C respectively, and a definite object is scrambled out of VP, say, to SpecAgrOP: *Ik heb {gisteren / toen oma kwam} de hond met plezier uitgelaten* [I have {yesterday / when grandma came} the dog with pleasure taken out].

[49] However, there are examples where the correlative seems to be adjoined to the demonstrative DP, i.e. in the middle of the matrix clause; cf. Wali (1982) and Srivastav (1991). So AdjDP (66c) is a position for correlatives in exceptional cases. (It is not clear to me whether SpecDP (66b) is a possible alternative for this.) But then one could also analyse a correlative in AdjIP as if it has moved there from AdjDP (or SpecDP). Neither Srivastav nor Bianchi considers this option, probably because of the multiple relativization cases. However, these in turn could be exceptional. It seems to me that it has certain advantages to take AdjDP (or SpecDP) as the basis. For instance, it would explain the locality effects between CP_{correl} and D_{dem} mentioned in a direct way. Preposing of the correlative could then be seen as a movement driven by information structural preferences, as is the case for other types of scrambling. Furthermore, it allows us to assume one base position for all

to be continued...

One final remark is in order. In the strict version of antisymmetry, adjunction is not possible, which is problematic for correlatives. (Strikingly, this is ignored by Bianchi 1999.) Hence again there are three options: i) a more elaborate phrase structure is needed in order to create a position for correlative clauses; ii) Zwart's (1993) revision of antisymmetry is used, which accounts for one adjoined position; or iii) strict antisymmetry is given up for a rigid left, uniform branching or fl-lub version of phrase structure.

7. The syntax of main types of relatives: summary and conclusion

This chapter has treated of the promotion theory of relativization in detail. I have briefly commented upon Kayne's (1994) and Bianchi's (1999) version of it and upon Borsley's (1997) critique. The derivations of all syntactic main types of relatives have been discussed. I have argued that all types of relatives involve the same 'ingredients', and that the differences can be traced back to overt/covert distinctions, that is, differences in the feature checking procedure. The only features that are relevant in this respect are *wh*, Case, and ϕ-features. Furthermore, there are differences in pied piping, which is accounted for in terms of covert feature movement. Namely, if formal features move up without directly establishing a checking relation, i.e. 'percolation', this causes pied piping. Finally, I have concluded that the uniform branching theory of phrase structure is untenable from the perspective of derivations of relative constructions. Rather, a universal spec-head-comp basis is preferable, at least in the functional domain, which is what is relevant in a relative context.

I will provide an overview of all analyses here, and discuss which 'parameter setting' leads to which type of relative construction. Obviously I cannot repeat all potential alternatives that lead to a crash, but see the text above.

Consider the features involved. First, there is the **wh**-feature (on C and D_{rel}). If it is strong then DP_{rel} moves to SpecCP; if it is weak, only the formal features (FF) of D_{rel} move to C, which gives a circumnominal relative.[50] This FF movement causes heavy pied piping (HPP) of the relative CP (CP_{rel}) to the specifier of the external (matrix) determiner ($SpecDP_{ext}$); see below. Second, **Case** is important. The relative DP (DP_{rel}) checks subordinate clause Case (subCase) with some X in the

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... continued

correlatives (except for the multiple relativization cases). If so, this reflects in a direct way that CP_{correl} and D_{dem} (+N) are semantically interpreted as a unit. Still, as required, D_{dem} does not c-command the relative clause (unlike in adnominal relative constructions).

50 So far, I have ignored the following problem: there are languages which seem to have a contradictory *wh*-feature in relative clauses and questions. For instance, in Imbabura there is overt *wh*-movement in questions, but relatives are circumnominal, in which *wh* is weak. Chinese shows he complementary pattern: it has *wh*-in-situ questions, but prenominal relatives, in which *wh* is supposed to be strong. At present I am not sure how to proceed on this matter.

relative clause.[51] In turn, the 'external' DP (DP_{ext}) in the matrix clause (CP_{matr}) checks matrix clause Case (matrCase) with some X in the matrix, whether overt or covert. Furthermore, the relative N must check matrCase with D_{ext}. Third, the **ϕ-features** (on nouns and determiners) have their influence. Those on N are checked with DP_{rel}. If ϕ on $D_{(ext/rel)}$ is strong, then N moves to D (or NP to SpecDP). If it is weak, then FF(N) moves to D, or, in the relative clause, NP moves to $SpecDP_{rel}$ (except in correlatives and circumnominal relatives).

In this context **heavy percolation** is feature movement of N to C_{rel}. It is only useful if D_{ext} has strong ϕ-features, which then causes heavy pied piping for ϕ-feature checking. I have argued that HPP must be CP_{rel} movement to $SpecDP_{ext}$, and not IP movement. There are two types of percolation here. Type A is full FF(N) percolation to C; type B is percolation of the ϕ-features only. In the first case N's Case feature is checked as well via CP; in the second this is not possible, hence in addition to HPP, N must move to D.

Table 5 lists the different settings for all relative clause types. Notice that the position of the correlative with respect to the matrix is different from the other types of relatives, but the features in use are the same everywhere.

Table 5. *Parameter settings for different relative clause types in a rigid-left promotion theory.*

RC type		*wh*	*ϕ (on D)*	*heavy percolation*	*remarks*
post	D N RC	strong	weak	no	
	N D RC	strong	strong	no	
	N RC D	strong	strong	type A	HPP
pre	D RC N	strong	weak	no	IP adjoins to CP
	RC D N	strong	strong	type B	HPP N to right of D
	RC N D	strong	strong	type B	HPP
cir	RC D	weak	(irrelevant)	no	HPP
cor	RC…Dem	(strong)	weak	no	no D_{ext}; D_{dem} in matrix

These settings lead to the representations in table 7, which are derived on the basis of the steps indicated in table 6.

[51] Notice that if *wh* is strong, this movement for Case checking must be overt, whether X is strong or weak. This is similar in normal questions. Rather obviously, the strong feature of the higher head blocks the more economical option which would be available for Case in another context.

Table 6. *Movements in different relative clause types in a rigid-left promotion theory.*

RC type		*movements*	*reasons*
post	D N RC	NP → SpecDP$_{rel}$ DP$_{rel}$ → Case position in CP$_{rel}$ DP$_{rel}$ → SpecCP$_{rel}$ FF(N) → D$_{ext}$ DP$_{ext}$ → Case position in CP$_{matr}$	D$_{rel}$ checks ϕ (weak) with NP some X checks subCase with DP$_{rel}$ C$_{rel}$ checks *wh* (strong) with DP$_{rel}$ D$_{ext}$ checks ϕ (weak) & matrCase with N some X checks matrCase with DP$_{ext}$
post	N D RC	NP → SpecDP$_{rel}$ DP$_{rel}$ → Case position in CP$_{rel}$ DP$_{rel}$ → SpecCP$_{rel}$ N → D$_{ext}$ DP$_{ext}$ → Case position in CP$_{matr}$	D$_{rel}$ checks ϕ (strong) with NP some X checks subCase with DP$_{rel}$ C$_{rel}$ checks *wh* (strong) with DP$_{rel}$ D$_{ext}$ checks ϕ (strong) & matrCase with N some X checks matrCase with DP$_{ext}$
post	N RC D	NP → SpecDP$_{rel}$ DP$_{rel}$ → Case position in CP$_{rel}$ FF[N] → C(P)$_{rel}$ DP$_{rel}$ → SpecCP$_{rel}$ CP$_{rel}$ → SpecDP$_{ext}$ DP$_{ext}$ → Case position in CP$_{matr}$	D$_{rel}$ checks ϕ (strong) with NP some X checks subCase with DP$_{rel}$ ϕ & Case percolation → heavy pied piping C$_{rel}$ checks *wh* (strong) with DP$_{rel}$ D$_{ext}$ checks ϕ (strong) & matrCase with CP$_{rel}$ some X checks matrCase with DP$_{ext}$
pre	D RC N	NP → SpecDP$_{rel}$ DP$_{rel}$ → Case position in CP$_{rel}$ DP$_{rel}$ → SpecCP$_{rel}$ IP$_{rel}$ → AdjCP$_{rel}$ FF[N] → D$_{ext}$ DP$_{ext}$ → Case position in CP$_{matr}$	D$_{rel}$ checks ϕ (weak) with NP some X checks subCase with DP$_{rel}$ C$_{rel}$ checks *wh* (strong) with DP$_{rel}$? D$_{ext}$ checks ϕ (weak) & matrCase with N some X checks matrCase with DP$_{ext}$
pre	RC D N	NP → SpecDP$_{rel}$ DP$_{rel}$ → Case position in CP$_{rel}$ FF$_{ϕ}$[N]→ C(P)$_{rel}$ DP$_{rel}$ → SpecCP$_{rel}$ N →$_{right}$ D$_{ext}$ CP$_{rel}$ → SpecDP$_{ext}$ DP$_{ext}$ → Case position in CP$_{matr}$	D$_{rel}$ checks ϕ (strong) with NP some X checks subCase with DP$_{rel}$ ϕ percolation (not Case) → heavy pied piping C$_{rel}$ checks *wh* (strong) with DP$_{rel}$ D$_{ext}$ checks matrCase with N D$_{ext}$ checks ϕ (strong) with CP$_{rel}$ some X checks matrCase with DP$_{ext}$
pre	RC N D	NP → SpecDP$_{rel}$ DP$_{rel}$ → Case position in CP$_{rel}$ FF$_{ϕ}$[N]→ C(P)$_{rel}$ DP$_{rel}$ → SpecCP$_{rel}$ N → D$_{ext}$ CP$_{rel}$ → SpecDP$_{ext}$ DP$_{ext}$ → Case position in CP$_{matr}$	D$_{rel}$ checks ϕ (strong) with NP some X checks subCase with DP$_{rel}$ ϕ percolation (not Case) → heavy pied piping C$_{rel}$ checks *wh* (strong) with DP$_{rel}$ D$_{ext}$ checks matrCase with N D$_{ext}$ checks ϕ (strong) with CP$_{rel}$ some X checks matrCase with DP$_{ext}$
cir	RC D	N → D$_{rel}$ *or* FF[N] → D$_{rel}$ DP$_{rel}$ → Case position in CP$_{rel}$ FF[D$_{rel}$]→ C$_{rel}$ CP$_{rel}$ → SpecDP$_{ext}$ DP$_{ext}$ → Case position in CP$_{matr}$	D$_{rel}$ checks ϕ (strong *or* weak) & subCase with N some X checks subCase with DP$_{rel}$ C$_{rel}$ checks *wh* with D$_{rel}$ D$_{ext}$ checks ϕ with CP$_{rel}$ (heavy pied piping) some X checks matrCase with DP$_{ext}$
cor	RC...Dem	*in the matrix:* DP$_{dem}$ → Case position in CP$_{matr}$ *in the correlative clause:* FF[N] → D$_{rel}$ DP$_{rel}$ → Case position in CP$_{rel}$ DP$_{rel}$ → SpecCP$_{rel}$	some X checks matrCase with DP$_{dem}$ D$_{rel}$ checks ϕ & subCase with N some X checks subCase with DP$_{rel}$ C$_{rel}$ checks *wh* (strong) with DP$_{rel}$

Table 7. *Structural representations for different relative clause types in a rigid-left promotion theory.*

RC type		*structural representation*
post	D N RC	$[_{DP\text{-}ext}\ [_{D}\ FF(N)+\mathbf{D}]\ [_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ \mathbf{N}]\ \underline{(D_{rel})\ t_{np}}\ ]_{dp\text{-}r}\ \underline{(C)\ [_{IP}\ \ldots\ t_{dp\text{-}r}\ \ldots]}]]$
	N D RC	$[_{DP\text{-}ext}\ [_{D}\ \mathbf{N}+\mathbf{D}]\ [_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ t_{n}]\ \underline{(D_{rel})\ t_{np}}\ ]_{dp\text{-}r}\ \underline{(C)\ [_{IP}\ \ldots\ t_{dp\text{-}r}\ \ldots]}]]$
	N RC D	$[_{DP\text{-}ext}\ [_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ \mathbf{N}]\ \underline{(D_{rel})\ t_{np}}\ ]_{dp\text{-}r}\ \underline{FF(N)+C\ [_{IP}\ \ldots\ t_{dp\text{-}r}\ \ldots]}]_{cp}\ \mathbf{D}\ t_{cp}]$
pre	D RC N	$[_{DP\text{-}ext}\ [_{D}\ FF(N)+\mathbf{D}]\ [_{CP}\ \underline{[_{IP}\ \ldots\ t_{dp\text{-}rel}\ \ldots]}\ [_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ \mathbf{N}]\ (D_{rel})\ t_{np}]_{dp\text{-}rel}\ (C)\ t_{ip}]]]$
	RC D N	$[_{DP\text{-}ext}\ \underline{[_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ t_{n}]\ (D_{rel})\ t_{np}]_{dp\text{-}rel}\ \phi(N)+C\ \ldots\ t_{dp\text{-}rel}\ \ldots]_{cp}}\ [_{D}\ \mathbf{D}+\mathbf{N}]\ t_{cp}]$
	RC N D	$[_{DP\text{-}ext}\ \underline{[_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ t_{n}]\ (D_{rel})\ t_{np}]_{dp\text{-}rel}\ \phi(N)+C\ \ldots\ t_{dp\text{-}rel}\ \ldots]_{cp}}\ [_{D}\ \mathbf{N}+\mathbf{D}]\ t_{cp}]$
cir	RC D	$[_{DP\text{-}ext}\ \underline{[_{CP}\ [_{C}\ FF(D_{rel})+(C)]\ [_{IP}\ldots\ [_{DP\text{-}rel}\ [_{D\text{-}rel}\ \mathbf{N}\ +\ (D_{rel})]\ [_{NP}\ t_{n}]]\ \ldots]]_{cp}}\ (\mathbf{D})\ t_{cp}]$ *or* $[_{DP\text{-}ext}\ \underline{[_{CP}\ [_{C}\ FF(D_{rel})+(C)]\ [_{IP}\ldots\ [_{DP\text{-}rel}\ [_{D\text{-}rel}\ FF(N)+(D_{rel})]\ [_{NP}\ \mathbf{N}]]\ \ldots]]_{cp}}\ (\mathbf{D})\ t_{cp}]$
cor	RC…Dem	$[_{IP\text{-}matr}\ \underline{[_{CP}\ [_{DP\text{-}rel}\ [_{D}\ FF(N)+D_{rel}]\ [_{NP}\ \mathbf{N}]]_{i}\ (C)\ \ldots\ t_{i}\ \ldots]}\ [_{IP\text{-}matr}\ \ldots\ [_{DP\text{-}dem}\ D_{dem}\ (NP)]\ \ldots]]$

In short, I have tried to provide a coherent and complete system to describe the syntactic aspects of relativization. In the body of this and the previous chapter I have excluded many potential alternatives. Of course I am aware that some details of the present analysis may not be completely satisfactory (especially concerning prenominal relatives), and they will probably be reconsidered in future research. Nevertheless, the promotion theory as argued for is the least implausible analysis of relativization in general.

5 Relative elements

1. Introduction

This chapter discusses the syntax and typology of relative elements. Some of these have been addressed before, e.g. in *wh*-relatives and *that*-relatives of the English type (cf. Ch4§3), but the COMP domain of relative clauses is more complex; moreover not all relative elements are in, or are moved to, the left periphery of the clause. In section 2 Lehmann's classification of relative elements is presented and revised. Section 3 discusses the repercussion of these findings on the general syntax of relative clauses as proposed in Chapter 4. A tentative analysis of resumptive pronouns and relative markers is put forward. Section 4 presents a fine-grained classification of relative elements, based on the language sample in Appendix II. It turns out that there is a large set of relative elements that is not predicted by the theory discussed so far: relative affixes. Section 5 concludes the discussion.

2. Theoretical predictions of types of relative pronouns and particles

Section 2.1 introduces Lehmann's classification of relative elements, which is actually a prediction of possible elements, based on the interaction of three functions associated with them. In 2.2 I try to translate these into syntactic characteristics. It is shown that this leads to problems, and therefore I propose a revision of Lehmann's classification.

2.1. The function of relative pronouns and particles

Relative clauses have their own characteristics which often makes them recognizable as a type. Marking by a relative pronoun or particle is a common way to (partly) obtain this goal. According to Lehmann (1984), the three possible *functions* of a relative element are the following:

(i) *Subordination*. A relative clause is a subordinate clause. This can be indicated by a designated pronoun or particle.
(ii) *Attribution.* The relative clause is attributed to the head. The relative element shows [ϕ-feature] agreement with the head.
(iii) *Gap Construction*. The instance of the head within the relative clause is marked by a representatitive or a companion. It fills the gap [hence bears (abstract) Case, MdV].

Here *Gap* (German: 'Leerstelle') refers to the representative of the head in the relative clause. It must not be confused with a syntactic trace. (See Ch2§4 for more discussion on Lehmann's functional scales.)

According to Lehmann all logically possible combinations of these functions actually occur. See table 1, adapted from Lehmann (1984:249).

Table 1. *Relative pronouns and particles according to Lehmann (1984).*

Function ↓	Type →	*relative pronouns*				*relative particles*		*resumptive pronouns*
		A	D	B	C	E	F	G
Subordination		yes	yes	yes	-	yes	-	-
Attribution		yes	yes	-	yes	-	yes	-
Gap Construction		yes	-	yes	yes	-	-	yes

Lehmann calls the distinction between relative pronouns and particles a little arbitrary and uses an 'at least two functions' criterion for relative pronounhood, without attaching too much value to it. A priori I would rather say that the main distinction between relative pronouns and particles is the function Gap Construction. Hence the second type will be moved to the relative particles department below, which is why I have called it type D.[1]

What are these types? The following explanation is drawn from Lehmann (1984:249-250).

A. Typical relative pronouns seem to serve all three functions. They agree with the head and bear abstract or morphological Case. Examples: English *who*, Dutch *die*.
D. Subordination and Attribution, but no marking of the gap. There is agreement with the head. If there is Case marking, then it is matrix clause Case. Possible examples: Arabic *al-la-ḏi*, Swahili *ni-*.
B. Subordination and Gap Construction, but no Attribution. Hence there must be Case distinction but no agreement with the head. Possible examples (again, according to Lehmann): French *que/qui,*[2] Italian *che/cui*, Welsh *a/y(r)*.
C. Attribution and Gap Construction, but no Subordination. This type occurs, for example, as the first part of a complex that contains a subordinator, too. Examples: *who* in (Middle) English *who that*, *wie* in (dialectal) Dutch *die dat*.

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1 Lehmann calls type D a kind of relative pronoun. This has the consequence that there are non-resumptive and resumptive relative pronouns, which leads to confusion with type G. In my terminology *resumptive pronoun* is reserved for type G. Hence resumptive pronouns are *not* relative pronouns and vice versa, although strictly speaking (all) relative pronouns are resumptive in the sense that they construct the gap.

2 There is a discussion in the literature concerning the deeper analysis of *que/qui*. See e.g. Dekkers (1999) and the references there. For example, Rooryck (1997) treats *que* as a complementizer and *qui* as a complex of *que* and a clitic pronoun. In a way this is reminiscent of the inflected complementizer facts in the Germanic languages discussed in e.g. Haegeman (1983), Bennis & Haegeman (1984), and Zwart (1997).

E. Just Subordination. This type may equal the normal non-relative subordinator or other complementizers. It is the canonical case of a relative particle. Examples: English *that*, Danish *som*.
F. Just Attribution. Possible example: Old-Akkadian *šu*.[3]
G. Just Gap Construction. This concerns neither relative pronouns nor relative particles, but personal or demonstrative pronouns. These *resumptive pronouns* are *in situ*, contrary to most relative pronouns and particles, which are sentence-initial (or perhaps sentence-final).

Although the logic of table 1 is appealing, I think it is in need of a revision, since the (syntactic) distinction between several types is unclear. This is argued in the next section.

2.2. From functions to syntax: a revision of Lehmann (1984)

The three functions *Subordination*, *Attribution* and *Gap Construction* are reflected in syntax. Subordination is marked by the placement of a relative element at the border of the subordinate sentence (initial in postnominal clauses). This is provisionally called +i/f (initial/final) for the moment. Since this in itself does not express Subordination, let us also assume a syntactic characteristic +sub. These 'features' do not necessarily correspond to formal features, as we will see. So we should not attach a great importance to these representations. Attribution is indicated by ϕ-feature agreement with the head – i.e. person, number, gender, class (+ϕ, in short) – *and* placement at the sentence border (+i/f). Gap Construction is marked by subordinate clause Case: +subCase, which is nominative/accusative/etc. in a particular case.

These translations of functions into syntactic characteristics are listed specifically in (1).

(1) a. Subordination ↔ +sub AND +i/f
b. Attribution ↔ +ϕ AND +i/f
c. Gap Construction ↔ +subCase

When applied, this gives table 2. Notice that the upper half of table 2 is copied from table 1, only rearranged: I have shifted type D to the right position in the relative particles department.

[3] The later Akkadian *ša* is not declined anymore, hence arguably of another type.

Table 2. *Relative pronouns and particles (version 1).*

Function/ feature ↓	Type →	*relative pronouns*			*relative particles*			*resumptive pronouns*
		A	B	C	D	E	F	G
Subordination		yes	yes	-	yes	yes	-	-
Attribution		yes	-	yes	yes	-	yes	-
Gap Construction		yes	yes	yes	-	-	-	yes
[sub]		+	+		+	+		
[i/f]		+	+	+	+	+	+	
[ϕ]		+		+	+		+	+
[subCase]		+	+	+				+

But syntactically, much more is involved. Again, within the context of relative constructions and relative pronouns or particles, *wh*-movement implies subordinate clause Case and placement at the sentence border – and the other way round: +wh ↔ (+subCase AND +i/f). Next, a relative pronoun or particle is either of category D or of category C, that is, pronoun/determiner-like or complementizer-like. I cannot think of other plausible options.[4] By definition, D, and only D, bears Case: +D ↔ +Case. Hence relative pronouns are of category D. For the moment I leave it open what relative particles are (but see below). Notice that it is often not immediately clear if a particular relative element is a relative particle or a relative pronoun to begin with.[5]

Furthermore, the general theory of syntax implies some connections between the relevant features. If an element has subordinate clause Case, it is an argument. Hence it is of category D and has ϕ-features: +subCase → (+D AND +ϕ). If an element in the relative clause has matrix clause Case, i.e. copies the Case of the antecedent, then it must be at the sentence border, because else there is no plausible licencing mechanism: +matrCase → +i/f. (The exact nature of such a mechanism is irrelevant here; it is discussed below.) Finally, if an element is at the sentence border, but there has been no *wh*-movement, it cannot have subordinate clause Case: (+i/f AND -wh) → -subCase.

All these statements and their implications (where I have used De Morgan's laws when relevant) are listed in (2) through (4). For completeness I have written down the trivial ones, too.

(2) a. Subordination ↔ (+sub AND +i/f) so (-i/f OR -sub) ↔ no Subordination
b. Attribution ↔ (+ϕ AND +i/f) so (-ϕ OR -i/f) ↔ no Attribution
c. Gap Construction ↔ +subCase so -subCase ↔ no Gap Construction

4 Even if some version of the split-CP hypothesis turns out to be correct – see e.g. Hoekstra & Zwart (1994), Zwart & Hoekstra (1997) *pro*, and Sturm (1996) *contra* – the C-like heads will be clearly distinct from D. Hence this issue is not directly relevant to the reasoning here.

5 For instance, Afrikaans *wat* looks like a relative pronoun, but it is used as an invariable relative particle; cf. Den Besten (1996) and the references there. Similarly, cf. Pittner (1996) concerning *wo* and *was* in dialects of German.

(3) a. +wh ↔ (+subCase AND +i/f) so (-subCase OR -i/f) ↔ -wh
b. +Case ↔ (+subCase OR +matrCase) so (-subCase AND -matrCase) ↔ -Case
c. +subCase → -matrCase so +matrCase → -subCase
d. +D ↔ +Case so -Case ↔ -D
e. +D ↔ -C so +C ↔ -D
f. +i/f ↔ (Sub OR Attr OR +wh) so (no Sub AND no Attr AND -wh) ↔ -i/f
g. +matrCase → +i/f so -i/f → -matrCase
h. (+i/f AND -wh) → -subCase so +subCase → (-i/f OR +wh)
i. +subCase → (+D AND +ϕ) so (-D OR -ϕ) → -subCase

(4) a. +D ↔ (+subCase OR +matrCase) so (-subCase AND -matrCase) ↔ -D
b. +C ↔ -Case so +Case ↔ -C
c. +C ↔ (-subCase AND -matrCase) so (+subCase OR +matrCase) ↔ -C

When applied, this gives the picture in Table 3.[6]

Table 3. *Relative pronouns and particles (version 2).*

Function/ feature ↓	Type →	*relative pronouns*			*relative particles*			*resumptive pronouns*
		A	B	C	D	E	F	G
Subordination		yes	yes	-	yes	yes	-	-
Attribution		yes	-	yes	yes	-	yes	-
Gap Construction		yes	yes	yes	-	-	-	yes
[sub]		+	+	-	+	+	-	-
[i/f]		+	+	+	+	+	+	-
[wh]		+	+	+	-	-	-	-
[ϕ]		+	+/-	+	+	-	+	+
[Case]		+	+	+				+
[matrCase]		-	-	-				-
[subCase]		+	+	+	-	-	-	+
[C]		-	-	-				-
[D]		+	+	+				+

First notice that there is a problem concerning the ϕ-features of type B. ϕ must be positive because of +subCase; see (3i). On the other hand, it should be negative because of the reverse implication in (2b): if there is no Attribution and f/i is positive, ϕ is negative. Lehmann supposes that French *que*/*qui* is an example of type

[6] A few implications are perhaps more complex. For instance, particle E is -ϕ because of the reverse implication in (2b): no Attribution then -i/f or -ϕ. Since Subordination destined i/f already positive, ϕ must be negative. For resumptive pronoun G we have: Gap Construction → +subCase → (+D AND +ϕ). In this case the reverse implication in (2b) gives negative i/f because ϕ is already positive. Subsequently, -i/f gives -wh according to the reverse part of (3a).

B. However, *que*/*qui* has been analysed differently by many people (cf. fn. 2). Solid empirical proof for type B would involve a language with overt Case and ϕ-feature marking that uses relative pronouns which show the first but not the latter, which differ from normal complementizers, and which do not allow a doubly filled COMP. French is not such a language. As far as I know, none has been attested, so far. Since the feature contradiction predicts type B to be non-existent, I will not consider it any longer. (Unless of course clear evidence will show up in the future. It would force us to reconsider the list of assumptions and implications above).

A further problem in table 3 is that the status of type D/E/F is unclear. Nothing so far predicts whether these particles have (matr)Case, or whether they are D-like or C-like. Therefore, let us proceed by trial and error. Suppose type D/E/F are all +matrCase. This gives the setting +D, -C, +Case; cf. (3b/d/e). In my view it is unattractive is that type E has now Case without having ϕ-features. Furthermore, type D and F have Case and ϕ-features, but this is contradicted by particles like English *that*, which, according to the literature I know, has neither Case nor ϕ-features. Thus suppose that type D/E/F all have -Case, hence -matrCase, -D, +C; cf. (3b/d/e). But then the problem is that type D and F have ϕ-features without Case, which is contradicted by examples of relative particles that show matrix clause Case. Therefore – finally – suppose that type D and F have +matrCase (hence +D, -C, +Case), but type E has -Case (hence -matrCase, -D, +C). The results are in table 4.

Table 4. *Relative pronouns and particles (version 3).*

Function/ feature ↓ Type →	*relative pronouns*		*relative particles*			*resumptive pronouns*
	A	C	D	E	F	G
Subordination	yes	-	yes	yes	-	-
Attribution	yes	yes	yes	-	yes	-
Gap Construction	yes	yes	-	-	-	yes
[sub]	+	-	+	+	-	-
[i/f]	+	+	+	+	+	-
[wh]	+	+	-	-	-	-
[ϕ]	+	+	+	-	+	+
[Case]	+	+	+	-	+	+
[matrCase]	-	-	+	-	+	-
[subCase]	+	+	-	-	-	+
[C]	-	-	-	+	-	-
[D]	+	+	+	-	+	+

The table shows that D and ϕ are systematically linked. If so, +subCase → (+D AND +ϕ) in (3i) is superfluous and can be replaced by the more general D ↔ ϕ, which gives the same results in combination with (3d): +D ↔ +Case. This is in accordance with standard assumptions. Now the status of type D/E/F concerning Case and category follows automatically from its ϕ-feature specification, which is determined by the Attribution function.

However, there is a remaining problem with the results in table 4. The features marked grey are syntax-internal and cannot be phonologically detected in a direct way. The same goes for the function specification. Hence there is no detectable difference between A and C, or between D and F. In other words, if we see a relative pronoun or particle in language X, e.g. *who* in English, there is no clear way to classify it as either A or C. The difference between the two is [+/-sub], but how do we know if *who* expresses subordination (given that there is no additional complementizer)?

The solution emerges if the following statement is acknowledged. It follows from Lehmann's definition of relative clauses in Ch2§4.

Theorem I
All three functions – Subordination, Attribution and Gap Construction – must be represented in a relative clause.

It is not the case that all three functions are always overt. For instance, in English *that*-relatives only Subordination is visible. This implies that there is an empty element which takes care of the missing functions. In this case it is the empty operator that Chomsky (1977) argued for, i.e. an empty relative pronoun of type C. Thus there is a division of labour between a D-like element in SpecCP and the particle in C.

Since there cannot be a SpecCP without there being a C head according to the X'-theory, it is superfluous to assume that SpecCP may represent Subordination, because this is already what C does, whether it is overt or not.

Theorem II
In a relative clause there is a division of labour between the complementizer C and the determiner phrase with head D_{rel} in SpecCP:
– C and only C expresses Subordination;
– D_{rel} and only D_{rel} expresses Attribution, and possibly Gap Construction.

Theorem III
a. In a relative clause D_{rel} and C are always present.
b. D_{rel} and C can each be overt or covert, depending on the particular language (or variant within a language).

Theorem IV
a. C bears neither Case nor $\phi_{antecedent}$-features.[7]
b. D bears both (abstract) Case and ϕ-features.

[7] Nevertheless, there are examples of inflected complementizers, e.g. in West Flemish. In those cases C agrees with the subject (not with SpecCP). This phenomenon has been described in terms of head raising of AgrS to C (see e.g. Zwart 1997). If so, the idea that ϕ-features do *not* originate in C can be maintained.

These assumptions solve the problems mentioned and simplify the picture substantially. The function Subordination is expressed by complementizers, not by a pronoun-like element in SpecCP. Hence type A and D do not exist at all. This explains why there is no clear evidence which distinguishes possible type A and D elements from type C and F, respectively. Only Lehmann's type C, E, F and G survive the interaction of function with syntax.

Thus we reach the final table 5. I will no longer use reference letters. Type C will be called *relative pronouns*, type E *relative complementizers*, type F *relative markers*, and type G *resumptive pronouns* from now on. The relative complementizers and relative markers are grouped together under the notion *relative particles*.

Table 5. *Relative pronouns and particles (final theoretical version).*

Function/ feature ↓ Type →	*relative pronouns*	*relative particles*		*resumptive pronouns*
		relative complementizers	*relative markers*	
Subordination	-	yes	-	-
Attribution	yes	-	yes	-
Gap Construction	yes	-	-	yes
[sub]	-	+	-	-
[i/f]	+	+	+	-
[wh]	+	-	-	-
[ϕ]	+	-	+	+
[Case]	+	-	+	+
[matrCase]	-	-	+	-
[subCase]	+	-	-	+
[C]	-	+	-	-
[D]	+	-	+	+

Importantly, each type can be overt or covert; and every relative clause contains a determiner-like and a complementizer-like element.

3. The syntax of relative elements

This section discusses the repercussion of the results from the previous section on the syntax of relative clauses. Subsection 3.1 is on the traditional COMP domain, hence on relative pronouns and complementizers; 3.2 discusses resumptive pronouns; 3.3 relative markers.

3.1. The COMP domain: relative pronouns and complementizers

Considering only relative pronouns and relative complementizer particles for the moment, we have the following set of possibilities for the COMP domain (where

COMP must be understood as C plus SpecCP). Notice that all three functions (Subordination, Attribution and Gap Construction) are represented, whether lexical (lex) or covert (ø).

Table 6. *The COMP domain of relative clauses.*

D_{rel} (in SpecCP)[8]		*C*		*features of D_{rel}*			*f. of C*	*example*
lex	rel. pronoun	lex	rel. compl.	ϕ	subCase	wh	sub	*who that*
lex	rel. pronoun	ø	rel. compl.	ϕ	subCase	wh	sub	*who ø*
ø	rel. pronoun	lex	rel. compl.	ϕ	subCase	wh	sub	*ø that*
ø	rel. pronoun	ø	rel. compl.	ϕ	subCase	wh	sub	*ø ø*

Complete examples are sketched in (5), based on the analysis of postnominal relatives in Chapter 4. Sentence (5a) is not standard English, but it is a common variant in the Germanic languages.[9]

(5) a. I know $[_{DP}$ the $[_{CP}$ $[_{DP\text{-}rel}$ man$_k$ $[_{D\text{-}rel}$ whom$]$ $t_k]_i$ $[_C$ that$]$ $[_{IP}$ you saw $t_i]]]$
b. I know $[_{DP}$ the $[_{CP}$ $[_{DP\text{-}rel}$ man$_k$ $[_{D\text{-}rel}$ whom$]$ $t_k]_i$ $[_C$ ø $]$ $[_{IP}$ you saw $t_i]]]$
c. I know $[_{DP}$ the $[_{CP}$ $[_{DP\text{-}rel}$ man$_k$ $[_{D\text{-}rel}$ ø $]$ $t_k]_i$ $[_C$ that$]$ $[_{IP}$ you saw $t_i]]]$
d. I know $[_{DP}$ the $[_{CP}$ $[_{DP\text{-}rel}$ man$_k$ $[_{D\text{-}rel}$ ø $]$ $t_k]_i$ $[_C$ ø $]$ $[_{IP}$ you saw $t_i]]]$

D_{rel} bears a *wh*-feature, checks subordinate clause Case and obligatorily agrees with the head noun, as argued in Chapter 4. Therefore it automatically fulfils the requirements in table 6. Since there is always movement to SpecCP, C is always syntactically present, hence it may bear a subordination function. I do not know if it is necessary that C bears a formal feature corresponding to subordination. It is not strictly needed in the analysis. I will not discuss this matter any further.

Whether D_{rel} or C is spelled out is difficult to predict by syntax.[10] It depends on at least four things. First it is a lexical matter: does a particular language have empty and/or full relative pronouns or particles to begin with? Dutch, for instance, does not have empty relative pronouns: *de man *(die) ik zag* 'the man (who) I saw'.[11] Second, it must be possible to parse the relative clause. For instance, *I saw the man who left* in English cannot be replaced by *I saw the man left*, because the latter leads to interpretation problems.[12] Third, there is a correlation between the Syntactic/ Semantic Function Hierarchy and anaphoric scales: the lower the function of the gap

8 Here I abstract away from pied piped constituents.

9 See e.g. Lehmann (1984), Pittner (1996), Dekkers (1999), and Bianchi (1999).

10 Nevertheless, there are OT approaches that offer new opportunities here; see e.g. Pesetsky (1997), Dekkers (1999) and Broekhuis & Dekkers (2000). Notice that, from a cross-linguistic view, the 'Doubly Filled COMP Filter' as formulated in Chomsky & Lasnik (1977), has a limited scope and lacks explanatory power. See also Bok-Bennema (1990) and Dekkers (1999) on this subject.

11 However, see Broekhuis & Dekkers (2000) for an original view on Dutch relative *dat*, which they suppose to be a complementizer. This would imply that there is an empty (or deleted) relative operator.

12 Still, subject relatives without a marker are reported to occur in some dialects of English – see e.g. Givón (1984:662/3) – probably in non-confusing contexts.

(roughly S > DO > PrepObj) the more explicit the anaphor (roughly ø < rel. particle < rel. pronoun). This has been discussed in Ch2§4; see also Keenan & Comrie (1977), Lehmann (1984), Bakker & Hengeveld (2001). Fourth, the extra-linguistic setting plays a role. For example, there is optionality between *the man I saw* and *the man that I saw*.[13] The only thing that can be said is that the latter is a little more explicit hence more likely to be used in a formal setting.

A subset of languages with relative complementizer particles have the possibility of 'zero relativization' as in *the man I saw*. According to Smits (1988:70-71) this is the case in Norwegian, Danish, Swedish and English, but not in the other Germanic and Romance languages. He states the following conditions on the use of zero relatives:

(6) *An empty COMP in a relative clause is possible only if:* [Smits 1988]
   a. the relative clause is restrictive,
   b. there can be a relative complementizer particle,
   c. the relative gap is not the subject of the relative clause, and
   d. the relative has not been extraposed (except in Danish).

The reason for condition (6a) will be discussed in Chapter 6, section 5.4; the reason for (6d) is closely related to it.[14] Condition (6b) is a coincidental lexical matter; it is not true universally – see below. As explained, condition (6c) follows from the word order of English and some parsing/recoverability conditions. This reasoning carries over to the related continental Scandinavian languages. Condition (6c) is often understood to be universal as well (see e.g. Downing 1978:385, also mentioned in Ch2§5). This is a mistake, however. Appendix II, table 15, shows that zero relativization is the primary strategy in Komso, Lakota, Mbum, Moore and Yukatekan – which have postnominal relative clauses – and in Alekano, Cuzco Quechua, Finnish, Ijo, Japanese, Nama, Saho-Afar and Yurok – which have prenominal relatives. In all these languages subject relatives are possible. Moreover, there are several languages where zero relativization is a secondary option. Condition (6c) happens to be true for standard English and continental Scandinavian, which can be explained by parsing conditions; it happens to be not true for the other languages mentioned, which, not surprisingly, have different word

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13 This is of course a favourite theme in OT approaches.

14 As for (6a), I will argue that an appositive is a kind of free relative that is in apposition to what appears to be the antecedent. It can then be argued that the COMP domain cannot be completely empty, as is the case in in free relatives. Condition (6d) is illustrated for English in (i).

(i) The car is beautiful that/*ø you bought yesterday.

I will argue in Chapter 7 that an extraposed clause is embedded in a specifying phrase that is conjoined to a part of the matrix clause. The repeated antecedent in the second conjunct is deleted. This would lead to an empty COMP domain if there were no relative element. Hence the same condition that prohibits a phonologically empty COMP domain in appositives covers the extraposition facts. The Danish exception to this generalization is illustrated in (ii), taken from Smits (1988:71).

(ii) Jeg lagde den pladen på som/ø Peter gav mig.
   I put the record on (that) Peter gave me

I have no explanation for this.

orders. Hence condition (6c) is not a syntactic universal. Neither is (6b), since there are no relative particles in most of the languages mentioned.

3.2. Resumptive pronouns

Resumptive pronouns are personal or demonstrative pronouns that occupy the gap, but they are not sentence-initial (unless by coincidence), so they are not *wh*-moved. An overview of languages using resumptive pronouns is given in Appendix II, table 9. According to Sells (1984), resumptive pronouns are pronouns bound by a *wh*-operator, hence they are interpreted as bound variables, which is similar to the interpretation of the gap (i.e. a trace) in a non-resumptive relative strategy. This distinguishes them from free anaphoric pronouns.

Some languages, including variants of English, apparently use resumptive pronouns as a repair strategy. An example is *I am looking for those documents which I can never remember where I put them* (taken from Haegeman 1994:410). Without the resumptive pronoun *them* the sentence would be ungrammatical, since *them* is in an island, hence normal *wh*-movement would be impossible. In fact, the use of a pronoun is impossible in contexts that are not an island, e.g. *the man that I saw (*him).* Sells (1984) argues that the English-type repair strategy does not involve true resumptive pronouns. He calls the pronouns involved *intrusive* pronouns. The reason is that these cannot be interpreted as bound variables. Rather, they behave like relative pronouns in appositive relatives with respect to the antecedent. See Sells (1984:VI, 1985) for details, and Chapter 6 of this book for some discussion on the interpretation of (relative pronouns in) appositive relatives.[15] Another reason to distinguish the repair strategy from the resumptive pronoun strategy is that the combination of a relative pronoun and a resumptive/intrusive pronoun is never possible in the resumptive strategy (see below).

The discussion in this section only concerns the true resumptive pronoun strategy, in languages where they are used on a regular basis. Notice that the use of resumptive pronouns in *correlative* constructions is not relevant here; but see Ch4§6.

Some findings concerning the resumptive strategy that can be inferred from Appendix II, table 9 – which is based on data provided by Lehmann (1984), Peranteau et al. (1972), Givón (1984), and others – are stated in (7).

(7) **Findings about the resumptive pronoun strategy**
   a. Resumptive pronouns exclude relative pronouns (cf. Downing (1978) and Ch2§5).
   b. Resumptive pronouns almost always occur in addition to a relative particle or marker. (Exceptions: Diegueño, Ganda, Nama.)

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[15] It might be that the use of intrusive pronouns is more widespread than Sells seems to assume. If I am not mistaken, he does not actually show that the apparent use of resumptive pronouns at a long distance (in islands) in e.g. Swedish, Hebrew, Welsh, etc. is different from the English intrusive strategy. Perhaps even the use of a pronoun in a prepositional context is intrusive, since a PP is an island for movement in many languages.

c. Resumptive pronouns occur in postnominal relatives. (Exceptions: Chinese and Nama; cf. Ch2§5.)
d. Resumptive pronouns occur with all basic word order strategies, although SVO is the most common. (Examples: SVO: Akan, Hebrew; SOV: Farsi, Urhobo; VSO: classical Arabic, Tongan.)
e. Resumptive pronouns can be clitics or words.[16] (Examples of clitics: proclitic in Ganda, Nahuatl; enclitic in Akkadian, Arabic.)
f. Resumptive pronouns are (always?) used conditionally or perhaps optionally, next to a zero (gap) strategy.[17,18]

At first sight it seems that (7a) must be true by definition, since resumptive pronouns and relative pronouns compete for the same base position – but see below. Concerning (7b), it is quite understandable that a relative clause preferably has some marker; and a resumptive pronoun itself does not mark the clause as a relative. I do not know a syntactic explanation for (7c), but the exceptions of Chinese and Nama indicate that it is only a tendency; and in general, kataphora is less usual than anaphora for discourse reasons. Notice furthermore that postnominal relatives are the most common type of relative. Property (7d) is not surprising at all, since postnominal relatives occur with all word orders (see Appendix II, table 24). Neither is (7e) startling: pronouns can be clitics or words in general.

The finding in (7f) might be taken to indicate that resumptive pronouns are an epiphenomenon. However, since they occur in more than 15% of the languages in the large sample in Appendix II (which, however, is not statistically balanced), and, moreover, constitute the primary strategy in many of these languages, I believe the resumptive strategy cannot be ignored. Nevertheless, the resumptive pronoun strategy is strange indeed. I have argued that every relative clause has overt or covert *wh*-movement. But if a resumptive pronoun takes the place of the gap, then where is the relative operator/pronoun? The finding in (7a) seems to imply that there is none. This cannot be correct, given the interpretation as operator-bound variables mentioned before. Hence there must be a relative operator.

A potential solution is the assumption that a relative operator could be base-generated in the COMP area (e.g. Shlonsky 1992). However, this is at odds with the promotion theory of relative clauses. (For instance, it would potentially prohibit raising; moreover, it is not immediately clear how this explains the licencing of the operator's abstract Case.) Furthermore, it would predict an unbounded dependency between the operator and the resumptive pronoun. Although there are some examples of resumptive pronouns in island contexts (e.g. Sells 1984:6,ex(3b) in

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16 Especially cliticized resumptive pronouns can easily be confused with (non-resumptive) relative affixes or non-relative verbal agreement. See section 4.1 below, which relies heavily on the detailed descriptions in Lehmann (1984).

17 Often they seem to be optional for objects, but obligatory for lower functions. Shlonsky (1992), followed by Reintges (2000) on Old Egyptian, argues that optionality does not exist on closer inspection, at least for some of the languages involved, and supposedly for all; see below.

18 I do not have information on conditionality or optionality in Akan, Fulfulde, Diegueño, Urhobo, Ganda, and Nahuatl.

Hebrew), this is not generally the case. For instance, Sells (1984:213ff) shows that the resumptive relative strategy in Igbo is sensitive to some island constraints.

As far as I can see, there is a lack of systematic data concerning the issue of island effects. A problematic aspect of potential subjacency violations in the resumptive strategy, is that it cannot be distinguished from a repair strategy as illustrated for English above. That is, a potential repair strategy with an intrusive pronoun is not visibly different from the regular resumptive pronoun strategy in grammatical sentences. Since the assumption of a base-generated operator in COMP cannot explain the Igbo pattern, and is theoretically at odds with the general assumptions throughout this book, I will reject it, and rather assume the following:

(8) **Hypothesis on relativization and the resumptive strategy**
   a. All languages have *wh*-movement in relative clauses.
   b. Some languages have a repair strategy for ungrammatical relative clauses using intrusive pronouns (where 'ungrammatical' means that *wh*-movement would violate island constraints). It is different from the resumptive pronoun strategy, and need not be discussed here. (The epiphenomenon is interesting in itself, of course; see also footnote 20).
   c. There are languages that have a resumptive strategy of relativization.
   d. Some of the languages with a resumptive strategy are part of the set of languages in (b), too: they use (intrusive) pronouns to repair ungrammatical relative clauses. Since this strategy mimics the normal (resumptive) strategy in these languages, the consequences of (a) are apparently blurred.

I must mention that Shlonsky (1992) and Reintges (2000) argue on the basis of Hebrew, Palestinian Arabic and Old Egyptian, that regular resumptive pronouns are also instances of 'last resort'. They are inserted if language-particular circumstances do not licence a trace at the position concerned (for various possible reasons), or if a trace would lead to ambiguity. If they are correct (but it remains to be shown for the majority of languages involved), optionality between the zero strategy and the resumptive pronoun strategy does not exist.[19] Notice that last resort of the Shlonsky/Reintges type differs from the repair strategy mentioned in (8b/d). Roughly speaking, in the former a trace would be illegal or unwanted; in the latter the *wh*-movement itself is impossible.

What I am interested in here, is the syntax of the resumptive pronoun strategy in case it is applicable. One option might be that the resumptive pronoun is a spelled-out trace; cf. Reintges (2000). If so, why are there no instances of a double lexical D_{rel}? That is, why is the combination of a relative pronoun (the moved D) and

[19] If this turns out to be untenable for some languages involved, another possible option concerning optionality may be that these languages have a parallel grammar in which there *is* a zero strategy. If in this parallel grammar there is a negative pied piping parameter (or a filter which prohibits PPs containing an empty operator in SpecCP), it follows that it is inaccessible in case of a prepositional context – given that adposition stranding is often impossible, too – hence only the grammar with the resumptive strategy can be used; thus there are ways to limit optionality to certain syntactic roles.

a resumptive pronoun (the lexical trace) never attested?[20] A partial answer may be that a resumptive pronoun is the lexical trace of an empty relative pronoun (i.e. a relative operator). This would facilitate the possibility of just a *resumptive* pronoun, but it still does not explain why the *relative* pronoun must be empty.

A way towards the solution is to generalize the idea of 'trace pronunciation' to all syntactic movements. The overt/covert distinction can be accounted for in terms of feature movement versus lexical movement, as argued for in Chapters 1 and 4. If only the formal features move, the 'trace' still contains the lexical content, so there is *in situ* pronunciation. If the whole head moves, there is no lexical material left in situ. The application of the former option (feature movement) with respect to the relative pronoun gives the structure in (9).

(9) D $[_{CP\text{-}rel}\ [_{DP\text{-}rel}$ NP FF(D_{rel}) $t_{np}]_i$ (C) $[_{IP}$ … DP V t_i]]
$[\ldots PF(D_{rel})\ldots]_i$
the man ø (that) I saw him

The advantages of (9) are the following:

- No ad hoc 'spell-out trace' procedure is needed. The resumptive pronoun strategy is a normal instance of covert movement.
- The complementary distribution between relative pronouns and resumptive pronouns follows automatically: if there is overt movement, a relative pronoun appears; if there is covert (feature) movement, a resumptive pronoun appears.

But there are still clear disadvantages with respect to (9):

- Why is the format of the *in situ* pronoun demonstrative/personal and not relative/question?
- Given the promotion theory, why does NP, the antecedent within DP_{rel}, move overtly? How can only part of a constituent be spelled out/left behind?

Fortunately, there is an alternative to (9) that does not raise these problems. This option is not available in the standard theory, so it may be another advantage of the promotion theory of relative constructions. The idea is that D does not move at all, neither overt nor covert. Movement solely involves NP. The only necessary assumption is that the formal *wh*-feature involved associates with NP, not with DP. The rest follows from the independently motivated procedures in Ch4; see (10).

(10) **The syntax of the resumptive strategy**
a. The formal *wh*-feature needed to build a relative clause is associated with the head NP, not with its determiner D (normally D_{rel}).

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[20] Actually, the repair strategy of ungrammatical (subjacency-violating) relative clauses (8b) does have the possibility of a combination of a relative pronoun and a resumptive pronoun, depending on the language. Therefore the spelled-out trace theory may be the correct syntactic description of this strategy.

b. Therefore D cannot be a relative/question D_{rel}. (It is also not an article since it is independent: it will be disconnected from NP, see below.) Hence D is a resumptive demonstrative/personal pronoun D_{res}.
c. The head NP moves to SpecDP to check the ϕ-feature agreement. There is no incorporation. Recall that the Case feature may be different.
d. D_{res} checks subordinate clause Case.
e. NP moves to SpecCP and checks the *wh*-feature.
f. N incorporates overtly or covertly into the matrix clause D_{matr}.
g. $N+D_{matr}$ agree and check matrix clause Case.

This is shown in (11)

(11) $FF(N)+D_{matr}$ $[_{CP}$ $[_{NP\text{-}rel}$ $PF(N)]_i$ (C) $[_{IP}$ … $[_{DP}$ t_i D_{res} $t_i]$]]
the man (that) I saw him

The analysis has the advantages but not the disadvantages of (9). It is also fully compatible with the assumptions on the syntax of relatives made before. Notice that assumption (10a) can be seen as another instance of the pied piping parameters discussed in Chapter 4. In the resumptive strategy there is an 'extreme lack of pied piping' (or perhaps negative pied piping): not even the DP-shell belonging to an NP is moved along.

I conclude somewhat tentatively that the phenomenon of resumptive pronouns can be dealt with satisfactorily from the perspective of the promotion theory of relativization.[21]

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[21] I have ignored the issue of resumptive pronouns in *wh*-questions, so far. Sells (1984:18/20ff) claims that these show the same pattern as in relative clauses (without actually showing the relevant data). I believe that this is wrong. Rather, we predict the absence of *resumptive* pronouns in questions – cf. (11), where there is no room for both an interrogative and a resumptive pronoun – but of course the presence of *intrusive* pronouns in the same way as in relatives. This is confirmed by Hebrew, where questions show a trace, except in islands. The same applies to Swedish. Moreover, the data from Reintges (2000) on Old Egyptian show that resumptive pronouns in questions are avoided, except in one type of subject question, which is phrased as a cleft sentence; hence the resumptive is actually in the relative clause part of the construction. I suspect that many apparent instances of resumptive pronouns in *wh*-questions can be explained by the fact that the sentence is really a cleft-construction, especially in African languages.

Technically, another question remains: why can *wh* be associated with NP_{rel} in relative clauses but apparently not in other contexts such as questions? The answer is: perhaps it could, but that does not lead to a different output, so there is no need to. Suppose something like *[D man]* is generated in an interrogative sentence, and the *wh*-feature is associated with *man*. D and N cannot differ in Case, because there is no higher clause determiner with which N can be associated. So N overtly or covertly incorporates into D so that Case and agreement can be checked. If so, *wh* is present in D, too. Therefore D may be interrogative (instead of demonstrative/pronominal) and *wh*-movement involves raising of DP. (NP cannot move alone, since its head is associated with D.) Apart from this technical explanation, a formulation like "**Man did you see him?*" meaning "*Which man did you see?*" seems an awkward way to express an open question, especially because it looks like a (grammatical) left-dislocation construction such as "*This man, did you see him?*", which is a *yes/no* question.

3.3. Relative markers

Relative markers as introduced in section 2, complicate matters as well. I have defined a relative marker as a type of relative particle that has just the Attribution function. Syntactically, it must be a D-like element which has (abstract) Case and ϕ-features. The function Gap Construction must have another source; a relative marker cannot undergo *wh*-movement, since in that case it would have subordinate Case and hence be a relative pronoun. This raises the question what the position of a relative marker is. It seems that it cannot be base-generated in SpecCP because that is where the relative operator and the head move to.

Consider the languages reported to have relative markers. These are classical Arabic, Bainouk, Crow, ancient Egyptian, Éwé, Geez, Hungana, Kupsabiny, and Wolof (cf. Appendix II, table 11). Four of these languages have a classifier system: Bainouk, Hungana, Kupsabiny and Wolof. I will first show that they only have apparent relative markers, and I will tentatively propose an analysis in section 3.3.1. Section 3.3.2 deals with 'real' relative markers.

3.3.1. Apparent relative markers: classifiers

Classifiers are present on both determiners and nouns.[22] Hence a relative construction is expected to look like (12), schematically:

(12) CL-D $[_{\text{CP-rel}}\ [_{\text{DP-rel}}\ [_{\text{NP}}$ CL-N] CL-D_{rel} $t_{np}]_i$ (C) $[_{\text{IP}}$ … t_i …]]

Suppose that D_{rel} is an empty operator. If so, the classifier that belongs to it looks like a sentence-initial relative particle. Since classifier languages do not have an overt Case system, this particle seems to be a relative marker.

For example, in Hungana there is no regular overt determiner. Hence (12) predicts the relative construction to be [CL-N CL IP]. This is borne out; see (13), taken from Lehmann (1984:102).

(13) kit ki a-swiim-in Kipes zoon
CL7:chair CL7 SBJ/CL1-bought-PRET Kipes yesterday
'(the) chair which Kipes bought yesterday'

In this context the second classifier is the apparent relative marker.[23]

In Wolof, determiners can be present. The relative construction is postnominal, the (outer) determiner is construction final. Hence the structure of the relative is (14a); (14b) shows schematically what is visible.

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[22] I will not go into the details of classifier systems. The discussion here is based on examples from Niger-Congo and Nilo-Saharan languages. Classifiers in Mandarin Chinese and Cantonese are discussed in e.g. Cheng & Sybesma (1999), albeit not from the perspective of relative clauses.

[23] One may wonder why a normal argument is not a DP like $[_{\text{DP}}$ CL-ø $[_{\text{NP}}$ CL-N]]. First, I am not sure that the DP level is always present. Second, CL CL N is stuttering: in this context one of the two equal classifiers is superfluous and could be deleted at some level.

(14) a. $[_{\text{CP-rel}}\ [_{\text{DP-rel}}\ [_{\text{NP}}\ \text{CL-N}]\ \text{CL-D}_{\text{rel}}\ t_{\text{np}}]_i\ (\text{C})\ [_{\text{IP}}\ \ldots\ t_i\ \ldots]\ ]\ \text{CL-D}$
b. CL-N CL-D_{rel} IP CL-D

Again, this is confirmed by the actual data; see (15), from Lehmann (1984:103):

(15) gor g-u xam addina g-i
CL-man CL-D3 know world CL-D1
'this man who knows the world'

The relative operator is visible as a neutral determiner. In fact, if (14) is correct, it is a relative pronoun (!), not a relative marker. The same conclusion must be drawn for Hungana: the classifier is a part of the relative operator.

I don't have information on determiners in Bainouk and Kupsabiny. Probably the patterns match either the system in Wolof, or the one in Hungana. I tentatively conclude that apparent relative markers in classifier languages are actually partly visible relative pronouns.

3.3.2. Real relative markers?

This leaves us with classical Arabic, Crow, ancient Egyptian, Éwé, and Geez.[24] Unfortunately the information I have on ancient Egyptian is insufficient for an analysis. Crow and Éwé do not have morphological Case (although there is object agreement on the verb), hence the possibility that the relative markers in these languages are in fact (deficient) relative pronouns cannot be excluded without further information. Clearer instances of relative markers are to be found in Geez and classical Arabic, where there is an overt Case system. The relative marker has a demonstrative part, agrees with the head noun, and if there is visible Case, it bears matrixCase. Apart from this, there is a resumptive clitic which, if I understand correctly, seems to be optional in object relatives and obligatory in lower functions. An abstract rendering is (16), where RM means 'relative marker':

(16) $\text{D-N}_{\text{matrCase}}\ \ \text{RM}_{(\text{matrCase})}\ [_{\text{IP}}\ \ldots\ (\text{GA}_{\text{subCase}})\ \ldots]$

Let me repeat the properties of relative markers.

(17) **On relative markers**
a. A relative marker is a D-like element. It cannot be in C (the complementizer position). It agrees with the head noun and bears (abstract) matrCase.
b. A relative marker competes for the same 'surface' position as the relative operator (and the head noun, in the promotion theory), i.e. SpecCP.
c. An overt relative pronoun excludes the presence of a relative marker.

[24] According to Lehmann (1984:103) the relative marker has evolved into a relative complementizer in Egyptian and Arabic.

In fact (17) suggests that a relative marker is a special instance of D_{rel}. This hypothesis is supported by a phenomenon that is called *attractio relativi*, which means that a relative pronoun gets matrix clause Case. It is attested occasionally in e.g. ancient Greek and Latin. It may be seen as a stylistic marking or a grammaticalized performance error. Two adjacent words (the head noun and D_{rel}) are Case-matched. See Bianchi (2000b) for a more sophisticated discussion. It could be that this rare and counter-intuitive strategy is systematically applied in a small number of languages with relative markers that are overtly Case-marked. That is, relative markers can be analysed as relative pronouns which suffer from 'attractio relativi'.

Matters seem to get worse when the resumptive pronoun in (16) is taken into consideration. I have argued in §3.2 that in case of a resumptive pronoun it is the head NP that moves to SpecCP, instead of DP_{rel}. The stranded D becomes the resumptive pronoun. But if so, where is the relative marker?

Therefore consider the following possibility: base-generation of a DP marker in SpecCP. In that case the head NP cannot land in SpecCP, but suppose it could land in $SpecDP_{RM}$. The structure is given in (18), where D_{res} is the resumptive pronoun:

(18) $D\ [_{CP}\ [_{DP}\ [NP_{rel}]_i\ D_{RM}]\ (C)\ [_{IP}\ \ldots\ [_{DP}\ t_i\ D_{res}\ t_i]\ \ldots]\ ]$

Consider the derivation of (18). The *wh*-feature is associated with head NP (cf. §3.2). NP moves to $SpecDP_{res}$. Agreement between NP and D_{res} is checked in a spec-head configuration. (N cannot incorporate into D_{res}, because their Cases do not match.) DP_{res} checks subCase in the relative clause. DP_{RM} is generated in SpecCP.[25] NP is attracted and lands in the highest position in CP: SpecDP in SpecCP. (Note that this is a c-commanding position in an antisymmetric system.) This is possible because NP and DP_{RM} fully match: both in Case and ϕ-features. D_{RM} checks all its features with NP. Finally, N is associated with the matrix D, as described several times before. Hence NP must have matrix Case, because else the derivation crashes. This implies that DP_{RM} must have matrix Case, too. Thus it might be that a derivation like (18) is allowed; albeit that the selection of DP_{RM} in SpecCP is somewhat odd, of course. Notice that this is only possible within the promotion theory of relative clauses.

In short, relative markers seem to be a diffuse category of elements that are hard to explain at first sight. Some of them do not demonstrate Case-marking, especially classifiers. As I have shown above, these are (remnants of) relative pronouns. Others may be relative pronouns that undergo *attractio relativi*. Others are determiners base-generated in SpecCP, an analysis which permits the presence of resumptive pronouns or clitics. I conclude that the theory presented so far predicts that relative markers exclude relative pronouns but not resumptive pronouns. Clearly, a much more detailed study is necessary to investigate the validity of the suggestions made in this section.

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[25] Notice that this is not possible in a (non-relative) context where there is no raising of an NP, because then DP_{RM}'s Case features remain unchecked.

4. A fine-grained typology of relative elements

This section briefly discusses all types of relative elements found in the data patterns listed in Appendix II, which is based on data provided by Lehmann (1984), Peranteau et al. (1972), Givón (1984), and several others. I will add some fine-tuning to the four main classes of relative elements predicted from the theory: relative pronouns, relative complementizers, relative markers, resumptive pronouns. Moreover, there turns out to be a large, diffuse fifth main class of relative elements: the relative affixes.

4.1. A classification of relative elements

Relative pronouns are pronouns that undergo *wh*-movement.[26] See also section 3.1, and Appendix II, table 8. They are in a sentence-initial position, bear (abstract) subCase and (abstractly) agree with the head noun, if present. They may be morphologically complex. Often there is a demonstrative and/or a question-related morpheme. Relative pronouns may be classified as follows:

RP_d A relative pronoun in *d*-format, i.e. with only a *demonstrative* core. Example: Danish *den*, Dutch *die*.

RP_{wh} A relative pronoun in *wh*-format, i.e. with an *interrogative* morpheme (apart from a possible demonstrative morpheme). Examples: English *who*, Serbo-Croatian *koje*, Latin *quis*.

RP_{sp} A relative pronoun in a *specialized* format, or at least with a specialized morpheme (next to a possible *wh*- and/or *d*-morpheme). Examples: Hindi *jo*, Slovenian *kdòr*.

The use of relative pronouns is limited without exception to postnominal relatives and correlatives. Notice that relative pronouns predominantly occur in Indo-European languages. Nevertheless, they can be present in languages from other families, e.g. in Tzeltal (a Maya language), Finnish or Erzya (Ugric languages).

Resumptive pronouns are personal or demonstrative pronouns. These have already been discussed in section 3.2. See also Appendix II, table 9. They can be divided into clitics and words. The distinction between an (object) agreement affix and a resumptive clitic is not always clear. Contrary to relative pronouns, resumptive pronouns are *in situ*, or at least not sentence-initial.

Resumptive pronouns occur in many different language families. Examples of languages that use resumptive clitics are classical Arabic, Ganda or Welsh. (These are denoted by GA in Appendix II: the Gap is filled by an Affix.) Examples of full

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26 An extraordinary phenomenon occurs in Bambara, Maninka, Mandinka and Vai, four related Mande languages from the Niger-Congo phylum. There are relative pronouns in interrogative format, e.g. *mìn* in Bambara. The predominant relative strategy is correlative. The interesting thing is that the relative pronoun and head noun are *in situ*. This would make sense only if these languages have an in situ question strategy, too, as in Chinese. I don't have further information on this matter.

resumptive pronouns are found in Chinese, Diegueño, or Urhobo. (They are denoted by GD: the Gap is filled by an Demonstrative element.)

The correlative strategy also uses resumptive pronouns, but in the matrix clause – the relative clause contains the head noun. (The correlative Demonstrative is denoted by cD.) It must be noted that in several languages resumptive pronouns in a correlative sentence may be replaced by nothing (i.e. an empty pronoun), and sometimes even by a full DP including a copy of the head noun. The former option is conditioned by the possibility for a language to drop pronouns in general. The latter option must be compared to the use of full nouns in two subsequent sentences where a pronoun in the second sentence would have sufficed. Hence these phenomena are not problematic for – and in fact unrelated to – the theory of relative clauses.

Everything which is not a relative pronoun or resumptive pronoun is called a **relative particle**. There are several kinds of relative particles. They are found in many, if not all, language families. The main characteristic of a relative particle is that it does not occupy the gap in a relative clause (at any stage of the derivation). I distinguish three classes: relative complementizers, relative markers and relative affixes.

The canonical relative particle is a **relative complementizer** (denoted by RC). See also section 3.1 above. There is no Case and no agreement with the head noun. A relative complementizer occupies the complementizer position. There is no movement involved. Again, we may distinguish several types; see also Appendix II, table 10:

RC_{SR} A relative subordinator equals another complementizer. Examples: English *that*, Norwegian *som*, Farsi *ke*.

RC_{sp} A particle specialized for relative clauses. Examples: Czech *co*, German (dialectal) *wo* or *wos*.

RC_{NR} A general nominalizing particle also used for relatives. Example: Mandarin Chinese *de*. Similar examples are from Burmese and Lahu.[27]

RC_{AT} A general attributive particle also used for relatives. An example is Old Akkadian *šu*.[28]

Relative complementizers predominantly occur in postnominal relatives. However, there are some rare examples of RC_{SR} in other main types, e.g. in Dagbani circumnominal relatives, in Gaididj correlatives, and perhaps a clause final one in Oromo prenominal relatives. Notice further that in Hebrew, Urhobo and Warlpiri the relative complementizer cliticizes onto the first word in the relative clause.

The second class of relative particles is the group of **relative markers**. These have been discussed in section 3.3. See also Appendix II, table 11. They occupy the first position in the relative clause. They show at least some overt evidence of agreement with the head noun. Therefore they are not in the complementizer

[27] These particles are clause-final, contrary to all other relative complementizers (except in Oromo); therefore their classification as relative complementizers is tentative.

[28] Perhaps Indonesian *yang* belongs to this class, too.

position. They seem not to have *wh*-raised from the gap position (but see §3.3). I have distinguished two groups:

RM Relative markers in non-classifier languages. Example: classical Arabic *al-la-ḏ ī*.

RM_{CL} Relative markers that are classifiers, sometimes with an additional *d*-morpheme. Examples: Hungana *wi, ki, yi*, Wolof *g-u*, etc.

Relative markers are predominantly found in Afro-Asiatic and Niger-Congo languages, but there are also examples from Crow (Siouan family).

The fifth major class of relative elements is the group of **relative affixes**. These are relative elements that are affixed to the verb in a relative clause. Relative affixes occur in many, if not all, language families and in all major types of relative clauses. My estimate is that this is the second largest class of relative elements, after the relative complementizers. Therefore it is a shame that – as far as I know – there is not one single syntactic theory on relative clauses that covers or even mentions these elements. I am afraid that I do not have much to offer on this subject, either. Nevertheless I want to put it on the agenda by at least giving an overview and a tentative classification of Relative Affixes (denotation RA) here. See also Appendix II, table 12.

RA(Agr) A specialized relative agreement affix that replaces subject or object agreement on the verb in a relative clause, e.g. in Hopi or Kongo.

RA(T) A specialized relative temporal affix that replaces T on V, for example in Greenlandic or Tamil. This turns the relative into a participial relative, except in Korean, where there are specialized relative temporal affixes for different tenses.

Notice that there are prenominal *and* postnominal participial relatives. The latter type (e.g. in Cahuilla, Greenlandic or Ojibwa) is less well familiar than the former (e.g. in Tamil or Turkish); see Appendix II, table 6 for an overview.

RA(NR) A nominalizing affix. (Compare RC_{NR} above.) It can replace a temporal affix – $RA(NR_T)$, e.g. in Ancash Quechua or Tibetan – which leads to a participial relative; or it can be additional: $RA(NR_{add})$, e.g. in Japanese or Navaho.

In some languages a nominalizing affix provides information on the Case role of the relative gap, e.g. there are subject and object nominalizing affixes in Turkish. See Appendix II, table 14 for a list of nominalizing affixes.

RA(AT) An (additional) attributive affix. (Compare RC_{AT} above.) There is one example, from Mbama.

RA(SR) An (additional) subordinating affix. (Compare RC_{SR} above.) For example in Amharic or Ganda.

RA(CL) An (additional) relative classifier affix that agrees with the head noun. (Compare RM_{CL} above.) For example in Bora or Swahili.

RA(add) A specialized additional relative affix, e.g. in Hopi, Kongo or Yaqui.

I have argued before that every relative clause has *wh*-movement. This implies the presence of a relative pronoun and a complementizer. In the languages with relative affixes these elements are abstract, but probably still present. Therefore a relative affix is 'extra' information, which is *not* superfluous, because the relative is not overtly marked otherwise. If so, a relative affix does not play a primary role in the syntax of these relative clauses. However, it is clear that this issue deserves a thorough further study.

A summary of all relative elements is given in table 7, which is the typological counterpart of table 5.

Table 7. *A fine-grained classification of relative elements.*

relative pronouns	*relative particles*			*resumptive pronouns*
	relative complementizers	*relative markers*	*relative affixes*	
RP_d RP_{wh} RP_{sp}	RC_{SR} RC_{sp} RC_{NR} RC_{AT}	RM RM_{CL}	RA(Agr) RA(T) RA($NR_{T/add}$) RA(AT) RA(SR) RA(CL) RA(add)	GD GA

Finally, table 8 summarizes which relative elements can occur in which syntactic main types of relatives. The rightmost column indicates a zero strategy.

Table 8. *Relative elements in syntactic main types of relative clauses.*

RC type	RP	RC	RM	RA	res. pr.	ø
postnominal	+	+	+	+	+	+
prenominal	-	- (+)	-	+	- (+)	+
circumnominal	-	- (+)	-	+	-	+
correlative	+	- (+)	-	- (+)	-	+

The next subsection discusses briefly which of the relative elements can occur together.

4.2. Combinations of relative elements

The use of a particular relative element does not a priori exclude the use of another one at the same time. Table 9 contains all logically possible combinations. It is filled in according to the data set in Appendix II. The impossible combination of a relative pronoun plus a resumptive pronoun is marked grey. Indeed it is not attested. (I have also indicated the number of patterns found, but note that the figures are not corrected for a balanced division between different language families.)

Table 9. *Combinations of relative elements.*

	RP relative pronoun	RC rel. compl.	RM relative marker	RA relative affix
GD/A resumptive pronoun	-	+ 17 Akan, Urhobo, Farsi, …	+ 3 Arabic (classical), Geez, Hungana	+ 4 Jacaltec, Kongo, Shona, Swahili
RA rel. affix	+ 1 Hurric	-	-	
RM rel. marker	-	-		
RC rel. compl.	+ 2 Arabic (Tunisian), Hungarian[29]			

Clearly, combinations of true relative elements (RP, RC, RA, RM) are extremely rare. This is not surprising, because it is unnecessary to express twice or more that a clause is a relative clause. Still, a combination that can be found is RP+RC. This may be so because the three functions Subordination, Attribution and Gap Construction are divided between a relative complementizer and a relative pronoun.

By contrast, resumptive pronouns are almost always combined with a true relative element (cf. Appendix II, table 9). This is also not surprising, since overt marking of relative clauses is a reasonable strategy, and in fact the predominant one. The resumptive pronoun as such does not do so.

At this point I must stress that overt marking of a relative clause is neither a syntactic nor a logical necessity. In fact zero relativization (i.e. a relative construction without relative elements) is a main strategy in a dozen languages from the sample in Appendix II (cf. table 15 there). It is also a secondary strategy in several other languages; see section 3.1 above.

[29] Apart from these two, the combination of a relative pronoun with a relative complementizer is attested in many dialects of Germanic languages, as mentioned before. However this is not the case in standard Dutch, German, English, etc. which is the reason why they are absent in the tables.

5. Conclusion

This chapter has presented an overview of relative elements. I have revised Lehmann's (1984) classification, which is based on the three functions Gap Construction (which is related to subCase), Attribution (which is related to ϕ-feature agreement) and Subordination. I have shown that the interaction with syntax predicts four types of elements: relative pronouns, resumptive pronouns and two kinds of relative particles that I have called relative complementizers and relative markers. A typological survey adds a large class of relative affixes to these. I have argued that all relative clauses display *wh*-movement. This implies that there is always a relative operator and a relative complementizer. The (abstract) complementizer has a subordinating function. The (abstract) relative pronoun takes care of Gap Construction and Attribution. Relative markers are analysed as either (remnants of) relative pronouns that may undergo *attractio relativi*, or clause-initial DP-markers. I have argued that in case of a resumptive pronoun the relative determiner stays *in situ*. Nevertheless, raising of the head noun assures the bounded nature of the relative construction. Finally I have presented a fine-grained classification of relative elements and I have shown which combinations of these are attested. Double marking turns out to be very rare, except if one of the elements is a resumptive pronoun.

Part B

Related detailed studies

6 Apposition

1. Introduction

A relative clause can be semantically restrictive, appositive or maximalizing. This has been discussed in Chapter 2, section 3. Some examples are repeated in (1).

(1) a. (I spoke to) the lecturers that failed the test on didactics. *[restrictive]*
b. (I spoke to) the lecturers, who failed the test on didactics. *[appositive]*
c. (I spilled) the milk that there was in the can. *[maximalizing]*

In (1a) the subject only spoke to the group of lecturers that failed the test; possible lecturers that passed the test are not addressed. In (1b) the subject spoke to all lecturers in the domain of discourse, who (by the way) all failed the test. In the degree relative construction (1c) the whole amount of milk in the can is spilled.

The present chapter focuses on the syntactic differences between restrictive and appositive relatives. Although there are obvious similarities, there are substantial differences between the two types, indeed. Hence appositives must be analysed differently from restrictives. There is a wealth of divergent proposals in the literature to distinguish them. I hope to bring the various insights together, here. I will argue that appositive relatives can be treated on a par with non-restrictive appositions. Both are specifying conjuncts to the head. Furthermore I show that within this conjunct, the relative is structured as a free relative. The derivation of the syntactic structure involves promotion, just as in restrictives, but here it is not the 'visible antecedent' (i.e. the first part of the appositional construction) that is promoted, but an element (within the second conjunct) that refers to the antecedent (possibly in combination with a relative pronoun). Thus the analysis combines several aspects of seemingly incompatible ideas put forward in the literature, and it explains many of the properties of appositive relatives to be reviewed below.

Section 2 is an overview of differences between restrictive and apositive relatives. Section 3 clears up some misconceptions concerning appositives. Section 4 is a short exposé on analyses of appositive relatives in the literature; see also Appendix III. Section 5 presents my analysis in detail. Section 6 concludes the chapter.

2. Differences between restrictive and appositive relatives

This section contains an overview of (potential) differences between restrictive and appositive relatives. There are five subsections: 2.1 discusses properties related to the antecedent; 2.2 is about relative pronouns and particles; 2.3 concerns extra-position and stacking; 2.4 scope, binding and reconstruction; and 2.5 intonation.

But first, consider two important similarities between restrictives and appositives. First, as mentioned in Ch2§2.1 before, the semantic θ-role and the syntactic role that the pivot constituent plays in the relative clause, are in principle independent of its roles in the matrix clause (see also De Vries 1996 and Givón 1984:Ch15). For instance, in (2a) *Mien* is agent/subject and *die* recipient/subject. In (2b) *het Maagdenhuis* is theme/prep. object and *waar* location/adverbial phrase.

(2) a. Mien, die een boekenbon had gekregen, spoedde zich naar de winkel.
Mien, who a book token had received, speeded SE to the shop
b. We spraken over het Maagdenhuis, waar snode plannen bekokstoofd
we spoke about the Maagdenhuis, where vile plans contrived were werden.

This illustrates the role independency in appositives. It is similar to that in restrictives, which has been exemplified in Ch2§2.1.[1] Second, it seems that the relative pronoun in an appositive relative is a bound pronoun, as in restrictives:

(3) De postbode$_i$ heeft Mieke$_j$, die$_{j/*i/*k}$ gisteren arriveerde, gezien.
the postman has Mieke, who yesterday arrived seen

However, further on it will become clear that the relation between the antecedent and the relative pronoun is more complicated in appositives.

Having said this, I will continue with the differences between restrictives and appositives below. I will use two abbreviations: ARC for appositive relative clause and RRC for restrictive relative clause. Appositivity is indicated by commas to the left and right. Notice that the English relative complementizer *that* can only be used in restrictive relatives, whereas the relative pronouns *who* and *which* may be used in both appositives and restrictives. The examples are mine, unless explicitly mentioned otherwise.

2.1. The antecedent

Both appositives and restrictives can have a definite or indefinite antecedent. However, there are some differences.

A1. If the antecedent is indefinite, it must be specific (hence presupposed) in order to licence an appositive. It may also be generic. There are several ways to show this. First, see the contrast in (4), and the contrast between the appositives in (4a) and (5). Example (4) is intended to be non-specific.

---

[1] It is well-known that – independently of the role independency – there can be language-specific restrictions to the *internal* role, as discussed in Chapter 2, sections 2.1 and 4. With respect to appositive relatives it may be noted that, according to Klein (1976:152), the internal role can never be that of a predicate noun:
(i) a. * De minister van milieuzaken, die Irene Vorrink is, gebruikt geen hasj.
the minister of environmental affairs, who Irene Vorrink is, uses no hash
b. * Saskia, die zij daar is, weet het beter dan Henk.
Saskia, who she there is, knows it better than Henk

(4) a. * Ik zag een man, die een rode hoed droeg. [ARC]
I saw a man, who a red hat wore
b. Ik zag een man die een rode hoed droeg. [RRC]

(5) a. Ik heb een mooie plek gevonden, waar zo te zien nog niemand eerder is geweest.
I have a nice place found, where so to see yet nobody before has been
b. Walvissen, die zoogdieren zijn, worden veel bestudeerd.
whales, who mammals are, are much studied
c. Er woont hier een bepaalde man, die je trouwens ook wel kent.
there lives here a certain man, who you by.the.way indeed also know
d. Ik heb een nieuwe trui gekregen, die m'n oma heeft gebreid.
I have a new sweater received, which my granny has knitted

A2. Second, the specificity restriction on appositives implies that the antecedent cannot contain a (negative) quantifier, regularly. This is because a quantifier makes the antecedent non-specific; see (6) and (7).[2]

(6) a. Iedereen/niemand die een hoed droeg werd gefotografeerd. [RRC]
everybody/nobody who a hat wore was taken.a.picture.of
b. * Iedereen/niemand, die een hoed droeg, werd gefotografeerd. [ARC]

(7) a. Alle/enkele mensen die een hoed droegen werden gefotografeerd. [RRC]
all/some people who a hat wore were taken.a.picture.of
b. * Alle/enkele mensen, die een hoed droegen, werden gefotografeerd. [ARC]

If, however, the quantified antecedent is specific in a certain context, an appositive is tolerable, similar to the sentences in (5). Example (8b) is taken from Sells (1985:2).

(8) a. In het Rijksmuseum bekeek ik enkele schilderijen in het bijzonder, die me aangeraden waren door Joop.
in the Rijksmuseum examined I some paintings in particular, which me
recommended were by Joop
b. A tutor will register each student, who is then responsible for getting his papers to the Dean's office on time.

In the following special contexts (cf. §2.4:S2), antecedents of appositives can be indefinite, too:

(9) a. Every chess set comes with a spare pawn, which you will find taped to the top of the box.
b. Every new student is assigned a tutor, who is responsible for the student's well-being in college.

---

[2] Notice that the meaning of an antecedent with a universal quantifier differs from a generic reading as in (5b).

The examples are from Sells (1985:2), again. It seems to me that the indefinite antecedents are in a sense generic within the context of the quantifier *every* (spare pawns are always taped to the top of the box, etc.).

A3. Furthermore, unlike an appositive, a restrictive cannot modify a unique referent, since that leads to vacuous quantification.

(10) a. * John that I love fainted. [RRC]
b. John, whom I love, fainted. [ARC]

Strange exceptions to (10a) are the examples of apparent restrictive relatives in (11).

(11) a. *Onze Vader Die in de hemelen zijt*
'Our Father Who in heaven art'
b. *Wij die dapper zijn* zullen jullie redden.
we who brave are will you save
c. *Jij die alles weet* hebt natuurlijk het laatste woord!
you who everything know have of.course the final word
d. *Joop die alles weet* heeft natuurlijk het laatste woord!
Joop who everything knows has of.course the final word

Normally, a relative to a name or pronoun is appositive. It seems that the relatives in (11) indicate a fixed property of the antecedent, hence it concerns subject relatives only. This hybrid type of relative is neither restrictive, nor appositive: it does not provide further information on the antecedent, rather it gives a further (epithetical) indication who is meant, without there being a set of possibilities. The examples in (11a-d) may be compared to phrases like *Joep van hiernaast* 'Joep from next.door', or, more precisely, with *jij hemelbewoner* 'you celestial'*, wij dapperen* 'we brave ones'*, jij allesweter* 'you wiseacre'*,* and *Joop de betweter* 'Joop know-it-all', respectively.

A further special case is the well-known example in (12b), where the relative causes a set-interpretation of the head noun. This is not a property of relative clauses alone, but it can be established by any modifier, see (12c).[3]

(12) a. * the Paris
b. the Paris that I love
c. the Paris of the old days

[3] In general, the external determiner of a restrictive relative depends on the content of the relative clause. See (i), taken from Jackendoff (1977:177).
(i) a. He greeted me with the/*a warmth I expected.
b. He greeted me with a/*the warmth I had not expected.
According to Jackendoff this is a general property of restrictive modifiers, hence it cannot be considered as clear evidence for the D-complement hypothesis of relative clauses that I have adopted in Ch3/4 (unless one would assume that every restrictive modifier is a complement of D – but that raises a lot of extra trouble, e.g. obligatory DP-internal extraposition, except e.g. for adjectives in Dutch, etc.).

So (12b/c) implies a set of different Parises from which one is chosen by means of the information provided by the modifier.

A4. Restrictives only modify DPs. Appositives can have any antecedent, see (13). Jackendoff (1977:175) states: 'Relative pronouns in appositives can be anaphoric to the same constituents as ordinary demonstrative pronouns can.' See also Fabb (1990). Note that the function of the head in the relative is not necessarily the same as in the matrix.

(13) CP: The three wise men advised resignation, which is good.
VP: The dog has thrown up, which the cat hasn't, fortunately.
AP: She denied to be corrupt, which she really was, though.
AdvP: He ran fast, which is how an athlete should run.
PP: They talked from one to twelve o'clock, which is a long time.
PP: John looked behind himself, (which is) where I stood.

The same can be shown in Dutch; see (14).

(14) CP: De drie wijze mannen adviseerden het aftreden van de Commissie,
the three wise men advised the retreat of the Commission,
wat een juiste beslissing was.
which a just decision was
VP: De kat heeft overgegeven, wat de hond hopelijk niet zal doen.
the cat has vomited, which the dog hopefully not will do
AP: Cresson ontkende corrupt te zijn, wat ze echter wel degelijk is.
Cresson denied corrupt to be, which she however indeed is
AdvP: Hij werkte hard, hetgeen is hoe een ambtenaar behoort te werken.
he worked hard, which is how a civil servant ought to work
PP: De leerstoelgroep vergaderde van 9:30 tot 12:30, wat erg lang is.
the prof. Chair-group meeted from 9:30 to 12:30, which very long is
PP: Hij keek verschrikt achter zich, waar echter niets was te zien.
he looked frightened behind SE, where however nothing was to see

However, this special use has its limitations: attributive APs cannot be relativized.

(15) a. * Unfortunately the corrupt (woman), which I am not, (woman) was elected.
b. * Helaas werd de corrupte (vrouw), wat ik niet ben, (vrouw) gekozen.

According to Emonds only postnominal adjectives, which must always bear a complement or adjunct, may carry an appositive.[4] See (16), from Emonds (1979:228).

[4] There is a clear explanation for these facts. First, there is more general constraint which prevents prenominal ajectives from taking a complement or modifier (e.g. the proud (*of these traditions) canadians). This need not be a primitive filter, for example it would follow from a theory in which A takes NP as a complement. Second, a postnominal adjective is predicative in English and Dutch.

to be continued...

(16) Canadians proud *(of these traditions), which Jean-Luc doesn't seem to be, favour an independent Eastern Canada.

This can be more ore less confirmed in Dutch, although postnominal adjective constructions are very restricted and obligatorily appositive:

(17) Joop, als altijd tuk op voordeeltjes, wat ik zelf niet ben, rende naar de winkel.
Joop, as ever keen on bargains, which I myself not am, ran to the shop

A5. Consider the following special case from Swedish: in appositives a definite marker is obligatory on the antecedent if it is preceded by a demonstrative, contrary to the situation in restrictive relative constructions. The normal definite marker in Swedish is a suffix, e.g. *hus-et* 'the house' (cf. Platzack 1997:71). A 'free determiner' can be added if an adjective precedes the noun: *det röda huset* 'the red house-the', or if the interpretation is demonstrative: *det huset* 'that house-the'. A free determiner without a definite suffix on the noun is generally impossible: **det (röda) hus*. Remarkably, it *is* possible if a restrictive relative is attached to the DP, but not in the case of an appositive relative. See the following contrast (from Platzack 1977:76):[5]

(18) a. Det hus*et* som han talade om ligger där borta. [RRC]
the house-the that he talked about is over there
b. Det hus*et*, som han för övrigt ville riva, är nu till salu. [ARC]
the house-the, that he by the.way wanted to.demolish, is now for sale

(19) a. Det hus som han köpte var rött. [RRC]
the house that he bought was red
b. * Det hus, som han för övrigt köpte, var rött. [ARC]
the house, that he by the.way bought, was red

Construction (19a) is even possible with extraposition (Platzack 1997:84):

(20) *Den man* vill jag se *som kan lösa den här uppgiften*.
the man want I see that can solve this task

... continued
Therefore it is a complete AP, which can have a complement and/or a modifier. In my terms, a predicative AP may take a specifying conjunct that contains an ARC; see below.

5 Notice that Swedish *som*, a relative complementizer, hence equivalent to English *that*, not *which*, can be used in appositive relatives.

A6. Finally, appositives with a partitive antecedent may cause difficulties concerning the agreement in the predicate. First consider the situation in Swedish. As is always the case, a predicate adjective in a subject relative agrees in number with the antecedent in Swedish. However, if the construction is partitive, a contrast between restrictives and appositives appears (Platzack 1997:79):

(21) a. En av poliserna som blev sjuk/sjuka heter Blom. [RRC]
one of policemen-the that got ill_{SG}/ill_{PL} is.named Blom
b. En av poliserna, som f. ö. blev sjuk/*sjuka, heter Blom. [ARC]
one of policemen-the, that by the.way got ill_{SG}/*ill_{PL} is.named Blom

If the relative is restrictive, the predicate adjective is optionally singular or plural; in an appositive it must be singular. Unfortunately, this observation is not confirmed by the following pattern concerning verb agreement in Dutch; see (22).[6,7] Example (22b) is from Bennis (1978:212). The two variants can be explained by varying the place of attachment of the relative clause (hence there is a meaning difference).

(22) a. Ik heb één van de voetballers die bij Ajax *spelen/speelt*, [RRC]
I have one of the football.players who with Ajax $play_{PL}$/$play_{SG}$
gisteren ontmoet.
yesterday met
b. Ik heb één van de voetballers, die bij Ajax *spelen/speelt*, [ARC]
gisteren ontmoet.

According to Bennis, extraposition in (22b) is only possible with the singular variant, but I do not agree with this judgement. Moreover, it seems to me that in (22a) extraposition is possible with both variants. Thus we have (23).

(23) a. Ik heb één van de voetballers ontmoet die bij Ajax *speelt/spelen*. [RRC]
b. Ik heb één van de voetballers ontmoet, die bij Ajax *speelt/spelen*. [ARC]

Furthermore, notice the constructions with appositives in (24), from Bennis (1978:213). If the relatives are interpreted as restrictive, the judgements remain the same.

(24) a. Van de voetballers, die bij Ajax *spelen*, heb ik er één ontmoet.
b. * Van de voetballers, die bij Ajax *speelt*, heb ik er één ontmoet.
c. Van de voetballers heb ik er één ontmoet, die bij Ajax *speelt*.
d. * Van de voetballers heb ik er één ontmoet, die bij Ajax *spelen*.

---

6 The uncertainty concerning the verb agreement in (22a) resembles some facts concerning the binominal qualitative construction, to be discussed in Ch8§App:4. Notice that the plural verb *spelen* is preferred if the main stress is on *Ajax*, but the singular *speelt* if it is on *één*.

7 Moreover, the translation of (21b) into Dutch gives two acceptable variants.

I think (24) can be explained almost trivially once it is noticed that a PP cannot be moved from within NP; see also Chapter 8 and Klein & Van der Toorn (1980). The fronted PP must be adverbial; it is not the complement of *één*. Hence the pied piped relatives belong to the plural DP, the sentence-final ones to the singular *één*.

2.2. Relative elements and pied piping

R1. English *that* cannot be used as a relative complementizer in appositives, as noted above. This is not a universal property: see further section 3.1. More interestingly, restrictives but not appositives may be introduced by a zero particle, at least in English and the continental Scandinavian languages (Smits 1988):

(25) a. The man I saw is great. [RRC]
b. * John, I saw, is great. [ARC]

Cinque (1982) assumes that a relative pronoun in an English appositive cannot be deleted because it is not c-commanded by the head noun, hence it is unrecoverable if it is empty. Concerning zero relativization, see further section 3.1 and Ch5§3.1 above.

R2. Consider pied piping in relative clauses. Pied piping of a preposition is possible in both types of relatives; see (26) and the Dutch counterpart in (27).

(26) a. The man *to whom* I just gave a present is celebrating his birthday. [RRC]
b. John, *to whom* I just gave a present, is celebrating his birthday. [ARC]

(27) a. De man *aan wie* ik zojuist een cadeau gaf, viert zijn verjaardag. [RRC]
b. Joop, *aan wie* ik zojuist een cadeau gaf, viert zijn verjaardag. [ARC]

Possessive relatives are also possible in both cases:

(28) a. The man$_{(,)}$ *whose mother* I met the other day, is a creep.
b. De man$_{(,)}$ *wiens moeder* ik gisteren ontmoette, is een engerd.

By contrast, complex pied piping is highly marked, if not impossible, in English restrictives, contrary to the situation in appositives.[8] This is shown in (29).[9]

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[8] Safir (1986:679) notices an interesting possibility concerning complex pied piping: fronting of the relative pronoun; see (i).
(i) a. Those reports, *the height of the lettering on* ***which*** the government prescribes, are tedious.
b. ? Those reports, ***which*** *the height of the lettering on* the government prescribes, are tedious.
See also Bianchi (1995:Ch6) on this subject.

[9] Unfortunately, sentences like (29a) are dubbed acceptable (but stylistically marked) in Cinque (1982:279), but unacceptable in Fabb (1990:64). Emonds (1979:224) has similar examples with inanimate antecedents, which he disapproves. All authors accept the examples with appositives as in (29b). I conclude that at least there is a clear contrast in (29).

(29) a. ?* The man *the wife of whom* I met yesterday is a carpenter. [RRC]
b. John, *the wife of whom* I met yesterday, is a carpenter. [ARC]

According to Cinque (1982), relative pronouns in English restrictive relatives are anaphors in the unmarked case, whereas they can be discourse-linked to the antecedent in appositives. Therefore (in the unmarked case) complex pied piping is ungrammatical in restrictives, because a closer NP node intervenes – the antecedent is outside the governing category of the pronoun – hence binding is impossible. In appositives the relative pronouns are not (necessarily) anaphors, hence principle A of the Binding Theory does not apply and complex pied piping is allowed.

Unfortunately, this reasoning cannot be completely correct. First of all, relative pronouns in appositives *must* have a nearby antecedent, too, as noted above; see for instance (30) and (31).

(30) Jan_i zag de $\text{vrouw}_{j\ (,)}$ $\text{die}_{j/*i*k/*}$ gisteren arriveerde.

(31) John_i saw the $\text{woman}_{j\ (,)}$ $\text{who}_{j/*i*k}$ arrived yesterday.

Moreover, in Dutch, complex pied piping as in (29) is impossible in both restrictive and appositive relatives; see (32).

(32) a. * De man *de vrouw van wie* ik gisteren heb ontmoet, is timmerman. [RRC]
b. * Joop, *de vrouw van wie* ik gisteren heb ontmoet, is timmerman. [ARC]

But we cannot say that relative pronouns are *always* anaphors of the Cinque type in Dutch, since complex pied piping in restrictives (and appositives) *is* possible if an additional preposition is added. This is also the case in English; see (33).

(33) a. De man ***met*** *de vrouw van wie* ik gisteren gesproken heb, is timmerman.
b. The man ***to*** *the wife of whom* I spoke yesterday, is a carpenter.

These facts are discussed in detail in Chapter 8, section 5.

R3. An appositive relative can contain an epithet NP, contrary to a restrictive. This is shown in (34). See also Fabb (1990).

(34) a. "De avonden", *welk boek* van Reve veel gelezen wordt, is herdrukt.
"De avonden", which book by Reve much read is, has.been reprinted
b. Ze schaamden zich diep, onze werkloze echtgenoten,
they shamed SE deeply, our unemployed husbands,
welke *stakkerds* geen Ferrari hebben.
which poor.devils no Ferrari have
c. Hond en kat zijn als water en vuur, welk *feit* reeds lang bekend is.
dog and cat are like water and fire, which fact already long known is

Examples like these have a literary flavour. They remind one of the internally headed free relatives discussed in Ch2§6.3.2 such as *welke onverlaat zoiets doet verdient straf* 'which miscreant such.a.thing does deserves punishment'.

R4. Finally, notice that a relative pronoun is a third person pronoun. We might wonder whether (appositive) relatives with a first or second person pronoun are ungrammatical. Unexpectedly this is not the case. Consider the examples in (35), from Delorme & Dougherty (1972:27/16):

(35) a. We, who are policemen, like peanuts.
b. You, who are troops, will embark.

Similar examples can be obtained in Dutch. See further section 5.5 on matching effects in appositive relatives with a pronominal head.

2.3. Extraposition and stacking

Like restrictives, appositives can be extraposed, and they can be stacked as well:

(36) a. Ik heb *Joop* gezien, *die twee zusters heeft*.
I have Joop seen, who two sisters has
b. Joop, die op de derde rij zat, van wie we nu nog niet weten of hij wel een
Joop, who on the third row sat, of whom we now yet not know if he indeed a
kaartje had, genoot van de voorstelling.
ticket had, enjoyed . the performance

These properties have been denied. They are treated further in section 3.1 below. Apart from that, the following can be said about stacking and extraposition.

E1. Appositives must appear to the right of restrictives; see e.g. Jackendoff (1977), Smits (1988), or Platzack (1997). An English example is (37):

(37) a. The man that came to dinner, who was drunk, fainted.
b. *The man, who was drunk, that came to dinner, fainted.

This is the case in Dutch, too:

(38) a. De president die dronken was, die president Clinton moreel veroordeelde,
the president who drunk was, who president Clinton morally condemned,
lachte luid.
laughed loud
b. * De president, die president Clinton moreel veroordeelde, die dronken
was, lachte luid.

However, in exceptional cases the reverse order is acceptable.

(39) ? Kijk, daar heb je die man weer, die ik je trouwens gisteren ook aanwees,
look, there have you that man again, who I you by.the.way yesterday also out.pointed,
die een paarse hoed draagt.
who a purple hat wears

Likewise, the order can be turned around in English. See (40), from Emonds (1979:222).

(40) We found that movie, which cost plenty, that you so highly recommended.

Emonds states that in general, both appositives and parentheticals can be followed by only one constituent, see (41), from Emonds (1979:227).

(41) He was sent that mony,| I want to emphasize |, for new furnature (*by my brother).
| which I worked hard for |

However, there are many counterexamples to this claim, e.g. (42), from Perzanowski (1980: 358/365). See also Fabb (1990:74).

(42) a. I gave Harry, who thanked me, his money back.
b. I gave Harry, who goes to NYU, his money back yesterday.

Finally, recall from Ch2§7.3 that, obviously, next to stacking recursive embedding is possible. Appositives and restrictives can be used in random order in that case, see e.g. (43), where restrictive connections are printed in italics and appositive connections are underlined.

(43) Ik zag *de vrouw$_i$ die$_i$* <u>*de hond$_j$*</u> *sloeg*, <u>die$_j$</u> <u>*de man$_k$*</u> <u>gebeten had</u> *die$_k$ vandaag*
I saw the woman who the dog hit, who the man bitten had who today
<u>*een vrije dag$_l$*</u> *had*, <u>waar$_l$ hij$_k$ zich zeer op verheugd had</u>.
a free day had, where he SE very on enjoyed had

2.4. Scope, binding and reconstruction

S1. By definition, an appositive refers to the whole antecedent DP, whereas a restrictive is under the scope of a determiner or quantifier that belongs to the antecedent. Hence (44a) implies that all students passed the examination, whereas (44b) implies that some students did not pass the examination.

(44) a. De studenten, die slaagden voor het examen, kregen een bos bloemen. [ARC]
the students, who passed for the examination, received a bunch (of) flowers

b. De studenten die slaagden voor het examen, kregen een bos bloemen. [RRC]

S2. An appositive is opaque for quantifiers and negation, contrary to restrictives. In other words: appositives are barriers for licencing relations such as variable binding. Therefore the meaning of *hij* in (46) cannot be constructed.

(45) *Bijna niemand* vertelde over de toren die *hij* beklommen had [RRC]
almost nobody told about the tower which he climbed had

(46) * *Bijna niemand* vertelde over de Martinitoren, die *hij* beklommen had. [ARC]
almost nobody told about the Martini.tower, which he climbed had

Jackendoff (1977:176) presents the following examples in English.[10] In (48b) the negative polarity item *any* cannot be licenced by the negation.[11]

(47) a. *Everyone* bought a suit that suited *him*. [RRC]
b. * *Everyone* bought a suit, which suited *him*. [ARC]

(48) a. I did*n't* see a man who had had *any* drinks. [RRC]
b. I did*n't* see Bill, who had had some/**any* drinks. [ARC]

See also Fabb (1990) on this subject.

However, it must be noted that in special contexts a quantifier seems to be able to bind a variable in an appositive. The examples in (49) are from Sells (1985). Equivalent sentences in Dutch are acceptable as well.

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10 In fact, (47b) is not a suitable example to show the point, because the appositive has an indefinite non-specific antecedent, which is an independent ground on which the example is unacceptable, cf. * *a man bought a suit, which suited well.* See further §3.1:M3 on similar misconceptions.

11 The contrast in (48) is a rather special, since normally, negative polarity items cannot be licenced across sentence boundaries at all. Perhaps (48a) can be explained by analysing it as involving constituent negation, equivalent to *I saw no man who had had any drinks.*
A related example is mentioned by Platzack (1997:78) for Swedish, where the NPI *någonsin* 'ever' can be licenced by the head of a restrictive:
(i) Den *vackraste* flicka han *någonsin* hade sett stod framför honom. [RRC]
the most.beautiful girl he ever had seen was.standing in.front.of him
(ii) * Den *vackraste* flickan, som han f. ö. *någonsin* träffat, var läkare. [ARC]
the most.beautiful girl, that he by the.way ever (had) met, was (a) doctor
The same contrast can be obtained in Dutch. It does not show, however, that ARCs are barriers for licencing relations. The only thing that can be concluded from this kind of examples is that the relation between the antecedent and the relative clause is different for restrictives, as compared to appositives.

(49) a. *Every rice-grower* in Korea owns a wooden cart, which *he* uses when *he* harvests the crop.
b. A tutor will register *each student, who* is then responsible for getting his papers to the Dean's office on time.
c. *Every man* has two hands, which serve *him* well.

Sells shows at length that these examples do not involve syntactic variable binding, but a type of discourse linking called *cospecification*.[12] A direct indication for this is that the relation between *every/each* and *he* can be inter-sentential, as shown in (50), where the appositive clauses of (49) have been converted into main clauses. Therefore a c-command relation is certainly excluded, hence syntactic binding is impossible.

(50) a. *Every rice-grower* in Korea owns a wooden cart. *He* uses it when *he* harvests the crop.
b. A tutor will register *each student. He* is then responsible for getting his papers to the Dean's office on time.
c. *Every man* has two hands. They serve *him* well.

Cospecification as in (49) or (50) is only possible with certain operators (excluding negation) in a continuative discourse. The latter implies that the 'expected centre' (usually the focus) is confirmed in the following clause by pronominalization, and that there is a temporal parallelism (more precisely: 'temporal or modal subordination'). See further Sells (1985). Notably, in the examples (46) through (48) these conditions are not fulfilled. A transformation such as in (50) is also impossible; see e.g. (51).

(51) *Bijna niemand/iedereen* sprak over de Martinitoren.
almost nobody/everybody told about the Martini.tower
* *Hij* had die beklommen.
he had it climbed

Thus the generalization that appositives are for some reason syntactically opaque to licencing relations can be maintained. Apparent counterexamples are explained by special discourse requirements. For instance, (52) is acceptable, contrary to (46) and (51).

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12 Sells (1985) argues that there are three main types of linking to an antecedent: i) *syntactic binding*, ii) *cospecification*, i.e. discourse licenced anaphora, and iii) *coreference*, which is only based on 'knowledge of the world'. Sells states cospecification in terms of Discourse Representation Theory, cf. Kamp & Reyle (1993). Demirdache (1991) takes over the essential parts of his findings in a somewhat different framework. She argues that there is a clear parallel with Evans's (1980) E-type pronouns. I might add that at present it is, or should be, well-known that there are several types of anaphora that are dependent on discourse conditions; see e.g. Sells (1987), De Vries (1999b) – and the references there – on logophoric reference, identifying emphatic expressions, etc.

(52) *Elke toerist* sprak over de Martinitoren, die *hij* immers de volgende dag zou
every tourist spoke about the Martini.tower, which he after.all the next day would
gaan beklimmen.
go climbing

S3. A restrictive but not an appositive allows for collocations split across a relative construction; see (53). This has been discussed in Ch3§2.3.3.[13]

(53) a. De voortgang die we boekten, was hoopgevend.
b. * De voortgang, die we (vorig jaar) boekten, was hoopgevend.
the progress, which we (last year) made, was hopeful

Vergnaud (1974) gives the following example in English:

(54) a. The horrible face that Harry made at Peter scared him.
b. * The horrible face, which Harry made at Peter, scared him.

S4. A restrictive but not an appositive allows for binding into the relative clause, as is familiar from examples like (55).

(55) a. The picture of *himself* that *John* likes is on the wall.
b. ?* That portrait of *himself*, which *John* painted last year, is expensive.

More appropriate examples avoid a possible coreferential PRO subject in SpecNP, as discussed in Ch3§2.3.4; see (56):

(56) a. De verhalen over *zichzelf* die *Joop* gisteren hoorde, waren [RRC]
the stories about SE-SELF which Joop yesterday heard, were
gelogen.
lied
b. ?* De verhalen over *zichzelf*, die *Joop* gisteren hoorde, waren [ARC]
gelogen.
b.' ?* Aan de muur hing een schilderij van zichzelf, dat Joop vorige maand
on the wall was a painting of SE-SELF, which Joop last month
heeft laten maken.
has made make

S5. Next, Safir (1986:673) claims that there is a difference between appositives and restrictives concerning parasitic gaps; see (57).

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[13] The judgements are influenced by the level of concreteness of the head noun, and the amount of semantic content in the appostive. Sentence (i), for example is much better.
(i) ? De voortgang, die we wegens grote werkdruk graag zouden boeken,
the progress, which we due.to heavy pressure.of.work readily would make,
werd belemmerd door trage Jan.
was hindered by slow Jan.

(57) a. John is a man [who$_i$ *[everyone [who knows pg$_i$]]* admires e$_i$] [RRC]
b. * John is a man who *Bill, who knows*, admires. [ARC]

Safir explains this by assuming that appositives are not present at S-structure. To me, the contrast in (57) seems to be just another instance of property S2: appositive are barriers for licencing relations; compare e.g. (46). This is confirmed by Demirdache (1991:158/9), in whose theory appositives are LF-raised (hence, in (57b) the appositive that contains the parasitic gap is not in the c-command domain of the antecedent, the first *who*). Notice, moreover, that (57a) is unacceptable in Dutch:[14]

(58) * Joop is een man die [iedereen die kent] bewondert.

S6. Finally, certain speaker-oriented sentence adverbs and logical connectives can appear in main clauses and appositive relatives only. An example is (59), from Emonds (1979:239).

(59) a. The boys, who have *frankly* lost their case, should give up. [ARC]
b. * The boys that have *frankly* lost their case, should give up. [RRC]

See also Lehmann (1984:271).

2.5. Intonation

I1. Whereas restrictives fit into the intonation contour of the main clause, appositives have a comma intonation, like appositions – cf. Emonds (1979) – and like left-dislocations – cf. Platzack (1997).

I2. According to Jackendoff (1977:173) restrictives can be focused and negated, whereas appositives cannot carry the sentence stress; see (60) and (61).

(60) We didn't talk to the man who married SUSAN. [RRC]
(We talked to the man who married JANE.)

(61) * We didn't talk to the man, who married SUSAN. [ARC]

I3. The relative pronoun *who* in English can be reduced in restrictives, but in appositives this is not possible. See (62), based on Kaisse (1981):

(62) a. those people who'll [həl] be there tomorrow [RRC]
b. * those people, who'll [həl] be there tomorrow [ARC]

[14] See also Bennis & Hoekstra (1984).

According to Kaisse, the main reason for this difference is that a restrictive, but not an appositive relative is a complement of the head noun. Given the promotion theory of relative clauses, this explanation must be revised. I do not expect problems, since there is a complementation relation both between D_{matrix} and RC, and between D_{rel} and N_{head} in restrictives, whereas appositives are analysed differently (see below).

3. Misconceptions on appositive relatives

There are a number of misconceptions on appositive relatives which I would like to contradict. The first subsection discusses some false statements that persist in the literature, but can easily be refuted; and some properties of English that happen to be not general linguistic truths. The second subsection contains some residual issues.

3.1. False statements that persist in the literature, and properties of English that do not have a universal status

M1. * *"An appositive relative cannot be extraposed, contrary to a restrictive one."*
(e.g. Emonds 1979:234)

Emonds – but also Vergnaud (1974), Smits (1988) and others – assume that appositives cannot be extraposed. This is plainly false. Some examples are given in (63).

(63) a. Gisteren heb ik *mijn zuster* bezocht, *die blond haar heeft* (zoals je weet).
yesterday have I my sister visited, who blond hair has (as you know)
b. *Ritzen* kwam op bezoek, *van wie laatst een schaamteloos boek over*
Ritzen came on visit, by whom lately a shameless book on
ministerschap is verschenen.
ministership has appeared

Even in English appositives can be extraposed; see (64), from (Fabb 1990:59).

(64) I met *John* yesterday, *who I like a lot*.

Some appositives have a continuative meaning or a cause/effect reading, such as (65a), taken from Smits (1988:185), or (65b), from Safir (1986:fn. 9).[15] According to Smits these sentences are base-generated in a right-peripheral position.

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[15] The bound pronoun in (65b) seems to be at odds with the generalization in §2.4:S2 above, viz. that an appositive is opaque for licencing relations. However, it is another example of cospecification licenced by a continuative discourse, as discussed in Sells (1985). See also the following contrast, taken from Safir (1986:673).
(i) The chairman must register each student, who may then apply for a loan.
(ii) * The chairman must register each student, who has applied for a loan.

(65) a. Ik wilde *mijn zuster* opzoeken, *die echter niet thuis was*.
I wanted my sister visit, who however not at.home was
b. [Every Christian]$_i$ prays to God, who forgives him$_i$.

This is rather interesting, but it does by no means imply that extraposition of 'normal' appositives is anomalous; cf. (63). See also Ch2§7.5 on this subject.

M2. * *"Appositive relatives cannot be stacked, contrary to restrictives."*
(e.g. Jackendoff 1979:171)

According to Jackendoff – but also Smits (1988), Platzack (1997), Alexiadou et al. (2000), etc. – restrictives can be stacked, but appositives cannot. An example is (66).

(66) a. the man who came to dinner who hated lox [RRC]
b. * the man, who came to dinner, who hated lox [ARC]

Although stacking is somewhat difficult in English, and a coordination structure is often preferred in general (see below), this observation turns out to be completely incorrect if more languages are taken into account; cf. Lehmann (1984:197ff) and Grosu & Landman (1998). See also Ch2, sections 3 and 7.3. For instance, the Dutch examples in (67) are perfectly acceptable. A good strategy is to use different relative pronouns.

(67) a. Joop, die op de derde rij zat, van wie we nu nog niet weten of hij wel een
Joop, who on the third row sat, of whom we now yet not know if he indeed a
kaartje had, genoot van de voorstelling.
ticket had, enjoyed . the performance
b. Popeye, die van spinazie houdt, die daarom ook heel sterk is, redde Olijfje.
Popeye, who . spinach likes, who therefore also very strong is, saved Olive
c. Ik woon in Amsterdam, dat 750000 inwoners heeft, waar bovendien vele
I live in Amsterdam, which 750000 inhabitants has, where moreover many
toeristen komen.
tourists come

An English example is (68).

(68) this man, who came to dinner late, about whom nobody knew anything, …

Examples of stacking with restrictive relatives comparable to (67) are shown in (69).

(69) a. Willen de mensen die op de derde rij zitten die nog geen kaartje hebben
want the people who on the third row sit who yet no ticket have
even hier komen?
just here come
b. Was de man die van spinazie houdt die heel sterk is, maar hier.
were the man who . spinach likes who very strong is, only here
c. Ken jij een stad die 750000 inwoners heeft waar veel toeristen komen?
know you a city that 75000 inhabitants has where many tourists come

One might ask whether a second relative modifies the antecedent alone or the antecedent plus the first relative. In fact, both may be the case. This is shown in (70), where *degenen* is ambiguous, i.e. it refers to 'people' (on any row), or to 'people on the third row'.

(70) Willen [de *mensen*$_i$ die op de derde rij zitten$_j$ die nog geen kaartje hebben]
want the people who on the third row sit who yet no ticket have
zich bij de kassa vervoegen, en [**degenen**$_{i/j}$ die wel een kaartje hebben] bij de
SE at the booking.office apply, and the.ones who indeed a ticket have at the
controleur?
ticket.inspector

According to Jackendoff (1977:186) "the phenomenon of stacking is not to be accounted for in the syntax, but rather in the system of presupposition and focus". If this is true, a flat structure like [NP [RC_1] [RC_2]] is to be preferred over a hierarchical one like [[NP RC_1] RC_2], contra Ross (1967), because the latter leads to wrong predictions.[16] In Jackendoff's representation stacked relatives are on the same hierarchical level. However, in a binary branching grammar this is not possible. In my view the solution is a coordination analysis of stacking. This is confirmed by the fact that it is *always* possible to coordinate a stacked relative overtly; see also Platzack (1997). For instance, (67b) and (69b/c) may be expressed as in (71). There is no difference in meaning.

(71) a. Popeye, die van spinazie houdt, *en* die daarom ook heel sterk is, redde Olijfje. [ARC]
b. Was de man die van spinazie houdt *en* die heel sterk is, maar hier. [RRC]
c. Ken jij een stad die 750000 inwoners heeft *en* waar veel toeristen komen? [RRC]

If the second relative pronoun equals the first, it can be omitted. Hence *die* can be left out in (71a/b), but not *waar* in (71c). This is shown in (72).

(72) a. Popeye, die van spinazie houdt, *en* daarom ook heel sterk is, redde Olijfje.
b. Was de man die van spinazie houdt *en* heel sterk is, maar hier.
c. * Ken jij een stad die 750000 inwoners heeft *en* veel toeristen komen?

So under certain conditions the coordinative head or the second relative pronoun can be elliptic, but leaving out both is never allowed; see (73).[17]

(73) a. * Popeye, die van spinazie houdt, heel sterk is, redde Olijfje. [ARC]
b. * Was de man die van spinazie houdt heel sterk is, maar hier. [RRC]

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16 Jackendoff's claim is criticized in Stuurman (1983). I will return to it in section 4.

17 However, if (73a) contains a third relative clause which *is* introduced by '*en*', the second coordinative head may be asyndetic.

Finally, notice that stacking of appositives with a non-NP antecedent is also possible. In these cases an overt coordinator is often preferred.

(74) a. Joop zocht onder de tafel, waar ik ook altijd zoek, (en) waar het een
Joop searched under the table, where I also always search, (and) where it a
bende is.
mess is
b. Joop is gevallen, wat heel zielig is, (en) wat hij voortaan moet vermijden.
Joop has fallen, which very pitiful is, (and) which he from.now.on should avoid

M3. * *"Object NPs in questions and negative sentences cannot bear an ARC."*
(e.g. Smith 1964:258)

It is claimed that object NPs in questions and negated sentences cannot have appositives; see for instance (75).

(75) a. * Did you see Bill, who is six foot tall?
b. * Who wrote a novel, which was published by Foris?
c. * We never go to the opera house, which is in Boston.

The observation is incorrect. Example (75a) is fine in Dutch; (75b) is unacceptable simply because *a novel* is non-specific; (75c) is all right and can also be rephrased (from Klein 1976:146). Thus consider (76).

(76) a. Heb je Lange Jan gezien, die 1 meter 99 meet?
have you Tall Jan seen, who 1 meter 99 measures
b. Wie heeft ook weer dat boek over snorkels geschreven, dat ik je vorige
who has also again that book about snorkels written, that I you last
week nog heb laten zien?
week yet have let seen
c. Naar het operagebouw, dat in Boston staat, gaan we vandaag niet.
to the opera.house, that in Boston is, go we today not
d. We gaan vandaag niet naar opa, die zijn rust hard nodig heeft na de
we go today not to grandfather, who his rest badly needs after the
operatie van vorige week.
operation of last week

What exactly causes the unacceptability in (75a) and (75c) in English is not clear to me. See also Sells (1985) and Demirdache (1991) on the subject of appositive relatives and the scope of quantifiers and negation.

M4. * *"A relative complementizer can only be used in restrictive relatives"*
(e.g. Jackendoff 1977:171)

In English, appositives may not be introduced by a relative complementizer. For instance:

(77) a. The man that I saw sneezed. [RRC]
b. * John, that I saw, sneezed. [ARC]

However, this restriction does not have a general status. According to Smits (1988) appositives can be introduced by a complementizer in the Scandinavian languages (i.e. *som*), French (*que*), Catalan, Italian and Portuguese. Lehmann (1984) provides many examples from other languages families. Hence the restriction in English is a language-particular coincidence, nothing more.

3.2. Other issues

M5. The head of a relative clause can be questioned in some cases. According to Fabb (1990:70) an appositive relative cannot be pied piped, contrary to a restrictive:

(78) a. [*Who* that you met] did you like _ the best? [RRC]
b. * [*Who*, some of whom were deaf], did we teach _ French? [ARC]

If the relative is stranded, Fabb gives the reverse pattern:

(79) a. * *Who* did you like _ [that you met] the best? [RRC]
b. *Who* did we teach _ , [some of whom were deaf], French? [ARC]

I think, however, that Fabb's remarks are incorrect. First, the contrast in (78) disappears if *who* is changed to *which people*, at least in the Dutch counterpart. The reason is simply that appositives must have a specific antecedent (cf. section 2.1 above).

(80) a. [*Welke mensen* die je ontmoette] vond je _ het leukst? [RRC]
b. [*Welke mensen*, van wie enkele doof waren], hebben we _ Frans geleerd? [ARC]

Second, consider the contrast in (79). In fact both sentences are expected to be unacceptable, since stranding in the middlefield is prohibited in general (see Ch7§5.2.7). This explains the judgement in (79a) and its Dutch counterpart in (81).

(81) * *Wie/welke mensen* vond je _ [die je ontmoette] het leukst?

This leaves us with the strange example in (79b). Notice that (82) – the Dutch counterpart – is plainly ungrammatical, as expected.

(82) * *Welke mensen* hebben we _ , [van wie enkele doof waren], Frans geleerd?

This casts serious doubt on the acceptability of (79b); see also Alexiadou et al. (2000:46). Perhaps (79b) is easily confused with a parenthetical sentence because the relative pronoun is not sentence-initial. (In Dutch this confusion is less likely

because the word order *mensen, enkele van wie* 'people, some of whom' is impossible for independent reasons.)

Finally, notice that it *is* possible to split an interrogative antecedent and a relative clause, namely if the relative is extraposed from the SpecCP position properly (i.e. to the end of the sentence). The judgements for restrictives and appositives are equal; see (83).

(83) a. Hoeveel mensen heb je gezien die een hoed droegen? [RRC]
how.many people have you seen who a hat wore
b. Hoeveel mensen heb je Frans geleerd, van wie enkele doof [ARC]
how.many people have you French learned, of whom some deaf
moeten zijn geweest?
must have been

Thus the apparent contrasts in (78) and (79) are due to ill-chosen examples.

M6. According to Safir (1986:667) there is a weak cross-over effect in restrictives but not appositives:

(84) a. ?* A man$_i$ who$_i$ [his$_i$ wife] loves t$_i$ arrived early. [RRC]
b. John$_i$, who$_i$ [his$_i$ wife] loves t$_i$, arrived early. [ARC]

Safir claims that this can be explained as follows: i) coreference of a restrictive relative pronoun and its antecedent is established at LF, ii) coreference of an appositive relative pronoun and its antecedent is established at some discourse level LF', and iii) the constraint against weak cross-over applies at LF only. However, I don't feel the contrast in Dutch to begin with. Both restrictives and appositives produce the weak cross-over effect; see e.g. (85) and (86).

(85) a. ?? Ik neem de hond$_i$ die$_i$ [zijn$_i$ vorige eigenaars] t$_i$ verwaarloosd [RRC]
I take the dog which his former owners neglected have hebben.
b. ?? Ik neem deze hond$_i$, die$_i$ [zijn$_i$ vorige eigenaars] t$_i$ verwaarloosd [ARC]
hebben.

(86) a. ?? Ik zag het meisje$_i$ dat$_i$ [haar$_i$ ouders] altijd t$_i$ gesteund hebben. [RRC]
I saw the girl which her parents always supported have
b. ?? Ik zag Mieke$_i$, die$_i$ [haar$_i$ ouders] altijd t$_i$ gesteund hebben. [ARC]

M7. Next, according to Platzack (1997) identification of reference with the whole antecedent is a necessary condition for linking a relative head to a non-restrictive relative clause. Notice the following contrast, from Platzack (1997:92):

(87) a. Lisa har en ny klänning, som Anna f. ö. har sytt.
Lisa has a new dress, that Anna by the.way has sewed
b. * Lisa har en ny klänning, som Anna f. ö. också har.
Lisa has a new dress, that Anna by the.way also has

In (87a) the dress in the matrix and subordinate clause is the same dress; in (87b) this cannot be the case. This is similar in Dutch. Of course restrictives cannot be subject to such a constraint.

Although a contrast like (87) is true for a subset of appositives, it has no general value. For instance, if we use a neuter *wh*-relative pronoun, the antecedent can be understood as a type or class of objects, and an interpretation as required in (87b) becomes available; see (88).

(88) a. Lisa heeft een nieuwe jurk, *wat* Anna trouwens ook heeft.
Lisa has a new dress, what Anna by.the.way also has
b. Lisa har en ny klänning, vilket Anna f. ö. också har.

Similarly, the antecedent in (89) is a type rather than a concrete object.

(89) a. Piet en Anna wensen voor hun bruiloft zo'n duur Wedgewood-servies,
Piet and Anna wish for their wedding such.an expensive Wedgewood-service
dat/wat onze buren trouwens ook al hebben.
which our neighbours by.the.way also already have
b. Piet kocht zo'n Lundia-kast, die/wat wij trouwens al jaren hebben.
Piet bought such.a Lundia-cupboard, which we by.the.way already for.years have

I fail to see in what sense these facts are relevant to the appositive/restrictive distinction.[18]

M8. Finally, unlike subordinate clauses (but like main clauses), appositives cannot be preposed. See (90), for example.

(90) a. Joop, die een gammele fiets had, kwam te laat. [ARC]
Joop, who a rickety bicycle had, came . late
a.' * Die een gammele fiets had, kwam Joop te laat.
b. Joop kwam te laat, omdat zijn fietsband lek was. [subordinate clause]
Joop came . late, because his cycle.tyre punctured was
b.' Omdat zijn fietsband lek was, kwam Joop te laat.
c. Joop kwam te laat, want zijn fietsband was lek. [main clause]
Joop came . late, for his cycle.tyre was punctured
c.' * Want zijn fietsband was lek, kwam Joop te laat.

According to Emonds (1979) this indicates that appositives are derived from main clauses. However, since restrictives cannot be preposed either, see (91), the same reasoning would apply to them – an unwanted conclusion.

(91) a. De man die een lekke band had, kwam te laat.
the man who a punctured tyre had, came . late
b. * Die een lekke band had, kwam de man te laat.

[18] Platzack suggests a relation with the phenomenon of split collocations, but it seems to me that that has to do with scope; see section 2.4 above and section 4ff.

See also Perzanowski (1980) for a reply to Emonds's claims.[19] At present, the question would rather be why relative clauses cannot be topicalized at all; see Chapter 7.

4. The syntax of appositive relatives: different views

An essential part of the syntax of restrictive relative constructions is that the relative clause is in the scope of the external determiner. In other words, there must be a node containing N+RRC – or rather RRC containing N, in accordance with the conclusions of the previous chapters – that excludes the matrix determiner/specifier. Moreover, the syntax of restrictives involves complementation: in the promotion theory advocated here, the relative is the complement of D; in the revised standard analysis (cf. Ch3§3.1.2) it is the complement of the head noun. This cannot be the case for appositive relatives. As shown in section 2 above, an ARC takes scope over a determiner or quantifier. Example (92) is an additional illustration, where the meaning of the second root clause is paraphrased in (b).

(92) a. Jij hebt twee violen, die trouwens al heel oud zijn, en ik heb er drie.
you have two violins, which besides already very old are, and I have there three
b. (i) = … & I have three violins.
(ii) ≠ … & I have three violins, which are already very old, by the way.

Given that an implication involving the relative clause as indicated in (92ii) is wrong, the elided constituent following the quantifier cannot contain N and the appositive relative (cf. Smits 1988:112-113). That is, an ARC must be attached at a higher level. Notice that a paraphrase like (92b.ii) would be the right interpretation for an elliptic restrictive relative.

Similarly, in (93), there is only one boy in the domain of discourse, viz. Annie's fat son. Sentence (93) does not imply that there is a set of possible sons of which one is wearing a cap, and who is fat, too. This would be the case if the relative clause were restrictive.

(93) Ik zag de dikke zoon van Annie, die een petje droeg.
I saw the fat son of Annie, who a cap-DIM wore

Therefore, the potential analyses of appositive relative constructions depicted in figure 1 below are incorrect. Here (a/b) would correspond to the (revised) standard analysis of restrictives, and (c) to the promotion theory.

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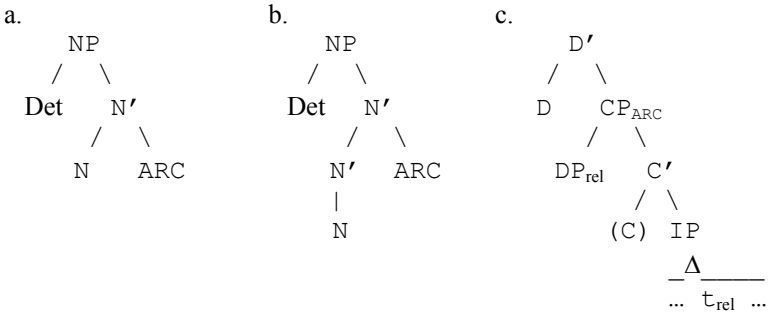
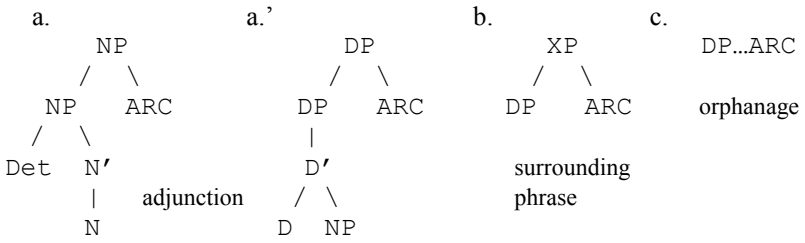
[19] In turn, Perzanowski (1980) is heavily criticized in Stuurman (1983). I think much of Stuurman's comment is valid. However, his defence of Emonds's Main Clause Hypothesis is based, among other things, on two false assumptions, viz. that appositives could neither stack nor extrapose.

Figure 1. *False analyses of appositive relative constructions.*



A priori, the following analyses (to be explained below) seem to be possible; see figure 2. Here (a') is simply a modernized variant of the adjunction analysis in (a); (b) involves a third constituent which contains the antecedent and the relative clause; and in (c) the relative and the antecedent are generated separately.

Figure 2. *Potential analyses of appositive relative constructions.*



Usually the antecedent is a DP, as drawn in Figure 2, but it must be kept in mind that any category can be the antecedent of an appositive relative (cf. section 2.1:A4).

In fact, all of these analyses have been proposed in the literature, in many different variants, and next to still other, less obvious theories. I will briefly discuss the historical development here. A summary will be given in Figure 3 below. See also Appendix III for some structural details.

The oldest theory on appositive relatives I know is the one by Smith (1964). She generates an appositive as the complement of Det, as she does with a restrictive. Subsequently, it must be extraposed to the right of the antecedent, within the maximal NP. Smith's approach to appositives has found no continuation in the literature, as far as I know. Probably this has the following reasons: it does not clearly distinguish appositive from restrictive relatives, and it does not reflect the basic scope facts mentioned above.

From Ross (1967) on, one may distinguish a line of thought concerning appositives called the MCH, the Main Clause Hypothesis. Ross argues that appositives are main clauses. At D-structure, they are coordinated to the matrix clause. Some transformations must then turn the clause into a parenthetical, relative clause, which surfaces in a position adjacent to the antecedent. This approach is

taken over by Thompson (1971) – who, by the way, is the only one who applies it to restrictive relatives, too. The MCH is formalized in Emonds (1979) and defended also by Stuurman (1983).

The MCH competes with the SCH, the Subordinate Clause Hypothesis, which states that the antecedent and the appositive relative form a constituent; the ARC is a subordinate clause, not a main clause. The difference with restrictives is represented by the attachment of an ARC to a higher level within the noun phrase. As far as I know, Jackendoff (1977:Ch7) is the first who explicitly argues so. It is defended against the MCH by Perzanowski (1980). In a binary branching grammar, Jackendoff's analysis translates straightforwardly into right-adjunction. For instance, in Smits (1988:partII) appositives are right-adjoined to the NP-level. In present-day syntax the position of ARCs may be viewed as adjoined to the DP-level, as e.g. in Toribio (1992). As I see it, these are all variants of the Subordinate Clause Hypothesis.

I will reserve the term MCH for the Ross/Emonds type approach, and SCH for Jackendoff's with its successors. In a broader perspective, the controversy concerns the difference between *orphanage* and *constituency*. The former notion (due to Haegeman, I believe) means that the antecedent and the ARC are generated separately, as depicted in Figure 2c. The latter means that they are a syntactic constituent, as e.g. in Figure 2a/a'.

First consider orphanage. It can be 'radical' or 'non-radical'. *Radical orphanage* means that an appositive is not even part of the syntactic structure of the matrix clause. For instance, Safir (1986) argues that there is a level LF', beyond LF, where an ARC is attached next to the antecedent. Likewise, Fabb (1990) and Canac-Marquis & Tremblay (1997) claim that an ARC is attached at a 'discourse' level.[20] They do not specify what this means exactly, but a DRT approach as in Sells (1985) comes to mind; cf. §2.4:S2 above. *Non-radical orphanage* means that an ARC is syntactically present, but it is not generated together with the antecedent. Next to the standard MCH, which involves extraposition of the constituent that intervenes between the antecedent and the ARC, there are some other theories. The closest related one is presented in McCawley (1982). He claims that constituents can be discontinuous. If precedence and dominance are independent relations, then there could be order-changing transformations that only affect the order of the constituents, but not their mutual relations as encoded in the phrase structure. This gives trees with crossing branches. Hence an ARC (or a parenthetical phrase in general) can be generated as attached to the main clause (as in the MCH; however, McCawley does not speak of coordination), and put next to the antecedent by 'Parenthetical Placement', a simple order-changing transformation. Finally, Smits (1988) argues that there are 'type B' appositives (viz. extraposed, continuative ARCs,[21] and those with a split antecedent) that cannot be accounted for by the SCH. He claims that these are generated separately from the antecedent. Smits does not specify the position of these relatives. Similarly, Bianchi (1999), although in general

[20] More importantly than this, Canac-Marquis & Tremblay assume that an ARC is a free relative in apposition to the antecedent. See below.

[21] See also section 3.1:M1 above.

a proponent of the constituency account, notes that a subset of appositives cannot be explained. Notably, this is a subset different from Smits's; it includes appositives with a non-DP antecedent. Bianchi assumes that these are base-generated separately (without specifically explaining where and how).

An advantage of the orphanage theory is that it explains why an ARC is not within the scope of phrases in the matrix clause (cf. §2.4), since it is not syntactically present in the radical orphanage approach, and it is at the highest position in most of the non-radical orphanage theories. However, there are also clear disadvantages. In short: the orphanage hypothesis does not explain a single relation between an antecedent and an appositive at all; just think of adjacency requirements, selection effects, ϕ-feature matching between the antecedent and the relative pronoun, conditions on extraposition, etc. See also Perzanowski (1980) and Borsley (1992) for comment. Here, I wish to point out briefly some important problems.

First, it must be stipulated that an ARC always surfaces adjacent to the antecedent (apart from instances of extraposition, of course, which are treated in the next chapter).[22] Second, the Main Clause Hypothesis is strange from the perspective of many languages. For instance, in Dutch and German main clauses display verb second, whereas subordinate clauses are completely verb-final. Relative clauses, including appositives, are clearly subordinate clauses in this respect. To put it more generally: how does the MCH make sure that appositives acquire the characteristics of subordinate clauses and get rid of typical main clause properties (e.g. the possibility of topicalization)? Third, concerning radical orphanage, if an ARC is attached at LF' (or some equivalent level), how can it be pronounced at all, given the regular T-model of grammar? Fourth, consider non-radical orphanage, where an ARC is present in syntax. This analysis can be excluded simply on the basis of the 'verb second' property in Dutch (see also Smits 1988:114), as shown in (94).

(94) a. Annie, die viool speelt, *heeft* een nieuwe strijkstok gekocht.
Annie, who violin plays, has a new bow bought
b. * Annie *heeft*, die viool speelt, een nieuwe strijkstok gekocht.

There can only be one constituent in front of the finite verb, *heeft*.[23] However, in the MCH the antecedent and the appositive are two separate constituents, hence (94a) cannot be derived. Notice that (94b), where the antecedent and the ARC are separated, is excluded.

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22 Emonds (1979) and Stuurman (1983) claim that this follows independently from the rule on *wh* interpretation that is needed for restrictives, too (hence 'appositives have no properties'). However, this cannot be correct. The adjacency requirement that is implicit in their formulation of '*wh* interpretation' is completely superfluous for restrictives. Furthermore, the semantics of appositives and restrictives is different in general. Finally, if what they mean boils down to the idea that a relative pronoun is a kind of anaphor, its reference should be established by the Binding Theory, not by some additional rule of *wh* interpretation in relative clauses. Notice that if this idea is correct, an ARC cannot be attached at a discourse level, since the Binding Theory works in syntax.

23 Recall that the finite verb is moved to C. This leaves one higher position in SpecCP, which is filled by either the subject or a topicalized phrase.

I conclude that there is substantial evidence against the orphanage hypothesis. In other words: an antecedent and an appositive must be a constituent together. Therefore consider the *constituency* approach in more detail. I have mentioned the D-complement hypothesis and the Subordinate Clause Hypothesis above. Next to these there are other, more recently proposed alternatives. One of them is the possibility of a *surrounding phrase* – cf. Figure 2b above. For instance, Lipták (1998) assumes that an appositive is a small clause complement: $[_{sc}\ DP_{ant}\ ARC]$. This implies that the relation between the antecedent XP and the appositive is predicative. However, if it is true that small clause predicates can also serve as predicate nominals, we have to conclude that Lipták's idea is problematic.[24] For instance, the following sentences are downright ungrammatical, whereas the corresponding appositive relative constructions are perfectly all right: * *this book is which I studied yesterday, by the way*; or * *they advised resignation is which is good*; or, in Dutch **dit meisje is dat ik gisteren nog gezien had* '* this girl is which I had seen yesterday, still'.[25] A related theory is Platzack (1997, 2000), where the appositive is generated as the complement of an empty N, and the antecedent originates as a DP in SpecNP: $\ldots[_{NP}\ DP_{ant}\ [_{N'}\ \emptyset\ ARC]]$. Since the determiner belonging to the antecedent is embedded in DP_{ant}, it does not take scope over the ARC, as required.

Another development is the one in Kayne (1994:Ch8§7) and Bianchi (1999:Ch5§4): *promotion plus LF remnant raising*. They argue that appositives are derived just as restrictives – see (95a) – except for one difference: in appositives there is remnant IP movement to SpecDP at LF. The effect of this is that the appositive is moved out of the scope of D; see (95b).[26]

(95) a. $[_{DP}\ \ldots\ [_{D'}\ D\ [_{CP}\ [_{DP\text{-}rel}\ NP\ D_{rel}\ t_{np}]_i\ (C)\ [_{IP}\ \ldots\ t_i\ \ldots]]]]]$ →

b. $[_{DP}\ [_{IP}\ \ldots\ t_i\ \ldots]_{ip}\ [_{D'}\ D\ [_{CP}\ [_{DP\text{-}rel}\ NP\ D_{rel}\ t_{np}]_i\ (C)\ \ t_{ip}\ ]]]$

The advantage of this approach seems that it unifies restrictives and appositives. Unfortunately, it is problematic in several respects. First, there is no plausible trigger for the movement in (95b).[27] Second, in Kayne's system prenominal relatives have the structure in (95b), too. However, a regular prenominal relative does not have an appositive interpretation. Third, the antecedent of an appositive can be non-nominal, e.g. an AP or CP, but it is not likely that these phrases undergo promotion as DPs do, because this would imply selection of a DP_{rel} (which in turn includes the antecedent XP) in the subordinate clause, where an AP/etc. is expected; cf. Borsley

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24 Notice that it has also been claimed for restrictives that the relation between the antecedent and the relative is predicative; cf. Ch3§2.1.

25 Obviously a (semi-)free relative can be a predicate, e.g. *this is what I saw*, or *Joop is the one I like*. But these sentences do not show a predicative relation between an antecedent and a relative, but between two DPs. The relevant examples would be: * *ø is* wh *I saw;* * *the one is I like*.

26 If so, reconstruction must be excluded. See Bianchi (1999:147ff) on this subject.

27 Kayne suggests that it is triggered by some feature which at PF causes a comma intonation. However, as he admits himself, the intonation break is between the antecedent and the relative pronoun (which is in SpecCP) and not before IP. Moreover, it is not clear to me why a PF-related feature would cause movement in syntax.

(1997). This is acknowledged by Bianchi (1999). Therefore she proposes that there are kinds of appositives, say type (ii) ARCs, that are not derived by promotion, but in another way. In my view this undermines the potential appeal of this theory, since unification is one of the primary goals of the approach.

An interesting alternative is Demirdache (1991:Ch3). She tries to bring the advantages of the SCH and the MCH together. As in the SCH, appositives are generated as right-hand adjuncts to the antecedent. Furthermore, the ARC is raised and adjoined to the matrix clause at LF. Thus ARCs are subordinate clauses syntactically, but they are interpreted as main clauses. Contrary to the SCH, the surrounding phrase theory and the promotion-plus-LF-remnant-raising analysis, Demirdache's theory accounts for all scope facts. Nevertheless, I will not follow her approach, because right-adjunction, countercyclic untriggered movement and the lack of promotion in a relative construction are at odds with the assumptions throughout this book.

Finally, it has been proposed that an appositive is *coordinated* to the antecedent; see Sturm (1986:Ch7§7.5), Koster (2000c:22), and more elaborated in De Vries (2000a). Like appositions such as *Joop, our boss* ARCs are 'specifying conjuncts'. Koster's approach is exceptional in that he also treats restrictive relatives as specifying conjuncts. He briefly suggests that the difference between RRCs and ARCs can be captured by attaching them at a different level, viz. NP and DP, respectively. This is in important respects similar to Toribio's (1992) version of the SCH approach. I will return to this below and continue with the discussion of appositives here. Koster represents coordination as [XP [& YP]], cf. Johannessen (1998). Specifying coordination is rendered as [XP [: YP]], where ':' is the head of a 'colon phrase', which symbolizes specifying coordination. The head ':' can be paraphrased as 'namely'. (I will discuss this extensively in section 5 below and in Chapter 7.) Thus, an appositive is represented as $[_{:P}\ [_{DP}$ D NP] $[_{:'}$: ARC]], where DP is the antecedent and ARC an appositive relative CP.

I agree with the general idea that appositives are specifying conjuncts to the antecedent (although I will develop an approach to coordination different from Koster's). I argue below that a conjoined appositive is not just a relative CP, but a kind of free relative (hence a DP). Independently, Canac-Marquis & Tremblay (1997) reach the same conclusion. They state that an appositive is a free relative that stands in apposition to the antecedent, like regular appositions. (The difference with De Vries (2000a) and the pertinent chapter is that they assume appositive elements to be 'unmerged objects', licenced at a discourse level. Hence their analysis is basically an orphanage approach.)

In order to facilitate the comprehension of the relations between all the different proposals concerning ARCs mentioned above, I have put them in a relational scheme in Figure 3.

Figure 3. *Theories of appositive relative clauses.*

constituency	↗	**complement of D** plus NP-internal extraposition of ARC	Smith (1964)
	→ **adjunction** to antecedent[28]	↗ "**S**ubordinate**C**lause**H**ypothesis"	Jackendoff (1977) Perzanowski (1980) Smits [type A] (1988) Toribio (1992)
		↘ plus **LF-raising** to $SpecCP_{main}$	Demirdache (1991)
	→ **surrounding phrase**	↗ compl. of add. **empty N**; antecedent DP is in SpecNP	Platzack (1997)
		↘ **Small Clause compl.**	Lipták (1998)
	↘	**promotion** plus **LF remnant raising** of ARC to SpecDP	Kayne (1994) Bianchi [type i] (1999)
	↘ specifying **coordination** to antecedent	↗ (bare ARC)	Sturm (1986) Koster (2000c)
		↘ ARC is **Free Relative**	De Vries (2000a)
orphanage	↗ **non-radical** →	↗ "**M**ain**C**lause**H**ypothesis" coordination to matrix clause at D-structure	Ross (1967) Thompson (1971) Emonds (1979) Stuurman (1983)
		discontinuous constituent plus attachment to matrix	McCawley (1982)
		↘ **base-gen. extraposition** [position unspecified]	Smits [type B] (1988) Bianchi [type ii] (1999)
	↘ **radical**	↗ (bare ARC) **LF'** / '**discourse**'	Safir (1986) Fabb (1990)
		↘ ARC is **Free Relative**	Canac-Marquis & Tremblay (1997)

This concludes a short but complete overview of all types of analyses of appositives relatives I know of. I have indicated briefly why I think the coordination approach is the most interesting one to pursue. The next section discusses it in detail. In short, I argue that appositive relative structures have the following characteristics:

- An appositive forms a constituent with its antecedent. This is the basic assumption of all variants of the constituency approach.
- The syntax of restrictives and appositives is only minimally different. This, too, is a characteristic of many constituency approaches, but particularly of Demirdache (1991), Kayne (1994), Bianchi (1999), Koster (2000c), and also of the orphanage analyses in Thompson (1971), and Canac-Marquis & Tremblay (1997).

[28] Notice that this is equivalent with complementation to an (extended) projection of N. The point is that the appositive is not an argument of N^0, i.e. not its specifier or complement.

- There is a generalized approach to ARCs and appositions, cf. Sturm (1986), Canac-Marquis & Tremblay (1997), and Koster (2000c). In particular, it involves specifying coordination, as argued by Canac-Marquis & Tremblay and Koster.
- Since the antecedent and the relative are separate conjuncts, the ARC is outside the scope of the determiner, as required.
- The appositive is a (false) free relative in apposition to the antecedent. By definition, the free relative involves a restrictive relative inside. See also Canac-Marquis & Tremblay (1997). Notice that this means that there is both a *wh*-element and an empty pronoun, which is equivalent to the implied antecedent in a free relative (see section 5.3 below for details).
- Within the free relative there is promotion of the empty pronoun. Hence the promotion theory of relative clauses can be applied across-the-board to all types of relative clauses. This generalization captures what Kayne (1994) and Bianchi (1999) aim at, too. Their mistake, I think, is that they try to promote the *visible* antecedent, which leads to severe problems.
- The relative pronoun in an ARC is syntactically bound by the empty element in the same way as the relative *wh*/operator in a restrictive relative by the antecedent.
- The empty pronoun in an ARC is anaphoric to the visible antecedent in the first conjunct. It is *this* relation that can be licenced by discourse (*cospecification* in Sells's terms). The discourse link between the antecedent and an element in the appositive relative is argued for at length in Sells (1985) and Demirdache (1991), although they take this element to be the relative pronoun.[29]

Finally, notice that from the generalizations stated above – most importantly that i) as for the way they are attached to the antecedent, ARCs are a kind of appositions; ii) as for the internal syntax, ARCs are a kind of free relatives – it follows that ARCs do not exist as an independent type. Roughly speaking, all the differences between restrictives and appositives follow from independent properties of (false) free relatives and apposition structures. This means that, although the MCH as such is untenable, Emonds is right after all: *"appositive relatives have no properties"*.

5. A coordination analysis of apposition

This section discusses in detail the coordination analysis of apposition, and of appositive relatives in particular. Section 5.1 elaborates on the concept of specification and shows why appositions in general can be treated as specifying conjuncts. In 5.2 the similarities between appositions and appositive relatives as specifying conjuncts are pointed out. Section 5.3 poses the hypothesis that ARCs are free relatives in apposition, and explores some direct consequences and potential

[29] Unfortunately, I think, several authors have mistakenly extrapolated this argument to the idea that an ARC *as a whole* is attached to the matrix on a discourse level.

problems. Section 5.4 discusses how the behaviour of ARCs as reviewed in sections 2 and 3 is explained by this analysis. Finally, section 5.5 presents some additional evidence for the theory presented: matching effects in appositive relative constructions with a pronominal head.

5.1. Apposition, specification and coordination

A nominal phrase can be modified. A non-adjectival, postnominal modifier is called an *apposition*. There are appositions of several syntactic categories – I will return to this – but the canonical case for which the term is used is a DP: another nominal phrase. The major distinction to be made is the one between restrictive and non-restrictive appositions. A restrictive DP apposition is often a name or a citation:

(96) a. the writer Mulisch
b. Mount Everest
c. Alexander the Great
d. the novel *De avonden*
e. the saying *et tu, Brute*

These appositions restrict the meaning of the first noun phrase. Hence within the logic of the framework used, they are DP complements of N. Other possible complements/modifiers of N – hence restrictive appositions according to the definition in Quirk et al. (1985:1300ff) – are clauses and prepositional phrases:

(97) a. the fact that he is ill
b. the question whether he will come
c. the man with the red hat
d. a city in Overijssel

What is of interest here are non-restrictive appositions. Some examples are provided in (98).

(98) a. John, our boss
b. a nice present: a book by Golding

Since 'appositive' has become a synonym of 'non-restrictive', they are 'appositive appositions', strictly speaking. Again, we are faced with a terminology that is a little confusing. Henceforth I will use the term 'apposition' for non-restrictive DP appositions only, unless explicitly indicated otherwise.

There are several semantic types of appositions; see (99), which is taken from Quirk et al. (1985:1308). According to them it may be viewed as a scale whereby type A(i) is the 'most appositive' and type C(ii) the 'least appositive'.

(99) *Semantic types of non-restrictive appositions:*

A	Equivalence		
	(i)	appellation:	*'that is'*
	(ii)	identification:	*'namely'*
	(iii)	designation:	*'that is to say'*
	(iv)	reformulation:	*'in other words'*
B	Attribution		–
C	Inclusion		
	(i)	exemplification:	*'for example'*
	(ii)	particularization:	*'especially'*

Examples (mine) are given in (100):

(100) A(i) [My best friend*, i.e.* Joop]*,* came by last night.
A(ii) He gave me [a nice present, *namely* a book by Mulisch].
A(iii) [Janeway, *that is to say* the captain of Voyager], disappeared.
A(iv) Joop is [an ornithologist, *in other words* a bird expert]
B [Joep, a nasty liar], left.
C(i) [Many people, *for example* my neighbour], like the mayor.
C(ii) They liked [these books, *especially* De avonden].

The *equatives* in A are canonical appositions. The initial DP and the apposition can often be turned around; both DPs select the same extralinguistic referent; and if one of the DPs is left out, the sentence is still acceptable.

What all these types have in common is that the apposition *specifies* the first DP. Even in equatives, where both DPs carry the same referential index, it is the case that the second DP provides further information on the first one to the hearer. Turning around the DPs changes the discourse. For example, the paraphrase "my best friend came by, you know, Joop" differs from "Joop came by, you know, the guy who is my best friend."

As shown above, an apposition is often connected to the initial DP by a special connection word or phrase, e.g. *namely, that is, especially, or*. Most of these can be used for several semantic types, but notice that they are not exactly synonymous. In several cases the connection can be *asyndetic*, that is, without an overt connector. It turns out that type A can be asyndetic; B is preferably asyndetic;[30] C cannot be asyndetic. See further below.

What is the syntactic status of appositions? In my view they must be analysed as coordinated constituents.[31] Consider (101).

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30 A connection like *being* or *as you know* is acceptable.

31 The idea that a (non-restrictive) apposition is syntactically coordinated to the first nominal phrase is shared by Koster (1995a, 2000c), Sturm (1986:VII,§7.5) and, in a sense, Klein (1976, 1977). An alternative possibility is right-adjunction (i.e. complementation to a higher projection of N). For more discussion on the syntax of restrictive and non-restrictive appositions see e.g. Delorme & Dougherty (1972), Klein (1976, 1977), Wiers (1978) and Bennis (1978).

(101) a. Joop **and** Jaap *[conjunction]*
b. Joop **or** Jaap *[disjunction]*
c. the White House, **or** the house with the Oval Office *[specification]*

The mere fact that coordinators like *or* (Dutch: *of((te)wel)*, *en wel*, etc.) can sometimes be used, strongly suggests that the appositive construction is a kind of coordination. Quirk et al. (1985:1301/2) state: *"Apposition resembles coordination in that not only do coordinate constructions also involve the linking of units of the same rank, but the central coordinators* and *and* or *may themselves occasionally be used as explicit markers of apposition."* Notice that if appositions were simply right-hand adjuncts to a noun phrase, the existence of coordinative heads or phrases is completely unexpected. Thus the three main types of coordination are *conjunction*, *disjunction* and *specification*. This section elaborates on the concept of ***specifying coordination***. It has been first introduced by Kraak & Klooster (1968:Ch11), as far as I know. (A discussion on the syntactic representation of coordination as such is postponed until Ch7§6.2.)

I have shown in (99/100) that specification is a notion that can be divided into several semantic kinds, e.g. equivalence as in (101c). This is similar for conjunction and disjunction. In general, conjunction combines two phrases; disjunction provides an alternative. In particular, conjunction can indicate a consequence, a result, a sequent, a contrast, a concession, a condition, a similarity, an addition, or a comment; as long as the two phrases have enough in common to justify the combination. A disjunction indicates an exclusive or inclusive alternative, or a negative condition. See Quirk (1985:930-934).

In terms of propositional logic, a conjunction of propositions is true only if both conjuncts are true, i.e. the semantics involves set intersection. A disjunction is true if one or more of the conjuncts are true.[32,33] If individuals are coordinated the semantics is much more complicated, see Link (1984).

Koster (1995a, 2000c) represents specifying coordination as [$_{:P}$ XP [$_{:'}$ **:** YP]], where he introduces :P as the *colon phrase*, named after the colon punctuation mark which may be paraphrased as 'namely'. In his view, which differs considerably from the one presented here, specifying coordination can be restrictive or non-restrictive. The colon is a Boolean operator that indicates set intersection in the case of a restrictive conjunct and set union in the case of a non-restrictive conjunct (Koster 2000c:22). I think that this is not correct. First, specifying coordination becomes an incoherent notion if it constitutes both restrictive and non-restrictive relations. Second, restriction is semantically different from specification. Third, how can a Boolean operator be ambiguous? In particular, Koster's suggestion boils down to the claim that the colon is either $\cap$ or $\cup$, which raises the question why a restrictive

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32 In fact, in natural language the operator OR has the meaning of the formal operator XOR (exclusive or). In other words: 'a or b' means 'a or b but not both'.

33 The term *conjunct* is somewhat confusing. It refers to one of the coordinated phrases, whether the coordination as a whole constitutes conjunction, disjunction or something else.

phrase is not simply coordinated with *and* and a non-restrictive phrase by *or*.[34] In short, I reject the idea that specifying coordination can be restrictive.

Furthermore consider Koster's suggestion that appositive phrases require set union. This claim can be evaluated with the use of propositional logic. Then a specifying coordination corresponding to [A : B] would be true if at least one of its members is true. But this is not correct. If the sentence corresponding to B, the apposition, is true, but the one corresponding to A false, the whole construction does not represent a specification at all (*# all politicians are dead, namely Bush still lives*). Hence we reach the opposite result: if we have to make a forced choice – although it is clear that this is a gross oversimplification – specification is a special case of the Boolean operator $\cap$, not $\cup$. If the first conjunct is false, the whole construction cannot be true at all. If the first conjunct is true, the second must be true also (*# Bush still lives, namely all politicians are dead; # Some politicians still live, namely Bush is dead*). In fact, **specification of A by B means that B is a logical subset of A** (cf. Kraak & Klooster 1968). In the case of an equative, B is maximal, i.e. of equal size as A. Therefore I will use the symbol &: (instead of a colon) to represent specifying coordination. The & indicates that it is a special instance of conjunction; the colon indicates the specifying part. The Dutch paraphrase *en wel* 'and namely' directly reflects this concept. I will not further discuss the semantics of the construction.

Next, consider the phonological shape of coordinative heads. They can be overt, as in (101) above, or *asyndetic* (i.e. phonetically empty); see (102).

(102) a. Joop**,** Jaap (and Joep)
b. Jaap**,** Joop (or Joep)
c. the White House**,** the house with the Oval Office

It appears that the default interpretation of an asyndetic conjunct is specification. Asyndetic forms of disjunctive and conjunctive heads are also possible, but it seems that these must be licenced by the presence of a final overt coordinated phrase – a kind of backward deletion. However, this need not be so. First, as I indicated above, not every type of specifying coordination can be asyndetic. Second, asyndetic coordination of the conjunctive type can be complete. Often, this has a stylistic effect; it indicates intensification, emphasis or a never-ending list. Some examples are given in (103).

(103) a. We need an office, computers, money.
b. Joop, Mien, everybody left.
c. He is very, very ill.
d. In a clear, loud voice she said: "yes".

[34] It is also not clear how an 'ambiguous colon' relates to Koster's suggestion that ARCs are attached at a higher level than RRCs as mentioned in section 4 above.

Hence under certain conditions all three types of coordination allow for (or even demand) an asyndetic connection. A further inquiry to the nature of these conditions lies outside the scope of this book.

The next section shows that appositive relatives can be analysed within the framework of specifying coordination, too. Chapter 7 shows that the same concept is relevant for the analysis of extraposition as well.

5.2. Appositive relatives are specifying conjuncts

Section 5.2.1 shows that appositive relatives behave as appositions and can be analysed as specifying conjuncts. In 5.2.2 some cross-linguistic consequences are discussed.

5.2.1. Appositive relatives behave as appositions

It has been claimed that an apposition is a reduced (relative) clause; see e.g. Delorme & Dougherty (1972) and Klein (1976, 1977). Since a clause can express more than a nominal phrase, this cannot be correct in a derivational sense – cf. Wiers (1978) or Lehmann (1984:272) – but I share the intuition that appositive relatives and appositions are similar in certain respects. Informally, I would rather state it the other way around: an appositive relative is nothing more than an extensive apposition. For instance, 'Annie, our manager' can be paraphrased as 'Annie, who is our manager'. (The implication is unidirectional, then.) Since I have argued in the previous section that appositions are specifying conjuncts, the present hypothesis will be that an appositive relative is a specifying conjunct to its antecedent.

Theorem I
Appositive relatives and appositions involve (asyndetic) specifying coordination.

As discussed in section 4, the coordination approach to apposition implies constituency of the antecedent and the relative clause. This is confirmed by the fact that topicalization of the whole construction is possible, similar to constructions with an apposition or normal conjunction. See (104), where the finite verb, which is always at the second position in Dutch main clauses, is printed in italics. The usual surface position of the object is indicated by an underscore.

(104) a. Joop en Joep *heb* ik _ gezien. [conjunction]
Joop and Joep have I _ seen
b. Annie, onze directrice, *heb* ik _ gezien. [apposition]
Annie, our manager, have I _ seen
c. Annie, die een dochter van drie heeft, *heb* ik _ gezien. [ARC]
Annie, who a daughter of three has, have I _ seen

By contrast, the two parts (e.g. the antecedent and the ARC) may not be separated by preposing one of the two, such that the remainder is stranded in the middlefield. This is shown in (105) and (106).[35]

(105) a. * Joop heb ik _ en Joep gezien.
b. * Annie heb ik _ , onze directrice, gezien.
c. * Annie heb ik _ , die een dochter van drie heeft, gezien.

(106) a. * (En) Joep heb ik Joop (en) _ gezien.
b. * Onze directrice heb ik Annie _ gezien.
c. * Die een dochter van drie heeft, heb ik Annie _ gezien.

These patterns are predicted by the Coordinate Structure Constraint, or whatever its deeper cause is.

Despite the fact that the two parts cannot be separated by fronting one of the two, extraposition of the second is possible (cf. section 3.1:M1):

(107) a. Ik heb Joop _ gezien, en Joep.
b. Ik heb Annie _ gezien, onze directrice.
c. Ik heb Annie _ gezien, die een dochter van drie heeft.

The general mechanism of extraposition is discussed in Chapter 7. I will show that it does *not* involve (rightward) movement of the second part, which explains why the judgements concerning (106) and (107) can be so radically different.

Furthermore, if appositions and ARCs are specifying conjuncts, it is expected that there may be a third (fourth, etc.) part whose status equals the second, just as there can be conjunction of more than two phrases (see also Ch7§6.2). This prediction of *multiplicity* (or *stacking*; cf. section 3.1:M2) is borne out; see (108).

(108) a. Jaap en Joop en Joep, …
b. voetbalvandalen, dat tuig, dat schorriemorrie, …
football hooligans, that scum, that ragtag
b.' Joop, onze held, onze redder in nood, …
Joop, our hero, our saviour in distress
c. Annie, die gek is, van wie niemand de woonplaats kent, …
Annie, who crazy is, of whom nobody the residence knows
c.' deze stad, die iedereen kent, waar één miljoen mensen wonen, …
this city, which everybody knows, where one million people live

Finally, as for appositions, it is now clear why they get the same Case as the antecedent, since normal conjuncts always bear equal Case.[36] (Concerning Case and appositive relatives, see section 5.5.)

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[35] Of course this is similar for restrictive relatives, which is to be discussed in Ch7, sections 5.2.4 and 5.2.7.

In short, if one subsumes non-restrictive relative clauses and appositions under coordination, several properties follow naturally. Moreover, a coordination analysis of apposition has some immediate advantages over a SCH-type approach, which crucially involves adjunction. I do not want to discuss it in detail here, but a brief list of relevant critique is the following:

- An adjunction analysis does not explain the Case of an apposition.
- An adjunction analysis has to stipulate that ARCs and appositions must be right-adjoined, not left-adjoined.
- An adjunction analysis does not directly exclude leftward movement of an ARC or apposition.
- Theoretically, right-adjunction is ill-founded; in particular, it does not fit within an antisymmetric phrase structure.

Furthermore, notice that the repercussion of the multiplicity facts on the adjunction theory is that there is counterevidence to the assumption that there would be a maximum of one adjunct per projection, e.g. contra Smits (1988:114), and its equivalent in Jackendoff (1977).

5.2.2. Some cross-linguistic considerations

Before I proceed with the syntactic analysis of appositive relatives in detail, I want to elaborate on some direct consequences and potential problems for the approach.

Since a specification follows the element specified per definition,[37] two (related) immediate predictions ensue:

Theorem II
a. Prenominal non-restrictive appositions do not exist.
b. Only postnominal relatives can be appositive.

I think these are true cross-linguistically. In English, (109) is a relevant example.

(109) a. Joe, who was ill last week
b. * who was ill last week, Joe

The fact that restrictive relatives cannot precede their antecedents in English either, has nothing to do with (109). Complements are always to the right in English. Moreover, many OV languages have prenominal restrictive relatives. As mentioned in Chapter 2, Turkish has prenominal (participial) relatives, but it uses a postnominal

... continued

[36] That is, apart from some instances of syntactically unbalanced coordination in the sense of Case differences (e.g. *he and me*), as reported in Johannessen (1998). See also Ch7§6.2.

[37] Even in symmetric phrases like "the White House, or the house with the Oval Office", which can be turned around without much change of meaning, it is always the case that the second conjunct specifies the first one.

or extraposed (finite) variant especially for appositives. Similarly, in Basque and Lahu ARCs are postposed. Nevertheless, it has been reported that prenominal appositive relatives exist in some languages, for instance Japanese and Chinese, albeit marginally. Lehmann (1984:277/8) states that they are primarily restricted to proper names.[38] There is no intonation break (Keenan 1985:169).

The near-restriction of 'antecedents' of prenominal ARCs to proper names suggests that the construction is deceptive. I will tentatively propose an analysis of these constructions that is subtly different, and which is in line with Theorem II. I suspect that what seems to be an appositive prenominal relative is really a (definite) free relative followed by a specifying apposition, comparable to e.g. *she who is our manager, (viz.) Annie*. This explains why the proper name cannot easily be replaced by definite nominal phrases or pronouns, since that would render a meaningless specification: for instance *she who is our manager, (viz.) *she/ ?this woman*. The other way around, where the relative is appositive, is fine: *Annie/she/this woman, who is our manager*. Hence it is the information structure which regulates the possibilities. I conclude that prenominal ARCs do not exist; examples that seem to involve such a construction involve apposition to a free relative, which is in fact the opposite of the normal construction.

If I am correct that apposition is specifying coordination, it follows that circumnominal relatives cannot be appositive, either. Indeed, Lehmann (1984:278) states that they do not occur, except that there are some marginal examples in Mohave. In addition, Culy (1990:251-254,256) provides some rare examples from Dogon and Japanese. However, all these exceptions have a relative clause-initial head noun, which makes them suspect. Given the fact that many things are unclear about these constructions, primarily due to a lack of data, I consider it possible that they are misanalysed and display a secondary postnominal relative strategy after all.

Finally, recall that correlatives are maximalizing, hence per definition not appositive (cf. Ch2§3). This is in accordance with Theorem II.[39]

5.3. Appositive relatives as free relatives in apposition

I argue that appositive relatives are a kind of free relatives in apposition to the antecedent. Section 5.3.1. is an outline of the proposal; section 5.3.2. elaborates on the syntax of free relatives; and section 5.3.3. shows the details of the analysis of appositives as 'false' free relatives.

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38 According to Lehmann (1984:277) the following scale of potential antecedents is relevant:
proper names → definite or generic NPs → personal pronouns → sentences
Proper names are the most and sentences the least accesible to appositive relativization.

39 Lehmann's (1984:279) examples of would-be correlative appositive free relatives are parenthetical sentences in my view. For instance, they can be interjected at any position in the sentence, but a true correlative is left-peripheral in the matrix. A Dutch example is (i):
(i) … dat hij – wat benadrukt moet worden – daartoe niet verplicht was.
… that he – what must be emphasized – there-to not obliged was

5.3.1. Outline

The idea of treating appositive relatives like appositions can be easily pushed to the limit by assuming that appositives are a kind of free relatives in apposition to the antecedent, in other words, that ARCs *are* complex appositions.[40]

Theorem III
Appositive relatives are a kind of free relatives in apposition to the antecedent.

I will show that this is correct.

Since free relatives are extended nominal projections with an embedded relative CP, the structure of a regular appositive is roughly the following:

(110) [[$_{DP1}$ Annie] &: [$_{DP2}$ [$_{CP}$ who is our manager]]]

A free relative functions as an argument. This explains why it can be coordinated to a DP. If it were just a CP, this should not be possible. Hence Theorem III supports Theorem I above; a regular appositive relative structure thus involves syntactically balanced coordination (contra Koster 2000c; see also Ch7§6.1).[41]

In some more detail, the structure of (110) is given in (111). I represent coordination as involving a layer behind the normal syntactic structure; this is discussed at length in Ch7§6.2 and it is of no concern here.

(111) [$_{\&:P}$ [$_{DP1}$ Annie]$_i$]
&: [$_{DP2}$ ø$_k$ [$_{CP}$ who$_k$ is our manager]]$_j$

The second DP specifies the first one. Therefore we have $j \subseteq i$. Within the second conjunct – a free relative – CP modifies an abstract pronominal head ø$_k$.[42] Sometimes the empty elements can be spelled out, e.g. *Annie, die onze directrice is* 'Annie, who is our manager' can become *Annie, oftewel zij die onze directrice is* 'Annie, or she who is our manager'. Here *oftewel* 'or' fills the specifying coordinative connection '&:', and *zij* 'she' the empty pronoun ø$_k$. This pronoun refers to DP$_1$, hence at a discourse level we have $k = i$. I will return to this below.

The structure in (111) is independent of the internal structure of relative clauses. A version of the revised standard analysis (cf. Ch3§3.1.2) is compatible with (111). However, for my purposes it is relevant that (111) is compatible with the

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40 As mentioned before, this idea is shared by Canac-Marquis & Tremblay (1997). Furthermore, De Rijk (1972) suggests a similar analysis for some particular examples in Basque, where the copying of the Case morpheme onto the relative is particularly telling. This is taken over by Lehmann (1984:61/68), who extends it to comparable examples in Chinese; and by Bianchi (1999:140-144), who – citing work by B. Mitchell – extends it to examples in Old English.

41 Of course there are instances of syntactically unbalanced coordination (e.g. *there and behind you*), but the possibilities are not unlimited: the conjuncts must be semantically equivalent; see further Ch7§6.1. In section 5.4 below I will show cases of syntactically unbalanced coordination in appositive relative constructions, viz. the ones with non-DP antecedents.

42 See also Groos & Van Riemsdijk (1981), Alexiadou et al. (2000:Introduction,§3.2), and others.

promotion theory of relative clauses. In that case, promotion is performed *within the second conjunct*. Thus $ø_k$ corresponds to the raised antecedent in restrictive relatives. It is not the visible antecedent that is promoted (as Kayne and Bianchi propose), but the empty element, i.e. the implied antecedent, in the free relative.

5.3.2. Some notes on the syntax of free relatives

At this point some notes on the syntax of free relatives are necessary. In accordance with the promotion theory, I assume that the selection structure is (112).

(112) $[_{DP}$ D $[_{CP}$ (C) … $[_{DP\text{-}rel}$ D_{rel} NP] …]]

As discussed in Ch2§6.3, there is a crucial difference between true free relatives and false free relatives (also called semi-free relatives). An example in Dutch is (113).

(113) a. *Wie zoet is* krijgt lekkers. *[true FR]*
who sweet is gets sweets
'Sweets for the sweet.'
b. *Degene/hij die zoet is* krijgt lekkers. *[false FR]*
the.one/he who sweet is gets sweets

First consider the derivation of (113b). It is similar to that of restrictive relatives. As is familiar by now, the external determiner selects a relative CP, ultimately. Before that, the relative DP moves to SpecCP for *wh*-checking, and the NP, which corresponds to an antecedent in a restrictive relative construction, moves to $SpecDP_{rel}$ in order to check agreement with D_{rel}, *die* in (113b). Finally, N moves to the external D so that agreement and abstract Case can be checked. See (114).

(114) $[_{DP}$ $[_{D}$ N+D] $[_{CP}$ $[_{DP\text{-}rel}$ $[_{NP}$ $t_n]$ D_{rel} $t_{np}]$ (C) … $t_{dp\text{-}rel}$ …]] *[false FR]*

The complex N+D corresponds to an independent personal or demonstrative pronoun, *degene* or *hij* in (113b), which is a kind of dummy antecedent. Importantly, the dummy antecedent N+D is separate from the relative pronoun D_{rel}.

By contrast, there is no separation between a dummy antecedent and a relative pronoun in true free relatives. Therefore we may assume that the derivation leads to the representation in (115).

(115) $[_{DP}$ $[_{D}$ $[N+D_{rel}]$+D] $[_{CP}$ $[_{DP\text{-}rel}$ $t_{n+d\text{-}rel}$ $[_{NP}$ $t_n]]$ (C) … $t_{dp\text{-}rel}$ …]] *[true FR]*

First, N incorporates into D_{rel}, then the complex $[N+D_{rel}]$ incorporates into the external D, after *wh*-movement of DP_{rel} to SpecCP. This gives the independent pronoun *wie* in (113a).

The difference between (114) and (115) straightforwardly explains the following facts:

- *True free relatives potentially cause matching effects; false FRs do not.* (Cf. section 5.5 and Ch2§6.3) In (114) the elements [N+D] and D_{rel} can bear

separate Cases, whereas in (115) the complex [[N+D_{rel}]+D] has a role in both the main clause and the subordinate clause.

- *Relative elements in false FRs correspond to those in restrictive relatives.* The configuration in which D_{rel} and C appear in (114) equals the one in restrictive relatives. For example, a restrictive corresponding to (113b) is *de man **die** zoet is* 'the man who sweet is'.
- *Relative pronouns in true FRs and false FRs may differ.* [[N+D_{rel}]+D] simply differs from D_{rel} alone. This may cause a different spell-out, e.g. *wie* versus *die* in (113a/b).

After this short intermezzo we can return to appositive relatives.

5.3.3. Appositive relatives are 'false' free relatives

The schematic structure proposed for appositive relative constructions above is repeated in (116).

(116) $[_{\&:P}\ [_{DP1}$ Annie$]_i$]
&: $[_{DP2}\ ø_k\ [_{CP}$ who$_k$ is our manager$]]_j$

When compared to (114) and (115), it becomes clear that an appositive relative is not a true free relative. Rather, it is a false free relative of which the pronominal head is empty:

Theorem IV
Appositive relatives are false free relatives with an empty pronominal head.

Hence the detailed structural representation is like (117). I will discuss the derivation of DP_2 directly below. Again, it is similar to the one in restrictive postnominal relatives.

(117) $[_{\&:P}\ [_{DP1}$ Annie$]_i$]
&: $[_{DP2}\ [_{D2}$ N+$D_2]\ [_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ t_n]\ D_{rel}\ t_{np}]$ (C) … $t_{dp\text{-}rel}$ …$]]_j$
$ø_k$ who$_k$ is our manager
(namely) (she)
'Annie, (namely she) who is our manager'

At the lowest level, NP moves to SpecDP_{rel} in order to check agreement with D_{rel}. This explains why a relative pronoun is a bound pronoun in general,[43] hence in (116) and (117) we have co-indexing of ø and *who*. DP_{rel} moves to SpecCP and checks the *wh-feature*. The relative CP is selected by D_2. Finally, N moves to the empty external D so that agreement and abstract Case can be checked. Whether this is overt or covert is irrelevant in this case. The complex [N+D] corresponds to an (abstract) personal pronoun; this is $ø_k$.

[43] That is, except in true free relatives.

The specifying-coordination-plus-free-relative ('CFR') theory of appositive relativization as laid down in Theorem I, III and IV can be summarized as follows:

The CFR theory of appositive relativization
An appositive relative clause is a false free relative (with an empty pronominal head) which is a specifying conjunct, i.e. in apposition, to the visible antecedent.

The next subsection discusses how the properties of appositive relatives as opposed to restrictives follow from this. But first, I must address the following. Bianchi (1999:144-146) argues that there are problems with the conjunction/FR analysis of appositives. These are all due to the fact that there are differences between true free relatives and ARCs. What she refers to, however, is Koster's theory in which the second conjunct is a bare CP. I will show that Bianchi's critique is not valid any longer in the pertinent CFR theory.

Bianchi's argument boils down to four points. First, she claims that, theoretically, there is no evidence for an external D in ARCs, whereas a real free relative is a DP. This is clearly incorrect, both theoretically and empirically. Theoretically, because i) the conditions on coordination force a DP and so a D; ii) ARCs can be compared to appositions, which are DPs; iii) a CP without an external D (or a correlate) cannot be interpreted as a relative clause since then there would be no sign of a pivot; and iv) an external D is necessary for Case checking. Empirically, because i) D *can* be made visible as a pronoun, e.g. in (117) above; and ii) D *must* be visible in e.g. French ARCs with a non-DP antecedent; see (118), taken from Canac-Marquis & Tremblay (1997:9). (The glosses are mine.)

(118) a. Marcelle est très fatiguée, **ce** que Marie n'est pas.
Marcelle is very tired, DEM which Marie NEG-is not
b. Marcelle est arrivée en retard, **ce** qu'elle ne fait jamais.
Marcelle has arrived . late, DEM which-she NEG does never

Notice that all these arguments are evidence for the CFR, and against coordination with a bare CP.

Second, Bianchi objects that in the conjunction approach a relative pronoun would be a 'relative determiner' (D_{rel}) in a restrictive relative, but a pronoun in an appositive, whereas restrictive and appositive relatives usually use the same relative elements. Whereas this may be a problem for the bare CP analysis, the objection simply does not apply to the CFR approach where a relative pronoun is a (bound) relative determiner in both restrictives and appositives. As shown in (117), appositives have a pronoun *in addition* to D_{rel}, viz. $N+D_2$.

Third, Bianchi notes that free relatives and appositives can use different relative pronouns. As argued in the previous subsection, this actually follows from the CFR approach, where appositives are *false* free relatives. Hence a relative pronoun in an ARC (like in restrictives) is a bound pronoun, whereas in true free relatives D_{rel} is combined with the abstract antecedent and becomes a 'free' pronoun comparable to an interrogative pronoun. This may explain the wie_{FR}/die_{ARC} contrast in Dutch discussed above. Another example – brought up by Bianchi – of the difference between relative elements in free relatives and appositives (which are

false free relatives in the pertinent account, hence with a different configuration in the COMP domain) is the French/Italian opposition between qui_{FR} and que_{ARC} in object relatives. *Que* is arguably a relative complementizer c-commanded by a relative operator (i.e. a phonetically empty D_{rel}), whereas D_{rel} must surface as *qui* if it is combined with N and D into a free pronoun, which in turn leads to 'deletion' of the complementizer.[44]

Finally, there are differences in pied piping between appositives and free relatives; pied piping in FRs is restricted by matching effects. This, too, follows from the structural differences implied by the CFR. For an explanation I refer the reader to the previous subsection and section 5.5 on matching effects, and to sections 2.2:R2 and 5.4 on pied piping.

I conclude that appositive relativization is specification of an antecedent with a false free relative. Bianchi's objections to Koster's conjunction approach do not apply to this CFR theory.

5.4. The behaviour of appositives explained

With the CFR analysis in mind, consider briefly the properties of appositive relatives again, as discussed in sections 2 and 3 above.

Behaviour related to coordination:
– The independency of the role of the pivot constituent (both semantic and syntactic) in the ARC with respect to its role in the matrix clause (cf. §2:intro), is guaranteed automatically, because the antecedent and the relative pronoun are in separate conjuncts.
– Since ARCs are complex appositions, hence specifying conjuncts, they are not essential for the grammatical status of the matrix: they are additional information. Therefore they can be deleted without the loss of acceptability, like many adverbial phrases.
– The theory of extraposition (cf. Ch7) allows – at least – for extraposition of any phrase that is not an argument of the matrix predicate. Since ARCs are specifying conjuncts, i.e. only an apposition to an argument (or something else), it follows that extraposition is possible in principle, which is correct (cf. §3.1:M1).
– The theory of coordination must allow for more than two conjuncts (cf. Ch7§6.2), i.e. multiplicity. Since ARCs are specifying conjuncts, it follows that stacking is in principle allowed (cf. §3.1:M2).
– Appositive relatives follow restrictive relatives and other complements of the antecedent (cf. §2.3:E1). This follows automatically from the present approach, where these complements are embedded within the maximal projection of the antecedent DP in the first conjunct. Therefore they precede specifying material such as an ARC, which resides in a second conjunct.

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[44] There are several theories on the surface forms of relative pronouns and complementizers, combinations of them, and the status of the 'Doubly Filled COMP Filter'. See e.g. Dekkers (1999), Rooryck (1997) and the references there.

– Finally, consider the following fact from Swedish: if the usual definite suffix on the noun is absent, a 'free determiner' is allowed in restrictive, but not appositive relative constructions (cf. §2.1:A5). That is, we have *det hus som…*(RRC) 'the house that' versus * *det hus, som…* (ARC) 'the house, that', whereas *det huset*$_{(,)}$ *som* (RRC/ARC) 'the house-the$_{(,)}$ that' is always acceptable. I do not wish to go into the syntax of double definiteness (but see e.g. Delsing (1993) and Platzack (2000)), and I will simply assume that, given the promotion theory of relativization, the interplay of the external determiner, the head noun, the relative determiner and the relative complementizer in a restrictive relative, provides the means to derive *det hus(et) som*…. What is relevant here is that * *det hus, som…* in an appositive is impossible. This follows from the CFR approach – in which the overt antecedent as a whole, which is a DP, resides in the first conjunct – simply because * *det hus* is ungrammatical. A free determiner can only be added to a definite DP, hence *det huset* is the desired form.

Behaviour related to the implied antecedent:
– In both restrictive and appositive relative constructions a relative pronoun (whether overt or not) is a kind of bound pronoun (cf. §2:intro). However, in an ARC the link to the overt antecedent is indirect: the relative pronoun is syntactically bound by the implied antecedent of the free relative, $ø_k$ in (117). In turn, $ø_k$ refers to the overt antecedent, which is the first conjunct. Since the antecedent does not c-command the second conjunct, this cannot be established syntactically. As argued by Sells (1985) – see also Demirdache (1991) and others – the relation between the antecedent and the referring element in the relative clause ($ø_k$ in my terms, the relative pronoun in theirs) is 'cospecification', i.e. discourse linking. Even though this may explain why the referring element does not have a free/indeterminate antecedent, it does not automatically exclude the possibility of reference to another phrase in the matrix. I think it is the concept of specifying coordination that helps to force the right interpretation. If in the configuration (119), $ø_k$ would refer to some unrelated entity DP_x, it cannot be the case that $j \subseteq i$. Therefore DP_2 cannot be interpreted as a specification of DP_1, which leads to a semantic anomaly.

(119) $\ldots DP_x \ldots [_{\&:P} [DP_1]_i \quad]$
$\&: [_{DP2} \; ø_k [_{CP} [D_{rel}]_k \ldots]]_j$

Thus this reasoning ad absurdum shows that an ARC as a specifying conjunct makes sense only if the empty element is cospecified with the visible antecedent. Therefore it is unnecessary to stipulate a constraint like 'the referring element in an ARC must be cospecified with the nearest preceding phrase'.
– Now consider the fact that ARCs can have an antecedent of any category (e.g. CP, AP, PP), contrary to restrictives (cf. §2.1:A4). The latter is not difficult to explain in the promotion theory, given that i) the visible antecedent must be selected by D_{rel} within the restrictive relative clause; ii) the relative CP must be selected by the head of the category that represents the whole construction. This is only possible with nominal projections. For instance, if an AP would take a restrictive relative, the head of some unknown extended projection YP of AP must select a relative CP, within

which D_{rel} takes AP as a complement, which is then raised and formally linked to Y. This is not a plausible scenario; therefore let us turn to the appositive relative construction. The relevant structure is (120), where XP is a non-DP antecedent, and the second conjunct a false free relative (hence a DP) in which D_{rel} is the relative pronoun, and N+D the empty pronoun $ø_k$ that represents the implied antecedent of a free relative.

(120) $[_{\&:P}\ [XP]\ ]$
$\&: [_{DP}\ [_{D}\ N+D]\ [_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ t_n]\ D_{rel}\ t_{np}]\ (C)\ \ldots\ t_{dp\text{-}rel}\ \ldots]]$

Since XP ≠ DP, the coordination is syntactically unbalanced. I argue that this is permitted if $ø_k$, the head of the second conjunct, refers to XP, so that the two conjuncts are functionally equivalent. This is possible in principle because a pronoun may refer to concepts, places, times, events, facts, things, etc. This implies that it can refer to any syntactic category. See for instance (121). I have included some more familiar examples of syntactically unbalanced coordination.

(121)

DP:	the man → he	he and Mary
PP:	behind you → there	there and behind you
CP/VP:	she is dull → it, that	(I don't believe) that, but rather that she is ill.
AP:	corrupt → that	(Is she corrupt?) That, and stingy (too).

Relatives appositive to non-DP antecedents are less common than those with DP antecedents (cf. Lehmann 1984:277). This is in line with the analysis in (120), since syntactically unbalanced coordination is more marked than balanced coordination in general.
– Contrary to restrictives, but like free relatives, appositives can (marginally) contain an epithet NP that functions as an internal head (cf. §2.2:R3). This is repeated in (122).

(122) a. * Deze roman welk *boek* Reve geschreven heeft, is herdrukt. [RRC]
this novel which book Reve written has, has.been reprinted
b. "De avonden", welk *boek* van Reve veel gelezen wordt, is herdrukt. [ARC]
"De avonden", which book of Reve much read is, has.been reprinted
c. Welke *onverlaat* zoiets doet, verdient straf. [FR]
which miscreant such.a.thing does, deserves punishment

Clearly, there is no available position for the additional nominal phrase *book* in the promotion theory of restrictive relatives, since the NP complement position of D_{rel} is occupied by the antecedent that is to be raised.[45] This explains why (122a) is impossible. By contrast, the epithet may take the position of the implied antecedent in a free relative. Similarly, in an appositive relative, the complement position of D_{rel} may be taken by an epithet, i.e. *book* in (122b). The antecedent *De avonden* is in the

[45] Notice, however, that there is one in the (revised) standard analysis. Thus this is another advantage of the raising approach.

first conjunct; the second conjunct acts as an internally headed free relative. This is shown in (123).

(123) $[_{\&:P}\ [_{DP1}$ De avonden$]$ $]$ …
$\&$: $[_{DP2}\ (D_2)\ [_{CP}\ [_{DP\text{-}rel}$ welk $[_{NP}$ boek$]]\ (C)$ … $t_{dp\text{-}rel}$ …$]]$

In Dutch only the relative pronoun *welk(e)*, which is morphologically a *wh*-word, can act as a dependent relative pronoun. Here it is the epithet NP that refers to the antecedent, instead of some pronominal element $ø_k$.[46]
– At least in the Romance and Germanic languages (and perhaps in any language) appositive relatives must be introduced by a relative element, whereas in some languages this is not obligatory for restrictive relatives (cf. §2.2:R1 and §3.1:M4). Probably this difference follows from the different configuration in the COMP area. Compare (124a/b), where both D_{rel} and C are empty:

(124) a. $[_{DP}$ D $[_{CP}\ [_{DP\text{-}rel}$ NP D_{rel} $t_{np}]_i$ C $[_{IP}$ … … t_i … … …$]]]$
the man ø ø I saw yesterday [RRC]
'(I like) the man I saw yesterday'

b. $[_{\&:P}\ [_{DP1}$ Joop$]$ $]$
$\&$: $[_{DP2}\ [_{D2}$ N+$D_2]\ [_{CP}\ [_{DP\text{-}rel}\ [_{NP}\ t_n]\ D_{rel}\ t_{np}]_i$ C $[_{IP}$ … … t_i … … …$]]$
$ø_k$ ø ø I saw yesterday
* ' (I like) Joop, I saw yesterday' [ARC]

In the restrictive there is at least one lexical element in the COMP domain: the antecedent noun, i.e. *man* in (124a). In an appositive there would be three empty elements in the COMP area in a zero relative. Apparently, this is not possible. One may state the demand that the CP layer cannot exist if it is completely lexically empty. Another possible approach to this matter is the assumption that $ø_k$ must be syntactically licenced by a lexical element, e.g. an overt D_{rel}. I will not expand on this, and simply assume that it can be formalized.[47]

Behaviour related to scope:
– A specifier or determiner of the antecedent does not take scope over an ARC, contrary to the situation in restrictives (cf. §2.4:S1). In a restrictive relative construction the relative CP is the complement of D, hence material embedded in CP is in the scope of D. In an appositive relative construction the ARC specifies the whole antecedent – including a specifier or determiner – which is embedded within the first conjunct. The overt antecedent does not c-command the ARC, hence cannot take scope over it.

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46 At present the data fail me on the basis of which it can be determined if there is a formal (covert) link between N (and/or D_{rel}) and D_2.

47 Notice that it is again the promotion analysis of relativization (in combination with the CFR theory) that predicts the difference between restrictives and appositives. In the (revised) standard analysis, the antecedent is not included in the relative CP, hence the COMP domain is completely empty in restrictives, too.

– For the same reason, appositives do not allow for split collocations, or binding into the relative clause, contrary to restrictives (cf. §2.4:S3/4). There is no c-command relation between the two conjuncts.
– An appositive is opaque for syntactic licencing relations (cf. §2.4:S2). Consider variable binding as an example, e.g. (125):

(125) * *Everyone$_i$ spoke about the Millennium Dome, which he$_i$ had visited*.

Here the binder is not the antecedent of the ARC but an element higher in the matrix. Hence it does c-command the relative construction. The reason why the example is unacceptable is that it violates in a sense the Across-The-Board constraint on coordination (i.e. the CSC). If there is variable binding into one conjunct, there should be a parallel relation with the other conjunct. Obviously, this is not the case here: *everyone* does not bind a variable in the first conjunct, *the Millennium Dome*. However, it has been pointed out to me that examples of variable binding into a regular conjunction are possible. An example could be (126):

(126) [Elke vader]$_i$ beweerde dat Cruijffs zoon en zijn$_i$ eigen zoon samen
every dad claimed that Cruijff's son and his own son together
op voetbal hadden gezeten.
on soccer had been

I don't think this counters my argumentation, since there are examples of variable binding into an ARC as well, as noted before; see for instance (127):

(127) [Elke vader]$_i$ geeft zijn zoon een bouwpakket, dat hij$_i$ vervolgens zelf
every dad gives his son a do-it-yourself.kit, which he subsequently SELF
in elkaar zet.
. together puts

According to Sells (1985) these examples do not involve syntactic binding but cospecification. This is subject to specific conditions, viz. the discourse must be continuative (cf. section 2.4:S2). In (126) the coordinated DPs are in the same predicate, hence the conditions on cospecification are automatically fulfilled. It seems to me that syntactic variable binding is preferred to cospecification, since examples like (126) and (127) are more marked than those in which there is a regular c-command relation, e.g. *[Every dad]$_i$ tells his$_i$ son that he$_i$ played soccer well in his$_i$ youth*.

In short, I conclude that the behaviour of appositive relatives (partly as opposed to restrictives) can be explained well within the CFR approach.

5.5. Matching effects

Finally, I want to present some curious facts concerning appositive relatives, namely the existence of matching effects in appositives with a pronominal head (in Dutch). In general, I think these facts support the analysis of appositive relative

constructions as involving a free relative, although a formal analysis has not been developed as yet.

First, notice that although a relative pronoun is a third person pronoun, it can refer to a first or second person antecedent (cf. §2.2:R4).[48] Some examples in Dutch are provided in (128) and (129).

(128) a. Dat ik, die jouw leerling ben, jou terecht moet wijzen…
that I, who your pupil am, you right must set...
b. Wij, die dappere soldaten zijn, bombarderen alles plat.
we, who brave soldiers are, bomb everything flat
c. Jij, die zo goed rennen kan, moet snel vertrekken.
you_{sg}, who so good run can, must quickly leave
d. Jullie, die zo goed in rekenen zijn, gaan door naar de finale.
you_{pl}, who so good at calculus are, go on to the final

(129) a. TAFKAP keek naar mij, die hij nooit eerder opgemerkt had!
TAFKAP looked at me, who he never before noticed had
b. Ze namen ons, die ze beschoten hebben, gevangen.
they took us, who they shot-at have, prisoned
c. De koningin gaf jou, die zij niet persoonlijk kende, een lintje.
the queen gave you_{sg}, who she not personally knew, a ribbon
d. De directeur feliciteerde jullie, die hij niet persoonlijk kende.
the manager congratulated you_{pl}, who he not personally knew

If an ARC has a pronominal antecedent, the empty pronoun in the free relative structure in the second conjunct looses its independent status and takes over all features of the antecedent pronoun. Therefore the free relative cannot be viewed as a false free relative anymore. Hence, as with true free relatives, we might expect Case matching effects to appear. That is, if the Case requirement in the subordinate contradicts the one in the matrix clause, the sentence becomes degraded. This prediction is correct; see (130) and (131), where there are contradictory nominative and objective requirements on the pronoun.[49] Notice that the general pattern is

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48 Similarly, a pronoun can take a non-restrictive apposition, e.g. *I, the president of the United States*. It seems to me that all this demands an external perspective: the speaker looks at the situation from the outside. Probably this explains the possibility of a first or second person antecedent, which can be paraphrased as 'the person who I am/you are'.

49 I came across some examples in German which are at odds with these findings in Dutch. The sentences are from Günter Grass, *Die Blechtrommel* (1959), taken from Deutscher Taschenbuch Verlag, 8. Auflage, 1999, pages 28, 28, 750, and 768, respectively.

(i) […] und [er] erlaubte **ihr, die** ihm standesambtlich angetraut war, […] vier Röcke
and he allowed her_{dat}, who_{nom} to.him by.the.Register.Office married was, four skirts
übereinanderzutragen.
on.top.of.each.other.to.wear

(ii) Man mag **mir, der ich** darauf brenne, den Beginn eigener Existenz anzeigen zu dürfen,
one may me_{dat}, who-I_{nom} it.on keen.am, the beginning of.own existence indicate to can,
erlauben, die Wrankas […] unbeobachtet zu lassen […]
allow, the Wrankas unnoticed to let

to be continued...

clearly unacceptable, although there are small differences in the judgements concerning individual sentences.

(130) a. * TAFKAP keek naar mij, die zijn grootste bewonderaar ben!
TAFKAP looked at me_{obj}, $who_{(nom)}$ his biggest fan am
b. * Ze namen ons, die toch dappere soldaten zijn, gevangen.
they took us_{obj}, $who_{(nom)}$ yet brave soldiers are, prisoned
c. * De koningin gaf jou, die zoveel gedaan hebt voor de maatschappij,
the queen gave $you_{sg, obj}$, $who_{(nom)}$ so.much done have for the society,
een lintje.
a ribbon

(131) a. * Ik, die hij berispt had, ben pas 14 jaar oud.
I_{nom}, $whom_{(obj)}$ he rebuked had, am only 14 years old
b. * Wij, die hij berispt had, zijn pas 14 jaar oud.
we_{nom}, $whom_{(obj)}$ he rebuked had, are only 14 years old
c. * Jij, die hij berispt had, bent pas 14 jaar oud.
$you_{sg, nom}$, $whom_{(obj)}$ he rebuked had, are only 14 years old

If we substitute a *false* free relative for the free relative, the sentence becomes grammatical, e.g. for (131a): *Ik, (namelijk) degene die hij berispt had, ben 14 jaar oud* 'I, (namely) the one who he had rebuked, am only 14 years old.' Furthermore, matching effects are known to vanish if the pronoun concerned shows no morphological difference between the different Cases; see e.g. Groos & Van Riemsdijk (1981). Hence this effect should appear with Dutch *jullie* 'you_{pl}', which can be nominative or objective. This is shown in (132).

(132) a. Ik geef jullie, die zo goed in voordragen zijn, het woord.
I give $you_{pl, (obj)}$, $who_{(nom)}$ so good at reciting are, the word
b. Jullie, die ik nog niet ken, krijgen eerst het woord.
$you_{pl, (nom)}$, $who_{(obj)}$ I yet not know, get first the word

As expected, both variants are grammatical.

The patterns above must be reproducible with third person pronominal antecedents that are used deictically. This is indeed the case, although I find the judgements less clear in some cases; perhaps because of possible confusion with

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... continued

(iii) Zwar ist **mir, der ich** von Beruf Dekorateur bin, das Anfertigen einer
indeed is me_{dat}, who-I_{nom} of profession window-dresser am, the manufacturing of.a
Gipsform nichts Neues […]
plaster.mould nothing new

(iv) […] der Text […] setzte sich in **mir, der ich** mich in den Polstern erster Klasse verlor,
the text settled SE in me_{dat}, who-I_{nom} $SE_{1\text{-}pers}$ in the cushions of.first class was.swallowed,
fest […]
fixed

A more systematic inquiry is necessary to clear up this matter. Possibly, the peculiar German construction *ich, der ich* 'I, the_{rel} I' is different in a relevant way from *ik, die* 'I, who'.

restrictive relatives. See (133), which is unproblematic, and (134), where there are matching problems:

(133) a. Hij, die altijd al ongedurig was, zal spoedig vertrekken.
he, who all.along restless has.been, will soon depart
b. Zij, die altijd al ongedurig waren, zullen spoedig vertrekken.
they, who all.along restless have.been, will soon depart
c. Ik geef hem, die ik nog niet ken, eerst het woord.
I give him, who I yet not know, first the word
d. Ik geef hun, die ik nog niet ken, eerst het woord.
I give them, who I yet not know, first the word

(134) a. * Ik gaf het woord aan hem, die jou nog geholpen heeft.
I gave the word to him_{obj}, $who_{(nom)}$ you yet helped has
b. * Ik gaf het woord aan hen, die jou nog geholpen hebben.
I gave the word to $them_{acc}$, $who_{(nom)}$ you yet helped have
c. * Hij, die jij nog geholpen hebt, is pas 14 jaar.
he_{nom}, $who_{(obj)}$ you yet helped have, is only 14 years
d. * Zij, die jij nog geholpen hebt, zijn zojuist aangekomen
$they_{(nom)}$, $who_{(obj)}$ you yet helped have, have just arrived

Finally, consider *restrictive* relatives with a pronominal antecedent, i.e. false free relatives. As stated before, they do not display matching effects. A clear example is (135) in German.

(135) a. Der den ich kenne, steht dort.
he_{nom} who_{acc} I know stands there
b. Ich kenne den der dort steht.
I know him_{acc} who_{nom} there stands

Here the antecedent *der* looks like an article. One can also use *derjenige* 'the one' and other determiners and pronominal elements. For some reason normal personal pronouns (*er* 'he') are not used in this construction. In Dutch the most usual pronominal antecedent is *degene* 'the one', but it is Case neutral, hence useless for our purposes. Fortunately, personal pronouns can also serve as an antecedent, as shown in (136).

(136) a. Hij die goed doet, zal goed ontvangen.
he who good does, will good receive
b. Ik zag hem die jij beschreven hebt.
I saw him who you described have

As in (135) the antecedent and the relative pronoun may bear different Cases. The judgements are a little less clear than in German; I suspect that this is because the Case on the relative pronoun is not morphologically overt. See (137).

(137) a. Hij die de schoen past, trekke hem aan.
he$_{nom}$ who$_{(obj)}$ the shoe fits, put it on
b. Hij die ik strafte, was stout.
he$_{nom}$ who$_{(obj)}$ I punished, was naughty
c. Ik heb hem die stout was geweest, gestraft.
I have him$_{obj}$ who$_{(nom)}$ naughty has been, punished
d. Ik ken hem die daar staat.
I know him$_{obj}$ who$_{(nom)}$ there stands

Thus restrictive and appositive relatives with a pronominal antecedent behave quite differently in Dutch. This can be explained if the antecedent is in different positions in these constructions. In the CFR approach the antecedent of an appositive is in a first conjunct. The empty pronoun of the free relative in the second conjunct is then semantically vacuous, which turns the false free relative into a normal FR. This may cause matching effects. I will not try to formalize these ideas before comparable data from other languages becomes available.

6. Conclusion

Appositive relatives differ from restrictives in several ways. I have reviewed differences with respect to possible antecedents, scope, relative elements, et cetera. Along the way, some misconceptions were cleared up. For instance, I have shown that appositives can be extraposed and stacked. There is a large number of competing analyses of apposive relativization in the literature. These have been ordered and evaluated. I have argued that apposition in general is specifying coordination to an antecedent. This allows us to generalize over appositions and appositive relatives. Appositive relatives are extended appositions. To be precise: they are false free relatives (with an empty head) that are in apposition to the antecedent. (Clearly, an appositive is different from a true free relative; neither can it be a bare CP.) I have called this approach CFR, the coordination-plus-free-relative theory. It implies constituency of the antecedent plus the appositive relative. The antecedent is in the first conjunct, the free relative in the second. Within the false free relative, there is promotion of the empty head – which, by the way, can be made overt in some cases. (It is this element that refers to the overt antecedent – the relative pronoun does so only indirectly.) Thus the syntax of relativization is maximally general: it now covers all syntactic and semantic main types of relatives. The specific configuration in which an appositive relative occurs has been shown to explain why its behaviour deviates from restrictives in several respects. Finally, I have presented some new data concerning matching effects in appositive relatives.

7 Extraposition

1. Introduction

In many languages relative clauses can be extraposed to the right. An example of this phenomenon is repeated from Ch2§7.5 in (1), an example from Dutch, which is generally SOV – except that there is finite verb second in main clauses; this is the auxiliary in (1).

(1) a. Ik heb **de man** *die zijn tas verloor* gezien. *[normal order]*
I have the man who his bag lost seen
b. Ik heb **de man** gezien *die zijn tas verloor*. *[extraposition]*

It is claimed by Borsley (1997) and others that extraposition of relative clauses is a problem for the promotion theory. If so, it casts some doubt on the validity of the arguments in the previous chapters. However, I will show that this is not the case.

Clearly, extraposition is a general phenomenon that is applied to a wide range of sentence types. It is *not* a substrategy of the relative construction. This is illustrated in section 3. Therefore it must be an operation that is in principle independent of the (syntactic) analysis of relative clauses. Section 5 argues at length that an analysis in terms of *specifying coordination* is much better equipped to handle extraposition in general than other theories (such as rightward movement or stranding; listed in section 4) – both on empirical and theoretical grounds. In section 6 I defend a variant of specifying coordination using ellipsis and parallel construal in terms of 'behindance' – an expression I take over from Grootveld (1992); I do not know the actual origin. I show that this analysis does not put any impediments whatsoever on the actual analysis of relative clauses. Hence the promotion theory argued for in the previous chapters can be maintained.

Section 2 starts with some preliminary remarks on extraposition of relative clauses. From section 3 onwards, the discussion has a more general character, as explained. Section 7 focuses on extraposition of non-relative constructions. Section 8 concludes the chapter. The Appendix to this chapter contains a collection of relevant data.

2. Extraposition of relative clauses

In Chapter 2, section 7.5, I have posed the following questions regarding extraposition of relative clauses:

- What conditions are there on extraposition?
- What is the syntax of extraposition?

- Do all syntactic main types allow for extraposition?
- Do all semantic main types allow for extraposition?

I will answer them in reverse order, with increasing detail. The first two questions are discussed at length in the subsequent sections. The answer to the fourth one is simply: *yes*; see the Dutch examples in (2), where the relative clause is placed to the right of the past participle.

(2) a. Hij heeft **de muizen** gezien *die in de kooi zaten*. *[restr.]*
he has the mice seen which in the cage were

b. Hij heeft **de muizen** gezien *die er in de kooi zaten*. *[degree]*
he has the mice seen which there in the cage were

c. Ik heb **Japie** gezien, *die in een kooi zat*. *[app.]*
I have Japie seen who in a cage was

Sentence (2a) shows extraposition of a restrictive relative, (2b) of a degree relative, and (2c) of an appositive relative (cf. Ch2§7.5 and Ch6). Hence all three semantic types of relatives can be extraposed.

Question three is more difficult. Extraposition in languages with a postnominal relative strategy is quite normal (see e.g. Smits (1988) for Germanic and Romance languages). Extraposition of relative clauses in languages with a primary prenominal relative strategy is less well studied, but it is certain that it exists, for instance in Lahu (Lehmann 1984:203/4) or Turkish (Veld 1993). However, since these languages also show a secondary postnominal relative strategy, it is not certain that the extraposed order is derived from the prenominal variant.[1] In fact, this is clearly not the case for Turkish, where the extraposed variant mimics the postnominal finite relative instead of the regular participial prenominal one. Nevertheless, Navaho seems to be a language where extraposition is possible in the absence of a secondary postnominal strategy (cf. Lehmann 1984:116). Clearly, more study is needed here.

Extraposition is hard to define if the relative head is internal. For instance, if a circumnominal relative would be 'extraposed', the head is automatically extraposed, too, since it is internal to the relative clause. Therefore, if this construction exists – and it does: see Lehmann (1984:111) for a Mohave example – it actually involves *heavy NP shift* and not relative clause extraposition (recall that a circumnominal relative is a nominalized clause, hence a DP: $[_{DP} \ldots [_{CP} \ldots NP \ldots]])$.[2]

What about (right-)extraposition in combination with a correlative strategy, which is some kind of left-extraposition per definition? We know that many languages with a correlative main strategy also have extraposed relatives, e.g. Hindi. However, Srivastav (1991) stresses that these two strategies are quite distinct (see also Ch4§6). For instance, correlatives contain the head noun, extraposed relatives

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1 The word *derived* must be understood in a pretheoretical sense here. It may be the case that extraposition does not involve syntactic movement, as in fact I will argue.

2 I have found one example, also in Mohave, where the head is in situ and the extraposed (nominalized!) relative seems to contain a gap; see Lehmann (1984:113). However, Lehmann states that it is probably an apposition in the form of a free relative, hence irrelevant to the discussion here.

do not; correlatives are maximalizing, extraposed relatives are usually restrictive. Therefore extraposed relatives cannot simply be analysed as correlatives that are right-adjoined or moved to the right. Rather, they behave on a par with postnominal relatives. And in fact, Hindi and related languages have a secondary postnominal strategy. This reasoning is valid for Sanskrit, Avestic, Hindi, Marathi, and probably for related languages like Bengali and Gujarathi. Similarly, Bambara has correlatives and extraposed relatives, but also a secondary postnominal strategy, which is probably also the case in the related Mande languages Maninka, Mandinka and Vai.

However, as far as I know, Warlpiri (Australian) and Wappo (Yuki, USA) do not have a secondary postnominal relative strategy. This does not justify the idea that relatives can be *convertible* ('umstellbar'), i.e. from correlative to extraposed, as claimed in Lehmann (1984:49,129-140), because Srivastav's objections translate straightforwardly to these languages. Rather, the issue is why these languages have a hidden postnominal relative strategy whereby extraposition is obligatory. I leave these matters for future research.

A final possibility to consider is the idea that at least some extraposed relatives might form an independent class, i.e. they are not derived from a postnominal or other relative main strategy. Among others, Lehmann (1984) and Downing (1978) argue in favour of this idea. In general, the kinds of arguments are the following: i) the particular class of extraposed relatives uses other relative pronouns than postnominal relatives do (or a subset of them); ii) the semantics may be slightly different (e.g. continuative).[3] I am not really convinced by this type of reasoning. First, one must distinguish restrictives from appositives. For the latter, see also Smits (1988) and some comment in Ch2§7.5. Regarding restrictives, a strong counter-argument is that a relative is interpreted in combination with the antecedent, whether it is extraposed or not. It can be argued that a relative pronoun is a kind of anaphor that must be locally bound (co-indexed), etc.

Concerning extraposition of relative clauses, this chapter focuses on the most clear-cut case: extraposition of restrictive relatives in languages with a postnominal relative strategy.[4] Most of the examples to be considered will be in Dutch.

3. Extraposition in a broader perspective

Relative clauses are not the only phrases that can be extraposed. In fact, it seems that every construction that may be divided in a first and a second part (henceforth: *duplex constructions*) allows for extraposition of the second part under certain conditions. These conditions are discussed in the next section. Crucially, they are

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3 Actually, the arguments are mixed up with those for the correlative class in the literature mentioned. I have tried to separate them fairly.

4 I may add that it follows straightforwardly from the theory to be presented that extraposition of circumnominal and correlative clauses is impossible. However, it does not directly follow that extraposition of prenominal relatives is impossible. As discussed, it is not clear from the available data whether this is an advantage of the theory or rather an issue yet to be solved.

similar in important respects for all construction types; see also the Appendix. Here I will simply list the relevant constructions. There are at least eight of them:

(3) *duplex constructions, allowing for extraposition:*

a.	conjuncts	*XP and*	*YP*
b.	relative clauses	*NP*	*who...*
c.	result clauses	*so/too A*	*that/to...*
d.	appositions	*NP,*	*NP,*
e.	comparative clauses	*more A*	*than...*
f.	PP complements of N	*N*	*PP*
g.	complement clauses of N	*N*	*CP*
h.	PP complements of A	*A*	*PP*

These are exemplified (in Dutch) in their discontinuous form in (4). In some constructions, especially (4c/e/g), the extraposed order is preferred or even obligatory. This is discussed in the next section.

(4) a. Ik heb *Joop* gezien *en Jos*.
I have Joop seen and Jos

b. Ik heb *de man* gezien *die een rode jas droeg*.
I have the man seen who a red coat wore

c. Ze heeft *zo hard* gelopen *dat iedereen verbaasd was*.
she has so fast run that everybody amazed was

d. Ik heb *Joop* gezien, *onze nieuwe directeur*.
I have Joop seen, our new manager

e. Ze heeft *meer* gedaan *dan we hadden verwacht*.
she has more done than we had expected

f. Ik heb *de man* gezien *met de rode hoed*.
I have the man seen with the red hat

g. Ik heb *de vraag* gesteld *of hij wilde komen*
I have the question asked if he wanted to.come

h. Hij is altijd *dol* geweest *op chocolade*.
he has always font been of chocolate

The phenomenon of extraposition is even more extensive than this. There are also simplex phrases that can be argued to be right-extraposed from the (matrix) clause. These divide into two classes: i) phrases that are part of the argument structure of the matrix predicate, and ii) phrases that are not. They are listed and exemplified in (5) through (8). The position in the matrix where the relevant phrase is expected normally is indicated by *[e]*. This position is discussed further in sections 6 and 7. Again, in some constructions extraposition is preferred or even obligatory, especially in (6a).

(5) *simplex extraposable argument phrases*
  a. complement clauses of V
  b. heavy NPs
    (i) enumerations, announcements, etc.
    (ii) free relatives[5]
  c. prepositional objects of V

(6) a. Ze heeft *[e]* gezegd *dat ze komt*.
  she has said that she comes
  b. (i) Hierbij doen we u *[e]* toekomen: *de onderscheiding voor*
  hereby do we you give: the reward for
  voorbeeldig gedrag.
  exemplary behaviour
  (ii) Ze heeft *[e]* vernield *wat jij gemaakt hebt*.
  she has destroyed what you made have
  c. Ze heeft *[e]* gedacht *aan haar moeders verjaardag*.
  she has thought of her mother's birthday

(7) *simplex extraposable non-argument phrases*
  a. sentence adverbs
  b. adverbial PPs
  c. adverbial NPs
  d. adverbial clauses
  e. predicative adjunct APs
  f. attributive APs

(8) a. Ik ben *[e]* wezen zwemmen, *gisterenmiddag*.
  I have been swimming, yesterday.afternoon
  b. Ik heb *[e]* gezwommen, *in de Gaasperplas*.
  I have swum, in the Gaasperplas
  c. Ik ben *[e]* wezen zwemmen, *die dag*.
  I have been swimming, that day
  d. Hij is *[e]* al vertrokken, *omdat hij haast had*.
  He has already left, because he hurried was
  e. Hij keek me *[e]* aan, *doodsbleek*.
  he looked me at, deathly.pale
  f. Ze heeft *[e]* druiven geplukt, *witte*.
  she has grapes picked, white (ones)

Notice that there is often an intonation break if non-arguments are extraposed. This is similar to the situation concerning extraposed appositive relatives and appositions.

Clearly, (3) through (8) show that extraposition is a very general phenomenon. It is *not* a substrategy of the relative construction. Before I continue with the theory of extraposition, some further remarks on different construction types are in order.

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[5] That is, under the assumption that free relatives are DPs under all circumstances. It will become clear below that within the logic of the approach this is indeed the case.

- *Concerning right-dislocation:* Right-dislocated phrases are in fact extraposed appositions. In a way, they are the reverse of left-dislocated phrases, but there are large asymmetries between the left-periphery and the right-periphery of a sentence.
- *Concerning heavy NPs (including free relatives):* Heavy subject NPs may not be allowed to extrapose because of the Extended Projection Principle, etc. This constraint may be overcome by the use of an expletive, but then the construction changes to a right-dislocation configuration, hence the NP would be an extraposed apposition.
- *Concerning extraposition of NPs:* Arguments and predicates cannot be extraposed, with the exception of heavy NPs. Appositions and adverbial NPs can. But note that – according to Klooster (1995) – adverbial NPs, e.g. in (8c), are in fact PPs with an empty situating preposition. Presumably, oblique Case is provided by the prepositional head.
- *Concerning extraposition of APs:* Veld (1993) argues that extraposed attributive APs as in (8f) are in fact NPs, where N is reduced or A type-lifted. The construction can then be analysed as an extraposed apposition, which explains why the extraposed adjective is interpreted as appositive.

  For unknown reasons extraposition of adverbial APs is severely restricted. Selected predicative APs cannot be extraposed at all, as one would expect (see below).
- *Concerning extraposition of complement PPs:* extraposition of PP complements of NP may be restricted by non-syntactic factors, too. According to Guéron (1980) these limitations are semantic in nature, but Truckenbrodt (1995) shows that prosodic constraints yield roughly the same output. A quite different syntactic/semantic analysis is proposed by Barbiers (1995), on the assumption that PP and NP are generated separately. One would expect the same restrictions on extraposition of PP complements of AP. Further research is necessary, here.
- *Concerning extraposition of non-nominal arguments of V:* prepositional objects, as well as complement clauses of V, are probably not extraposed in a regular way. Several authors (e.g. Zwart 1997) have claimed that i) selection is always to the right, and ii) these constituents simply fail to move leftwards, contrary to Case-bearing nominal phrases. See also Barbiers (1995) for an alternative analysis.
- *Concerning small clause predicates:* SC predicates, independently of their categorial status, do not extrapose: **Joop is gisteren geweest ziek/voorzitter/in de tuin* '*Joop has been yesterday ill/chairman/in the garden'. See Bennis & Hoekstra (1989) and references there.

The next sections discuss how some crucial general characteristics of extraposition can be explained.

4. Analyses of extraposition

Syntactic theories on extraposition can be divided into three main groups, with a total of at least seven distinct analyses, to be explained below:[6]

A. *extraposition as right-hand adjunction*
   (i) after rightward movement;
   (ii) base-generated;
B. *extraposition as VP-internal stranding*
   (iii) with leftward movement of the first part;
   (iv) base-generated in an additional complement position;
   (v) with leftward deletion of the second part of a copy after leftward movement;
C. *extraposition as specifying coordination*
   (vi) of the extraposed constituent only;
   (vii) plus ellipsis.

I will call these analyses (i) the *rightward movement* theory, (ii) the *base-generated adjunct* theory, (iii) the *stranding* theory, (iv) the *base-generated complement* theory, (v) the *leftward deletion* theory, (vi) the *specifying coordination* theory, and (vii) the *specifying coordination plus ellipsis* theory. I will stay close to the original proposals in the literature, but the discussion below is my own evaluation of the *analysis as a type* rather than a review of a particular analysis in all its details.

Extraposition as *rightward movement* of the A' type is proposed by Reinhart (1980), Baltin (1984), and others. It is defended more recently in Büring & Hartmann (1995, 1997). In this view, a sentence like (1) has the structure of (9), where I abstract away from the position of the subject, etc.

(9) [$_{CP}$ Ik heb … [$_{VP}$ [$_{VP}$ [*de man* t_i] gezien] [$_{CP\text{-}rel}$ *die zijn tas verloor*]$_i$]].
I have the man seen who his bag lost

The relative clause is generated next to the antecedent and moved to a right-adjoined position, in this case AdjVP.

An alternative view is that the extraposed relative is base-generated separate from the antecedent. Then there is no movement. The structure is as in (10).

(10) [$_{CP}$ Ik heb … [$_{VP}$ [$_{VP}$ [*de man*] gezien] [$_{CP\text{-}rel}$ *die zijn tas verloor*]]].

This *base-generated adjunct* theory is defended by e.g. Culicover & Rochemont (1990).

Right-adjunction is not allowed in Kayne's antisymmetry framework. Hence in this framework neither of the two proposals above can be maintained. This has lead to various proposals in which it is not the relative clause that moves rightward, but the

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[6] A discontinuous constituent analysis along the lines of McCawley (1982) is left out of consideration; see Ch6§4 for some discussion.

antecedent that moves leftward. It is called the *stranding* analysis of extraposition: the extraposed constituent is stranded in its base-position. Thus (1) must be analysed as (11), where *de man* is moved to a higher position such as SpecAgrOP. (The problem that it is not a constituent is discussed below.)

(11) [$_{CP}$ Ik heb … [*de man*]$_i$ … [$_{VP}$ gezien [$_{DP}$ t$_i$ *die zijn tas verloor*]]].

Theories along these lines are proposed in e.g. Kayne (1994) and Rochemont & Culicover (1997).

Haider (1994, 1997) assumes that the relative is VP-internal, too, but in his theory it is generated separate from the antecedent, as shown in (12).

(12) [$_{CP}$ Ik heb … [$_{VP}$ [*de man*] gezien [$_{CP}$ *die zijn tas verloor*]]].

Hence the extraposed constituent is a *base-generated complement*.

Wilder (1995) provides an interesting alternative to Kayne (1994). He claims that the whole construction moves leftward – as *de man* in (11) – and leaves a syntactic copy, in accordance with Chomsky (1995). Then there is backward deletion of the relative clause, and, obviously, forward deletion of the antecedent; see (13).

(13) [$_{CP}$ Ik heb … [$_{DP}$ *de man* ~~*die zijn tas verloor*~~]$_i$ … [$_{VP}$ gezien [$_{DP}$ ~~*de man*~~ *die zijn tas verloor*]$_i$]].

This is the *leftward deletion* theory of extraposition. It makes use of the same mechanism needed for Right Node Raising constructions. See also Wilder (1994, 1997, and 2000).

Yet another possibility is extraposition as *specifying coordination*,[7] argued for in Koster (1995a, 2000c), and Rijkhoek (1996, 1998). In this analysis there is no movement. The extraposed phrase is a specifying conjunct, which is simply attached at the relevant level of the projection line. Koster and Rijkhoek then analyse (1) as in (14), where &: (my notation) symbolizes a coordinative head with a specifying semantics.[8] It may be paraphrased as *namely*. Again, example (14) abstracts away from movements irrelevant to the analysis.

(14) [$_{CP}$ Ik heb … [$_{\&:P}$ [$_{AgrOP}$ *de man* gezien] [&: [$_{CP\text{-}rel}$ *die zijn tas verloor*]]]].

I will show that a theory making use of this insight is the most feasible. It is explained further and revised in section 6, along the lines of De Vries (1999a). In a nutshell, it combines *specifying coordination* with *ellipsis*. In this way, the two conjuncts can be of a similar class (both semantically and syntactically), which is advantageous in various respects. The analysis of (1) then becomes (15):

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7 The concept of specifying coordination has been introduced in Ch6§5.1.

8 The analysis is called *conjunction analysis* in Rijkhoek (1998) and *parallel construal* in Koster (2000c). Koster uses the notation ":P", the 'colon phrase', instead of "&:P".

(15) [$_{CP}$ Ik heb [$_{\&:P}$ [$_{AgrOP-1}$ *de man* gezien] [&:
[$_{AgrOP-2}$ [$_{DP}$ ~~de man~~ *die zijn tas verloor*] ~~gezien~~]]]].

Here the coordinated constituents are e.g. $AgrOP_1$ and $AgrOP_2$ – or some other (extended) projection. The second is more specific than the first, since it contains the relative clause. Repeated material is phonetically deleted. Coordination is represented as [$_{\&P}$ XP [$_{\&'}$ & YP]], the standard way in present-day syntax, until the revision in section 6.

The major differences between these seven theories are summarized in table 1.

Table 1. *Characteristics of syntactic theories on extraposition.*

theory	*adjunction*	*separate base-position for EX*	*movement creates separation*	*ellipsis*
rightward movement	yes	no	yes	no
base-generated adjunct	yes	yes	no	no
stranding	no	no	yes	no
base-generated complement	no	yes	no	no
leftward deletion	no	no	yes	yes
specifying coordination	no	yes	no	no
spec. coord. plus ellipsis	no	yes/no[9]	no	yes

Here EX, the extraposed constituent, can be a relative clause. Notice that movement and a separate base-position are mutually exclusive.

5. Properties of extraposition: an evaluation of different types of analyses

This section discusses several properties associated with extraposition. At the same time it evaluates the analyses mentioned above. The evaluation has an empirical and a theoretical side. Section 5.1 starts with the latter, but the most convincing part is probably the empirical evaluation in section 5.2. Finally, section 5.3 summarizes the results.

5.1. Theoretical evaluation

Not every analysis on extraposition can be used without problems in present-day syntax. Four issues in particular are of interest here.

First, right-hand adjuncts are not used any longer by many syntacticians. Especially in an Antisymmetric syntax they cannot exist. If this claim is correct, it poses a problem for the rightward movement and the base-generated adjunction analysis of extraposition, since both make crucially use of right-adjunction.

[9] 'Yes', because there is base-generated additional material; 'no' because the extraposed phrase is not generated on its own in this position: within the second conjucnt it is in the regular place. There is no 'discontinuous constituent'.

A second claim is that movement is triggered. This idea is designed as *feature checking* in many Minimalist analyses. If so, and if extraposition is movement, it may be a problem that extraposition is optional (see also section 5.2.10).[10] Suppose that the movement that causes extraposition, is triggered by some feature. Then it is unclear why this feature is sometimes active and sometimes not. Hence the rightward movement analysis of extraposition is problematic in this respect. A counter-argument might be that there could be a meaning difference between the extraposed order and the normal order, which could be encoded in the presence versus absence of a trigger. However, I do not see any clear difference in meaning between e.g. (1a) and (1b). As far as I know, no account along these lines has been proposed.

The other analyses of extraposition do not suffer from the trigger problem, because there is no (rightward) movement involved. In the stranding theory, the leftward deletion theory, and to a certain extend the base-generated complement theory, there is *leftward* movement. This movement is triggered (e.g. by a Case feature) and it is not optional. In particular, in the stranding analysis it is the antecedent (or first part of a duplex construction in general) that moves leftwards. If the relative (or second part of a duplex construction in general) is stranded, it seems to be extraposed; if it is pied piped with the antecedent, the normal order arises. Of course, in this scenario one needs a theory about pied piping. However, that is needed anyway, since pied piping phenomena in general show signs of optionality; recall the well-known facts concerning preposition stranding/pied piping discussed in Chapter 4.

The third possible problem is less general; it concerns the promotion theory of relative clauses (and, possibly, analyses of duplex constructions with similar characteristics). According to the promotion theory a phrase like *de man die zijn tas verloor* has the structure in (14).

(16) $[_{DP}$ de $[_{CP\text{-}rel}$ $[_{DP\text{-}rel}$ man_m die $t_m]_i$ (C) t_i zijn tas verloor]]

The crucial point is that i) *de man* is not a constituent, and ii) *die zijn tas verloor* is not a constituent, either – unless the noun phrase *man* is moved out of DP_{rel} to a higher projection of a split CP, as proposed in Bianchi (2000a) and Zwart (2000).

I have argued in Chapter 3 that the promotion theory of relatives has many advantages. However, it also seems to be incompatible with several theories on extraposition. The stranding theory needs to raise [*de+man*], which is not a constituent.[11] The rightward movement theory needs to move *die zijn tas verloor*, which is not a constituent either (unless Bianchi and Zwart are right). The base-

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[10] Büring & Hartmann (1995, 1997) propose a filter that triggers obligatory extraposition of complement clauses: *Finite sentences may not be governed by V or I.* This statement has received heavy critique, e.g. in Koster (2000c). Moreover, it does not say anything about *optional* extraposition of complement clauses and all other constructions under discussion.

[11] Kayne's (1994:124) assumption that extraposition from a definite phrase is impossible, is simply incorrect. Whereas the stranding analysis can handle extraposition from indefinite phrases by leftward movement of a lower projection of DP, e.g. NP or QP, this is not possible for extraposition from definite or even larger phrases. See further section 5.2.

generated adjunction theory, the base-generated complement theory, and the specifying coordination theory generate the two phrases separately; but then the noun cannot have raised from within the relative. However, the specifying coordination plus ellipsis theory and the leftward deletion theory support any analysis of relative clauses, including the promotion theory. This is because the head noun is syntactically present in both positions, cf. (13) and (15) above.

The fourth issue concerns the relation between the first and the second part of a duplex construction. In the case of relative clauses, the syntactic and semantic relations between the antecedent and the relative clause. These relationships can be accomplished if at least there is selection involved, cf. Chapter 3. If, however, in an extraposition configuration, the antecedent and the relative clause were to be generated apart, some kind of 'interpretative linking' is necessary (cf. Kaan 1992a/b). This is the case for the base-generated adjunction theory, the base-generated complement theory, and the specifying coordination theory.[12] In my view it is problematic, since i) a pragmatic notion like 'interpretative linking' leads to theoretical inconsistency: it does not fit into the general (formal) approach to relatives argued for; ii) a relative pronoun is a (locally) bound pronoun, not a pronoun with free reference (cf. Ch6); iii) a restrictive meaning is always associated with syntactic sisterhood and selection, as far as I know; iv) properties of extraposition such as 'binding at the base' (cf. section 5.2.11) imply a local relation between the antecedent and the relative clause; etc. Thus in my view 'interpretative linking' is ill-advised.

The results of this short exposé are summarized in table 1. A plus means that the analysis is compatible with the relevant theoretical assumption; a minus that it is not.

Table 2. *A theoretical evaluation of extraposition theories.*

theoretical issue	*rightw. move-ment*	*base-gen. adj.*	*strand-ing*	*base-gen. compl.*	*leftw. dele-tion*	*spec. coordi-nation*	*spec. co. + ellipsis*
no right-hand adjunct (Antisymmetry)	–	–	+	+	+	+	+
trigger for movement (Minimalism)	–	+	+	+	+	+	+
promotion theory of relative clauses	+/–	–	–	–	+	–	+
no interpretative licencing	+	–	+	–	+	–	+

[12] The particular theories by Culicover & Rochemont (1990) and Haider (1994, 1997) do have some licencing mechanisms, such as the *complement principle*. However, these are highly problematic. I quote Büring & Hartman (1995:199): *"It should have become clear […] that base-generating NP related clauses as 'discontinuous constituents' of the form NP_i … CP_i does not provide a satisfactory explanation of the relevant data. The required licencing mechanisms are stipulative and empirically inadequate."* Therefore I replace these mechanisms with the unspecified notion 'interpretative linking' which has at least some advantages, e.g. it makes extraposition from embedded positions possible.

Notice that a plus at *trigger for movement* does not imply that there is movement; the principle that movements must be triggered is automatically fulfilled if there is none.

Thus if there is some truth in these four theoretical claims, the leftward deletion and the specifying coordination plus ellipsis theory of extraposition are the most promising ones. The next section shows that the latter it is supported by empirical arguments.

5.2. Empirical evaluation

In separate subsections I will discuss thirteen properties related to extraposition, and indicate if and how the different analyses mentioned above are able to handle them. Apart from a more or less detailed explanation, all theories are evaluated in the following way. A minus means that the property cannot be derived or violates generally assumed principles; +/– that it could be derived if additional assumptions are made; + that it can be derived straightforwardly, or with reference to independent principles.

The examples used here show relative clauses only; however, the Appendix to this chapter contains additional examples with all other relevant constructions from section 3 above. Crucially, they show exactly the same behaviour in almost all cases.

5.2.1. Extraposition from any constituent

Extraposition may take place from any constituent. This is shown for relative clauses in (17).[13]

(17) a. Ik heb de man *een boek* gegeven *dat hij graag wilde hebben*. [DO]
I have the man a book given which he readily wanted to.have

b. Ik heb *iemand* de prijs gegeven *die het verdiende*. [IO]
I have someone the prize given who it deserved

c. *Iemand* heeft me een boek gegeven *die ik niet ken*. [S]
someone has me a book given who I not know

d. Ik heb *op een plek* gelopen *waar jij ook bent geweest*. [Adv]
I have on a spot walked where you also have been

e. *Dat boek* heb ik de man gegeven *dat hij graag wilde hebben*. [TOP]
that book have I the man given which he readily wanted to.have

Many theories are able to derive this property, although some additional assumptions may be necessary. However, the stranding analysis and the leftward deletion analysis fail completely.

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[13] See also Rijkhoek (1998), and Meinunger (2000:206) for some German examples.

Rightward movement: +
There are two possibilities. Either extraposition is movement to an arbitrary right-adjoined position (e.g. AdjIP for subjects, AdjCP for topics), or it is movement to AdjVP standardly, before leftward movement of the antecedent takes place – such as topicalization or subject raising to SpecIP (where it is presupposed that everything is generated within VP). In the latter case the licencing of the trace may be a problem.

Base-generated adjunct: +
In principle, the extraposed phrase can be generated wherever necessary.

Stranding: –
Extraposition from non-objects can only be explained if everything is generated within VP, and VP is always emptied. For example, extraposition from a subject leads to the structure in (18).

(18) *S* Aux … [$_{\text{AgrOP}}$ DO [V+AgrO] [$_{\text{VP}}$ [t_s *RC*] t_v t_{do}]]

If the verb were to be left in situ, the word order would be wrong, since in that case the verb would follow the extraposed relative, which is not what we want to derive. However, it is generally assumed that Dutch verbs are spelled out in V (apart from verb second of the finite verb in main clauses), see e.g. Den Besten (1989) and Zwart (1997). Apart from extraposed material, the verb is sentence-final. If there is an additional adverb like *snel* 'fast', it must precede the verb and it may precede the object. A reasonable assumption is therefore that adverbs can be generated directly above VP (e.g. in AdjVP). But this is problematic in (18), since V is spelled out above this position, which is an unacceptable word order. If, hypothetically, one assumes that adverbs are always above AgrOP, one must also assume that indefinite objects can scramble out of AgrOP – since an indefinite object may precede adverbs, e.g. *Ik heb gisteren iemand hard zien lopen* [I have yesterday someone fast seen walking] – which is at odds with general assumptions.

Things can get even worse than this. Suppose there is extraposition from a time-oriented adverbial phrase. Then all constituents from VP (including DO and V) must be raised to a position *above* the base-position of the adverbial phrase (say, AdjIP). After that, the adverbial phrase is moved to a position above the raised phrases, whilst the constituent to be extraposed is stranded in its base-position. Obviously, this scenario is implausible to the point of being ridiculous. I conclude that the stranding theory cannot handle extraposition from non-objects.

Base-generated complement: +
The extraposed constituent can be generated at its standard position deep down in VP, no matter what the status of the antecedent is.

Leftward deletion: –
This theory suffers from exactly the same problem as the stranding theory: the base-position of the antecedent is not right-peripheral in the case of extraposition from non-objects.

Specifying coordination: +
The specifying conjunct is simply added to the relevant level of the projection line; see the sketch in (19) for extraposition from a subject.

(19) $[_{\&:P}$ [*S* Aux DO V] &: [*RC*]]

One may ask why the relative is not simply conjoined with VP, after which the subject could raise to its high position, e.g. as in (20).

(20) *S* Aux DO $[_{\&:P}$ [t_s V t_{do}] &: [*RC*]]

However, (20) clearly violates the Coordinate Structure Constraint (CSC).[14]

Specifying coordination plus ellipsis: +
Similarly, the specifying conjunct is added to the relevant level of the projection line; see (21).

(21) $[_{\&:P}$ [*S* Aux DO V] &: [~~*S*~~ *RC* ~~Aux DO V~~]]

If there is extraposition from a subject, the deleted phrase is somewhat larger than in the case of extraposition from an object.

5.2.2. Extraposition from embedded positions

It is possible to extrapose from embedded positions. Example (22a) shows extraposition from within a PP. Even more spectacular, (22b) is extraposition from a PP within a DP.

(22) a. Ik heb [aan *de man*] gedacht *die een rode jas droeg*.
I have [of the man] thought who a red coat wore
b. Ik heb [de papieren van *de man*] gecontroleerd *die een rode jas droeg*.
I have [the papers of the man] checked who a red coat wore

These facts pose difficulties for the theories that rely on movement only, since movement is supposed to be limited by locality constraints (and a definite DP is certainly a barrier), and movement can only apply to constituents (but *de papieren van de man* without the relative is certainly not one). Hence the rightward movement and the stranding theory are problematic in this respect.

Rightward movement: –
The examples above cannot be derived. Rightward movement would cross several barriers here (or in whatever terms locality of movement is defined). This problem is one of the core problems for a movement analysis of extraposition: rightward

[14] Ross's (1967:98/99) definition of the CSC is the following: "In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct." A general exception to this rule is across-the-board (ATB) movement.

movement must be different from leftward movement, but why and how is unclear. Notice furthermore that the relative would be taken out of the scope of the antecedent; however, this problem might be undone by reconstruction.

Base-generated adjunct: +
Since there is no movement, there are no major problems here. However, the scope problem remains, but here there is no reconstruction possible; see also section 5.2.11.

Stranding: –
The stranding theory cannot derive (22), since a non-constituent must be moved leftwards. For instance, (23) shows the VP from which *de+papieren+van+de+man* should be raised to AgrOP, stranding the relative.

(23) [$_{VP}$ [V [$_{DP\text{-}obj}$ *de* [$_{NP}$ *papieren* [$_{PP}$ *van* [$_{DP}$ *de* [$_{CP}$ [$_{DP}$ *man* die] een rode jas droeg]]]]]]]

Obviously, this is impossible. Examples like these show in an enlarged form an essential flaw in the stranding theory. On closer inspection, extraposition from a definite phrase cannot be derived at all, cf. (24).

(24) [$_{VP}$ [V [$_{DP}$ *de* [$_{CP}$ [$_{DP}$ *man* die] een rode jas droeg]]]]

Even in this simple case, *de+man* is not a constituent that can be moved leftwards. See also De Vries (1996, 1997).

Base-generated complement: +
There are no problems since the relative clause is generated apart from the antecedent; see (25).

(25) [$_{VP}$ [[$_{DP}$ de papieren van *de man*] V [$_{CP}$ *die een rode jas droeg*]]]

However, as in the base-generated adjunct account, the relative is outside the scope of the antecedent.

Leftward deletion: +
The examples can be derived without problems:

(26) S Aux … [de papieren van *de man* ~~die een rode jas droeg~~]$_{do}$ … V [~~de papieren van de man~~ *die een rode jas droeg*]$_{do}$

The non-constituent deletion in the lowest copy is comparable to deletion in Right Node Raising constructions.

Specifying coordination: +
Specifying coordination is comparable to the base-generated adjunct theory in this respect. An example is (27).

(27) S Aux … [$_{\&:P}$ [[de papieren van *de man*] V] &: [*die een rode jas droeg*]]

Again, the scope problem remains.

Specifying coordination plus ellipsis: +
There are no problems; see e.g. (28):

(28) S Aux … [$_{\&:P}$ [[de papieren van *de man*] V] &: [[~~de papieren van de man~~ *die een rode jas droeg*] ~~V~~]]

The analysis combines elements of the leftward deletion theory and the specifying coordination theory.

5.2.3. Mirror effects

In principle, each DP can have a relative clause. What happens if two relative clauses are extraposed, e.g. from the subject and the direct object? In these cases a clear mirror effect emerges: the dependencies are nested, not intertwined.[15]

(29) a. *Een zekere misdadiger* heeft de kluis gekraakt die tweehonderd diamanten bevatte, *die ook meneer X heeft vermoord*.
a certain criminal has the safe cracked that two hundred diamonds contained, who also mister X has killed
b. * *Een zekere misdadiger* heeft de kluis gekraakt *die ook meneer X heeft vermoord*, die tweehonderd diamanten bevatte.

Examples with two relative clauses are extremely hard to comprehend. The effect is perhaps clearer if different construction types are used. See (30), where a comparative clause is extraposed from the subject, and a relative clause from the object.

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[15] The subject of multiple extraposition deserves a study of its own. Haider (1994) claims that there is a fixed serialization of extraposed phrases:
prep. phrase – relative clause – adverbial clause – argument clause – result/comparative clause.
This is in contradiction with the mirror effect, and I believe that Haider is mistaken. According to the mirror analysis the extraposed phrases/clauses cannot be ordered in an absolute sense with respect to the types of phrases. Rather, the ordering is relative to the position in the matrix to which they are related. Hence an extraposed subject argument clause follows an extraposed relative related to the object; cf. Haider (1994:3). However, reversely, an object argument clause must *precede* a relative related to the subject; see e.g. (i).
(i) (Alleen) die mensen hebben gezegd dat ze weg zouden blijven die echt niet wilden komen.
(only) those people have said that they away would stay who really not wanted to.come
Or, a subject argument clause may precede an object comparative:
(ii) Het viel minder grammatici op dan gewenst dat deze zin ook acceptabel is.
it struck less grammarians . than desired that this sentence also acceptable is
Along these lines it is not so difficult to break down Haider's complete serialization in favour of the mirror principle. Nevertheless, three potential difficulties remain: i) strong focus may sometimes override the normal grammatical order; ii) the phenomenon of object scrambling in the matrix may apparently blur the predicted order of object-related phrases in the extraposed domain; iii) the position of adverbial phrases/clauses remains somewhat unclear.

(30) a. *Meer jongens* hebben de man gezien die een hoed draagt, *dan meisjes*.
more boys have the man seen who a hat wears, than girls
b. * *Meer jongens* hebben de man gezien *dan meisjes*, die een hoed draagt.

More examples are in the Appendix.

The mirror effect is predicted by the specifying coordination theories. It is not derived in the rightward movement, the base-generated adjunct and the base-generated complement theory. Even worse, it cannot be derived (or, more precisely, the opposite is predicted) in the stranding and the leftward deletion theory.

Rightward movement: +/–
If extraposed phrases from subjects are adjoined to IP and those from objects to VP, then the mirror effect follows automatically. However, if both extraposed phrases can be adjoined to VP, it must be stipulated which one is attached first (even in a cyclic derivational grammar, since at the VP level both the subject and the object are there). If there is extraposition from two objects – IO and DO – this problem becomes more severe.

Base-generated adjunct: +/–
Culicover & Rochemont (1990) argue that extraposed constituents from subjects *may* be attached at the VP level. If so, the mirror symmetry must follow from an additional stipulations. The fact that there are different options here reveals an inherent weakness of the theory.

Stranding: –
If we grant for the moment that a relative extraposed from a subject can be stranded in SpecVP, the prediction would be as follows:

(31) S Aux DO V $[_{VP}\ [t_s\ RC_{ex\text{-}s}]\ t_v\ [t_{do}\ RC_{ex\text{-}do}\ ]]$

Clearly, if the structure in (31) is possible, it predicts the wrong order – i.e. the order in (29b/30b), which is unacceptable.

Base-generated complement: +/–
Multiple extraposition can be accounted for by adding another shell inside the VP (cf. Haider 1994/1997). However, the ordering of extraposed constituents remains to be explained.

Leftward deletion: –
Similar to the stranding analysis, the leftward deletion analysis predicts exactly the opposite of the mirror principle. This is because the base positions of the antecedents necessarily reflect the order of the extraposed phrases in these theories, which is wrong.

Specifying coordination: +
Since each specifying conjunct must be attached to the phrase whose specifier is the relevant antecedent, the mirror principle automatically follows; see (32).

(32) [$_{\&:P-1}$ *S* Aux [$_{\&:P-2}$ <u>DO</u> V [&:$_2$ <u>RC$_{do}$</u>]] [&:$_1$ *RC$_s$*]]

The same applies to:

Specifying coordination plus ellipsis: +
with the proviso, of course, that there is ellipsis; see (33).

(33) [$_{\&:P-1}$ *S* Aux [$_{\&:P-2}$ <u>DO</u> V [&:$_2$ ~~DO~~ <u>RC$_{do}$</u> ~~V~~]] [&:$_1$ ~~S~~ *RC$_s$* ~~Aux DO RC$_{do}$ V~~]]

5.2.4. No preposing

Contrary to (right-)extraposition, preposing (i.e. 'left-extraposition') is impossible:

(34) * *Die een rode jas draagt*, heb ik *de man* _ een boek gegeven.
who a red coat wears, have I the man _ a book given

This is a problem for the rightward movement and the base-generated adjunct theory.

Rightward movement: –
If a relative clause can move rightwards, why can't it move leftwards (to a topic or left adjunct position)? I do not see how to prevent it. The fact that the relative c-commands the antecedent in (34) cannot be the explanation, since it does that too in a right-extraposed (adjoined) position according to this theory.

Base-generated adjunct: –
Similarly, why can't the relative be in a high left-adjoined position?

All other theories are asymmetric, hence we get the following judgements:

Stranding: +
Base-generated complement: +
Leftward deletion: +
Specifying coordination: +
Specifying coordination plus ellipsis: +

5.2.5. No left position

The next logical question (although it may sound a bit silly) is why the relative cannot be left of the antecedent at all:

(35) * Ik heb *die een rode jas draagt*, *de man* _ een boek gegeven.
I have who a red coat wears, the man _ a book given

If extraposition is adjunction, this is problematic, since left-hand adjuncts in general are not excluded in principle; moreover, the hierarchical status of left-hand and right-hand adjuncts is equal. By contrast, complements can be forced to be on the right (e.g. by the Linear Correspondence Axiom, or some directional licencing mechanism). Furthermore, in the theories that use specifying coordination, a specification follows the phrase to be specified per definition. Hence none of the other theories suffer from this potential problem.

Rightward movement: –
Base-generated adjunct: –
Stranding: +
Base-generated complement: +
Leftward deletion: +
Specifying coordination: +
Specifying coordination plus ellipsis:+

5.2.6. The Right Roof Constraint

Extraposition does not cross clause boundaries. In other words, it obeys the Right Roof Constraint.[16] This is shown in (36).

(36) a. [Dat *het meisje dat op de hoek woont* die baan wil], is aangekondigd.
[that the girl that on the corner lives that job wants], has.been announced
b. [Dat *het meisje* die baan wil *dat op de hoek woont*], is aangekondigd.
c. * [Dat *het meisje* die baan wil], is aangekondigd *dat op de hoek woont.*

In general, (*wh*-)movement to the left across a clause boundary is degraded, but not strongly ungrammatical. This contrasts with extraposition, which is completely unacceptable.[17] All theories have difficulties with this property, except the stranding and the specifying coordination plus ellipsis theory.

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[16] The Right Roof Constraint is equivalent to the Upward Boundedness Constraint. Ross (1967:179) states: "Any rule whose structural index is of the form…A Y, and whose structural change specifies that A is to be adjoined to the right of Y, is upward bounded." This is paraphrased in Van Riemsdijk & Williams (1986:30) into: "No element that is moved rightward by a transformation may be moved out of the next higher node S."

[17] However, Meinunger (2000:Ch6.4.1) claims that the Right Roof Constraint can sometimes be violated in German. The first context is with verb clusters. If there are additional contradictory temporal adverbials, there must be two or more TPs – which is almost the same as a clause, according to Meinunger. The example is (i):

(i) weil er damals [das Buch t_i [heute in einer Woche] abliefern] wollte], [auf das alle gewartet haben.]$_i$ 'since at that time he wanted to hand in the book a week from now, on which everybody has waited.'

The second context is with a factive clause in the middlefield:

(ii) Peter hat, [daß er uns denjenigen Computer t_i schenkt,] fest versprochen, [den er nicht mehr braucht.]$_i$ 'Peter can't go back on his promise that he will give us that computer as a present, that he doesn't need anymore'

I cannot reproduce these examples in Dutch. Furthermore I think TP is equivalent to IP, not CP, for what it's worth. However, if sentences like these can be confirmed, further inquiry is necessary to

to be continued...

Rightward movement: +/–
The difference between movement to the left and movement to the right (extraposition) is not explained, hence additional assumptions are necessary.

Base-generated adjunct: +/–
Here too, additional assumptions to limit the number of potential attachment sites are necessary to prevent Right Roof violations. Notice that (36c) is an extreme case of extraposition from an embedded position (cf. section 5.2.2), which has been claimed to be derivable above.

Stranding: +
Since extraposition from embedded positions cannot be derived in general (cf. section 5.2.2), the Right Roof Constraint is obeyed automatically; see (37).

(37) a. V_{matrix} [$_{CP\text{-}2}$ X [NP_{ant} *RC* Y]] →*
b. [$_{CP\text{-}1}$ [$_{CP\text{-}2}$ X [NP_{ant} _ Y]] … V_{matrix} [t_x [t_{np} *RC* t_y]]]

Schematically, (37a) shows the base position of the embedded clause, and (37b) the matrix clause after the necessary movements to derive the ungrammatical (36c). Obviously, these would concern non-constituent movement, which is impossible, as required.

Base-generated complement: +/–
Here, too, a Right Roof violation such as (36c) would involve non-constituent movement:

(38) V_{matrix} [$_{CP\text{-}2}$ X [$_{VP}$ …[NP_{ant} …[*RC*]…]]]

In (38), which corresponds to (37a), X+…+NP would have to be moved, whilst RC is stranded. This is not possible. However, a Right Roof violation could be created by generating the relative in the lowest shell of the matrix VP, as in (39):

(39) [$_{CP\text{-}2}$ X …NP_{ant} …] … [$_{VP}$ … V_{matrix} [$_{VP}$ … *RC*]]

The configuration [… *NP* …]… [*RC*] is similar to the one for extraposition from an embedded position, which has been argued to be derivable above. So additional assumptions are necessary to exclude (39) but include (25).

Leftward deletion: +/–
One major condition on leftward deletion is that the relevant phrase is right-peripheral within the copy of the larger constituent that has been moved leftwards,

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... continued
find out why the Right Roof Constraint (or, preferably, its deeper cause) can be overridden in the contexts mentioned.

cf. Wilder (1995). In (36a/c) this condition is not fulfilled, hence a Right Roof violation cannot be derived. However, in an English example like (40) the antecedent *is* right-peripheral within the embedded clause.

(40) * [That we rescued *someone*] was praised *who was in trouble*.

Thus a derivation like (41) cannot be excluded without further assumptions.

(41) [That we rescued someone ~~who was in trouble~~] was praised [~~that we rescued someone~~ *who was in trouble*].

Moreover, if – in a successive cyclic grammar – (36b) is taken as the input to derive (36c), the relevant phrase to be deleted is right-peripheral in its copy.

Specifying coordination: +/–
Suppose the basis of (36b/c) is, schematically, (42):

(42) V_{matrix} [$_{CP\text{-}2}$ X [$_{\&:P}$ [… NP_{ant} …] &: [*RC*]]]

Then topicalization of the whole CP_2 gives (36b): clause-bound extraposition. A Right Roof violation (36c) cannot be derived, since movement of X+NP would be non-constituent movement (and a violation of the Coordinate Structure Constraint, too). However, Koster and Rijkhoek seem to overlook that (36c) could also be analysed as in (43), where the relative is a specifying conjunct attached at the matrix level:

(43) [$_{\&:P}$ [$_{CP\text{-}1}$ [$_{CP\text{-}2}$ X …NP_{ant} …] V_{matrix} $t_{cp\text{-}2}$] &: [*RC*]]

Again, this is just a special case of a configuration in which the antecedent is embedded (cf. section 5.2.2 above). It does not take scope over the relative. Since the relative is only interpretatively linked to the antecedent this should not be a problem, unless further assumptions are made.

Specifying coordination plus ellipsis: +
The only possible representation of the crucial case, (36c), is (44), where I abstract away from internal movements:

(44) [$_{\&:P}$ [$_{CP\text{-}1}$ [$_{CP\text{-}2}$ X …NP_{ant}…] V_{matrix}] &: [$_{CP\text{-}1}$ [~~$_{CP\text{-}2}$ X …[NP~~ *RC*] ~~…] V~~]]

As required, however, this is *not* a legitimate representation, since the deletion involved violates a general constraint on deletion. G. de Vries (1992) argues the following: *a CP smaller than a conjunct has to contain a left-hand clue to be recoverable*; see section 6.3. This constraint prevents sentences like * *He says that Peter went to the movies and she ~~says that~~ John ~~went~~ to school*. It also excludes (44), where X constitutes the necessary left-hand clue to recover the CP_2 embedded

within the second conjunct. Thus, within this theory, the Right Roof Constraint on extraposition follows from an independent principle on deletion.

5.2.7. No stranding in the middlefield

Stranding in the middlefield is not allowed. That is, if the antecedent is topicalized, the relative clause cannot be left behind at the normal object position; see (45).

(45) * *De man* heb ik *die een rode koffer draagt* gesignaleerd.
the man have I who a red suitcase carries noticed

Especially for the stranding theory this is problematic.

Rightward movement: +/–
In general, the first part of a duplex construction is not a constituent. Hence stranding in the middlefield is prohibited because it would involve non-constituent movement. For example, the derivation of (45) from (46) would imply raising of *de+man*, which is impossible. (Even if the relative is assumed to be an adjunct to DP, *de man* is not the maximal projection.)

(46) Ik heb [$_{DP}$ *de* [*man* [*die* ...]]] gesignaleerd.

However, if there is no article, it is less clear how topicalization of the first part is to be excluded, though it may still be feasible. A serious problem might be (47) or (48): similar constructions with a normal conjunct and an apposition, respectively.

(47) a. Ik heb [[*Jaap*] en [*Joop*]] gezien.
I have Jaap and Joop seen
b. * [*Jaap*]$_i$ heb ik [t$_i$ en [*Joop*]] gezien

(48) a. Ik heb [[*Joop*], [*onze baas*]], gezien.
I have Joop, our boss, seen
b. * *Joop* heb ik [t$_i$ [*onze baas*]], gezien.

Since extraposition of the second DP is possible, movement of an entire conjunct does not appear to be a violation of the Coordinate Structure Constraint. Therefore movement to the left of the first one should also be possible, but it is not. A way out could be that i) moving one entire conjunct *is* a violation of the CSC, and ii) extraposition of conjuncts and appositions is *not* rightward movement, but ellipsis within a second conjunct, as in (49).

(49) Ik heb [[*Jaap* gezien] en [*Joop* ~~gezien~~]].

In fact, I agree with this analysis. Anyway, the rightward movement account of extraposition seems to miss the generalization, here.

Base-generated adjunct: +
Leftward movement of the first part of a duplex construction is either non-constituent movement or a violation of the CSC. Since extraposition does not involve movement in this theory, there is no potential inconsistency between rightward and leftward movement.

Stranding: –
If extraposition is stranding, it is not clear why the relative cannot be stranded in the middlefield. A schematic derivation of (45) would be (50).

(50) a. V [*NP RC*] →
b. [*NP RC*]$_i$ V t$_i$ →
c. *NP* Aux S [t$_{np}$ *RC*]$_i$ V t$_i$

Here it is to be noticed that the structure in (50b) represents a grammatical order (viz. the non-extraposed order), and that the raising of NP from [NP RC] as in (50c) is the way to derive grammatical extraposition (but then with (50a) as the input). Therefore it is not clear to me how to exclude (50) without simply stipulating it.

Base-generated complement: +
The explanation is similar to the one in the base-generated adjunct theory.

Leftward deletion: +
In the relevant example, there are three members of a movement chain. The structure is sketched in (51):

(51) * [NP ~~CP~~]$_i$ Aux S [~~NP~~ CP]$_i$ V [~~NP CP~~]$_i$

As explained, there are two deletion processes: forward deletion of the antecedent and backward deletion of the relative clause. In general, there is an across-the-board requirement on this process: forward/backward deletion must be maximal in the domain of deletion, i.e. the copies of the chain, ordered by c-command. This ATB principle is violated in (51) because the postcedent of backward deletion is not final in the chain. See further Wilder (1995).

Specifying coordination: +
Koster and Rijkhoek assume that a relative is always a specifying conjunct. It specifies the antecedent directly, or it is attached to a larger phrase. (The latter case is extraposition.) Therefore stranding in the middlefield is excluded by the Coordinate Structure Constraint. The source of (52b) would be (52a), from which NP is to be raised.

(52) a. [$_{\&:P}$ *NP* [&: *RC*]] V →
b. *NP* Aux S [$_{\&:P}$ t$_{np}$ [&: *RC*]] V

This is impossible, since NP is the first conjunct of a coordination structure.

It is not necessary to follow Koster and Rijkhoek's radical approach in that a relative (or a result clause, or a degree phrase, etc.) is always a specifying conjunct. It may be the case that only extraposition is accounted for in that way. If so, the argumentation for base-generated adjuncts carries over to this theory, at least with respect to the ban on stranding in the middlefield.

Specifying coordination plus ellipsis: +
Similarly, leftward movement of the antecedent (or the first part of a duplex construction) from the middlefield involves either non-constituent movement or a CSC violation.

5.2.8. Kaan's generalization

Virtually every constituent can be topicalized. See (53) for example. As for (53b), we must assume that the object has been scrambled out of the VP before topicalization takes place.

(53) a. Ik heb *de man die een rode jas draagt* gezien. [normal order]
I have the man who a red coat wears seen
b. [gezien] heb ik *de man die een rode jas draagt*. [VP topicalization]
c. [*de man die een rode jas draagt* gezien] heb ik. [large topicalization]

As shown before, extraposition can take place from DO and from the topic position:

(54) a. Ik heb *de man* gezien *die een rode jas draagt*. [extraposition from DO]
b. [*de man* gezien] heb ik *die een rode jas draagt.* [extraposition from TOP]

Interestingly, VPs with (optionally) extraposed material are inert, i.e. V+EX cannot be topicalized together. This is Kaan's generalization (cf. Kaan 1992a/b); see (55a). However, topicalization of a larger constituent including the first part of a split duplex construction *is* possible (55b).

(55) a. * [gezien *die een rode jas draagt*] heb ik *de man*. [extr. + topicalization]
b. [*de man* gezien *die een rode jas draagt*] heb ik. [extr. + large topical.]

This contrast begs for an explanation. It turns out that only the specifying coordination theories have one.

Rightward movement: –
An extraposed constituent is right-adjoined to the VP (or at least VP is one of the possible adjunction sites). Hence this phrase is (or may be) part of the maximal projection of V. Therefore I see no way to prevent the derivation of (55a), which is simply VP topicalization.[18] (Again, after object scrambling, which is also necessary to derive (53b) and facts with intervening adverbs.) The possible objection that in

[18] Büring & Hartmann (1995:197) claim to have a solution, but it is countered in Wilder (1995:283/4).

(55a) the antecedent does not precede the relative clause is irrelevant for several reasons. First, syntax is first and foremost about hierarchy, not about precedence. The relative is embedded; it depends on the definition of c-command whether it would take scope over the antecedent. It probably also c-commands (a trace of) the antecedent in the adjoined extraposition site if there is no topicalization. Second, topicalization is A'-movement, which is to be reconstructed in some way. It is well-known that an anaphor can precede (and c-command) its antecedent if it is topicalized, e.g. *Zichzelf$_i$ bewonderde hij$_i$ niet t$_{zz}$* 'Himself he didn't admire.'

Base-generated adjunct: –
Similarly, (55a) would be topicalization of the maximal VP, which includes the extraposed right-adjunct.

Stranding: –
Since an extraposed constituent is stranded within VP, (55a) would simply be VP topicalization.

Base-generated complement: –
Again the same problem.

Leftward deletion: –
The derivation of (55b) is unproblematic. The relative is embedded in the VP. The whole AgrOP (including the relative) is topicalized; this gives a lower and a higher copy according to the copy theory of movement. As usual, the lower one is phonetically deleted (by forward deletion), hence it may be viewed as a trace.

A potential derivation of (55a) – which is to be excluded – is sketched in (56). (56a) is more or less the selection structure. The complex direct object moves to the middlefield in (56b); then the remnant VP is topicalized (56c).

(56) a. (Ik heb) gezien [de man die een rode jas draagt] →
b. Ik heb [de man die een rode jas draagt]$_i$ gezien [de man die een rode jas draagt]$_i$ →
c. [gezien [de man die een rode jas draagt]]$_k$ heb ik [de man die een rode jas draagt]$_i$ [gezien [de man die een rode jas draagt]$_i$]$_k$ →

This is the structure from which to spell out, that is, after the necessary deletions. First, there is deletion concerning the copy with subscript *i* in (56d). There is forward deletion of *de man* and backward deletion of the relative clause, which gives extraposition. Notice that the sequence *de man die…* in the topic position is not a member of the relevant *i*-chain, since it is only a part of a member of another chain with subscript *k*.

d. [gezien [de man die een rode jas draagt]]$_k$ heb ik [de man ~~die een rode jas draagt~~]$_i$ [gezien [~~de man~~ die een rode jas draagt]$_i$]$_k$ →

If nothing more happens, *de man* survives twice – which is impossible. It seems to me that in order to prevent remnant movement to cause double surfacing in general, one must assume that the higher copy (here: of *k*) includes information about subdeletion in the lower copy. Hence (56d) becomes (56e).

e. [gezien [~~de man~~ die een rode jas draagt]]$_k$ heb ik [de man ~~die een rode jas draagt~~]$_i$ [gezien [~~de man~~ die een rode jas draagt]$_i$]$_k$ →

Finally, (56f) shows forward deletion of the entire copy of *k*.

f. [gezien [~~de man~~ die een rode jas draagt]]$_k$ heb ik [de man ~~die een rode jas draagt~~]$_i$ [~~gezien~~ [~~de man die een rode jas draagt~~]$_i$]$_k$

If I am not mistaken, this leads to a violation of Kaan's generalization. Hence the contrast in (55) is not predicted: both sentences can be derived.

Specifying coordination: +
Example (55b) is derived by topicalizing a large constituent within which extraposition has taken place. This is shown in (57).

(57) a. (Ik heb) [$_{\&:P}$ [*de man* gezien] &: [*die een rode jas draagt*]]. →
b. [$_{\&:P}$ [*de man* gezien] &: [*die een rode jas draagt*]]$_i$ heb ik t$_i$

Clearly, *gezien* and the relative clause *die een rode jas draagt* do not form a constituent in (57), the specifying coordination approach to extraposition. Hence they cannot be topicalized together without the antecedent *de man*. So (55a) cannot be derived. Kaan's generalization follows from the structure.[19]

Specifying coordination plus ellipsis: +
Similarly, V+EX is not a constituent, hence cannot be topicalized.

5.2.9. Islandhood of extraposed material

A relative clause is an island for extraction, whether it is extraposed or not; see (58) and (59).[20] Example (58) can be recognized as a violation of the Complex Noun Phrase Constraint.

(58) * *Wat* heb je *de man die _ draagt* gezien?
what have you the man who _ wears seen

---

19 Movement of the whole &:P after scrambling out *de man* is not an option either, since the latter would violate the Coordinate Structure Constraint.

20 However, some speakers of Norwegian, Swedish and Danish accept extraction from a relative clause. This phenomenon is known as *satsflätor*. It is subject to severe syntactic and semantic restrictions; see the description in Taraldsen (1981) and Smits (1988:198-203). I will not discuss it here.

(59) * *Wat* heb je *de man* gezien *die _ draagt*?

After extraposition, as in (59), this is less obvious, but still there are possible explanations independent from extraposition. For instance, it can be assumed that CP is a barrier for movement since SpecCP of a relative clause is always filled with a relative pronoun or operator.

Note that other constructions show that extraposition does play a role with respect to islandhood. See e.g. the examples with a PP complement of A in (60), and a PP object of V in (61). In these cases extraction from the relevant phrase is possible, but not if it is extraposed. This is the so-called *freezing* effect. More examples are in the Appendix.

(60) a. *Waar* is hij altijd *afhankelijk van* _ geweest?
where has he always dependent of _ been
b. * *Waar* is hij altijd *afhankelijk* geweest *van* _?

(61) a. *Waar* heb je *aan* _ gedacht?
where have you of _ thought
b. * *Waar* heb je gedacht *aan* _?

These facts are a problem for the stranding theory, the base-generated complement theory, and the leftward deletion theory.

Rightward movement: +
If extraposed phrases are in an adjoined position, then the relevant facts are predicted since adjuncts are claimed to be islands for extraction on independent grounds (whatever the exact cause is).

Base-generated adjunct: +
Similarly.

Stranding: –
In this theory extraposed phrases are simply stranded. Therefore it is predicted that there is no difference in extraction possibilities between phrases in the normal and in the extraposed position. For relative clauses this happens to be correct, but other constructions such as (60)-(61) show that this prediction is wrong.

Base-generated complement –
Leftward deletion: –
As in the stranding theory, the freezing effects remain unexplained.

Specifying coordination: +
Extraposition is analysed as coordination. Extraction as in (59), (60b) or (61b) would involve extraction from the second conjunct only. This is a clear violation of the Coordinate Structure Constraint.

Specifying coordination plus ellipsis: +
Similarly. See the representation in (62).

(62) * **Wat** heb je [$_{\&:P}$ [*de man* gezien] &: [~~*de man*~~ *die _ draagt* ~~*gezien*~~]]?

Here the movement of *wat* out of the second conjunct violates the CSC. Hence extraction from an extraposed phrase is never possible. Extraction from non-extraposed phrases depends on the internal structure of the pertinent phrase.

5.2.10. Optionality

Extraposition of relative clauses is optional:

(63) a. Ik heb *de man die een rode hoed op had* gezien.
I have the man who a red hat on had seen
b. Ik heb *de man* gezien *die een rode hoed op had*.

The Appendix shows that extraposition of *all* constructions mentioned in section 3 is optional, although there is a preference to extrapose clauses and other large phrases. This preference can be explained phonologically. Truckenbrodt (1995) shows that clauses in the middlefield lead to an awkward intonation contour.

There seems to be one exception to the generalization that all extraposition is optional. Namely, 'extraposition' of complement clauses of V is obligatory. In other words, the regular position is postverbal, which contrasts with DP objects of V. So there seems to be obligatory extraposition. However, it can be shown that complement clauses can be optionally extraposed from this obligatory position; see (64).[21]

(64) a. * Ze heeft *dat ze een nieuwe baan krijgt* gewenst, gisteren. *[preverbal]*
she has that she a new job gets wished, yesterday
b. Ze heeft gewenst *dat ze een nieuwe baan krijgt*, gisteren. *[oblig. extr.]*
c. Ze heeft gewenst, gisteren, *dat ze een nieuwe baan krijgt.* *[optional extr.]*

Zwart (1997), Koster (1999a) and others claim that the position of the complement clause in (64b) is actually the base position, not an extraposed one. Leftward movement for Case reasons is excluded, contrary to the situation with DPs. If so, we can maintain the generalization that all extraposition is optional.

All theories seem to account for the optionality of extraposition automatically, since they are designed to explain the right-peripheral position in contrast to the normal position of the constructions discussed.[22] However, the position of optionally extraposed complement clauses is problematic for the VP-internal stranding theories, since the 'intermediate' position in (64b) is the position obtained by

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[21] Barbiers (1998) shows that a preverbal position as in (64a) *is* possible for some quotative and factive sentences. This involves leftward movement, and it is not relevant for the discussion here.

[22] The trigger problem for the rightward movement theory has been discussed in section 5.1 above; I will not count it again here.

stranding. This means that optional extraposition to a more peripheral position as in (64c) is underivable. The other theories do not have this problem. For instance, in the rightward movement theory the complement clause is moved to a right-adjoined position *after* right-adjoining the adverb. In short, we have the following judgements:

Rightward movement: +
Base-generated adjunct: +
Stranding: –
Base-generated complement: –
Leftward deletion: –
Specifying coordination: +
Specifying coordination plus ellipsis: +

5.2.11. Binding at the base

In general, a subject takes scope over an object, and an indirect object takes scope over a direct object (S > IO > DO). If a phrase – say, a relative clause – is extraposed, it turns out to behave as if it is still at the original position near the antecedent with respect to scope properties. This is stressed by Büring & Hartmann (1995, 1997). Haider (1994, 1997) also shows that phrases extraposed from objects have VP-internal scope. This phenomenon may be called 'binding at the base'. It can be shown in many ways.

First consider variable binding by quantifiers; see (65), where there must be binding from IO into DO, from DO into IO, from S into DO, and from DO into S in (a) through (d), respectively. In (65b/d) this is not possible because of the scope relations S>IO>DO. Each pair in (65a/b/c/d) shows that the judgements are equal for the extraposed and the non-extraposed order.

(65) a. Ik heb iedereen$_i$ *het verhaal dat hij$_i$ wilde horen* verteld. [io > do]
I have everybody the story that he wanted to.hear told
a.' Ik heb iedereen$_i$ *het verhaal* verteld *dat hij$_i$ wilde horen*.
b. * Ik heb *de persoon die het$_i$ wilde horen* [elk verhaal]$_i$ verteld. [do < io !]
I have the person who it wanted to.hear every story told
b.' * Ik heb *de persoon* [elk verhaal]$_i$ verteld *die het$_i$ wilde horen*.
c. [Elke man]$_i$ is *het huis waar hij$_i$ woonde* binnengegaan. [s > do]
every man has the house where he lived entered
c.' [Elke man]$_i$ is *het huis* binnengegaan *waar hij$_i$ woonde*.
d. * *De man die er$_i$ woonde* is [elk huis]$_i$ binnengegaan. [do < s !]
the man who there lived has every house entered
d.' * *De man* is [elk huis]$_i$ binnengegaan *die er$_i$ woonde*.

The examples in (66) show similar effects using binding Principle C. In each case, *Joop* may not be c-commanded by the pronoun.

(66) a. Ik heb *de vrouw die Joops$_i$ zus natrok* hemzelf$_i$ aanbevolen.[23] [io > do]
I have the woman who Joop's sister investigated himself recommended
a.' Ik heb *de vrouw* hemzelf$_i$ aanbevolen *die Joops$_i$ zus natrok*.
b. * Ik heb hem$_i$ *een vrouw die Joop$_i$ niet kende* aanbevolen. [do < io !]
I have him a woman who Joop not knew recommended
b.' * Ik heb hem$_i$ *een vrouw* aanbevolen *die Joop$_i$ niet kende*.
c. *Iemand die Joop$_i$ vertrouwde* heeft hem$_i$ hulp geboden. [s > io]
someone who Joop trusted has him help offered
c.' *Iemand* heeft hem$_i$ hulp geboden *die Joop$_i$ vertrouwde*.
d. * Hij$_i$ heeft *de vrouw die Joop$_i$ vertrouwde* hulp geboden. [io < s !]
he has the woman who Joop trusted help offered
d.' * Hij$_i$ heeft *de vrouw* geholpen *die Joop$_i$ vertrouwde*.

See the Appendix for examples with other constructions. Clearly, these facts are problematic for those theories that do not have a 'base position' next to the antecedent, i.e. the base-generated adjunct theory, the base-generated complement theory and the specifying coordination theory. Moreover, the theories that cannot represent extraposition from subjects properly, have a problem with the scope of phrases extraposed from subjects. These are the stranding and the leftward deletion theory. Since this is not an entirely independent problem, I will score it as +/–.

Rightward movement: +
It must be assumed that extraposed phrases are reconstructed to their original positions. According to Haider (1994, 1997) this is not entirely without problems, but I will grant it the benefit of the doubt.

Base-generated adjunct: –
There is no base position, hence there cannot be reconstruction. This is problematic because a phrase extraposed from a direct object c-commands VP-internal material such as the indirect object. By contrast, if one assumes that all elements from VP are raised to a higher position, then every argument c-commands an extraposed phrase attached to VP, e.g. DO would take scope over EX_{IO}, which is wrong.

Stranding: +/–
See the text directly below (66) above.

Base-generated complement: –
In this theory an extraposed phrase is in the lowest position in the VP. Hence a relative belonging to e.g. the subject is c-commanded by IO and DO, which is contradicted by the facts; etc.

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[23] This example shows that *Joop*, which is embedded in the indirect object, is not c-commanded by *hemzelf*, the direct object; so Principle C is not violated. Notice that *hemzelf* is not an anaphor but an *identifying emphatic expression* (see De Vries 1999b); therefore it may not be c-commanded by a nearby antecedent (like a pronoun). This is not a problem, because *Joop* is embedded.

Leftward deletion: +/–
See the text directly below (66) above.

Specifying coordination: –
As in the base-generated adjunct theory, the problem is that there is no base position. However, if a phrase extraposed from a direct object is attached lower than the direct object (e.g. if there is a strong AgrIOP, or if &:P can split a VP-shell), and an extraposed phrase from an (indirect) object lower than the subject, the scope problem may be partially resolved. If so, there is still a remaining problem. A phrase extraposed from an object topic must be attached at the highest sentence level; see (67). Therefore it should be out of the scope of the subject, which is at odds with the facts; see e.g. (68).

(67) $[_{\&:P}\ [TOP_{do}$ Aux S V] &: [*RC*]]

(68) a. *Dat ene boek waarin hij$_i$ de hemel in geprezen wordt*, zal [elke geleerde]$_i$ begeren.
that one book which-in he the heaven in praised is, will every scholar desire
b. *Dat ene boek* zal [elke geleerde]$_i$ begeren *waarin hij$_i$ de hemel in geprezen wordt*.

Hence an object topic can be interpreted within the scope of the subject, but in the analysis of (67) there is no way to get the relative structurally lower.

Specifying coordination plus ellipsis: +
The specifying coordination plus ellipsis theory does not have these problems, since the relative is always structurally associated with the antecedent. For instance, (69) shows why a relative with a direct object antecedent is within the scope of the indirect object, even if the &: phrase is attached at the VP level.

(69) S Aux $[_{\&:P}\ [_{VP}$ IO *DO* V] &: $[_{VP}$ ~~IO [DO~~ *RC*] ~~V~~]]

Within the second conjunct, IO c-commands DO and the relative associated with it. In an analysis with AgrOPs, the indirect object c-commands the whole &:P; see (70).

(70) S Aux $[_{AgrIOP}$ IO $[_{\&:P}\ [_{AgrDOP}$ *DO* V] &: $[_{AgrDOP}$ [~~DO~~ *RC*] ~~V~~]]]

Hence the scope predictions are still the same.

5.2.12. Split antecedent

It has been reported in Ch2§7.6 above that English and Dutch allow for a split antecedent – or, more precisely: type A multiple relativization – in rare occasions. An example is in (71). The Appendix shows that this is possible with most duplex constructions.

(71) [Ik heb *een vrouw*$_i$ gezien] en [jij hebt *een man*$_j$ bespied] *die*$_{i+j}$ *beide een rode jas droegen*.
[I have a woman seen] and [you have a man spied.on] who both a red coat wore$_{PL}$

Notice that the relative pronoun, which is the subject, triggers plural agreement on the verb in the relative. This means that (71) is not simply a Right Node Raising construction such as (72).

(72) a. Ik heb *een vrouw* gezien en jij hebt *een man* bespied *die een rode jas droeg*.
I have a woman seen and you have a man spied.on who a red coat wore$_{SG}$
b. [Ik heb *een vrouw* gezien ~~*die een rode jas droeg*~~] en [jij hebt *een man* bespied *die een rode jas droeg*].

The relative pronoun *die* can refer to male and female nouns, but not to neuter ones. The analysis in (72) is confirmed by the use of the neuter relative *dat* in (73).

(73) [Ik heb *een kind* gezien ***dat*** ~~*een rode jas droeg*~~] en [jij hebt *een vrouw* gezien ***die*** *een rode jas droeg*].
I have a child seen that a red coat wore and you have a woman seen who a red c. wore

Here *dat* cannot be deleted backwards because it differs phonologically from *die*.

In short, (72) and (73) are *not* examples of a split antecedent, but Right Node Raising constructions. The true case to consider is (71). Now, let us turn to the theories.

Rightward movement: –
The relative clause in (71) cannot have its origin next to one or both split part(s) of the antecedent, because the relative pronoun and the verb are plural, but *de man* or *de vrouw* is singular.

Base-generated adjunct: + (but see below)
The relative is generated apart from the antecedent, hence (71) can be treated as a relative with an embedded antecedent, which, moreover, is split. This is not a problem, because the relative pronoun is only interpretatively linked to the antecedent. Like a personal pronoun it can combine two referents into a plural. So the structure could be like (74), where the relative is right-adjoined to the conjunction phrase that combines the two matrix clauses:

(74) $[_{\&P}\ [_{\&P}\ [_{CP}\ \ldots\ i\ \ldots]\ \&\ [_{CP}\ \ldots\ j\ \ldots]]\ [_{RC}\ die_{i+j}\ \ldots]]$

Notice, however, that if (74) is possible, it makes an explanation for the Right Roof Constraint difficult.

Stranding: –
In the stranding theory a relative is always generated in combination with the antecedent. This is impossible here because of the plural relative pronoun and verb.

Base-generated complement: +/–
The only way to generate (71) is to embed the relative deep down within the second conjunct:

(75) $[_{\&P}\ [_{CP}\ \ldots\ i\ \ldots]\ \&\ [_{CP}\ \ldots\ j\ \ldots[_{RC}\ die_{i+j}\ \ldots]]\ ]$

The relative pronoun must be interpretatively linked to *i* and *j*. If this is allowed, an explanation of the Right Roof Constraint becomes difficult, since in (75) clause boundaries are crossed (although here they are coordinated, not subordinated).

Leftward deletion: –
As in the stranding theory, the relative is always generated in combination with the antecedent, which is impossible here because of the plural pronoun and verb.

Specifying coordination: + (but see below)
As in the base-generated adjunct theory, the relative can be attached at the highest level. The conjoined matrix clauses are the first conjunct of the specifying coordination phrase. The relative is the second conjunct.

(76) $[_{\&:P}\ [_{\&P}\ [_{CP}\ \ldots\ i\ \ldots]\ \&\ [_{CP}\ \ldots\ j\ \ldots]]\ \&:\ [_{RC}\ die_{i+j}\ \ldots]]$

The relative pronoun is interpretatively linked to the two parts of the antecedent. Again, the Right Roof Constraint may become problematic.

Specifying coordination plus ellipsis: +/–
Speculatively, one may argue for an entirely different approach; see (77).

(77) [&:P [[Ik heb een vrouw gezien] en [jij hebt een man bespied]] &:
[~~[ik en jij] hebben [[een vrouw en een man]~~ die beide een rode jas droegen] ~~gezien/bespied~~].

The conjoined matrix clauses are specified. However, they are not literally repeated in the specifying conjunct, but conflated. A paraphrase of (77) is the following: 'I have seen a woman, and you have spied on a man, that is to say, we (you and I) have seen (or spied on) them (i.e. woman and a man) who both wore a red coat.' This kind of conflation is only possible if the structure of the conjoined sentences is entirely parallel, both syntactically and semantically.

The predicted parallelism may be correct, since sentences like (78), which cannot be derived in this approach, are unacceptable.

(78) * Ik heb een vrouw gezien en een postbode heeft de brief bezorgd
I have a woman seen and a postman has the letter delivered
die beide een rode jas droegen.
who both a red coat wore

The contrast between (71) and (78) may justify the unconventional approach in (77). Notice that the analyses that use interpretative linking (the base-generated adjunct,

the base-generated complement and the specifying coordination theory) cannot distinguish the two cases: both can be derived in the same way. Therefore the judgements given before must be reconsidered. In short, we have:

Rightward movement: –
Base-generated adjunct: +/–
Stranding: –
Base-generated complement: +/–
Leftward deletion: –
Specifying coordination: +/–
Specifying coordination plus ellipsis: +/–

5.2.13. Question formation

Question formation can be divided into three kinds: i) topicalization of the whole construction, ii) topicalization of the first part only and stranding the second in the middlefield (which is unacceptable), and iii) extraposition from a topic. This is shown in (79).

(79) a. *Hoeveel mensen die weggingen* heb je gezien?
how.many people who left have you seen
b. * *Hoeveel mensen* heb je *die weggingen* gezien?
c. *Hoeveel mensen* heb je gezien *die weggingen*?

The constructions in (79b) and (79c) are special cases of stranding in the middlefield and extraposition from a topic that have been treated in sections 5.2.7 and 5.2.1 above, respectively. (79a) is simply pied piping of a large *wh*-constituent; which can be derived in any theory, provided that a duplex construction is a constituent (in the non-extraposed order). This seems to be generally assumed, hence question formation of type (i) is unproblematic.

Rightward movement: +
Base-generated adjunct: +
Stranding: +
Base-generated complement: +
Leftward deletion: +
Specifying coordination: +
Specifying coordination plus ellipsis: +

5.3. Summary and conclusion

It must be stressed that all extraposable constructions behave similarly in many ways. This is shown in the Appendix. It suggests that the relevant properties must follow from the extraposition system itself, rather than from the structures of the particular constructions. This does not mean, however, that the behaviour needs to be equal in *all* respects, since there may be construction-specific (and language-specific) additional constraints.

A final demand on extraposition theories is therefore their general applicability. Clearly, the adjunction theories and the specifying coordination theories are capable of extraposing any kind of phrase. On the other hand, the stranding theories (including the leftward deletion theory) can only extrapose argument-related phrases. Stranding of e.g. a sentence adverb within VP is impossible, since it cannot be generated there. Therefore these theories miss a large generalization. The base-generated complement theory does have an additional VP-internal position for extraposed phrases, but it seems strange to generate adverbial material as the complement of V.

All results are summarized in table 3. They are scored simplistically as follows: + is one point, +/– is zero points, – is minus one point. I am aware that not every problem is equally important, but the results are clear enough to avoid a difficult discussion.

Table 3. *An empirical and theoretical evaluation of extraposition theories.*

empirical or theoretical issue	*rightw. move-ment*	*base-gen. adj.*	*strand-ing*	*base-gen. compl.*	*leftw. dele-tion*	*spec. coordi-nation*	*spec. co. + ellipsis*
extraposition from any constituent	+	+	–	+	–	+	+
extraposition from embedded positions	–	+	–	+	+	+	+
mirror effects	+/–	+/–	–	+/–	–	+	+
no preposing	–	–	+	+	+	+	+
no left position	–	–	+	+	+	+	+
Right Roof Constraint	+/–	+/–	+	+/–	+/–	+/–	+
no stranding in the middlefield	+/–	+	–	+	+	+	+
Kaan's generalization	–	–	–	–	–	+	+
islandhood of extraposed material	+	+	–	–	–	+	+
optionality	+	+	–	–	–	+	+
binding at the base	+	–	+/–	–	+/–	–	+
split antecedent	–	+/–	–	+/–	–	+/–	+/–
question formation	+	+	+	+	+	+	+
general applicability	+	+	–	–	–	+	+
no right-hand adjunct (Antisymmetry)	–	–	+	+	+	+	+
trigger for movement (Minimalism)	–	+	+	+	+	+	+
promotion theory of relative clauses	+/–	–	–	–	+	–	+
no interpretative licencing	+	–	+	–	+	–	+
score	**0**	**1**	**-3**	**1**	**2**	**10**	**17**

I conclude that the stranding theory is quite problematic, in fact untenable. The rightward movement theory,[24] the base-generated adjunct theory, the base-generated complement theory, and the leftward deletion theory are not much better. This confirms several statements made before in the literature. I quote:

Haider (1994:5):
"Culicover & Rochemont seem to overlook that heir argument against [rightward] *movement is an argument against their own position* [i.e. the base-generated adjunct theory]*, too."*

Haider (1994:19):
"Accounts that employ movement to the right or base generation of adjoined positions miss their explanatory target on empirical and theoretical grounds."

Büring & Hartmann (1995:180):
"Neither of these more recent analyses of extraposition [i.e. the stranding theory and the base-generated complement theory] *can account for the relevant facts in a thorough and revealing fashion."*

Koster (2000c:12):
"We must conclude that extraposition is highly problematic, both from the point of view of the classical analysis [i.e. the rightward movement theory] *as from the point of view of Kayne's alternative* [the stranding theory]*."*

Thus the most promising are the specifying coordination theories, especially the one with deletion. The next section discusses it in more detail.

6. Asyndetic specifying coordination and ellipsis

I have shown how the properties of extraposition can be explained by simply using the structure of specifying coordination. This section discusses the structure itself in more detail. It compares the ellipsis approach with the non-ellipsis approach (§6.1), argues for coordination as a behindance relation (§6.2), and elaborates on deletion (§6.3).

6.1. Advantages of ellipsis in specifying coordination

Recall from Chapter 6, section 5.1, that there are three main types of coordination. These are repeated in (80). I will not repeat the discussion on the *concept* of specifying coordination here.

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[24] Haider (1994) points out yet another difficulty for this theory. If extraposition is adjunction to the right, any phrase that can be scrambled should be extraposeable. This is not the case however: there are phrases that can be extraposed but not scrambled (e.g. PPs) and the other way around (argument DPs).

(80) a. Joop **and** Jaap *[conjunction]*
b. Joop **or** Jaap *[disjunction]*
c. Our gardener, **namely** Joop *[specification]*

I have shown that extraposition is asyndetic specifying coordination. Thus (81a) is analysed as in (81b), Koster and Rijkhoek's representation, or (81c), my representation.[25]

(81) a. Ik heb *de man* gezien *die een rode jas droeg*.
I have the man seen who a red coat wore
b. Ik heb [*de man* gezien [&: [*die een rode jas droeg*]]].
c. Ik heb [*de man* gezien [&: [~~de man~~ *die een rode jas droeg* ~~gezien~~]]].

Problematic aspects of Koster and Rijkhoek's analysis treated above are the following ones:

I. Interpretative licencing. (See section 5.1 above.)
II. The promotion theory of relative clauses. (See section 5.1 above.)
III. The Right Roof Constraint. (See section 5.2.6 above.)
IV. Binding at the base. (See section 5.2.11 above.)

But there are more arguments in favour of the ellipsis analysis and against theirs.

V. CSC violations.
According to Koster and Rijkhoek, a constituent extraposed from the direct object is inserted as a specifying conjunct at the level of AgrOP. This is shown in more detail in (82).

(82) Ik_s heb $[_{\&:P}\ [_{AgrOP}\ [de\ man]_{do}$ (AgrO) $[_{VP}\ t_s$ gezien $t_{do}]]\ [\&:\ [RC]\ ]]$.

The crucial thing to notice is that, as usual, the subject is moved out of the VP to its normal overt subject position. However, in (82), this means extraction out of the first conjunct (which is the whole AgrOP). This is a direct violation of the Coordinate Structure Constraint. In fact, this problem always occurs, since any further derivation of the sentence has to proceed from the first conjunct onwards (except if the whole clause is coordinated). The CSC cannot be abandoned, because it is crucial for the explanation of 'no stranding in the middlefield', 'islandhood of extraposed material', etc.

The specifying coordination plus ellipsis theory does not have this problem, since all relevant material is syntactically present in both conjuncts. Therefore

25 The specification is preferably asyndetic, because the type of specification used here is comparable to a type B (i.e. attributive) non-restrictive apposition such as *Joep, a nasty liar*, which also resists an overt coordinator; see Ch2§5.1. By contrast, extraposition of an adverbial phrase need not be asyndetic: *Ik ben [e] wezen zwemmen, (namelijk), in de Gaasperplas* [I have been swimming, (namely), in the Gaasperplas]. Clearly, this type compares to type A(ii) (i.e. identificational) non-restrictive attribution such as *a nice present, (namely) a book by Mulisch*.

(subject) movement to a higher position from within the coordination phrase is always across-the-board; see (83), where the subject traces are printed in bold face.

(83) Ik_s heb $[_{\&:P}\ [_{AgrOP}\ [de\ man]_{do}$ (AgrO) $[_{VP}\ \mathbf{t_s}$ gezien $t_{do}]]$ [&:
$[_{AgrOP}\ [\sout{de\ man}\ \ RC]_{do}\ \sout{\text{(AgrO)}\ [_{VP}\ \mathbf{t_s}\ \text{gezien}\ t_{do}]}]\ ]$.

VI. Unbalanced conjuncts.
Specifying coordination as Koster and Rijkhoek propose it, heavily relies on the possibility of unbalanced coordination. In (81b) the first conjunct is an AgrOP, the second a relative clause. Although there are instances of syntactically unbalanced coordination (*she_{NOM} and him_{ACC}*; *$there_{ADV}$ and $behind_P$ you*), i.e. Williams's Law of Coordination of Likes can be easily violated, the possibilities are not unlimited. Sturm (1995) shows that coordination can be syntactically unbalanced, provided that the conjuncts are functionally equivalent. Clearly, AgrOP and an extraposed phrase such as a relative clause or a prepositional phrase are not equivalent in any sense, neither functionally, nor syntactically. Hence this is a strong argument in favour of the ellipsis analysis, where the conjuncts are balanced.

VII. Restriction is not specification.
An extraposed relative can restrict the meaning of the antecedent. If the relative alone is the specifying conjunct, there is a semantic problem, exactly similar to the one elaborated on in the previous chapter. The representation is equivalent to the one (in the non-extraposed order) where a restrictive relative is attached to the antecedent by means of specifying coordination, instead of being a complement. I have argued in Ch6§5.1 that restriction is not specification – which I will not repeat here – hence the representation by Koster and Rijkhoek constitutes a semantic anomaly.

In the ellipsis theory the relation between the relative and the 'antecedent' in the first conjunct is indirect. The relative restricts the antecedent in the second conjunct in the regular way, that is, it involves complementation at least (see below). Furthermore, there is a relation between the first and second conjunct, say $AgrOP_1$ and $AgrOP_2$. This is a specification relation: the second AgrOP is a subset of the first, since one of its arguments is more specific. Thus the problem vanishes.

I conclude that the specifying coordination plus ellipsis theory is to be preferred over the variant without ellipsis.

6.2. Coordination as behindance

At this point consider the syntactic nature of coordination. I have not addressed it in detail before, but since the analysis of extraposition (and also apposition) crucially depends on coordination structures, a closer inspection of this phenomenon is desirable. I will argue that an analysis of coordination in terms of behindance in combination with a 'CoP' theory is the most feasible, especially from the perspective of *specifying* coordination.

If we take binary branching for granted,[26] there are essentially two possibilities concerning the syntactic analysis of coordination:[27] i) coordinated constituents are the specifier and the complement of a coordination projection, say CoP; ii) the second conjunct is in a behindance relation to the first, i.e in a parallel tree structure. See (84), where *Co* stands for e.g. AND ($\wedge$), NAMELY (&:), or (exlusive) OR ($\vee_{(x)}$).

(84) a. $[_{CoP}$ XP $[_{Co'}$ Co YP]] *[coordination as CoP]*
b. [XP] *[coordination as behindance]*
Co [YP]

The CoP analysis (84a), is defended by Johannessen (1993, 1998). Coordination as behindance (the 3D approach in popular terms), (84b), is proposed by Goodall (1987) and G. De Vries (1992), and extended to other constructions by Van Riemsdijk (1998).

Until now I have used the more conventional way of coordination like (84a) in order to prevent confusion, but I want to switch to another approach at this point, for two reasons. First, I will use G. de Vries's theory on ellipsis, which is presented in tandem with the behindance view on coordination, so the internal consistency of this chapter is guaranteed if I maintain that idea (although this is probably an unnecessary safety precaution). Second, there are some general advantages of the alternative representation that I will present below. I want to stress, however, that the exact analysis of coordination is not essential to the theory of extraposition proposed in this chapter.

Both approaches to coordination in (84) have their merits. It seems to me that linguistics needs a revolutionary, new analysis where the advantages of both theories are somehow combined. An attempt to achieve this goal is presented in Grootveld (1992, 1994). She proposes CoPs (without a specifier) that are behind each other. Unfortunately this does not yet adequately solve all apparent paradoxes that a coordination theory faces. Therefore I tentatively propose an unconventional alternative. My considerations are the following ones:

The problem of the categorial status of the connection
A normal coordinator like AND or OR has (almost) all characteristics of a functional head. This is shown by Grootveld (1992, 1994), and at length by Johannessen (1998). It is not the case for initial coordinators (e.g. *neither*…nor, *both*… and, *not only*… but …also/too); see again Johannessen (1998), and also G. de Vries (1992). An interesting observation is that an initial coordinator can move and trigger inversion in some cases: *Ofwel heeft Joop gelogen, of (hij heeft) de waarheid gesproken* 'Either has Joop lied, or (he has) spoken the truth'. This suggests that initial coordinators are maximal projections, not coordinative heads – even though sometimes they have the appearance of a coordinative head (e.g.

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[26] See e.g. Grootveld (1992, 1994) and the references there for comment on non-binary branching approaches to coordination.

[27] I leave alternative analyses such as Munn's or Van Zonneveld's out of consideration. They are variants of the CoP analysis. See e.g. Johannessen (1998) and Grootveld (1992, 1994) for comment.

òf… of 'either… or', *èn*… en 'both… and' in Dutch). I follow G. de Vries (1992) and many others in that initial coordinators are adverbial phrases; normally they are adjoined to the coordinative phrase as a whole.[28] Finally, and this is the most difficult point, a specifying connection can be a word or a phrase, e.g. *namely, or, that is (to say), or rather*. I conclude the following:

A. A normal coordinator is a functional head.
B. An initial coordinator is an adverbial adjunct phrase.
C. A specifying coordinator can be followed or replaced by a phrase.
D. Thus there are i) *coordinative heads*, ii) *coordinative adverbs*, and iii) *specifying coordinative phrases*.

The CoP theory (84a) can account for coordinative heads and adverbs, but there is no room at all for a specifying coordinative phrase, because there is only a head position available (&: in this case). Within the behindance approach, the connection between the conjuncts is a discourse connection, according to G. de Vries (1992). This is an unsatisfying answer. It potentially leaves room for specifying phrases like *that is*, since a discourse link does not need to be a syntactic head, but the internal syntax of the specifying phrase remains unaccounted for, as well as the fact that a normal coordinator behaves as a functional head. Grootveld's theory treats all coordinators as heads, which is incorrect for coordinative adverbs. Furthermore she has no available position for specifying phrases, either.

The hierarchy paradox

In the CoP theory the first conjunct c-commands the second, which in turn c-commands the third, etc. Is it correct to assume this counter-intuitive syntactic hierarchy? Binding facts suggest that the answer is *no*. An anaphor within the second conjunct cannot be bound by the first: **Joop*$_i$ *en zichzelf*$_i$ 'Joop and SE-SELF'*;* * *zij*$_i$ *en elkaars*$_i$ *buren* 'they and each other's neighbours'.[29] Furthermore, the second conjunct cannot contain a bound variable: *[every woman]*$_i$ *and [her*$_i$ *husband]*.

A syntactic hierarchy implies a logical hierarchy (but not the other way around, as I will show). However, in the case of ordinary multiple coordination a representation like [XP [∧ [YP [∧ [ZP [∧ [UP [∧ WP]]]]]]]] does not necessarily reflect the meaning well. In a sentence such as *The teacher handed over the tests to*

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[28] This is clear from observations such as (i) and (ii):
(i) zowel mooie tafels als stoelen 'both beautiful tables and chairs'
(ii) * mooie zowel stoelen als tafels 'beautiful both tables and chairs'

[29] Notice that this cannot be tested with the ambiguous *himself* in English; cf. Ch3§2.3.4. Some more facts are (i) and (ii), where in each case a pronoun is possible, but not an anaphor.
(i) Een gesprek tussen [Joop$_i$ en hemzelf$_i$/{zijn$_i$ (eigen) buren}/*zichzelf$_i$]
a conversation between [Joop and PRON-SELF/{his (own) neighbours}/*SE-SELF]
(ii) Een gesprek tussen [hen$_i$ en {hun$_i$ (eigen) buren}/{*elkaars$_i$ buren}]
a conversation between [them and {their (own) neighbours}/{*each other's neighbours}]
Note that the context requires an identifying emphatic expression (which is not an anaphor; cf. De Vries 1999b) or a possessive construction; but not a bare pronoun.

Joop, Piet, Mieke, Jaap and Joep I do not feel an implied hierarchy in the sense that *Jaap and Joep* forms a group, *Mieke* forms a group with *[Jaap and Joep]*, *Piet* forms a group with *[Mieke, [Jaap en Joep]]*, and *Joop* forms a group with *[Piet [Mieke, [Jaap en Joep]]]*. However, there can be a logical hierarchy in sentences like *I will invite Joop or Joep and Jaap*. Depending on the intonation pattern the meaning is (Joop $\vee_x$ (Joep $\wedge$ Jaap)) or ((Joop $\vee_x$ Joep) $\wedge$ Jaap). Even in this case there cannot be a syntactic hierarchy in the sense of c-command, since tests with Binding give the same results as above. Finally, notice that a logical hierarchy can be stressed or forced with an additional coordinative adverb: *(Joop and (either Jaap or Joep)), (Jaap and (both Mini and Maxi))*. In short, I conclude the following:

E. There is a distinction between syntactic hierarchy and logical hierarchy.
F. There is no syntactic hierarchy between (groups of) conjuncts.
G. There is an optional logical hierchy between groups of conjuncts.
H. If there is a logical hierarchy, there can be an additional coordinative adverb which is embedded.

The CoP theory as in (84a) assumes a syntactic hierarchy, which is incorrect. The behindance theories (84b) and Grootveld (1992, 1994) do not have this problem. Clearly, the advantage is that there is no syntactic hierarchy. However, the behindance theory provides no means to account for an optional logical hierarchy, as far as I can see. Moreover, they do not predict the possibility of an additional coordinative adjunct, whereas the CoP theory does, e.g. [$_{\wedge P}$ XP [$\wedge$ [$_{\vee P}$ Adv [$_{\vee P}$ YP [$\vee_x$ ZP]]]]]. The solution presented below is similar to the one in Grootveld (1994).

The feature problem
If, for instance, two singular phrases are conjoined, the result can be a plural. Similarly the gender and person of the whole can be different from each of the conjuncts. Hence what is syntactically needed is a mechanism to accommodate for the fact that the ϕ-features of two or more coordinated phrases can be different from the separate conjuncts. A straightforward solution is to assume that there is a node on top of the conjuncts, such as CoP.[30]

I. There must be a projection on top of the separate conjuncts.

Hence the CoP theory and Grootveld's theory accommodate for the feature problem, but the behindance theory as in (84b) does not.

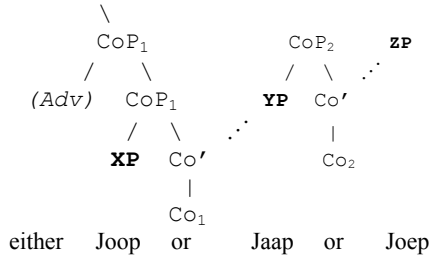
Furthermore, Johannessen (1998) shows that unbalanced coordination is not very exceptional; it can be found cross-linguistically. The relevant examples here are those where a second nominal conjunct has an unexpected Case, e.g. *she$_{NOM}$ and him$_{ACC}$*. This asymmetry can be explained well in the CoP theory, e.g. by assuming that the & head blocks transmission of grammatical features and licences default Case of its complement. However, what is bothering is that the derivation of

[30] The (lexical-semantic) procedure to establish what the features of CoP are, is quite complex; cf. Link (1984) and G. de Vries (1992:109ff), but this is not what concerns me here.

symmetrical coordination is awkward within this theory. In other words, it is designed to explain the systematic exception, but it fails to account for the regular case in a feasible way. On the other hand, the behindance approach naturally accounts for the regular case, but it is not clear how to handle asymmetric instances of coordination, as far as Case is concerned.

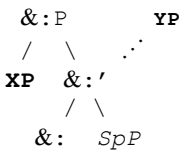
The findings in A through I lead to the following proposal. First, there must be both behindance and a CoP. Second, conjuncts are in the same syntactic position, but behind each other. Third, coordinative heads are in Co; coordinative adverbs can be treated as adjuncts to CoP. Fourth, since a coordination does not start with a coordinative head, the first conjunct is the specifier rather than the complement of Co. Consequently, every conjunct of a multiple coordination is the spec of a CoP in another plane, except the last one. Fifth, it is the presence of Co (or Co'; see below) that triggers a second (or third, etc…) conjunct in another plane. The results up to this point are drawn in (85), where the dots indicate behindance. Notice that XP, YP and ZP are on the same vertical level, hence there is no hierarchical difference.

(85) e.g. (either) Joop or Jaap or Joep



At this point it becomes clear where there is room for a specifying coordinative phrase: the complement position of Co. An indication that this might be correct are complex phrases like *or rather*, *and that it to say*, and in Dutch *en wel*, *oftewel*. All of these seem to consist of a coordinative head plus some kind of complement. Thus we have (86):

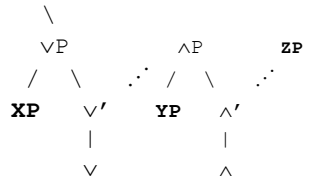
(86) e.g. the White House, or rather the house with the Oval Office



The specifying coordinative head and phrase are united in &:'. In the third dimension XP and YP are sisters. They are connected by a specifying coordinative relation.

Now consider the case where there is a logical hierarchy, say *(Joop or (Jaap and Joep))*. Clearly, the first coordinative head must not select the second nominal phrase, but the second coordination phrase; see (87):

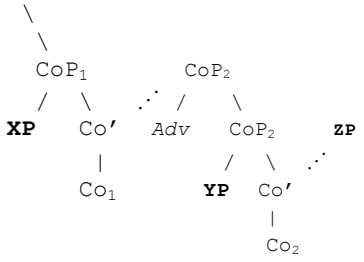
(87) (Joop or (Jaap and Joep))



In this representation YP and ZP are sisters in the third dimension, related by AND. XP is a sister of ∧P, related by OR. Hence there is a logical hierarchy. As required, there is *not* a syntactic hierarchy between XP, YP and ZP, because there is no c-command relation between any of them.

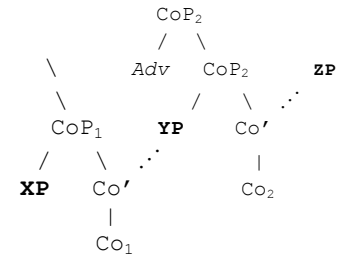
Finally, consider point H above: the possibility of an intermediate coordinative adverb. If there is a logical hierarchy, as in (87), there can be an additional adverb. This is because Co_1' is related to the maximal CoP_2. See (88a). If there is no such hierarchy, Co_1 is linked to the second conjunct, not to CoP_2. In that case, an extension of CoP_2 with an adjunct would be a countercyclic procedure, which I assume to be impossible; see (88b).

(88) a. *correct*



e.g. Joop en (òf Jaap of Joep)

b. *wrong*



e.g. * Joop en èn Jaap en Joep

Thus the analysis reflects all properties essential to coordination.

Linearization of 3D structures involves the simple rule *if Y is directly behind X then X directly precedes Y*. I agree with Grootveld (1992, 1994) that behindance must be an independent notion. It does not interfere with other grammatical notions. Hence every conjunct has to be grammatical in its syntactic context. This theory deviates substantially from Goodall (1987) and G. de Vries's (1992) system with Reduced Phrase Markers, which has received heavy critique – see Grootveld (1992) and the references there.[31]

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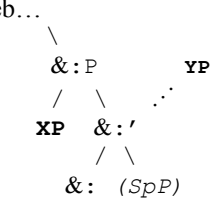
[31] If I understand correctly, this means that I cannot use G. de Vries's solution for Right Node Raising constructions. In short, it comes down to the effect that a right bracket can close several left brackets, provided that they are in a parallel structure. This accounts elegantly for the fact that the left 'gap' (which, then, is not a gap in this theory) is right-peripheral and that both the 'gap' and the right node do not need to be a constituent. However, Wilder (1994, 1995, 1997) provides a feasible alternative system with backward deletion. Wilder's (2000) approach with multiple dominance does not account for non-constituent RNR.

I will not further discuss the nature of coordination. Obviously, the theory set out above deserves further inquiry.

I have argued that extraposition involves specifying coordination. Thus a sentence like (89a) is represented as in (89b), where the second conjunct is in a parallel tree structure, as drawn more precisely in (89c):

(89) a. Ik heb *de man* gezien *die een rode jas droeg*.
b. Ik heb [$_{\&:P}$ [$_{XP}$ *de man* gezien]
&: [$_{YP}$ ~~de man~~ *die een rode jas droeg* ~~gezien~~]].
c. Ik heb…



Here XP and YP are AgrOPs. In this example the connection &:' ('namely') is asyndetic.

6.3. Rules on ellipsis

The ellipsis used in the specifying coordination plus ellipsis theory, e.g. in (89), needs a justification. A suitable, independent theory on ellipsis is already available in G. de Vries (1992). She elaborates on Fiengo's Head Condition, among other things. Some important results are summarized in (90).

(90) *Conditions on ellipsis (simplified), taken from G. de Vries (1992):*
a. The Head Condition: X [lex] → XP [lex]
b. Recoverability:
(i) An elliptical conjunct has to contain at least one remnant to be recoverable.
(ii) An elliptical CP smaller than a conjunct has to contain a left-hand clue to be recoverable.

The Head Condition states that if the head of a projection is lexical, then all its arguments must be lexical, too. For example, if V is the relevant head, we have: *I saw Pete and *(you) saw *(John)*. If the head is absent, all kinds of remnants may be present: *I saw Pete and you ~~saw~~ John*. Recoverability assures that there are not zero remnants: * *I saw Pete and ~~you saw Joop~~*. The second recoverability condition prevents sentences like * *Joop says that Peter likes grapes and Jaap ~~says that~~ John ~~likes~~ apples*.[32]

[32] If the left-hand clue *that* is spelled out (* *Joop says that Peter likes grapes and Jaap ~~says~~ that John ~~likes~~ apples*), the sentence is still unacceptable, since there are *Head Linking* rules that I will not

to be continued...

As long as no condition is violated, there is a certain freedom concerning the remnants. However, it is tacitly assumed that remnants must provide new information. This important pragmatic principle is illustrated in (91).

(91)	John	gave	me	a book	yesterday,	and...
a.	Pete	–	you	a CD	today	.
b.	Pete	–	you/*me	–	–	.
c.	Pete/*John	–	–	–	today	.
d.	Pete	–	you	a CD/*book	–	.
e.	–	–	–	a CD	today/*yesterday	.
f.	Pete	gave	me	a book	yesterday,	(too) .

In (91a-e) any combination of remnants is possible as long as each of them provides new information. In (91f) things are different because of the Head Condition: the verb is present, therefore all its arguments must be projected, too, whether new or not.

As long as (90) is obeyed, almost anything goes, provided that no information is repeated. Hence (92) might be viewed as a kind of economy condition.[33]

(92) *Condition on Remnants:*
A remnant must provide new information.

It is remarkable that a violation of (92) in (91b-e) is unacceptable, whereas (91f) is perfectly all right, although only one the arguments provides new information.[34] Here the condition simply doesn't apply because there is no deletion, hence no remnant.

This brief exposé on deletion/ellipsis in general suffices for the present purposes. For more details I refer to G. de Vries (1992), but also Wilder (1994, 1995, 1997, 2000), and the references there.

Now consider the surface structure of an extraposed relative clause; see (93), where the promotion theory of relative clauses is applied:

(93) Ik heb [$_{\&:P}$ [$_{AgrOP}$ [$_{DP}$ *de man*] gezien]].
&: [$_{AgrOP}$ [$_{DP}$ ~~de~~ [$_{CP}$ [$_{DP\text{-}rel}$ ~~man~~ *die*] *een rode jas droeg*]] ~~gezien~~]

The Condition on Remnants demands that all old information is deleted in the second conjunct. Hence *de, man* and *gezien* are elliptical. The conditions in (90) must also be checked. First, the head of the construction (*gezien*) is deleted, hence

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... continued
discuss. The relevant linking rule requires lexical verbal inflection if C is lexical; this leads to *Joop says that Peter likes grapes and Jaap ~~says~~ that John did/likes apples.*

33 The condition is not absolute; sometimes some repeated material survives, but probably only to save a major constituent

34 If *none* of the arguments is new, the coordination is semantically vacuous, hence unacceptable. Notice furthermore that in (91f) the Condition on Remnants is not overruled by the Head Condition; it simply does not apply because there is no remnant at all.

there may be other deletions and remnants. Second, there is a remnant (the relative clause), hence the elliptical conjunct is recoverable. Thus it turns out that (93) can be derived without problems.[35]

7. Extraposition in general

Extraposition of duplex constructions (cf. section 3) is carried out according to the following scheme:

(94) ... [$_{\&:P}$ [$_{XP1}$ [Dup1] YP]].
&: [$_{XP2}$ [~~Dup1~~ EX] ~~YP~~]

At a certain point the sentence splits up into two parts: a first and second conjunct XP_1 and XP_2, where the second specifies the first. The first conjunct contains only the first part of the duplex construction, Dup1 (e.g. the antecedent of a relative clause) – next to the remainder YP of the phrase XP (e.g. the verb). The second conjunct contains the whole construction Dup1+EX (plus the remainder YP) *syntactically*, but *phonetically* only EX is present – the second, extraposed part of a duplex construction (e.g. a relative clause). Some examples are given in (95) through (99), where I abstract away from movements internal to AgrOP.

PP complement of N:
(95) Ik heb [$_{\&:P}$ [$_{AgrOP1}$ [$_{DP}$ *de man*] gezien]].
&: [$_{AgrOP2}$ [$_{DP}$ ~~de man~~ [$_{PP}$ *met de hoed*]] ~~gezien~~]
I have the man seen with the hat

Complement clause of N:
(96) Ik heb [$_{\&:P}$ [$_{AgrOP1}$ [$_{DP}$ *de vraag*] gesteld]].
&: [$_{AgrOP2}$ [$_{DP}$ ~~de vraag~~ [$_{CP}$ *of hij wegging*]] ~~gesteld~~]
I have the question asked if he left

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[35] However, some remaining issues are not entirely clear. First, I do not know exactly how G. de Vries's conditions on NP domains of ellipsis translate into a DP theory, how they interact with CP domains, and hence how they would apply to structures like (93). I leave this for future research.

Second, regularly coordinated sentences with structures similar to those proposed for extraposed relatives, such as (93), vary in acceptability:

(i) *? Joop zag de man die een rode jas droeg en Jaap ~~zag de man~~ die een groene jas droeg.*
Joop saw the man who a red coat wore and Jaap saw the man who a green coat wore

Notice, however, that there is a crucial difference with (93): in (93) *de man* in the first and second conjunct has the same referent, but in (i) the deleted person is necessarily someone else. The same effect can be shown in another way: in (ii) the deleted *someone* is preferably interpreted with the same referent as the overt *someone*.

(ii) Yesterday someone gave Joop a book, and today ~~someone gave~~ Jaap a CD.

I think this indicates that forward deletion is not simply an operation on phonetic form. The meaning is involved, too. On different grounds, Wilder (1997) concludes that forward deletion, contrary to backward deletion, is not PF-deletion, but it involves insertion of material with semantic and syntactic but not phonological features.

Complement PP of A:

(97) Hij is altijd [$_{\&:P}$ [$_{AgrOP1}$ [$_{AP}$ *afhankelijk*] geweest]].
&: [$_{AgrOP2}$ [$_{AP}$ ~~afhankelijk~~ [$_{PP}$ *van ons*]] ~~geweest~~]
he has always dependent been of us

Result clause:[36]

(98) Ik heb [$_{\&:P}$ [$_{AgrOP1}$ [$_{DegP}$ *zoveel*] gedaan]].
&: [$_{AgrOP2}$ [$_{DegP}$ ~~zoveel~~ [$_{CP}$ *dat ik uitgeput was*]] ~~gedaan~~]
I have so.much done that I exhausted was

Comparative clause:[37]

(99) Ik heb [$_{\&:P}$ [$_{AgrOP1}$ [$_{DegP}$ *meer*] gedaan]].
&: [$_{AgrOP2}$ [$_{DegP}$ ~~meer~~ [$_{PP}$ *dan* [$_{CP}$ *ze hadden verwacht*]]] ~~gedaan~~]
I have more done than they had expected

If the schema in (94) is applied without further thought, an extraposed conjunction might be analysed as in (100a), where *Jaap* is conjoined to *Joop* within the specifying conjunct. However, this is highly unlikely since the much simpler analysis in (100b) is compatible with the meaning of the sentence.

Conjunction:

(100) a. Ik heb [$_{\&:P}$ [$_{AgrOP1}$ [$_{DP}$ *Joop*] gezien]]. *[unlikely]*
&: [$_{AgrOP2}$ [$_{\wedge P}$ [$_{DP1}$ ~~Joop~~]] ~~gezien~~]
$\wedge$ [$_{DP2}$ *Jaap*]
I have Joop seen and Jaap

b. Ik heb [$_{\wedge P}$ [$_{AgrOP1}$ [$_{DP}$ *Joop*] gezien]]. *[correct]*
$\wedge$ [$_{AgrOP2}$ [$_{DP}$ *Jaap*] ~~gezien~~]

The difference with (95)-(99) is that EX (here: *Jaap*) does not restrict the meaning of Dup1 (here: *Joop*), but they are conjoined in the non-separated order.

Something similar can be said about appositions. An analysis like (101) is not clearly excluded, but there is a simpler analysis possible; see (102).

Apposition:

(101) Ik heb [$_{\&:P}$ [$_{AgrOP1}$ [$_{DP}$ *Joop*] gezien]]. *[unlikely]*
&: [$_{AgrOP2}$ [$_{\&:P}$ [$_{DP1}$ ~~Joop~~]] ~~gezien~~]
&: [$_{DP2}$ *onze baas*]
I have Joop seen, our boss

(102) Ik heb [$_{\&:P}$ [$_{AgrOP1}$ [$_{DP}$ *Joop*] gezien]]. *[correct]*
&: [$_{AgrOP2}$ [$_{DP}$ *onze baas*] ~~gezien~~]

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36 The degree phrase DegP is an extended projection of NP, taken over from Rijkhoek's (1998) analysis. I have no claims concerning the internal analysis of result clauses or comparative clauses.

37 See Den Besten (1978, 1989) and the references there concerning the internal analysis of comparative clauses.

The analysis in (101) can be paraphrased as 'I have seen Joop, that is to say, I have seen Joop, namely, our boss.'; (102) as 'I have seen Joop, in other words, I have seen our boss'. The first possibility seems a little overdone.

Importantly, both conjuncts must be grammatical in combination with the rest of the sentence. This has many beneficial consequences. Generally, selected constituents (i.e. arguments and proper predicates) cannot be extraposed, because then the first conjunct would be ungrammatical. For instance, if an indirect object is extraposed, there would be a first conjunct where an argument lacks, hence some Case feature or theta-role cannot be checked/licenced, etc. Exceptions such as complement clauses and free relatives are treated below.

By contrast, adjuncts can generally be left out with preservation of grammaticality, so they can be extraposed. Thus, apart from the duplex constructions above, where the associative elements have a first part Dup1 that is the grammatical head of the construction, a list of independent adjuncts can be analysed in a similar fashion: an extraposed order is obtained according to the scheme in (103), where [e] indicates the regular position of the phrase in question.

(103) ... [$_{\&:P}$ [$_{XP1}$ [e] YP]].
&: [$_{XP2}$ [EX] ~~YP~~]

Examples are provided in (104) through (109). These are the 'simplex extraposable non-argument phrases' from section 3. Notice that [e] can be filled with a dummy, as indicated.

Sentence adverb:

(104) a. Ik ben (*toen*) wezen zwemmen, (namelijk) *gisterenmiddag*.
I have (then) been swimming, (viz.) yesterday afternoon
b. Ik ben [$_{\&:P}$ [$_{IP1}$ [e] wezen zwemmen]].
&: [$_{IP2}$ [*gisterenmiddag*] ~~wezen zwemmen~~]

Adverbial PP:

(105) a. Ik heb (*er*) gezwommen, (namelijk) *in de Gaasperplas*.
I have (there) swum, (viz.) in the Gaasperplas
b. Ik heb [$_{\&:P}$ [$_{AgrOP1}$ [e] gezwommen]].
&: [$_{AgrOP2}$ [*in de Gaasperplas*] ~~gezwommen~~]

Adverbial NP:

(106) a. Ik ben (*toen*) wezen zwemmen, (namelijk) *die dag*.
I have (then) been swimming, (viz.) that day
b. Ik ben [$_{\&:P}$ [$_{IP1}$ [e] wezen zwemmen]].
&: [$_{IP2}$ [*die dag*] ~~wezen zwemmen~~]

Adverbial clause:

(107) a. Hij is (*daarom*) al vertrokken, (namelijk) *omdat hij haast had*.
he has (therefore) already left, (viz.) because he in-a-hurry was

b. Hij is [$_{\&:P}$ [$_{IP1}$ [e] al vertrokken]].
&: [$_{IP2}$ [*omdat hij haast had*] ~~al vertrokken~~]

Predicative adjunct AP:

(108) a. Hij keek me (*zo*) aan, (namelijk) *doodsbleek*.
he looked me (so) at, (viz.) deathly.pale

b. Hij keek me [$_{\&:P}$ [$_{AgrOP1}$ [e] aan]].
&: [$_{AgrOP2}$ [*doodsbleek*] ~~aan~~]

Attributive AP:

(109) a. Ze heeft (*zulke*) druiven geplukt, (namelijk) *witte*.
she has (such) grapes picked, (viz.) white.ones

b. Ze heeft [$_{\&:P}$ [$_{AgrOP1}$ [[e] druiven] geplukt]].
&: [$_{AgrOP2}$ [*witte* ~~druiven~~] ~~geplukt~~]

Finally, consider the 'simplex extraposable argument phrases'. These are prepositional, clausal and other heavy objects of V. As shown in (110), there can be a dummy argument. (For unknown reasons the specifying connection (*en wel*) can be overt only if the dummy is overtly present. This is different from the situation in (104)-(109).)

(110) a. *Complement clause of V:*
Ze heeft (*'t*) gezegd, gisteren, (en wel) *dat ze komt*.
she has (it) said, yesterday, (namely) that she comes

b. *Heavy NP (i):*
Hierbij doen we (*'t*) u toekomen, (en wel) *de onderscheiding voor*
hereby do we (it) you give, (namely) the reward for
voorbeeldig gedrag.
exemplary behaviour

c. *HNP(ii), free relative:*
Ze heeft (*'t*) vernield, (en wel) *wat jij gemaakt hebt*.
she has (it) destroyed, (namely) what you made have

d. *PP complement of V:*
Ze heeft (*eraan*) gedacht, gisteren, (en wel) *aan Joops verjaardag*.
she has (thereof) thought, yesterday, (namely) of Joop's birthday

According to Koster (1995b/1999b) constructions with (extraposed) complement clauses involve an empty element in the normal object position. This can be proved by using parasitic gaps (e.g. *Hij heeft [e1] zonder [e2] te merken beweerd dat het regende* 'he has without noticing asserted that it rained').[38] A similar argument can be made for

[38] How parasitic gaps – here: [e2], a PRO – are licenced exactly is not relevant here. (N.B. There is an anti-c-command constraint on the two gaps.) Clearly, for its interpretation [e2] is dependent on [e1]. Notice that in this example it is not 'that it rained' what is not noticed; rather, the subject does not notice that he asserted that it rained.

the other heavy objects, e.g. *Ze heeft zonder te bekijken vernield wat jij gemaakt hebt* 'she has without looking.at destroyed what you have made'. I conclude that constructions with heavy objects licence a *pro* argument in the regular object position. The reason for that is subject to further research. What is relevant here, is that this explains why extraposition is possible. It is shown in (111) and (112) how these constructions could be analysed with specifying coordination. Crucially, the first conjunct would be ungrammatical if there were no *pro* argument.

(111) a. Hierbij doen we u [$_{\&:P}$ [$_{AprOP1}$ [$_{DP}$ *pro*] toekomen]].
&: [$_{AgrOP2}$ [$_{DP}$ *de onderscheiding… gedrag*] ~~toekomen~~]
b. Ze heeft [$_{\&:P}$ [$_{AprOP1}$ [$_{DP}$ *pro*] vernield]].
&: [$_{AgrOP2}$ [$_{DP}$ *wat jij gemaakt hebt*] ~~vernield~~]

At present I am not sure how to treat (extraposed) heavy non-DP objects of V.[39] Nevertheless, an analysis along the lines of (112) seems feasible.

(112) a. Ze heeft [$_{\&:P}$ [$_{IP1}$ [$_{DP}$ *pro*] gezegd]].
&: [$_{IP2}$ gisteren ~~gezegd~~ [$_{CP}$ *dat ze komt*]]
b. Ze heeft [$_{\&:P}$ [$_{IP1}$ [$_{PP}$ *pro*] gedacht]].
&: [$_{IP2}$ gisteren ~~gedacht~~ [$_{PP}$ *aan Joops verjaardag*]]

The position of *gisteren* 'yesterday' is tentative here.[40]

I conclude that the specifying coordination approach constitutes the overarching scheme of extraposition. It predicts which constructions can extrapose and which cannot. It also predicts that extraposed constructions of different types have properties in common (cf. section 5). Nevertheless there are some additional language-specific and construction-specific constraints, which require further study. I have touched on some these in the course of the argument, but I cannot discuss them any further here.

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[39] For instance, the representation in (112b) shows an interesting problem: the primary conjunct contains a gap with categorial status PP; cf. the dummy in (110d). However, *pro* is arguably a DP. Perhaps there is an empty preposition, too.

[40] See fn. 15 on multiple extraposition. Notice that the possibility of more than one remnant in a specifying conjunct must be excluded for argument-related phrases in order to maintain the effects of the mirror principle. It is unclear to me what causes this restriction and why it does not apply to normal conjunction. Furthermore, the mirror effect in extraposition can be disturbed by adverbial phrases. As yet it is unexplained why this is so.

8. Conclusion

This chapter discusses the syntactic nature of extraposition, in particular of relative clauses. I have shown at length that an analysis in terms of specifying coordination plus ellipsis is to be preferred over rightward movement, adjunction and stranding theories of extraposition. It is compatible with current theoretical asumptions and derives most empirical properties associated with extraposition straightforwardly.

The concept of specifying coordination (that has been introduced in the previous chapter) gains strength now it turns out to be central to the analysis of both apposition and extraposition. Furthermore, I have tentatively proposed a new theory on coordination that combines properties of the CoP and the behindance analysis. The three semantic main types of coordination are conjunction, disjunction and specification. This theory on coordination has been completed with general rules on ellipsis. Finally, and this is very relevant within the context of this book, it has become clear that the analysis of extraposition proposed is fully compatible with the promotion theory of relative clauses advocated for in the previous chapters.

Since the consequences of the theory proposed in this chapter are far-reaching, there are many issues that deserve further, detailed inquiries, e.g. differences between languages or multiple extraposition. As a start, the Appendix compares data of different construction types that allow for extraposition.

Appendix: example sentences

The examples are ordered according to the relevant sections in Chapter 7.

5.2.1. Extraposition from any constituent

(1) *conjunct*

a. Ik heb de man *een boek* gegeven *en een CD*. [DO]
I have the man a book given and a CD

b. Ik heb *hem* een boek gegeven *en haar (ook)*. [IO]
I have him a book given and her (too)

c. *Hij* heeft de man een boek gegeven *en zij (ook)*. [S]
he has the man a book given and she (too)

d. Ik heb *over straat* gelopen *en in het park*. [Adv]
I have on the street walked and in the park

e. *Een boek* heb ik hem gegeven *en een CD*. [TOP]
a book have I him given and a CD

(2) *relative clause*

a. Ik heb de man *een boek* gegeven *dat hij graag wilde hebben*. [DO]
I have the man a book given which he readily wanted to.have

b. Ik heb *iemand* de prijs gegeven *die het verdiende*. [IO]
I have someone the prize given who it deserved

c. *Iemand* heeft me een boek gegeven *die ik niet ken*. [S]
someone has me a book given who I not know

d. Ik heb *op een plek* gelopen *waar jij ook bent geweest*. [Adv]
I have on a spot walked where you also have been

e. *Dat boek* heb ik de man gegeven *dat hij graag wilde hebben*. [TOP]
that book have I the man given which he readily wanted to.have

(3) *result clause*

a. Ik heb de man *zoveel* gegeven *dat hij in verlegenheid werd gebracht*. [DO]
I have the man so.much given that he in embarassment was brought

b. Ik heb *zoveel mensen* een boek gegeven *dat ik een lintje kreeg*. [IO]
I have so.many people a book given that I a decoration received

c. *Zoveel mensen* gaven me een boek, *dat ik in verlegenheid werd gebracht*. [S]
so.many people gave me a book, that I in embarassment was brought

d. Ik heb *op zoveel plaatsen* gelopen *dat ik niet meer weet waar precies*. [Adv]
I have on so.many places walked that I not anymore know where exactly

e. *Zoveel boeken* heb ik hem gegeven *dat hij in verlegenheid werd gebracht*. [TOP]
so.many books have I him given that he in embarassment was brought

(4) *apposition*

a. Ik heb de man *De aanslag* gegeven, *een boek van Mulisch*. [DO]
I have the man *De aanslag* given, a book by Mulisch

b. Ik heb *Joop* een boek gegeven, *onze baas*. [IO]
I have Joop a book given, our boss.

c. *Joop* heeft me een boek gegeven, *onze baas*. [S]
Joop has me a book given, our boss

d. Ik heb in *Amsterdam* gelopen, *een mooie stad*. [Adv]
I have in Amsterdam walked, a nice city

e. *De aanslag* heb ik hem gegeven, *een boek van Mulisch*. [TOP]
De aanslag have I him given, a book by Mulisch

(5) *comparative clause*
a. Ik heb de man *meer* gegeven *dan hij verwachtte*. [DO]
I have the man more given than he expected
b. Ik heb *meer mensen* een boek gegeven *dan men verwachtte*. [IO]
I have more people a book given than one expected
c. *Meer mensen* hebben me een boek gegeven *dan ik verwachtte*. [S]
more people have me a book given than I expected
d. Ik heb *op meer plaatsen* gelopen *dan men verwachtte*. [Adv]
I have on more places walked than one expected
e. *Veel meer boeken* heb ik gekregen *dan ik verwachtte*. [TOP]
much more books have I received than I expected

(6) *PP complement of N*
a. Ik heb de man *een boek* gegeven *met een rode kaft*. [DO]
I have the man a book given with a red cover
b. Ik heb *de man* een boek gegeven *met de rode hoed*. [IO]
I have the man a book given with the red hat
c. *Iemand* heeft me een boek gegeven *met een lange grijze baard*. [S]
someone has me a book given with a long grey beard
d. Ik heb in *de tuin* gelopen *met die drie hoge coniferen*. [Adv]
I have in the garden walked with those three large conifers
e. *Dat boek* heb ik de man gegeven *met die rode kaft*. [TOP]
that book have I the man given with that red cover

(7) *complement clause of N*
a. Ik heb *de vraag* gesteld *of hij wilde komen*. [DO]
I have the question asked if he wanted to.come
b. Ik heb *de voorspelling* het voordeel van de twijfel gegeven *dat het gaat regenen*.
I have the prediction the benefit of the doubt given that it goes to.rain [IO]
c. *De vraag* werd gesteld *of hij wilde komen*. [S]
the question was asked if he wanted to.come
d. Ik heb aan *de voorspelling* getwijfeld *dat het gaat regenen*. [Adv]
I have to the prediction doubted that it goes to.rain
e. *Die vraag* kan ik niet beantwoorden *of het gaat regenen*. [TOP]
that question can I not answer if it goes to.rain

(8) *PP complement of A*
Hij is altijd *dol* geweest *op chocolade*. [PRED]
he has always fond been of chocolate

Some of the [Adv] examples show extraposition from a DP *embedded* in an adverbial position, strictly speaking – hence they belong to section 5.2.2, too.

5.2.2. Extraposition from embedded positions

(9) *extraposition from a PP*
a. Ik heb [aan *Joop*] gedacht *en Piet*. *[conjunct]*
I have of Joop thought and Piet
b. Ik heb [aan *de man*] gedacht *die een rode jas droeg*. *[relative clause]*
I have of the man thought who a red coat wore

c. Ik heb [aan *zoveel*] gedacht *dat Joop versteld stond*. *[result clause]*
I have of so.much thought that Joop stunned was
d. Ik heb [aan *Joop*] gedacht, *onze baas*. *[apposition]*
I have of Joop thought, our boss
e. Ik heb [aan *meer*] gedacht *dan jij*. *[comparative clause]*
I have of more thought than you
f. Ik heb [aan *de man*] gedacht *met de rode hoed*. *[PP complement of N]*
I have of the man thought with the red hat
g. Ik heb [aan *het feit*] gedacht *dat een koe vier poten heeft*. *[compl. clause of N]*
I have of the fact thought thought that a cow four legs has
h. < n/a > *[PP complement of A]*

(10) *extraposition from a PP in a DP*
a. Ik heb [de papieren van *Joop*] gecontroleerd *en (van) Piet*. *[conjunct]*
I have the papers of Joop checked and (of) Piet
b. Ik heb [de papieren van *de man*] gecontroleerd *die een rode jas droeg*. *[RC]*
I have the papers of the man checked who a red coat wore
c. Ik heb [de papieren van *zoveel mensen*] gecontroleerd *[result clause]*
dat ze niet meer te tellen waren.
I have the papers of so.many people checked that they not anymore to count were
d. Ik heb [de papieren van *Joop*] gecontroleerd, *onze baas*. *[apposition]*
I have the papers of Joop checked, our boss
e. Ik heb [de papieren van *meer mensen*] gecontroleerd *dan je kunt tellen*.
I have the papers of more people checked than you can count *[comp. cl.]*
f. Ik heb [de papieren van *iedereen*] gecontroleerd *met een rode hoed*.
I have the papers of everybody checked with a red hat *[PP compl. of N]*
g. Ik heb [de stellers van *de vraag*] geïdentificeerd *of Kok al een opvolger heeft*.
I have the 'posers' of the question identified if Kok already a successor has *[c. cl. of N]*
h. < n/a > *[PP compl. of A]*

5.2.3. Mirror effects

Most examples here need heavy stress, since they are extremely complicated. Not all (a)-examples are perfectly acceptable to everyone, but the contrast with the (b)-examples is quite clear.

(11) *conjuncts*
a. *Jij* hebt hem gezien en haar, *en ik* (ook).
you have him seen and her, and I (too)
b. * *Jij* hebt hem gezien *en ik*, en haar.

(12) *relative clauses*
a. *Iemand* heeft een kast gekocht die tweeduizend gulden kostte, *die je wel kent*.
someone has a cupboard bought which two.thousand guilders cost, who you for.sure know
b. * *Iemand* heeft een kast gekocht *die je wel kent*, die tweeduizend gulden kostte.

(13) *result clauses*
a. *Zoveel mensen* hebben zoveel boeken gekocht dat ze ze niet meer konden tillen,
so.many people have so.many books bought that they them not anymore could carry,
dat alle boekwinkels uitverkocht waren.
that all book.stores out.sold were
b. * *Zoveel mensen* hebben zoveel boeken gekocht *dat alle boekwinkels uitverkocht waren*, dat ze ze niet meer konden tillen.

(14) *appositions*
a. *Joop* heeft De aanslag gelezen, een bekende roman, *onze baas*.
Joop has De aanslag read, a well-known novel, our boss
b. * *Joop* heeft De aanslag gelezen, *onze baas*, een bekende roman.

(15) *comparative clauses*
a. *Meer mensen* hebben meer boeken thuis dan ik bezit, *dan ik verwachtte*.
more people have more books at.home than I possess, than I expected
b. * *Meer mensen* hebben meer boeken thuis *dan ik verwachtte*, dan ik bezit.

(16) *PP complements of N*
a. *Iemand* heeft een boek gekocht over taalkunde, *met een lange grijze baard*.
someone has a book bought on linguistics, with a long grey beard
b. * *Iemand* heeft een boek gekocht *met een lange grijze baard*, over taalkunde.

(17) *complement clauses of N*
a. *De vraag* heeft het feit verdoezeld dat Jan ziek is, *waarheen we met vakantie willen*.
the question has the fact obscured that Jan ill is, where.to we on vacation want
b. * *De vraag* heeft het feit verdoezeld *waarheen we met vakantie willen*, dat Jan ziek is.

(18) *PP complements of A:* < n/a >

Mixed examples show exactly the same nesting symmetry:

(19) *mixed example: comparative clause & PP complement of N*
a. *Meer jongens* hebben de man gezien met de rode hoed, *dan meisjes*.
more boys have the man seen with the red hat, than girls
b. * *Meer jongens* hebben de man gezien *dan meisjes*, met de rode hoed.

(20) *mixed example: result clause & relative clause*
a. *Zoveel mensen* hebben de man gezien die een rode hoed droeg,
dat het bewijs sluitend is.
so.many people have the man seen who a red hat wore, that the evidence complete is
b. * *Zoveel mensen* hebben de man gezien *dat het bewijs sluitend is*,
die een rode hoed droeg.

5.2.4. No preposing

(21) a. * *En Piet*, heb ik *Jan* _ een boek gegeven. *[conjunct]*
and Piet, have I Jan _ a book given
b. * *Die een rode jas draagt*, heb ik *de man* _ een boek gegeven. *[relative clause]*
who a red coat wears, have I the man _ a book given
c. * *Dat hij ze niet kon tillen*, heb ik hem *zoveel boeken* _ gegeven. *[result clause]*
that he them not could carry, have I him so.many books _ given
d. * *Onze baas*, heb ik *Joop* _ gezien. *[apposition]*
our boss, have I Joop _ seen
e. * *Dan ik*, heeft hij *meer boeken* _ gekregen.[1] *[comparative clause]*
than I, has he more books _ received

[1] However, some people accept (i):
(i) ? *Dan wie* heeft hij *meer boeken* _ gekregen? [than who has he more books received].

f. * *Met een hoed*, heb ik *de man* _ een boek gegeven.[2] *[PP complement of N]*
with a hat, have I the man _ a book given
g. * Of hij terugkeert, heb ik de vraag _ gesteld. *[complement clause of N]*
if he returns, have I the question _ asked
h. *Op chocolade* is hij altijd *dol* _ geweest. *[PP complement of A]*
of chocalate has he always fond _ been

Notice that PP complements of A do not follow the general pattern. The acceptability of (21h) implies a contrastive reading, cf. (29).

5.2.5. No left position

(22) a. * Ik heb *en Piet, Jan* _ een boek gegeven. *[conjunct]*
I have and Piet, Jan _ a book given
b. * Ik heb *die een rode jas draagt, de man* _ een boek gegeven. *[relative clause]*
I have who a red coat wears, the man _ a book given
c. * Ik heb *dat hij ze niet kon tillen, zoveel boeken* _ gegeven. *[result clause]*
I have that he them not could carry, so.many books _ given
d. # Ik heb *onze baas*, *Joop* _ gezien.[3] *[apposition]*
I have our boss, Joop _ seen
e. * Hij heeft *dan ik*, *meer boeken* _ gekregen. *[comparative clause]*
he has than I, more books _ received
f. * Ik heb *met een hoed*, *de man* _ een boek gegeven. *[PP complement of N]*
I have with a hat, the man _ a book given
g. * Ik heb *of hij terugkeert, de vraag* _ gesteld. *[complement clause of N]*
I have if he returns, the question _ asked
h. * Hij is altijd *op chocolade, dol* _ geweest.[4] *[PP complement of A]*
he has always of chocalate, fond _ been

5.2.6. The Right Roof Constraint

Extraposition is clause-bound; see (23) versus (24).

(23) a. [Dat *Joop* die baan wil, *en Piet,*] heeft je vader gezegd. *[conjunct]*
that Joop that job wants, and Piet, has your father said
b. [Dat *het meisje* die baan wil *dat op de hoek woont,*] is aangekondigd. *[RC]*
that the girl that job wants that on the corner lives, has.been announced

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[2] Apparently, preposed PP complements of N do exist in Dutch. However, they can only be interpreted adverbially; see Klein & Van den Toorn (1980), and also Cattell (1976) and Corver (1990); *contra* Kooij & Wiers (1980) and e.g. Barbiers (1995). PPs and other material cannot be raised out of a DP in Dutch. If it appears so, nevertheless, the PP must be an adverbial PP (which is generated as an adjunct). This is shown by the minimal pair in (i/ii), where in (ii) an adverbial interpretation is highly unlikely (but not impossible given a special context).

(i) Van wie heb je een boek gelezen? [Of whom have you a book read?]
(ii) ?* Van wie heb je een boek afgestoft? [Of whom have you a book dusted?]

In (i) *van wie* can be generated as an adverbial PP; contrary, in (ii) it must have been raised from within DP (*een boek*), an illegal operation.

[3] Obviously, if *Joop* is taken to specify *onze baas*, instead of the reverse, the sentence is acceptable, but then the meaning is different in a subtile way.

[4] However, if the adjective is deverbal or if it is a pseudo-participle, this configuration is acceptable, e.g. *Hij is van ons afhankelijk geweest* [he has of us dependent been]. See also De Vries (1998b).

c. [Dat *zoveel mensen* die baan willen *dat ze niet te tellen zijn,*] is gebleken. *[res. cl.]*
that so.many people that job want that they not to count are, has.been found
d. [Dat *Joop* die baan wil, *onze chef*,] is duidelijk. *[apposition]*
that Joop that job wants, our manager, is clear
e. [Dat *meer mensen* die baan willen *dan mogelijk is,*] is duidelijk. *[comp. cl.]*
that more people that job want than possible is, is clear
f. [Dat *dat meisje* die baan wil, *met de rode jurk,*] is duidelijk. *[PP compl. of N]*
that that girl that job wants, with the red dress, is clear
g. [Dat *het feit* bekend is *dat Joop die baan wil*,] is duidelijk. *[compl. clause of N]*
that the fact known is that Joop that job wants, is clear
h. [Dat Joop *dol* is *op chocolade*,] is duidelijk. *[PP complement of A]*
that Joop fond is of chocolate, is clear

(24) a. * [Dat *Joop* die baan wil] heeft je vader gezegd, *en Piet.* *[conjunct]*
b. * [Dat *het meisje* die baan wil] is aangekondigd, *dat op de hoek woont.* *[RC]*
c. * [Dat *zoveel mensen* die baan willen] is gebleken, *dat ze niet te tellen zijn*. *[res. cl.]*
d. * [Dat *Joop* die baan wil] is duidelijk, *onze chef.* *[apposition]*
e. * [Dat *meer mensen* die baan willen] is duidelijk, *dan mogelijk is*. *[comp. cl.]*
f. * [Dat *dat meisje* die baan wil] is duidelijk, *met de rode jurk.* *[PP compl. of N]*
g. * [Dat *het feit* bekend is] is duidelijk, *dat Joop die baan wil*. *[compl. clause of N]*
h. * [Dat Joop *dol* is] is duidelijk, *op chocolade.* *[PP complement of A]*

The same can be shown with simplex argument and non-argument constructions.

(25) a. [Dat ze heeft gezegd *dat ze zal komen*,] is verheugend. *[compl. clause of V]*
that she has said that she will come, is joyful
b. [Dat we u hierbij doen toekomen: *de onderscheiding voor voorbeeldig gedrag*,] is verheugend. *[HNP(i)]*
that we you hereby do give: the reward for exemplary behaviour, is joyful
c. [Dat ze vernield heeft *wat jij gemaakt hebt*,] is betreurenswaardig. *[HNP(ii): FR]*
that she destroyed has what you made have, is regrettable
d. [Dat ze niet heeft heeft gedacht *aan haar moeders verjaardag*,] is treurig. *[PP object of V]*
that she not has thought of her mother's birthday, is regrettable

(26) a. * [Dat ze heeft gezegd] is verheugend, *dat ze zal komen*. *[compl. clause of V]*
b. * [Dat we u hierbij doen toekomen] is verheugend: *de onderscheiding voor voorbeeldig gedrag*. *[HNP(i)]*
c. * [Dat ze vernield heeft] is betreurenswaardig, *wat jij gemaakt hebt*. *[HNP(ii): FR]*
d. * [Dat ze niet heeft heeft gedacht] is treurig, *aan haar moeders verjaardag*. *[PP object of V]*

(27) a. [Dat ik ben wezen zwemmen *gisterenmiddag*,] is fijn. *[sentence adverb]*
that I have been swimming yesterday.afternoon, is nice
b. [Dat ik heb gezwommen *in de Gaasperplas*,] is fijn. *[adverbial PP]*
that I have swum in the Gaasperplas, is nice
c. [Dat ik ben wezen zwemmen *die dag*,] is fijn. *[adverbial NP]*
that I have been swimming that day, is nice
d. [Dat hij al vertrokken is *omdat hij haast had*,] is betreurenswaardig. *[adv. clause]*
that he already left has because he hurried was, is regrettable
e. [Dat hij me aankeek, *doodsbleek*,] was beangstigend. *[pred. adj. AP]*
that he me at.looked, deathly.pale, was scary

f. [Dat ze druiven heeft geplukt, *witte*,] komt goed uit. *[attributive AP]*
that she grapes has picked, white (ones), is convenient

(28) a. * [Dat ik ben wezen zwemmen] is fijn, *gisterenmiddag*. *[sentence adverb]*
b. * [Dat ik heb gezwommen] is fijn, *in de Gaasperplas*. *[adverbial PP]*
c. * [Dat ik ben wezen zwemmen] is fijn, *die dag*. *[adverbial NP]*
d. * [Dat hij al vertrokken is] is betreurenswaardig, *omdat hij haast had*. *[adv. clause]*
e. * [Dat hij me aankeek] was beangstigend, *doodsbleek*. *[pred. adj. AP]*
f. * [Dat ze druiven heeft geplukt] komt goed uit, *witte.* *[attributive AP]*

5.2.7. No stranding in the middlefield

(29) a. * *Jan* heb ik _ *en Piet* gezien. *[conjunct]*
Jan have I _ and Piet seen
b. * *De man* heb ik _ *die een rode jas draagt* gezien. *[relative clause]*
the man have I _ who a red coat wears seen
c. * *Zoveel boeken* heb ik hem _ *dat hij ze niet kon tillen* gegeven. *[result clause]*
so.many books have I him _ that he them not could carry given
d. * *Joop* heb ik, _ *onze baas,* gezien. *[apposition]*
Joop have have I, _ our boss, seen
e. * *Meer boeken* heeft hij _ *dan ik* gekregen. *[comparative clause]*
more books has he _ than I received
f. * *De man* heb ik _ *met de hoed* gezien *[PP complement of N]*
the man have I _ with the hat seen
g. * *De vraag* heb ik _ *of hij terugkeert* gesteld. *[complement clause of N]*
the question have I _ if he returns asked
h. *Dol* is hij altijd _ *op chocolade* geweest. *[PP complement of A]*
fond has he always _ of chocalate been

Example (29h) is acceptable with a contrastive reading, cf. (21h) above.

5.2.8. Kaan's generalization

VPs with extraposed material are inert, hence cannot be topicalized. Topicalization of the verb alone or of a larger constituent including the first part of a duplex construction *is* possible. The examples are contrastive. For instance, (31b) can be understood as: 'it is seen, not beaten that I have the man, (yesterday,) who wears a red coat.'

(30) *conjunct*
a. Ik heb *Joop* gezien, *en Piet*.
I have Joop seen, and Piet
b. [Gezien] heb ik *Joop en Piet* _.
b.' [Gezien] heb ik *Joop* _ gisteren *en Piet*.
c. * [Gezien, *en Piet*] heb ik *Joop* _.
d. [*Joop* gezien *en Piet*] heb ik _.

(31) *relative clause*
a. Ik heb *de man* gezien *die een rode jas draagt*.
I have the man seen who a red coat wears
b. [gezien] heb ik *de man* (gisteren) *die een rode jas draagt*.
c. * [gezien *die een rode jas draagt*] heb ik *de man*.
d. [*de man* gezien *die een rode jas draagt*] heb ik.

(32) *result clause*
- a. Ik heb *zoveel mensen* gezien *dat het me duizelt*.
  I have so.many people seen that it me gets.dizzy
- b. [Gezien] heb ik *zoveel mensen* (gisteren) *dat het me duizelt*.
- c. * [Gezien *dat het me duizelt*] heb ik *zoveel mensen*.
- d. [*Zoveel mensen* gezien *dat het me duizelt*] heb ik.

(33) *apposition*
- a. Ik heb *Joop* gezien, *onze baas*.
  I have Joop seen, our boss
- b. [Gezien] heb ik *Joop* (gisteren), *onze baas*.
- c. * [Gezien, *onze baas*] heb ik *Joop*.
- d. ? [*Joop* gezien, *onze baas*] heb ik.[5]

(34) *comparative clause*
- a. Ik heb *meer mensen* gezien *dan jij*.
  I have more people seen than you
- b. [Gezien] heb ik *meer mensen* (gisteren), *dan jij*.
- c. * [Gezien *dan jij*] heb ik *meer mensen*.
- d. [*Meer mensen* gezien *dan jij*] heb ik.

(35) *PP complement of N*
- a. Ik heb *de man* gezien *met de grijze baard*.
  I have the man seen with the grey beard
- b. [Gezien] heb ik *de man* (gisteren), *met de grijze baard*.
- c. * [Gezien *met de grijze baard*] heb ik *de man*.
- d. [*De man* gezien *met de grijze baard*] heb ik.

(36) *complement clause of N*
- a. Ik heb *de vraag* gesteld *of hij komt*.
  I have the question asked if he comes
- b. [Gesteld] heb ik *de vraag* (gisteren), *of hij komt*.
- c. * [Gesteld *of hij komt*] heb ik *de vraag*.
- d. [*De vraag* gesteld *of hij komt*] heb ik.

(37) *PP complement of A*
- a. Hij is altijd *dol* gebleven *op chocolade*.
  he has always fond remained of chocolate
- b. * [Gebleven] is hij altijd *dol op chocolade*.
- c. * [Gebleven *op chocolade*] is hij altijd *dol*.
- d. [*Dol* gebleven *op chocolade*] is hij altijd.

Notice that (37b) is impossible, too.

Normal heavy NPs also confirm to the pattern, but Kaan's generalization seems to be invalid for the other simplex extraposed argument phrases. However, if they are extraposed to the right of an adverb (*gisteren* 'yesterday'), the pattern reemerges; see the (d/e)-examples.

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[5] Concerning (33d), see (42) and onwards.

(38) *complement clause of V*
- a. Ze heeft gezegd *dat ze zal komen*.
  she has said that she will come
- b. [gezegd] heeft ze *dat ze zal komen*.
- c. [Gezegd *dat ze zal komen*] heeft ze.
- d. Ze heeft gezegd, gisteren, *dat ze zal komen*.
- e. * [Gezegd, gisteren, *dat ze zal komen*] heeft ze.

(39) *heavy NP(i)*
- a. Hierbij doen we u toekomen: *de onderscheiding voor voorbeeldig gedrag*.
  hereby do we you give: the award for exemplary behaviour
- b. [Toekomen] doen we u hierbij: *de onderscheiding voor voorbeeldig gedrag*.
- c. * [Toekomen: *de onderscheiding voor voorbeeldig gedrag*] doen we u hierbij.

(40) *HNP(ii): free relative*
- a. Ze heeft vernield *wat jij hebt gemaakt*.
  she has destroyed what you have made
- b. [Vernield] heeft ze *wat jij hebt gemaakt*.
- c. [Vernield *wat jij gemaakt hebt*] heeft ze.
- d. Ze heeft vernield, gisteren, *wat jij hebt gemaakt*.
- e. * [vernield, gisteren, *wat jij hebt gemaakt*] heeft ze.

(41) *PP object of V*
- a. Ze heeft niet gedacht *aan haar moeders verjaardag*.
  she has not thought of her mother's birthday
- b. [Gedacht] heeft ze niet *aan haar moeders verjaardag*.
- c. [Gedacht *aan haar moeders verjaardag*] heeft ze niet.
- d. Ze heeft niet gedacht, gisteren, *aan haar moeders verjaardag*.
- e. * [Gedacht, gisteren, *aan haar moeders verjaardag*] heeft ze niet.

Simplex extraposed non-argument phrases behave similar to duplex constructions, although the judgements are less clear. Therefore the (e/f)-examples serve to illustrate the contrast with topicalization of phrases without extraposed material. The (d)-examples are not perfect, because the appositive meaning of the phrase in italics is more or less in contradiction with the meaning of the topic position; hence the problem is semantic, not syntactic.

(42) *sentence adverb*
- a. Ik wil het cadeau kopen, *morgen*.
  I want the present to.buy, tomorrow
- b. [kopen] wil ik het cadeau, *morgen*.
- c. * [Kopen, *morgen*] wil ik het cadeau.
- d. ? [Het cadeau kopen, *morgen*] wil ik.
- e. Ik wil *morgen* het cadeau kopen.
- f. [*Morgen* het cadeau kopen] wil ik.

(43) *adverbial PP*
- a. Ik heb mijn rijbewijs niet gekregen, *die dag*.
  I have my driver's.licence not received, that day
- b. [Gekregen] heb ik mijn rijbewijs niet, *die dag*.
- c. * [Gekregen, *die dag*] heb ik mijn rijbewijs niet.
- d. ? [Mijn rijbewijs gekregen, *die dag*] heb ik niet.
- e. Ik heb *die dag* mijn rijbewijs niet gekregen.

f. [*Die dag* mijn rijbewijs gekregen] heb ik niet.

(44) *adverbial NP*
a. Ik heb die man gezien, *op school*.
I have that man seen, at school
b. [Gezien] heb ik die man, *op school*.
c. * [Gezien, *op school*] heb ik die man.
d. ? [Die man gezien, *op school*] heb ik.
e. Ik heb die man *op school* gezien.
f. [*Op school* gezien] heb ik die man.

(45) *adverbial clause*
a. Deze verstandige jongen zal het koopje laten schieten, *omdat zijn geld op is*.
this sensible guy wil the bargin let go, because his money gone is
b. [Laten schieten] zal deze verstandige jongen het koopje, *omdat zijn geld op is*.
c. * [Laten schieten, *omdat zijn geld op is*] zal deze verstandige jongen het koopje.
d. ? [Het koopje laten schieten, *omdat zijn geld op is*] zal deze verstandige jongen.
e. Deze verstandige jongen zal het koopje *omdat zijn geld op is* laten schieten.
f. [Het koopje *omdat zijn geld op is* laten schieten] zal deze verstandige jongen.

(46) *predicative adjunct AP*
a. Hij heeft het monster aangekeken, *bevend van angst*.
he has the monster at.looked, trembling with fear
b. [Aangekeken] heeft hij het monster, *bevend van angst*.
c. * [Aangekeken, *bevend van angst*] heeft hij het monster.
d. ? [Het monster aangekeken, *bevend van angst*] heeft hij.
e. Hij heeft het monster *bevend van angst* aangekeken.
f. [Het monster *bevend van angst* aangekeken] heeft hij.

(47) *attributive AP*
a. Ze heeft druiven geplukt, *witte*.
she has grapes picked, white (ones)
b. [Geplukt] heeft ze druiven, *witte*.
c. * [Geplukt, *witte*] heeft ze druiven.
d. ? [Druiven geplukt, *witte*] heeft ze.
e. Ze heeft *witte* druiven geplukt.
f. [*Witte* druiven geplukt] heeft ze.

If there is not an object, the difference between the VP-level and a larger constituent below IP is undetectable. Therefore topicalization patterns with the (d)-examples above, the most favourable option of the two.

(48) a. Ik heb gezwommen, gisteren. *[sentence adverb]*
I have swum, yesterday
b. ? [gezwommen, gisteren] heb ik.

(49) a. Ik heb gefietst, in de bergen. *[adverbial PP]*
I have cycled, in the mountains
b. ? [Gefietst, in de bergen] heb ik.

5.2.9. Islandhood of extraposed material

Duplex constructions are islands for extraction, whether they are extraposed (51) or not (50). The non-extraposed configuration in (50) resembles the ones for 'preposing' and 'stranding in the middlefield', which is also impossible, cf. (21) and (29). Most of the facts in (50) can be recognized as instances of the Complex Noun Phrase Constraint and the Coordinate Structure Constraint. However, after extraposition, as in (51), this is not so obvious.

(50) a. * *Wie* heb je *Piet en* _ gezien?[6] *[conjunct]*
who have you Piet and _ seen

b. * *Wat* heb je *de man die* _ *draagt* gezien? *[relative clause]*
what have you the man who _ wears seen

c. * *Wat* heb je *zoveel soep dat je* _ *deed* gegeten? *[result clause]*
what have you so.much soup that you _ did eaten

d. * *Wat* heb je *Joop, onze* _ , gezien? *[apposition]*
what have you Joop, our _ , seen

e. * *Wie* heeft hij *meer boeken dan* _ gekregen?[7] *[comparative clause]*
who has he more books than _ received

f. * *Waar* heb je *een boek over* _ afgestoft?[8] *[PP complement of N]*
what have you a book on _ dusted

g. * *Wat* heb je *de vraag of hij* _ *deed* gesteld? *[complement clause of N]*
what have you the question if he _ did asked

h. *Waar* is hij altijd *dol op* _ geweest?[9] *[PP complement of A]*
what has he always fond of _ been

(51) a. * *Wie* heb je *Piet* gezien *en* _? *[conjunct]*

b. * *Wat* heb je *de man* gezien *die* _ *draagt*? *[relative clause]*

c. * *Wat* heb je *zoveel soep* gegeten *dat je* _ *deed*? *[result clause]*

d. * *Wat* heb je *Joop* gezien*, onze* _? *[apposition]*

e. * *Wie* heeft hij *meer boeken* gekregen *dan* _? *[comparative clause]*

f. * *Waar* heb je *een boek* afgestoft *over* _? *[PP complement of N]*

g. * *Wat* heb je *de vraag* gesteld *of hij* _ *deed*. *[complement clause of N]*

h. * *Waar* is hij altijd *dol* geweest *op* _? *[PP complement of A]*

Notice the difference between (50h) and (51h), which can be repreduced with a deverbal adjective:

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6 Nevertheless, Across-The-Board extraction from conjuncts is possible, cf. (i):
(i) Wat heeft Piet _ gekocht en Joop _ verkocht? [what has Piet bought and Joop sold]

7 As noted before, some people accept preposing the entire second part with a question:
(i) ?*Dan wie* heeft hij *meer boeken* _ gekregen?

8 See below.

9 Preposing the entire second part by means of a question is also possible:
(i) *Waarop* is hij altijd *dol* _ geweest? [what.on has he always fond _ been]
This is not extraction, but preposing like (21h).

(52) a. *Waar* is hij altijd *afhankelijk van* _ geweest?[10]
where has he always dependent of _ been
b. * *Waar* is hij altijd *afhankelijk* geweest *van* _?

PPs show the same pattern, whether they are selected (a) or adverbial (b/c/c'):

(53) a. *Waar* heb je *aan* _ gedacht? *[PP object of V]*
what have you of _ thought
b. *Waar* heb je *in* _ gespeeld? *[adverbial PP]*
where have you in _ played
c. *Waar* heb je *een boek over* _ gelezen?
what have you a book about _ read
c.' *Waar* heb je *de man mee* _ gezien?
what have you the man with _ seen

(54) a. * *Waar* heb je gedacht *aan* _? *[PP object of V]*
b. * *Waar* heb je gespeeld *in* _ ? *[adverbial PP]*
c. * *Waar* heb je *een boek* gelezen *over* __?
c.' * *Waar* heb je *de man* gezien *mee* __?

Notice that the PPs in (53c/c') and (54c/c') must be interpreted adverbially, hence they are *not* complements of N, contrary to appearances; cf. footnote 2.[11]

Contrary to (54a), extraction from complement clauses is possible, but preferably not if they are extraposed further to the right. The judgements are not very clear.[12]

(55) a. *Wie* heb je gezegd *dat ik moest opbellen* _? *[compl. clause of V]*
b. ?? *Wie* heb je gezegd, gisteren, *dat ik moest opbellen* _?
who have you said, yesterday, that I should call _

The other simplex constructions are opaque, anyway.

(56) a. * *Van wat* heb je mij *de medaille ter preventie* _ doen toekomen? *[HNP(i)]*
of what have you me the medal for prevention _ do give
b. * *Wat* heb je *wie* _ *wilde* geholpen? *[HNP(ii): FR]*
what have you who _ wanted helped
c. * *Van wat* heb je *die dag* _ gezwommen? *[adverbial NP]*
of what have you that day _ swum
d. * *Wie* heb je *omdat hij* _ *sloeg* aangeklaagd? *[adverbial clause]*
who have you because he _ beat sued
e. * *Als wat* heeft Joop je *bleek* _ aangekeken? *[predicative adjunct AP]*
as what has Joop you pale _ at.looked

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10 In Dutch, only an 'R-pronoun' can escape from a PP. Examples like (i) or (ii) are impossible.
(i) * *Wie* is hij altijd *dol op* _ geweest? [who has he always fond of _ been]
(ii) * *Wie* is hij altijd *afhankelijk van* _ geweest? [who has he always independent of _ been]

11 The following dialogue is impossible: "Ik heb *een man met een rode jas* gezien." "Pardon, ik heb je niet verstaan. *Waar* heb je een man *mee* gezien?" ["I have seen a man with a red coat." "Sorry, I didn't hear you, what did you see a man with?"] Here an adverbial interpretation is excluded. Hence the PP is a complement of N, and extraction is impossible, as in (50f).

12 Perhaps this is (partly?) caused by a structural ambiguity: if the adverb is interpreted in the subordinate clause, there is only a bounding problem; if it is interpreted in the main clause, there should be a freezing effect.

f. * *Als wat* heb je druiven, *blauw* _ geplukt? *[attributive AP]*
as what have you grapes, blue _ picked
g. <n/a> *[sentence adverb]*

5.2.10. Optionality

All instances of extraposition are optional. Nevertheless, there is a preference to extrapose clauses and other large phrases. The 'obligatory extraposition' of complement clauses of V is not true extraposition, but probably just indicates the base position (cf. Zwart 1997; Koster 1999a, etc.), from which true optional extraposition can take place, cf. (65). The same may be the case for PP complements of V (see e.g. Barbiers 1995).

(57) *conjunct*
a. Ik heb *Joop en Jos* gezien.
I have Joop and Jos seen
b. Ik heb *Joop* gezien *en Jos*.

(58) *relative clause*
a. Ik heb *de man die een rode hoed op had* gezien.
I have the man who a red hat on had seen
b. Ik heb *de man* gezien *die een rode hoed op had*.

(59) *result clause*[13]
a. *Zo hard dat iedereen schrok* heeft ze nog nooit gelachen.
so hard that everybody was.scared has she yet never laughed
b. Ze heeft nog nooit *zo hard* gelachen *dat iedereen schrok*.
a.' *Te veel om te bespreken* heeft hij nog nooit ingeleverd.
too much . to discuss has he yet never in.handed
b.' Hij heeft nog nooit *te veel* ingeleverd *om te bespreken*.

(60) *apposition*
a. Ik heb *Joop, de directeur*, ontmoet.
I have Joop, the manager, met
b. Ik heb *Joop* ontmoet, *de directeur*.

(61) *comparative clause*
a. Ik heb *meer dan jij* gegeten.
I have more than you eaten
b. Ik heb *meer* gegeten *dan jij*.

(62) *PP complement of N*
a. Ik heb *de man met de rode hoed* gezien.
I have the man with the red hat seen
b. Ik heb *de man* gezien *met de rode hoed*.

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13 In general, there is a strong preference to extrapose result clauses. However, especially if the whole construction is topicalized, the non-extraposed order is acceptable.

(63) *complement clause of N*
a. Ik heb *de vraag of hij komt* niet durven stellen.
I have the question if he comes not dare to.pose
b. Ik heb *de vraag* niet durven stellen *of hij komt*.

(64) *PP complement of A*
a. Hij is altijd *dol op chocolade* geweest.
he has always fond of chocolate been
b. Hij is altijd *dol* geweest *op chocolade*.

(65) *complement clause of V*[14]
a. * Ze heeft *dat ze een nieuwe baan wil* gezegd, gisteren.
she has that she a new job wants said, yesterday
b. Ze heeft gezegd *dat ze een nieuwe baan wil,* gisteren.
c. Ze heeft gezegd, gisteren, *dat ze een nieuwe baan wil*.

(66) *heavy NP(i)*
a. Hierbij doen we u *de onderscheiding voor voorbeeldig gedrag* toekomen.
hereby do we you the reward for exemplary behaviour give
b. Hierbij doen we u toekomen: *de onderscheiding voor voorbeeldig gedrag*.

(67) *HNP(ii): free relatives*
a. Ze heeft *wat jij gemaakt hebt* vernield.
she has what you made have destroyed
b. Ze heeft vernield *wat jij gemaakt hebt*.

(68) *PP object of V*
a. Ze heeft *aan haar moeders verjaardag* gedacht.
she has of her mother's birthday thought
b. Ze heeft gedacht *aan haar moeders verjaardag*.

(69) *sentence adverb*
a. Ik ben *gisterenmiddag* wezen zwemmen.
I have yesterday.afternoon been swimming
b. Ik ben wezen zwemmen, *gisterenmiddag*.

(70) *adverbial PP*
a. Ik heb *in de Gaasperplas* gezommen.
I have in the Gaasperplas swum
b. Ik heb gezwommen, *in de Gaasperplas*.
a.' Ik heb de man *met een verrekijker* bespied.
I have the man with . binoculars spied.on
b.' Ik heb de man bespied, *met een verrekijker*.

(71) *adverbial NP*
a. Ik ben *die dag* wezen zwemmen.
I have that day been swimming
b. Ik ben wezen zwemmen, *die dag*.

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[14] If the complement clause is quotative or factive, it *can* be preverbal (cf. Barbiers 1998):
(i) Joop zal *dat hij gelogen heeft* nooit toegeven. [Joop will that he lied has never admit]

(72) *adverbial clause*
  a. Hij is *omdat hij haast had* al vertrokken.
     he has because he in.a.hurry was already left
  b. Hij is al vertrokken, *omdat hij haast had*.

(73) *predicative adjunct AP*
  a. Hij keek me *doodsbleek* aan.
     he looked me deathly.pale at
  b. Hij keek me aan, *doodsbleek*.

(74) *attributive AP*
  a. Ze heeft *witte* druiven geplukt.
  b. Ze heeft druiven geplukt, *witte*.

5.2.11. Binding at the base

The fact that subjects take scope over objects, and indirect objects over direct objects (S > IO > DO) in combination with variable binding by quantifiers (Q) and binding Principle C effects (C) can be used to show that extraposed phrases behave as if they are at the 'original' position. In particular, this is relevant for duplex constructions with a clause, and for complement clauses of V.

(75) *relative clause*
  a. Ik heb iedereen$_i$ *het verhaal dat hij$_i$ wilde horen* verteld. [Q: io > do]
     I have everybody the story that he wanted to.hear told
  a.' Ik heb iedereen$_i$ *het verhaal* verteld *dat hij$_i$ wilde horen*.
  b. * Ik heb *de persoon die het$_i$ wilde horen* [elk verhaal]$_i$ verteld. [Q: do < io !]
     I have the person who it wanted to.hear every story told
  b.' * Ik heb *de persoon* [elk verhaal]$_i$ verteld *die het$_i$ wilde horen*.
  c. [Elke man]$_i$ is *het huis waar hij$_i$ woonde* binnengegaan. [Q: s > do]
     every man has the house where he lived entered
  c.' [Elke man]$_i$ is *het huis* binnengegaan *waar hij$_i$ woonde*.
  d. * *De man die er$_i$ woonde* is [elk huis]$_i$ binnengegaan. [Q: do < s !]
     the man who there lived has every house entered
  d.' * *De man* is [elk huis]$_i$ binnengegaan *die er$_i$ woonde*.

(76) a. Ik heb *de verpleegster die Joops$_i$ vrouw natrok* hemzelf$_i$ aanbevolen. [C: io > do]
     I have the nurse who Joop's wife investigated himself recommended
  a.' Ik heb *de verpleegster* hemzelf$_i$ aanbevolen *die Joops$_i$ vrouw natrok*.
  b. * Ik heb hem$_i$ *een vrouw die Joop$_i$ niet kende* aanbevolen. [C: do < io !]
     I have him a woman who Joop not knew recommended
  b.' * Ik heb hem$_i$ *een vrouw* aanbevolen *die Joop$_i$ niet kende*.
  c. *Iemand die Joop$_i$ vertrouwde* heeft hem$_i$ hulp geboden. [C: s > io]
     someone who Joop trusted has him help offered
  c.' *Iemand* heeft hem$_i$ hulp geboden *die Joop$_i$ vertrouwde*.
  d. * Hij$_i$ heeft *de vrouw die Joop$_i$ vertrouwde* hulp geboden. [C: io < s !]
     he has the woman who Joop trusted help offered
  d.' * Hij$_i$ heeft *de vrouw* geholpen *die Joop$_i$ vertrouwde*.

(77) *result clause*
  a. Ik heb iedereen$_i$ *zoveel dat hij$_i$ er gek van werd* verteld. [Q: io > do]
     I have everyone so.much that he there crazy of became told
  a.' Ik heb iedereen$_i$ *zoveel* verteld *dat hij$_i$ er gek van werd*.

b. * Ik heb *zoveel mensen dat het$_i$ afgestompt raakte* [elk verhaal]$_i$ verteld.[Q: do < io !]
I have so.many people that it dulled became every story told
b.' * Ik heb *zoveel mensen* [elk verhaal]$_i$ verteld *dat het$_i$ afgestompt raakte*.
c. [Elke man]$_i$ heeft *zoveel CD's dat hij$_i$ failliet raakte* gekocht. [Q: s > do]
every man has so.many CDs that he bankrupt became bought
c.' [Elke man]$_i$ heeft *zoveel CD's* gekocht *dat hij$_i$ failliet raakte*.
d. * *Zoveel mensen dat ze het$_i$ beschadigden* zijn [elk huis]$_i$ binnengegaan. [Q: do < s !]
so.many people that they it damaged have every house entered
d.' * *Zoveel mensen* zijn [elk huis]$_i$ binnengegaan *dat ze het$_i$ beschadigden*.

(78) a. Ik heb *zoveel mensen dat Joop$_i$ verlegen werd* hemzelf$_i$ aanbevolen. [C: io > do]
I have so.many people that Joop shy became himself recommended
a.' Ik heb *zoveel mensen* hemzelf$_i$ aanbevolen *dat Joop$_i$ verlegen werd*.
b. * Ik heb hem$_i$ *zoveel kandidaten dat Joop$_i$ wanhopig werd* aanbevolen. [C: do < io !]
I have him so.many candidates that Joop desperate became recommended
b.' * Ik heb hem$_i$ *zoveel kandidaten* aanbevolen *dat Joop$_i$ wanhopig werd*.
c. *Zoveel mensen dat Joop$_i$ ontroerd was* hebben hem$_i$ hulp geboden. [C: s > io]
so.many people that Joop touched was have him help offered
c.' *Zoveel mensen* hebben hem$_i$ hulp geboden *dat Joop$_i$ ontroerd was*.
d. * Hij$_i$ heeft *zoveel mensen dat Joop$_i$ een lintje verdiende* hulp geboden. [C: io < s !]
he has so.many people that Joop a decoration deserved help offered
d.' * Hij$_i$ heeft *zoveel mensen* geholpen *dat Joop$_i$ een linje verdiende*.

(79) *comparative clause*
a. Ik heb iedereen$_i$ *meer dan hij$_i$ wilde horen* verteld. [Q: io > do]
I have everybody more than he wanted to.hear told
a.' Ik heb iedereen$_i$ *meer* verteld *dan hij$_i$ wilde horen*.
b. * Ik heb *meer mensen dan het$_i$ wilden horen* [elk verhaal]$_i$ verteld. [Q: do < io !]
I have more people than it wanted to.hear every story told
b.' * Ik heb *meer mensen* [elk verhaal]$_i$ verteld *dan het$_i$ wilden horen*.
c. [Elke man]$_i$ heeft *meer CD's dan hij$_i$ zich kon veroorloven* gekocht. [Q: s > do]
every man has more CDs than he SE could afford bought
c.' [Elke man]$_i$ heeft *meer CD's* gekocht *dan hij$_i$ zich kon veroorloven*.
d. * *Meer mensen dan er$_i$ woonden* zijn [elk huis]$_i$ binnengegaan. [Q: do < s !]
more people than there lived have every house entered
d.' * *Meer mensen* zijn [elk huis]$_i$ binnengegaan *dan er$_i$ woonden*.

(80) a. Ik heb *meer mensen dan Joop$_i$ verwachtte* hemzelf$_i$ aanbevolen. [C: io > do]
I have more people than Joop expected himself recommended
a.' Ik heb *meer mensen* hemzelf$_i$ aanbevolen *dan Joop$_i$ verwachtte*.
b. * Ik heb hem$_i$ *meer kandidaten dan Joop$_i$ verwachtte* aanbevolen. [C: do < io !]
I have him more candidates than Joop expected recommended
b.' * Ik heb hem$_i$ *meer kandidaten* aanbevolen *dan Joop$_i$ verwachtte*.
c. *Meer mensen dan Joop$_i$ verwachtte* hebben hem$_i$ hulp geboden. [C: s > io]
more people than Joop expected have him help offered
c.' *Meer mensen* hebben hem$_i$ hulp geboden *dan Joop$_i$ verwachtte*.
d. * Hij$_i$ heeft *meer mensen dan Joop$_i$ verwachtte* hulp geboden. [C: io < s !]
he has more people than Joop expected help offered
d.' * Hij$_i$ heeft *meer mensen* geholpen *dan Joop$_i$ verwachtte*.

(81) *complement clause of N*
- a. Ik heb iedereen$_i$ *de vraag of hij$_i$ wilde vertrekken* voorgelegd. [Q: io > do]
  I have everybody the question if he wanted to.leave presented
- a.' Ik heb iedereen$_i$ *de vraag* voorgelegd *of hij$_i$ wilde vertrekken*.
- b. <n/a>
- c. [Elke gek]$_i$ heeft *de vraag waar hij$_i$ woonde* gesteld. [Q: s > io]
  every nut has the question where he lived asked
- c.' [Elke gek]$_i$ heeft *de vraag* gesteld *waar hij$_i$ woonde*.
- d. * *Het verzoek of hij$_i$ kon komen* heeft [iedereen]$_i$ verbaasd. [Q: io < s !]
  the request if he could come has everybody surprised
- d.' * *Het verzoek* heeft [iedereen]$_i$ verbaasd *of hij$_i$ kon komen*.

(82)
- a. <n/a>
- b. * Ik heb hem$_i$ *de vraag of Joop$_i$ kwam* gesteld. [C: do < io !]
  I have him the question if Joop came asked
- b.' * Ik heb hem$_i$ *de vraag* gesteld *of Joop$_i$ kwam*.
- c. *Het verzoek of Joop$_i$ kon komen* heeft hem$_i$ hoofdbrekens bezorgd. [C: s > io]
  the request if Joop could come has him 'mind-bendings' given
- c.' *Het verzoek* heeft hem$_i$ hoofdbrekens bezorgd *of Joop$_i$ kon komen*.
- d. * Hij$_i$ heeft *het verzoek of Joop$_i$ kwam* overwogen. [C: do < s !]
  he has the request if Joop came considered
- d.' * Hij$_i$ heeft *het verzoek* overwogen *of Joop$_i$ kwam*.

(83) *complement clause of V*
- a. Ik heb Joop$_i$/iedereen$_i$ gezegd *dat hij$_i$ weg moest gaan.* [C/Q: io > do]
  I have Joop/everybody told that he away should go
- a.' Ik heb Joop$_i$/iedereen$_i$ gezegd, gisteren, *dat hij$_i$ weg moest gaan*.
- b. * Ik heb hem$_i$ gezegd *dat Joop$_i$/iedereen$_i$ weg moest gaan*. [C/Q: do < io !]
  I have him told that Joop/everybody away should go
- b.' * Ik heb hem$_i$ gezegd, gisteren, *dat Joop$_i$/iedereen$_i$ weg moest gaan*.
- c. Joop$_i$/iedereen$_i$ heeft me gezegd *dat hij$_i$ weg moest gaan.* [C/Q: s > do]
  Joop/everybody has me told that he away should go
- c.' Joop$_i$/iedereen$_i$ heeft me gezegd, gisteren, *dat hij$_i$ weg moest gaan.*
- d. * Hij$_i$ heeft me gezegd *dat Joop$_i$/iedereen$_i$ weg moest gaan.* [C/Q: do < s !]
  he has me told that Joop/everybody away should go
- d.' * Hij$_i$ heeft me gezegd, gisteren, *dat Joop$_i$/iedereen$_i$ weg moest gaan.*

5.2.12. Split antecedent

In severely restricted contexts, extraposed relatives may have more than one antecedent in Dutch. It is called type A multiple relativization in Ch2§7.6. Most duplex constructions show a similar pattern.

(84)
- a. [Ik heb *een vrouw* gezien] en [jij hebt *een man* bespied], *[relative clause]*
  [I have a woman seen] and [you have a man spied.on]
  die beide een rode jas droegen.
  who both a red coat wore
- b. [Joop is *zo klein*] en [Piet is *zo groot*], *[result clause]*
  [Joop is so small] and [Piet is so tall]
  dat ze elkaar niet in de ogen kunnen kijken.
  that they each.other not in the eyes can look
- c. [Ik heb *Joop* gezien] en [jij hebt *Piet* bespied], *onze twee bazen*. *[apposition]*
  [I have Joop seen] and [you have Piet spied.on], our two bosses

d. [*Meer mannen* schreven zich in] en [*meer vrouwen* *[comparative clause]*
[more men signed SE up] and [more women
schreven zich uit], dan *in totaal bij te houden was*.
deregistered], than in total up to keep.with was

e. Ik heb [*de man* aangehouden] en [*de vrouw* *[PP complement of N]*
I have [the man stopped] and [the woman
doorgelaten], *met een gezamenlijke reisverzekering*.
let.through], with a combined travel.insurance

f. [Joop heeft *het verzoek* gedaan], en [Piet heeft *[complement clause of N]*
[Joop has the request made] and [Piet has
de vraag gesteld], *of ze samen op reis mochten*.
the question asked], if they together on a.journey were.allowed

5.2.13. Question formation

Question formation can be divided into three kinds: i) topicalization of the whole construction, ii) topicalization of the first part only and stranding the second in the middlefield (which is unacceptable), and iii) extraposition from a topic.

(85) *conjunct*
a. *Welke man en welke vrouw* heb je uitgenodigd?
which man and which woman have you invited
b. * *Welke man* heb je *en welke vrouw* uitgenodigd?
c. *Welke vrouw* heb je uitgenodigd, *en welke man*?

(86) *relative clause*
a. *Hoeveel mensen die weggingen* heb je gezien?
how.many people who left have you seen
b. * *Hoeveel mensen* heb je *die weggingen* gezien?
c. *Hoeveel mensen* heb je gezien *die weggingen*?

(87) *result clause*
a. ? *Hoeveel zulke domme mensen dat ze niet gaan stemmen* heb je geteld?
how.many so stupid people that they not go voting have you counted
b. * *Hoeveel zulke domme mensen* heb je *dat ze niet gaan stemmen* geteld?
c. ? *Hoeveel zulke domme mensen* heb je geteld *dat ze niet gaan stemmen*?

(88) *apposition*
<n/a>

(89) *comparative clause*
a. *Hoeveel langer dan Piet* heb je hem geschat?
how.much taller than Piet have you him estimated
b. * *Hoeveel langer* heb je hem *dan Piet* geschat?
c. *Hoeveel langer* heb je hem geschat *dan Piet*?

(90) *PP complement of N*
a. *Hoeveel mannen met een hoed* heb je geturfd?
how.many men with a hat have you tallied
b. * *Hoeveel mannen* heb je *met een hoed* geturfd?
c. *Hoeveel mannen* heb je geturfd *met een hoed*?

(91) *complement clause of N*
  a. *Wiens verzoek of hij geld kreeg* heb je gehonoreerd?
     whose request if he money became have you honoured
  b. * *Wiens verzoek* heb je *of hij geld kreeg* gehonoreerd?
  c. *Wiens verzoek* heb je gehonoreerd *of hij geld kreeg*?

(92) *PP complement of A*
  <n/a>

Simplex constructions can be questioned with preservation of categorial status, except clauses. This has nothing to do with extraposition.

(93) a. <n/a> *[complement clause of V]*
  b. *Wiens verzoek om overplaatsing naar een betere positie* *[Heavy NP(i)]*
     whose request for replacement to a better position
     heeft u gehonoreerd?
     have you honoured
  c. <n/a> *[HNP(ii): free relative]*
  d. *Aan wie* heb je gedacht? *[PP object of V]*

(94) a. *Wanneer* heb je gevoetbald? *[sentence adverb]*
     when have you played.soccer
  b. *Waarin* heb je gezommen? *[adverbial PP]*
     Where.in have you swum
  c. *Welke dag* ben je wezen zemmen? *[adverbial NP]*
     which day have you been swimming
  d. <n/a> *[adverbial clause]*
  e. *Hoe bleek* keek hij je aan? *[predicative adjunct AP]*
     how pale looked he you at
  f. *Welke kleur druiven* heeft ze geplukt? *[attributive AP]*
     which colour grapes has she picked

8 Possession

1. Introduction

Attributive possessive structures come in several syntactic forms, and so do possessive relatives. In this chapter I try to establish to what extent and how these structures are interrelated. I will show how the theory presented for attributive possessives translates into possessive relatives within the framework of the promotion theory of relatives clauses.

As an illustration, consider the following data from Dutch. Syntactically, there are at least three different ways to shape a possessive relative:[1]

(1) a. de man wiens[2] vader ik ken [the man whose father I know]
b. de man wie zijn vader ik ken [the man whom his father I know]
c. de man van wie ik de vader ken [the man of whom I the father know]

These constructions correspond to the normal attributive possessives in (2) respectively. The examples in (1a) and (2a) contain a prenominal genitive; in (1b)/(2b) we have a possessive pronoun construction; and the variant in (1c)/(2c) contains a periphrastic genitive using the preposition *van* 'of'.[3,4]

(2) a. 's mans vader [the$_{gen}$ man$_{gen}$ father]
b. de man zijn vader [the man his father]
c. de vader van de man [the father of the man]

Since the three variants mean exactly the same, one may wonder why all these options exist to begin with. Consequently, a range of questions arises:

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1 Here *wiens* 'whose' and *wie* 'who' are relative pronouns. Furthermore, *zijn* 'his' is a possessive pronoun, *van* 'of' a preposition and *de* 'the' a definite non-neuter article.

2 In Dutch, *wiens* is male singular, and *wier* feminine singular or plural (f/m). The latter has become very formal, if not archaic. It seems that *wiens* is shifting from a morphological genitive to a Saxon genitive (cf. the Appendix, section A1), which is inert to number or gender.

3 Notably, true morphological genitives are archaic in modern Dutch. Phrases like *'s mans* are lexicalized. The topic plus pronoun construction in (1b) and (2b) has a colloquial flavour in the standard language, but is completely acceptable in many dialects and also in Frisian. Often the pronoun is lexically reduced to *z'n* 'his' or *d'r* 'her', but that is not necessary (contrary to what is often suggested in the literature).

4 The Saxon genitive is not relevant here; but see the Appendix.

- Are attributive possessive constructions (syntactically) related to each other?
- What licences the (abstract) Case of the attributive phrase?
- In short, how are the various attributive possessives to be represented syntactically?
- How can the syntax of attributive possessives be incorporated into relative constructions?
- In particular, how can possessive relatives be treated within the promotion theory of relative clauses?

There are several proposals in the literature concerning possessive structures.[5] Still, many questions are not adequately addressed or not satisfactorily solved, as far as I can judge. Therefore I will try to develop a new approach that covers the pertinent constructions – both attributive possessives and possessive relatives – in a coherent way. I argue that the three constructions are indeed related syntactically, and that the analysis of possessive structures can be incorporated within the promotion theory of relative clauses unproblematically.

Section 2 starts with some general remarks about the function of possession. The syntax of attributive possessives is treated in section 3; the interaction between possessive and relative constructions in section 4. Section 5 discusses pied piping and preposition stranding in relative clauses, in particular exceptionally heavy pied piping; and section 6 concludes the chapter. The Appendix to this chapter addresses some special constructions related to possession; these are the Saxon genitive, the double genitive, independent possessives and the qualitative construction.

2. Prefatory overview: thematic roles and cognitive schemata

What is possession? It has been stated over and over in the literature that it is extraordinarily hard to define, since virtually every relationship between two entities can be expressed by a possessive construction. For instance, *his book* expresses ownership, *his father* kinship and *his defeat* an event whereby the 'possessor' has a patient role. Still, in all cases the possessive pronoun *his* is used.

As a further illustration, thematic roles associated with German genitives as can be found in the literature, can be systematized as follows – adapted from Duden (1998:668/9,302) and De Wit (1997:112/3):

[5] Two important works are Delsing (1993:Ch5) and De Wit (1997).

(3) a. 'belong to'

(i) *Genitivus possessivus:* *('gen. of possession')*
das Haus meines Vaters [the house my_{gen} $father_{gen}$]

(ii) *Genitiv der Zugehörigkeit:* *('gen. of belonging to')*
die Schule meines Bruders [the school my_{gen} $brother_{gen}$]

(iii) *Genitivus des Eigenschaftsträgers:* *('gen. of property-bearing')*
die Grösse des Zimmers [the size the_{gen} $room_{gen}$]

b. 'agent'

(iv) *Genitivus subiectivus:* *('gen. of subject')*
die Lösung des Schülers [the solution the_{gen} $student_{gen}$]

(v) *Genitivus Auctoris:* *('gen. of maker')*
das Werk des Dichters [the work the_{gen} $poet_{gen}$]

c. 'theme/patient'

(vi) *Genitivus obiectivus:* *('gen. of object')*
die Lösung der Aufgabe [the solution the_{gen} $assignment_{gen}$]
das Verschwinden des Mädchens [the disappearing the_{gen} $girl_{gen}$]

(vii) *Genitivus des Produkts:* *('gen. of product')*
der Dichter des Werkes [the poet the_{gen} $work_{gen}$]

d. 'property'

(viii) *Genitivus Qualitatis:* *('gen. of quality')*
ein Mann der Vernunft [a man the_{gen} $ingenuity_{gen}$]

e. 'part/whole'

(ix) *Genitivus partitivus:* *('gen. of part')*
die Hälfte des Buches [the half the_{gen} $book_{gen}$]

(x) *Genitiv der Steigerung:*[6] *('gen. of augmentation')*
das Buch der Bücher [the book the_{gen} $books_{gen}$]

f. 'equation/explication'

(xi) *Genitivus explicativus:* *('gen. of explication')*
die Strahl der Hoffnung [the beam the_{gen} $hope_{gen}$]

(xii) *Genitivus definitivus:* *('gen. of delimitation')*
die Pflicht der Dankbarkeit [the duty the_{gen} $gratitude_{gen}$]

g. 'presentation'

(xiii) *Genitiv des dargestellten Objekts:* *('gen. of represented object')*
das Bild Goethes [the picture $Goethe_{gen}$]

This state of affairs is confirmed from a typological perspective. For instance, Heine (1997:33) states: *"Looking at a wider range of languages it would seem that there is a catalogue of possessive notions that tend to be distinguished in some way or other and that might be relevant for a cross-cultural understanding of* [predicative] *possession."* These seven notions are the following, illustrated with predicative possessive structures:

6 This is not a productive construction; it is restricted to biblical language.

(4)	a.	*physical possession:*	I want to fill in this form; do you *have* a pen?
	b.	*temporary possession:*	I have a car that I use to go to the office… …but it *belongs to* Judy.
	c.	*permanent possession:*	Judy *has* a car but I use it all the time.
	d.	*inalienable possession:*	I *have* blue eyes/two sisters.
	e.	*abstract possession:*	I *have* no time/no mercy/a missing tooth.
	f.	*inanimate inalienable possession:*	The tree *has* few branches.
	g.	*inanimate alienable possession:*	That tree *has* crows on it.

The notions in (4) seem to be subdivisions of (3a), the 'belong to' relation. Clearly, the range of meanings associated with predicative possessive constructions is far more limited than the range of meanings associated with attributive possession.

It seems to me that people intuitively distinguish canonical possession, i.e. clear instances of the 'belong to' relation. This becomes grammaticalized in a language. Consequently, every relation expressed by means of this syntactic pattern is 'generalized possessive', no matter if the relation is far away from the canonical meaning. Thus, in the words of Postma (1997:276):

"We should take possession to be a specific syntactic configuration. This configuration can, by default, be interpreted *as a semantic possesssion."*

In accordance with standard conventions, I use the term *(generalized) possession* for all pertinent constructions. As stated, this includes more than just canonical semantic possession. However, it should be clear that the semantics of generalized possession is not empty. There is an asymmetry between possessor and possessum – see Postma (1997). In addition, Heine (1997:156) agrees with Nikiforidou (1991) on the following points:

"(a) The meanings (or functions) of genitives are motivated rather than arbitrary. (b) They are limited in number and are part of a network of conceptual relationships. (c) This network is similar across languages. (d) There are significant correlations between the synchronic structure and the diachronic development of genitives."

According to Heine, eight cognitive schemata account for the vast majority of possessive constructions in the languages of the world. This is based on a survey of more than 100 different languages. The schemata are summarized in table 1.

Table 1. *Cognitive schemata underlying **predicative** possession, based on Heine (1997:47ff).*

formula	*label of event schema*	*example*	*(language)*
X takes Y	Action	O menino tem fome. the child takes hunger	*[Portuguese]*
Y is (located) at X	Location	U menja kniga at me book	*[Russian]*
X is with Y	Companion	O menino esta com fome. the child is with hunger	*[Portuguese]*
X's Y exists	Genitive	Kitab-im var book-my existent	*[Turkish]*
Y exists for/to X	Goal	Le livre est à moi. the book is to me	*[French]*
Y exists from X	Source	ts'ét'ú nets'e. cigarette you.from	*[Slave]*[7]
As for X, Y (of X) exists	Topic	noo=n no-paa?as ?awq I=CLIT my-brother is	*[Luiseño]*
Y is X's (property)	Equation	Kniga moya book my 'the book is mine'	*[Russian]*

As I understand it, Location, Companion, Genitive, Goal and Source are associated with grammaticalized prepositions, or with locative, comitative, genitive, dative and ablative Case, respectively. Many European languages (including English) use the Action schema. A verb like 'have' often arises out of the semantic bleaching of verbs such as 'take', 'hold' or 'get'.

Next to predicative possession, *every* known language has a form of attributive possession (Heine 1997). According to Heine, it rarely happens that the same schema is used for predicative and attributive possession. Notably, it is possible that more than two schemata are in use, i.e. there can be secondary strategies. Although the semantic range of relations is larger for attributive than for predicative possessives, only five out of eight schemata are used – see table 2. This stands to reason, since propositional syntax is unavailable.

7 *Slave* is an Athapaskan language of the Na-Dene phylum.

Table 2. *Cognitive schemata underlying **attributive** possession, based on Heine (1997:144ff).*

formula	*label of event schema*	*example*	*(language)*
Y at X	Location	Mamadu lá báara [Mamadu at] work 'Mamadu's work'	*[Maninka]*
X with Y	Companion	è-ya` kɛŋ` kà à-pa` kaŋ` M-aunt his with F-father my 'my father's aunt'	*[Turkana]*
Y for/to X	Goal	la belle mère à Jean the mother-in-law to Jean	*[French]*
Y from X	Source	het boek van Jan the book of John	*[Dutch]*
(As for) X, X's Y	Topic	de boer z'n huis the farmer his house	*[Dutch]*

Thus, predicative and attributive possession are built on the same conceptual templates. That does not automatically mean they are syntactically derived from each other, or from one and the same underlying structure. Heine (1997) claims that attributive possession can be traced back to 'specification' in many cases. Sometimes attributive structures are historically derived from clausal possession, but there are also examples that show the opposite development. Adding to this that many attributive structures do not have a clausal parallel and vice versa – e.g. *John's resignation ≠ * John has a resignation; John's mother ≠ John has a mother*; cf. Hulk & Tellier (2000) for further discussion – I will not pursue a unified syntactic view on possession.[8] Rather, I maintain a syntactic split in predicative versus attributive possession – although many constructions may be tightly related, of course. I tentatively assume that Heine's cognitive templates account for the (semantic) similarities between the two, whilst the syntactic distinction explains the differences. Leaving these general considerations behind, I will focus on attributive possessives in West-Germanic languages in the next section.

3. Attributive possessives in Dutch, German and English

Section 3.1 shows that there are at least seven distinct possessive configurations. I argue that they are syntactically related, where I take the periphrastic construction as the 'base'. One important reason for this approach is the Case problem to be discussed in 3.2. Section 3.3 argues for the existence of empty prepositions; 3.4 contains the complicated part of the syntactic proposal, where I focus on the derivation of prenominal attributive possession. Section 3.5 comments on some potential alternative ideas; 3.6 is a summary of the analysis. The theory on attributive possession laid down in this section then serves as the basis for the analysis of possessive relatives in section 4.

[8] This is in partial disagreement with Kayne (1994), Den Dikken (1995), and others.

3.1. Various possessive configurations

There are various syntactic ways to express an attributive possessive relation in Dutch and German. Apart from a possessive pronoun (5a), one can use a possessive preposition – i.e. a periphrastic genitive – as in (5b),[9] a post- or prenominal genitive (5c/d),[10] a topic plus possessive pronoun – the 'adnominal possessive dative' – (5e), or a Saxon genitive (5f).[11] Not all options may be available at a certain stage of a language, so (5) is partly a diachronic sample.

(5)	a.	zijn eer	seine Ehre	[his honour]
	b.	de eer van de man	die Ehre von dem Mann	[the honour of the man]
	c.	de eer des vaderlands	die Ehre des Vaterlandes	[the h. the$_{gen}$ fatherland$_{gen}$]
	d.	's mans eer	des Mannes Ehre	[the$_{gen}$ man$_{gen}$ honour]
	e.	de man zijn eer	dem Mann seine Ehre	[the man his honour]
	f.	Joops eer	Joops Ehre	[Joop's honour]

In present-day Dutch the real morphological genitive (5c/d) is archaic. In German, the prenominal genitive is also archaic, but the postnominal one is productive; it is preferred over the periphrastic genitive in formal language (if applicable), but it is past its prime in spoken German. The topic construction in (5e) is colloquial in German, and confined mainly to proper names. In Dutch it is fully productive in many dialects, among which colloquial (standard) Dutch. The Saxon genitive (5f) is reserved for proper names. I will return to it in the Appendix.

The following options are *not* available; see (6). Indeed, from an economic point of view it stands to reason that doublings are excluded.[12]

(6)	a.	* van de man$_i$ zijn$_i$ eer	[of the man his honour]
	b.	* seine$_i$ Ehre des Mannes$_i$	[his honour the$_{gen}$ man$_{gen}$]
	c.	* van 's mans$_i$ (zijn$_i$) eer	[of the$_{gen}$ man$_{gen}$ (his) honour]
	etc.		

The following sections develop a syntactic account for the constructions in (5) and (6).[13]

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9 This construction is colloquial in German. Notice that *von dem* is usually contracted to *vom*. However, for clarity I will use the elaborate variant in the text below.

10 Why the article in prenominal genitives is preferably reduced in Dutch, is not clear to me.

11 Apart from these, there are other – related – possessive constructions in e.g. Norwegian, viz. the *postnominal possessive pronoun construction* (e.g. 'hatten min' [hat.the my]) and the *proprial possessive construction* (e.g. 'huset hans Per' [house-the his Per]). See Delsing (1993), and footnote 9 of section A3 in the Appendix to this chapter.

12 See sections 3.4 and 3.6 for further discussion.

13 Although the cognitive schemata of these constructions may differ, there must be some syntactic unity, as argued. The periphrastic genitive belongs to the Source schema, the topic pronoun construction and the Saxon genitive to the Topic construction. Unfortunately, the morphological genitive is etymologically opaque in German and Dutch (Heine, p.c.).

3.2. Case in possessive constructions

Generally, Case can be licenced by either a verb (structurally), or a preposition (oblique).[14] In (7) the nominal head is *eer/Ehre* 'honour' in each construction. The Case of *eer/Ehre* is unproblematically licenced by the syntactic context, e.g. a main verb. How about the dependent nominal phrase (the possessor)?

(7)	a.	de eer van de man	die Ehre von dem Mann	[the honour of the man]
	b.	's mans eer	des Mannes Ehre	[the$_{gen}$ man$_{gen}$ honour]
	c.	zijn eer	seine Ehre	[his honour]
	d.	de man zijn eer	dem Mann seine Ehre	[the man his honour]

In (7a), *de man/dem Mann* has (oblique) objective/dative Case, licenced by the preposition *van/von*.[15] *'s Mans/des Mannes* in (7b) is genitive. The Case of *zijn/seine* in (7c/d) is variable: it agrees with the head noun's Case. *De man/dem Mann* in (7d) is objective/dative.

The last fact is not well-known for Dutch. There are three points which indicate that it is true. First, the construction is analogous to the German one, where the topic possessor is visibly dative. Second, Verhaar (1997) claims that *Jan* is 'appositive' to *z'n boek* in the example *Jan z'n boek* – which is comparable to (7d) – i.e. *Jan z'n* is not a constituent.[16] Third, the contrast between objective and nominative Case can be made explicit if pronouns are used: *? hem$_{obj}$ z'n eer* [him his honour] versus ** hij$_{nom}$ z'n eer* [he his honour].

In (7a) the Case of the possessor is licenced by the preposition. However, in (7b/c/d) there seems to be no Case licencer. Therefore, these constructions call for an explanation.

If a parallel syntax is assumed for DP and CP (e.g. De Wit 1997) – an attractive idea in itself – the possessor in (7b/c/d) would be a kind of subject, hence carry nominative Case *in each example* – or genitive Case if that is the intranominal counterpart of nominative. Given the data, this prediction is blatantly wrong. Conversely, the possessors in (8) would seem to be objects hence *both* carry objective/accusative Case, which is also not true.

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14 In this chapter I argue that some prepositions can licence genitive Case (and in general: possessive phrases) on the basis of West-Germanic languages. However, Grosu (1988) and Ritter (1988) argue that D-like elements licence possessive phrases in Rumanian genitives and Hebrew Construct States, respectively. Thus the pertinent theory might be of limited scope. But perhaps these constructions are more complicated than they seem to be, in a way resemblant of the English Saxon genitive to be discussed in the Appendix. Nevertheless, conclusions in this direction require much more study.

15 Dutch has lost the morphological difference between accusative and dative Case, hence the neutral term 'objective' Case. The difference between nominative and objective Case is only visible in the pronominal system, as in English.

16 This is in accordance with Koelmans (1975) and others, who assume that this construction has developed from a dative construction: *ik heb Jan z'n boek afgenomen* [I have (from) John$_{dat}$ his$_{acc}$ book$_{acc}$ taken]. The same claim has been made for German; cf. Heine (1997:183/4). However, I am not convinced that it is correct.

(8) a. de eer van de man die Ehre von dem Mann [the honour of the man]
b. de eer des vaderlands die Ehre des Vaterlandes [the h. the$_{gen}$ fatherland$_{gen}$]

Moreover, the semantic parallel between (7b/c/d) and (8) is lost.

Instead we might approach this matter quite differently. I consider two points of major importance:[17]

- The three main forms of attributive possession, the periphrastic (prepositional) genitive, the morphological genitive and the possessive pronoun construction, are used to express the same semantic relations (besides some idiosyncrasies).
- Only the periphrastic genitive provides a clear way to licence the Case of the attribute, viz. by means of a preposition.

Therefore I propose that the prepositional genitive is the syntactic basis for all attributive possessive constructions under discussion.[18] This basis may be implemented like (9).

(9) [$_{DP}$ D [N [$_{PP}$ P DP]]] [e.g. the honour of the man]

Prepositions can licence all kinds of Cases. For instance, in German there are prepositions associated with accusative, dative and genitive. It is imaginable that a grammaticalized preposition changes into a genitive affix, or into an abstract preposition that licences genitive Case. The latter has probably been the case in Dutch and German. Since there is a genitive *paradigm*, it is implausible that the inflections relate to a single preposition.[19] Leaving aside speculations about what might have happened in an undocumented past, we may represent the genitive as follows:

(10) a. de eer van de man [$_{DP}$ D [N [$_{PP}$ P DP$_{obj}$]]] [the honour of the man]
b. de eer des vaderlands [$_{DP}$ D [N [$_{PP}$ ~~P~~$_{gen}$ DP$_{gen}$]]] [the h. the$_{gen}$ fatherland$_{gen}$]

Here ~~P~~$_{gen}$ is the abstract preposition that licences genitive Case. The dash indicates that it has no lexical content.

Thus the semantic unity between the two constructions is represented in syntax. Moreover, a solution to the Case problem is offered by means of an abstract preposition, which will be elaborated upon in the next section. I will return to prenominal possessives in section 3.4.

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17 Moreover, Heine (p.c.) notes that "Prepositional genitives [diachronically] give rise to inflectional genitives, while the reverse is highly unlikely".

18 In the Hungarian non-dative possessive construction, the possessor bears the same Case as the head noun (moreover the head is marked with a possessive morpheme); cf. Szabolcsi (1984). This suggests that the structure in (9) is inapt for these kind of structures.

19 For instance, apart from the regular male/neuter **s**-affix, male nouns can be 'weak': *de weg des here**n*** 'the lord's way'. Feminine and plural DPs do not show the **s** either, e.g. *de commissaris de**r** koningin* 'the queen's commissionar', *de laatste de**r** Mohikanen* 'the last of the Mohicans'.

3.3. Empty prepositions

The presence of an abstract preposition in genitive constructions can be argued for on a diachronic basis (grammaticalization) and by theory-internal reasons (Case licencing). In addition, there is empirical evidence for the existence of empty prepositions.

Consider the *d-w* alternation in Dutch relative constructions. The relative pronoun *die* is the normal pronoun that agrees with a non-neuter noun. However, in the vicinity of a preposition, relative *die* changes to *wie* in present-day Dutch, as shown in (11).[20] (Similarly, the conversion of neuter *dat* to *wat* exists.)

(11) a. de jongen die/*wie ik zie/bewonder/sla [the boy whom I see/admire/hit]
b. de jongen *aan* wie/*die ik denk [the boy of whom I think]
c. de jongen *met* wie/*die ik spreek [the boy with whom I speak]

Regardless of the explanation of this alternation, we predict it to take place in possessive relative constructions also, if there is a hidden preposition. This is correct, indeed; see (12).[21]

(12) a. de jongen wiens/*diens vader ik ken [the boy whose father I know]
b. de jongen wie zijn/*die zijn vader ik ken [the boy whom his father I know]

Similarly, relative *die* changes to *wie* if it is an indirect object. One could argue for the presence of an abstract preposition if lexical *aan* 'to' is absent; see (13).

(13) de man (*aan*) wie/??die ik het gegeven heb [the man (to) whom I it given have]

Finally, on the basis of intonation patterns – among other things – Klooster (1995) argues that prepositions of situating time adverbials can be left lexically unrealized, as illustrated in (14).

(14) die dag = op die dag
that day = on that day

Thus there is clear support for the existence of abstract prepositions.

3.4. Prenominal possession

Genitive DPs may appear before or after the possessum; recall (15).[22]

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[20] Although this does not explain every *w* in Dutch, it does seem to be an important generalization.

[21] Note that *diens* is the demonstrative counterpart of relative *wiens*.

[22] Generally, the order is not free. In German, genitives are postnominal nowadays, e.g. *das Haus des Mannes* 'the man's house', but there are some archaic expressions (and well-known titles of old books, etc.) that are prenominal, like *des Knaben Wunderhorn* 'the boy's magic horn'. In Dutch, genitives are archaic, but generally feminine and plural genitives are postnominal, and male and

to be continued...

(15) a. 's mans eer des Mannes Ehre [the$_{gen}$ man$_{gen}$ honour]
b. de eer des vaderlands die Ehre des Vaterlandes [the h. the$_{gen}$ fatherland$_{gen}$]

Notably, prenominal genitives are definite. As opposed to the situation in postnominal genitives, the main article may not be expressed. This is shown in (16).

(16) * 's mans *de* eer * des Mannes *die* Ehre [the man the honour]

What is the analysis for prenominal genitives? Given an underlying structure like (9) – [$_{DP}$ D [N [$_{PP}$ P DP]]] – the PP must have moved to the higher SpecDP – cf. (17).

(17) 's mans eer [[$_{PP}$ ~~P~~$_{gen}$ DP$_{gen}$] ~~D~~ [N t$_{pp}$]] [the$_{gen}$ man$_{gen}$ honour]

Here ~~P~~$_{gen}$ and ~~D~~ must be empty; DP$_{gen}$ is *'s mans* and N is *honour*.

We cannot simply base-generate PP$_{gen}$ in SpecDP or an adjunct position for several reasons. First, it would be hard to exclude the spell-out of D, because then it would not have to have a special property in order to licence movement to SpecDP (since there would be no movement). Second, the parallel with postnominal genitives is weakened. Third, *lexical* PPs are not allowed in SpecDP either (e.g. * *met de hoed de man* [with the hat the man]; * *van de man de eer* [of the man the honour]). Fourth, a possessive attributive phrase is neither an adjunct, nor a subject to the head noun, but rather it is a modifying complement. For the periphrastic construction this is obvious. For some prenominal genitives it is obvious, too (e.g. *'s mans ontslag* 'the man's discharge'), but for some it is not (*'s mans schrijven* 'the man's writing'). However, given the syntactic and semantic parallels, it would be quite odd to assign a subject status (hence a base specifier position) to only some of the prenominal genitives. Hence the base position of attributive possessives is the complement position of the head noun. Prenominal genitives arise by movement of the genitive.

How can we implement these findings in syntax? It seems reasonable to assume that all projections that represent a generalized possessive relation bear a generalized possessive feature. Thus, a lexical possessive preposition P$_{poss}$ (*van* 'of'), a genitive P$_{gen}$ (possibly ø), and a genitive DP$_{gen}$ (e.g. *'s mans* [the$_{gen}$ man$_{gen}$]) contain possessive features by definition. This is just the technical reflex of the idea that all possessive constructions are instances of one underlying scheme. Note that a possible genitive Case feature must be separated from the general possessive feature, since the former is more specific. So we have the following feature combinations:

... continued

neuter genitives are prenominal or postnominal. In Middle Dutch genitives were prenominal or postnominal.

(18)	+ possessive	- genitive:	P_{poss}	(*van, von*)
	+ possessive	+ genitive:	DP_{gen}	(*'s mans, des Mannes*)
	- possessive	- genitive:	<standard>	
	- possessive	+ genitive:	genitive objects of V_{+gen} or $P_{+gen,-poss}$[23]	

Suppose that a non-genitive determiner D optionally selects a possessive feature, or, alternatively, that there is a possessive D available in the lexicon. So D belongs to the first class in (18). This determiner D_{poss} can neither be identified as 'the' – since 'the' is not possessive – nor as 'the$_{gen}$', since that has a genitive feature. Thus D_{poss} is purely functional in nature; it has no lexical content (but see VII below). Notice that we may assume that D_{poss} is [+definite] as well, since an indefinite article is not acceptable in a possessive construction with prenominal material (e.g. * *'s mans een eer; * the man's an honour*).

Given the assumptions above, there are several possible derivations, which are systematically reviewed here.

I. P_{gen} selects DP_{gen}. This is the only legitimate way to create a genitive noun phrase. Chomsky (1995) does not discuss the mechanism of oblique Case licencing in the Minimalist Program (Chomsky 1995). One may consider it a matter of selection restrictions or covert checking. The choice between these or other alternatives is not important for the purposes here.

II. P_{gen} selects $DP_{[+/-poss, -gen]}$ or $P_{[+/- poss, -gen]}$ selects DP_{gen}. Obviously, this crashes. I will only consider the correct variant in I as the input for the larger derivations in III and furher on.

III. Within a normal DP, N selects PP_{gen}. Nothing moves, a postnominal genitive remains, e.g. *de eer des vaderlands* [the honour the$_{gen}$ fatherland$_{gen}$]. Notice that the main D cannot be genitive itself, if it has no genitive Case licencer. P_{gen} can only licence one DP_{gen}: its complement. Hence * *der eer 's mans* [the$_{gen}$ way the$_{gen}$ man$_{gen}$] is excluded.

IV. Within a normal DP, N selects PP_{poss}. Nothing moves, a postnominal prepositional genitive remains. That is, PP stays in situ and P_{poss} is spelled out as *van*, e.g. *de eer van de man* [the honour of the man].

V. D is possessive, N does not have a possessive complement. This crashes. The possessive feature on D must be checked, but there is no available checker.

VI. D is possessive, N selects PP_{gen}. PP_{gen} moves to SpecDP to check D's possessive feature. Then the genitive becomes prenominal. Recall that D_{poss} is lexically empty. Example: *'s mans eer* [the$_{gen}$ man$_{gen}$ honour].

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[23] Examples in German are: *berauben seines Geldes* 'rob (of) his$_{gen}$ money$_{gen}$', *wegen des Geldes* 'because.of the$_{gen}$ money$_{gen}$'.

VII. D is possessive, N selects PP_{poss}. Now an interesting situation occurs. From (19) I conclude that D_{poss} does not attract PP_{poss} : a prenominal PP cannot be lexically prepositional, as I indicated before.[24]

(19) * van de man (de) eer [[$_{PP}$ P_{poss} DP] D_{poss} [N t_{pp}]] [of the man (the) honour]
* von dem Mann (die) Ehre

The option in (19) is blocked, because there is a more economical derivation, which involves head movement of P. Instead of pied piping the whole PP, P_{poss} incorporates into D_{poss}.[25] *This produces a possessive pronoun*; see (20).[26]

(20) zijn eer …/ seine Ehre … [P_{poss}+D_{poss} [N [$_{PP}$ t_p …]]] [his honour…]

By assumption the complex head $[P+D]_{poss}$ lexically yields a possessive pronoun.[27] Why is D_{poss} not a possessive pronoun by itself? An important reason is that an argument (here: DP) cannot carry two theta roles; see also De Wit (1997).[28] Since DP, an extended projection of N, is an argument within its syntactic context, D is already associated with a θ-role. Therefore the 'possessor' role cannot be assigned to D as well. This role should reside in PP then. This view concords with the fact that PP is selected by N. Notably, a preposition alone is not a possessive pronoun: possessive P is identified as *of*. Hence P and D must form an alliance: P provides the possessive character, D the pronominal part.

If P has a DP-complement – i.e. in the topic plus possessive pronoun construction – the derivation is still not finished. The obligatory semantic agreement

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24 A prenominal lexical PP can only be interpreted adverbially (Klein & Van den Toorn 1980); see also Cattell (1976) and Corver (1990). PPs and other material cannot be raised out of DP in Dutch. If it appears so, nevertheless, the PP must be an adverbial PP, which is generated as an adjunct. This is shown by the minimal pair in (i/ii), where in (ii) an adverbial interpretation is highly unlikely (but not impossible given a special context). In (i) *van wie* can be generated as an adverbial PP; contrary, in (ii) it must have been raised from within DP (*een boek*): an illegal operation. Similarly, (iii), a real genitive – i.e. not an adverbial lexical PP – is ungrammatical.

(i) Van wie heb je een boek gelezen? [Of whom have you a book read?]
(ii) ?* Van wie heb je een boek afgestoft? [Of whom have you a book dusted?]
(iii) * Wiens heb je boek afgestoft/gelezen? [Whose have you book dusted/read?]

25 P does not cross a bounding node (which is DP, not NP). N is an intervening head, but is is irrelevant considering the nature of the attraction. Notice that P-to-D movement is independent of possible covert N-to-D movement (cf. Ch4).

26 I do not consider the Italian construction *il mio libro* [the my book] a counterexample to the pertinent approach. Rather, that language allows for a split D, or an extra layer within DP. See also Bianchi (1995).

27 I use X+Y as an abbreviation for the standard incorporation structure [$_Y$ [$_X$ x] [$_Y$ y]], which is in fact a representation of 'head adjunction'.

28 Possessive pronouns are not adjectives, either. See De Wit (1997) and the references there. Unfortunately, she treats possessive pronouns and prenominal genitives as the specifier of 'PosP', a solution that is against the spirit of the pertinent approach.

between antecedent and pronoun, i.e. the bound reading, must be expressed by a spec-head configuration. Thus DP moves to SpecDP_{poss}; cf. (21).[29,30]

(21) de man zijn eer [$_{DP}$ $DP_{obj/dat}$ P_{poss}+D_{poss} [N [$_{PP}$ t_p t_{dp}]]]
dem Mann seine Ehre the man his honour

Notably, if the antecedent DP does not move, a Binding Principle C violation would occur.

The structure in (21) assures that every phrase gets the right Case. The possessive pronoun is connected with the head noun as if it were a normal determiner, hence they agree in Case, which is determined by their function in the clause, hence licenced by the environment. The topic DP originates as the complement of P (originally *van*$_{+obj}$/*von*$_{+dat}$), hence gets objective Case in Dutch, and dative Case in German.

The above reasoning implies that a seemingly simple DP like *zijn eer* 'his honour' is in fact more complex. The possessive pronoun *zijn* is the result of incorporating a possessive preposition into the determiner of *eer*. Possibly the pronoun is bound by a fronted *pro* complement of P (see section 3.6).

As a final illustration, consider the German phrases in (22). The example in (22a) is archaic and the one in (22c) modern; (22b) is an example of a transitional stage, taken from Paul (1919:325).

(22) a. des Knaben Wunderhorn [the$_{gen}$ boy$_{gen}$ wonderhorn]
b. des Teufels sein Gepäck [the$_{gen}$ devil$_{gen}$ his baggage]
c. dem Peter sein Haus [the$_{dat}$ Peter$_{dat}$ his house]

In (22a) there is a prenominal genitive PP, which is arrived at by fronting PP_{gen}. In (22b) there are both a genitive PP and a possessive pronoun, as the result of P_{gen} incorporation into D_{poss} *and* DP_{gen} topicalization, which is strange because the possessive relation is expressed twice; it seems as if the genitive and the periphrastic construction are mixed up. Notice that this is predicted to be impossible by the feature system introduced, because [poss] is not equal to [gen]. In (22c) the prenominal genitive has disappeared. Still, dative Case on *dem Peter* can be licenced by P_{poss}, just like *von* 'of' licences dative. Again P_{poss} is spelled out in combination with D_{poss} as *sein* 'his'.

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29 Although the pronoun is 'bound' by spec-head agreement, it can be argued to be locally free in a binding-theoretical sense (as required for pronouns), since the antecedent and the posessive pronoun are not co-arguments. In fact, the antecedent is an argument of the possessive head. For definitions, see De Vries (1998a).

30 Technically, it might be that the antecedent DP, which has a topic function within the larger DP_{poss}, and D_{poss}, which attracts it, need topic features or something equivalent.

3.5. A brief evaluation of potential alternatives

At this point let us exclude some potential alternatives to the approach laid down in the sections above.

Take a genitive phrase like *wiens vader* 'whose father'. The pronoun *wiens* could be analysed on a par with a demonstrative pronoun or an article, as in *die/de vader* 'that/the father'. If so, it must be a D-head. But then it must bear the same Case as the noun, which is false, obviously. Hence a genitive interrogative pronoun cannot be D.

Suppose, then, that *wiens* is a genitive phrase. If so, it is an XP (say, a DP itself) which could be generated in SpecDP. Somehow, genitive Case is assigned to SpecDP. But what about postnominal genitives, e.g. *de commissaris der koningin* [the commissioner the$_{gen}$ queen$_{gen}$]? In this construction it is the complement of N that receives genitive Case. (We cannot invoke a right specifier in DP, since the genitive phrase precedes other complements of N: *de commisaris der koningin met die rare hoed* 'the queen's commissioner with that silly hat'; * *de commisaris met die rare hoed der koningin*.) However, other complements of N (mainly PPs) never receive genitive Case. So there is a Case licencing problem anyway. Moreover, it is not clear how to prevent the head of DP to be filled (* *wiens de vader;* * *whose the father*).

Things become even worse if we add possessive pronouns to this story. A possessive pronoun cannot be in SpecDP, since it agrees in Case with the head noun (it is not genitive, unless accidentally). Hence suppose a possessive pronoun is in D, like an article. If so, it is not excluded that a possessive pronoun would coocur with a prenominal genitive, which is impossible. Still, SpecDP can be filled with a topic, as in *Jan zijn vader* [John his father], or *wie zijn vader* [who his father]. Contrary to prediction, this topic is neither genitive, nor does it agree in Case with the head noun (unless coincidentally), but it is objective (or, more precisely: dative, in German).

The above reasoning shows that naïve assumptions about possessives inevitably lead to major problems. Thus a far more elaborate theory is needed, as I argue throughout this chapter.

3.6. Summary and conclusion

Summarizing what we have so far, there are several ways to spell out a generalized possessive construction: e.g. using a morphological genitive, a possessive pronoun or a preposition. The unity between these constructions is reflected by ascribing them the same syntactic base structure. Technically, P_{gen}, P_{poss} and D_{poss} bear a generalized possessive feature. The structures of the relevant constructions are the following:

(23)

a.	de eer van de man die Ehre von dem Mann	$[_{DP}$		D	[N $[_{PP}$ P_{poss} [D NP]$_{obj/dat}$]]]
b.	de eer des vaderlands die Ehre des Vaterlandes	$[_{DP}$		D	[N $[_{PP}$ ~~P~~$_{gen}$ [D NP]$_{gen}$]]]
c.	's mans eer des Mannes Ehre	$[_{DP}$	$[_{PP}$ ~~P~~$_{gen}$ [D NP]$_{gen}$]	~~D~~$_{poss}$	[N t_{pp}]]
d.	diens eer dessen Ehre	$[_{DP}$	$[_{PP}$ ~~P~~$_{gen}$ [D_{dem} ø]$_{gen}$]	~~D~~$_{poss}$	[N t_{pp}]]
e.	de man zijn eer dem Mann seine Ehre	$[_{DP}$	[D NP]$_{obj/dat}$	P+D_{poss}	[N $[_{PP}$ t_p t_{dp}]]]
f.	zijn eer seine Ehre	$[_{DP}$	*pro*$_{dp}$	P+D_{poss}	[N $[_{PP}$ t_p t_{dp}]]]
g.	die (man) zijn eer jenem (Mann) seine Ehre	$[_{DP}$	[D_{dem} (NP)]	P+D_{poss}	[N $[_{PP}$ t_p t_{dp}]]]

The (normal) main D in (23a/b) does not have a possessive feature; in (23c-g) it does, hence the raising of P or PP in order to check it. P_{poss} is *van/von* in Dutch and German, respectively. It licences objective or dative Case. Genitive Case is licenced by an abstract P_{gen}. Possibly P_{gen} can be identified as a genitive affix in other languages, but not so in Dutch and German.[31] By assumption, D_{poss} also lacks a phonetic counterpart. This is indicated by bars in (23). However, if lexical P_{poss} incorporates into D_{poss}, this produces a possessive pronoun. Overt head movement of abstract P_{gen} to D_{poss} is blocked, since that does not produce a word (but see the transitional stage in (22b)). Therefore the whole PP raises to SpecDP, cf. (23c/d). In (23e/g), and probably (23f), there is additional topicalization of the antecedent DP.[32] Thus a spec-head relation is established between the bound pronoun and the antecedent, and a violation of Binding Principle C is avoided. However, since it is not clear whether this is the cause or result of the movement, it might be that an additional topic feature is involved.

Finally, notice that it is correctly predicted that the periphrastic genitive, the morphological genitive and possessive pronouns do not cooccur, since all these options use the P and D head differently; see (24). The explanation is given directly below.

(24) a. * $zijn_i$ eer van de man_i * $seine_i$ Ehre von dem $Mann_i$
his honour of the man

b. * 's $mans_i$ eer van de man_i * des $Mannes_i$ Ehre von dem $Mann_i$
the_{gen} man_{gen} honour of the man

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31 Klooster (1997) supposes that a genitive projection is headed by a genitive determiner which is spelled out as *s*. I rather stick to the idea of a prepositional phrase, because of several reasons. First we can maintain the generalization that only verbs and prepositions licence Case; second the parallelism between the constructions in (23) would be lost otherwise; and third the *s* is not part of all paradigms.

32 It could be that PP raises, not only DP. Since P is empty, one cannot be sure. However, I will not assume unnecessary pied piping, which – moreover – would possibly block a direct spec-head relation between antecedent DP and possessive pronoun.

c. * 's $mans_i$ $zijn_i$ eer — * des $Mannes_i$ $seine_i$ Ehre
the$_{gen}$ man$_{gen}$ his honour

In (24a) the derivation of *zijn* implies incorporation of P into D – cf. (23f) – hence P cannot be spelled out in situ as the periphrastic *van*. In (24b) the derivation of the prenominal genitive *'s mans* implies movement of the PP complement of N to SpecDP – cf. (23c) – hence PP cannot be spelled out in situ as a periphrastic genitive. (See however the Appendix to this chapter on double object constructions and double genitives.) Finally, (24c) is impossible because if a possessive P incorporates into D in order to create a possessive pronoun, it cannot licence the genitive Case of the prenominal constituent any longer.[33]

The next section continues with possessive relatives. Special constructions such as the Saxon genitive and the double genitive are treated of in the Appendix.

4. Possessive relatives

Given this framework for attributive possession, we can move on to possessive relatives at this point. Section 4.1 is an outline of the relevant data; section 4.2 contains the analysis.

4.1. Outline of the data

There are various ways to shape a possessive relative, as shown in (25) through (27) for Dutch, German and English. The construction in (a) resembles the morphological genitive – cf. (5c/d) above; the one in (b) the topic plus pronoun construction – cf. (5e); and the one in (c) the periphrastic (prepositional) genitive – cf. (5b). Since Dutch has more possibilities than the other two languages, I will mainly refer to Dutch, henceforth.

(25) a. de man wiens vader ik ken — [the man whose father I know]
b. de man wie zijn vader ik ken — [the man whom his father I know]
c. de man van wie ik de vader ken — [the man of whom I the father know]
c.' de winkel waarvan ik de eigenaar ken — [the shop where.of I the owner know]
c.'' de winkel waar ik de eigenaar van ken — [the shop where I the owner of know]

(26) a. der Mann dessen Vater ich kenne
b. * der Mann dem seinen Vater ich kenne
c. der Mann von dem ich den Vater kenne
c.' das Geschäft wovon ich den Inhaber kenne
c.'' * das Geschäft wo ich den Inhaber von kenne

[33] However, an example similar to (24b) that was acceptable in a transitional stage of German, has been discussed in (22b) above.

(27) a. the man whose father I know
b. * the man whom his father I know
c. the man of whom I know the father
c.' the shop whereof I know the owner *(archaic)*
c.'' the shop which I know the owner of

From the data some patterns emerge. First note that all Dutch possessive relative constructions contain a relative pronoun in *w*-format; compare (25) to (28).

(28) a. * de jongen *d*iens vader ik ken [the boy whose$_d$ father I know]
b. * de jongen *d*ie zijn vader ik ken [the boy whom$_d$ his father I know]
c. * de jongen van *d*ie ik de vader ken [the boy of whom$_d$ I the father know]
c.' * de winkel *d*aarvan ik de eigenaar ken [the shop there.of I the owner know]
c.'' * de winkel *d*aar ik de eigenaar van ken [the shop there I the owner of know]

This is striking, since the normal relatives are *die* and *dat* with a *d*, e.g. *de jongen die ik ken* 'the boy whom I know'. In fact, in Middle Dutch (28a/b/c) was correct; and it is still this way in present-day German; cf. (26a/c).

Second, if the possessum forms one constituent with the relative pronoun (D_{rel}), e.g. *wiens vader/wie zijn vader* in (25a/b), an article may *not* be expressed and the whole DP gets a definite interpretation automatically; see the contrast with (29). (The patterns in (29) through (32) are similar in German and English.)

(29) a. * de jongen wiens de/een vader ik ken [the boy whose the/a father I know]
b. * de jongen wie zijn de/een vader ik ken [the boy whom his the/a father I know]

However, if D_{rel} and NP are separated – as in (25c/c'/c'') – the article *is* expressed, e.g. *van wie…**de** vader*. Therefore the phrase can also be indefinite:

(30) a. de jongen van wie ik *een* vriend ken [the boy of whom I a friend know]
b. de winkel waarvan ik *een* klant ken [the shop where.of I a customer know]
c. de winkel waar ik *een* klant van ken [the shop where I a customer of know]

Moreover, if D_{rel} and NP are separated, a preposition (*van*) is obligatory; see (25) versus (31).

(31) a. * de jongen wiens ik (de) vader ken [the boy whose I (the) father know]
b. * de jongen wie zijn ik (de) vader ken [the boy whom his I (the) father know]
c. * de jongen wie ik (de) vader ken [the boy whom I (the) father know]
d. * de winkel waar ik (de) eigenaar ken [the shop where I (the) owner know]

On the contrary, if D_{rel} and NP are one constituent, this preposition is impossible; see (32).

(32) a. * de jongen [van wiens (de) vader] ik ken
the boy of whose (the) father I know
b. * de jongen [(de) vader van wiens] ik ken
the boy (the) father of whose I know
c. * de jongen [van wie zijn (de) vader] ik ken
the boy of whom his (the) father I know
d. * de jongen [(de) vader van wie zijn] ik ken
the boy (the) father of whom his I know
f. * de jongen [(de) vader van wie] ik ken
the boy (the) father of whom I know
g. * de jongen [van wie (de) vader] ik ken
the boy of whom (the) father I know
h. * de winkel [(de) eigenaar waarvan] ik ken
the shop (the) owner where.of I know
i. * de winkel [waarvan (de) eigenaar] ik ken
the shop where.of (the) owner I know

For now, this concludes a list of five relevant properties to be explained.

My goal is twofold. I try to derive these possessive structures and their properties in a way that matches the claims concerning attributive possessives laid down in the previous sections; moreover, the analysis must be compatible with the promotion theory of relative clauses.[34]

4.2. Analysis

The promotion theory of relative clauses has been discussed in Chapters 3, 4 and 5. The technical aspects for postnominal D N RC languages such as Dutch, German and English can be summarized as follows. The subordinate clause is the complement of the matrix determiner. The head noun originates in the relative clause. Within that clause, it must be promoted to be licenced (and become recognizable) as the head noun. Two steps in the derivation are crucial here. First, movement of DP_{rel} to SpecCP. (Recall that D_{rel} bears a *wh*-feature.) Second, movement of the head NP to $SpecDP_{rel}$. Thus agreement between NP and D_{rel} can be established in a spec-head configuration. Moreover, NP reaches the highest specifyer position, where a connection with the outer determiner can be made.[35] This is shown in (33).

(33) a. de jongen die ik ken [the boy whom I know]
b. $[_{DP}$ de $[_{CP}$ ik ken $\mathbf{[_{DP\text{-}rel}}$ **die** $\mathbf{[_{NP}}$ **jongen]]**]] $\rightarrow$
c. $[_{DP}$ de $[_{CP}$ $\mathbf{[_{DP\text{-}rel}}$ $\mathbf{[_{NP}}$ **jongen] die** $\mathbf{t_{np}}$ **]** ik ken $\mathbf{t_{DP\text{-}rel}}$]]

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34 There are sentences involving heavy pied piping that seem hard to explain; these are discussed in section 5. See also Bianchi (1995:ChVI).

35 I have argued in Chapter 4 that there is formal feature movement of N to D; this (as well as intermediate movements of DP_{rel} to AgrOP, etc.) is left out of the representation here in order to prevent unnecessary complexity.

Consider what happens in a possessive PP that contains a relative DP. Let us start with the periphrastic possessive relative. The underlying structure is given in (34a). Recall that Dutch relative pronouns receive a lexical *w* in the vicinity of a preposition from section 3.3 above. Suppose that this relation between P and D_{rel} is reflected in syntax. If so, it can be implemented in the following way. The relation is covert – that is, there is no overt movement, although there is a lexical change – thus it could involve incorporation of the formal features (FF) of D_{rel} into P, whilst the phonological features (PF) are left behind; see (34b). This is just a technical solution for a process called 'feature percolation', also discussed in Chapter 4.

(34) a. $[_{PP}$ P $[_{DP\text{-}rel}$ D_{rel} NP]] *"van die jongen"* [of $that_{rel}$ boy]
b. $[_{PP}$ $D_{rel,\ FF}$+P $[_{DP\text{-}rel}$ $D_{rel,\ PF}$ NP]] *"van wie jongen"* [of $that_{rel,\ w}$ boy]

Although not lexically marked, the same relation must be there in English and German.

In simple promotion structures, e.g. in (33), the agreement between D_{rel} and NP is checked in spec-head configuration, i.e. NP (the complement of D_{rel}) raises to $SpecDP_{rel}$. In the possessive construction (34), however, there is a formal chain between D_{rel} and P, so NP is attracted to SpecPP instead:

(35) $[_{PP}$ NP $D_{rel,\ FF}$+P $[_{DP\text{-}rel}$ $D_{rel,\ PF}$ $t_{np}]]$ *jongen van wie* 'boy of whom'

In Minimalist terms: $SpecDP_{rel}$ and SpecPP are equidistant. In fact, $SpecDP_{rel}$ need not be projected at all.

If P is possessive *van*, (35) becomes *jongen van wie* 'boy of whom'. Thus, lexically, NP must be in SpecPP. Reasoning backwards, this can only be the case if the heads D_{rel} and P are in a tight relationship, so that their formal features are shared.[36]

Ultimately, the whole PP is promoted to SpecCP of the subordinate clause, since every D_{rel} – consequently PP in (35) – bears a *wh*-feature. For example, the derivation of (36a) is given in (36b/c).

(36) a. de jongen van wie ik de vader ken [the boy of whom I the father know]
b. $[_{VP}$ $[_{PP}$ van $[_{DP\text{-}rel}$ die jongen]] $[_{VP}$ ik de vader ken]] →
c. de $[_{CP}$ $[_{PP}$ jongen van wie] $[_{IP}$ ik de vader t_{pp} ken]]

Following Klein & Van den Toorn's (1980) conclusion that preposed prepositional phrases must be interpreted as adjunct PPs, I suppose that the relative PP in (36) is generated as an adjunct to VP. Due to an internal *wh*-feature, PP moves to SpecCP. CP itself is the complement of a determiner in the main clause. The internal structure of PP equals (35). Movements within IP are not specified, because they are not directly relevant, here.

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[36] Notice that LF-raising of D_{rel} is not a feasible alternative to overt formal-feature movement, because NP raises to SpecPP overtly. This confirms the model of grammar presented in Chapter 1, where derivations are strictly cyclic.

If a relative pronoun is turned into an R-pronoun, the linear order between preposition and relative pronoun is reversed (*van wie* versus *waarvan*). Following Van Riemsdijk (1978a), I suppose the complement of P – here: DP_{rel} – moves to SpecPP. This leads to the pair in (37).[37]

(37) a. $[_{PP}\ [_{DP\text{-}rel}\ NP\ D_{rel}\ t_{np}]\ \ P\ \ t_{DP\text{-}rel}\ ]$ *winkel waarvan* [shop where.of]

b. $[_{PP}\ NP\ \ D_{rel,\ FF}+P\ [_{DP\text{-}rel}\ D_{rel,\ PF}\ t_{np}]]$ *jongen van wie* [boy of whom]

Given this analysis, both pied piping and preposition stranding can be represented conveniently. Either the whole PP in (37a) moves, or its specifier, DP_{rel}, as shown in (38):

(38) a. de winkel waarvan ik de eigenaar ken
de $[_{CP}$ **$[_{PP}$ $[_{DP\text{-}rel}$ $[_{NP}$ winkel] waar t_{np}] van $t_{DP\text{-}rel}$]** ... ik de eigenaar ... **t_{pp}** ...ken]
the shop where. .of I the owner know

b. de winkel waar ik de eigenaar van ken
de $[_{CP}$ **$[_{DP\text{-}rel}$ $[_{NP}$ winkel] waar t_{np}]** ... ik de eigenaar ... $[_{PP}$ **$t_{DP\text{-}rel}$** van **t**] ... ken]
the shop where I the owner of know

This also makes clear why stranding is only possible with R-pronouns and not in (37b), e.g. * *de jongen wie ik de vader van ken* [the boy whom I the father of know], since *jongen wie* is not a constituent in (37b). Preposition stranding and pied piping are discussed further in section 5.1.

Next, consider the possessive relatives without an overt preposition, repeated in (39).

(39) a. de jongen wiens vader ik ken [the boy whose father I know]
b. de jongen wie zijn vader ik ken [the boy whom his father I know]

The underlying structure of the raised DP *jongen ... vader* is given in (40), which can be paraphrased as 'the father of which boy'.

(40) $[_{DP}\ D_{poss}\ [_{NP1}$ vader $[_{PP}\ P_{gen/poss}\ [_{DP\text{-}rel}\ D_{rel}\ [_{NP2}$ jongen]]]]]

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37 Alternatively, it could be that D_{rel} overtly incorporates into P (as I assumed in De Vries (1996)), since *waarvan* 'where.of' is one phonological word. If so, NP moves to SpecPP and the pair in (37) becomes really minimal. However, this leads to difficulties in preposition stranding cases. In fact, we need [NP D_{rel}] to remain a constituent. Excorporation does not solve the problem, because *wh*-movement is XP movement, so where could D_{rel} be positioned after excorporation? Notice, moreover, that the R-transformation does not always lead to a phonological word, e.g. *over iets* → *ergens over* 'about something'.

There are two possibilities. If P is genitive, it is phonetically empty, but provides genitive Case for its complement, DP_{rel}. Similar to the analysis for prenominal genitives, PP raises to SpecDP in order to check the possessive feature. As stated, D_{rel} and P are connected by formal feature movement, which yields the *w*-format of D_{rel}. Hence D_{rel} becomes *wiens*, the male genitive of *wie*. As before, NP_2 (*jongen*) raises to SpecPP to check agreement with D_{rel}; cf. (35). Thus (40) is spelled out as *jongen wiens vader* 'boy whose father' – compare the derivation in (23c):

(41) $[_{DP}$ **$[_{PP}$ $[_{NP2}$ jongen] $D_{rel,\ FF}$+~~P~~$_{gen}$ $[_{DP\text{-}rel}$ $[_{D\text{-}rel,PF}$ wiens] t_{np2}]]** ~~D~~$_{poss}$ $[_{NP1}$ vader **t_{pp}**]]

Alternatively, if P is only possessive, not genitive, the possessive P will incorporate into D_{poss}. This is similar to the derivation of normal possessives like *Joop zijn boek* [Joop his book]. Again, the complex $[D+P]_{poss}$ is spelled out as a possessive pronoun, and DP_{rel} moves to the main specifier. Within DP_{rel}, NP_2 moves to the specifier position, as before. This yields (42) – compare the derivation in (23e):

(42) $[_{DP}$ **$[_{DP\text{-}rel}$ $[_{NP2}$ jongen] $[_{D\text{-}rel,\ PF}$ wie] t_{np2}]** $[_{D+P\text{-}poss}$ zijn] $[_{NP1}$ vader $[_{PP}$ t_p+$D_{rel,\ FF}$ **$t_{DP\text{-}rel}$**]]]

Embedding these DP-structures in a relative clause results in raising the whole DP to SpecCP, according to the promotion theory; cf. (43).

(43) a. de $[_{CP}$ $[_{DP}$ jongen wiens vader] ik t_{dp} ken]
b. de $[_{CP}$ $[_{DP}$ jongen wie zijn vader] ik t_{dp} ken]

Thus the right word order is derived. Now the whole structure can be inserted into the main clause. The head noun is (covertly) combined with the main determiner. They agree in ϕ-features and bear the same Case, which is checked in the matrix clause (e.g. with I or AgrO).

Once the analyses for the various possessive relative clauses in (25) – repeated as (44) – are known, it is easy to exclude the ungrammatical options in (28), (29), (31) and (32) above. (The relevant examples will be repeated below.)

(44) a. de man wiens vader ik ken [the man whose father I know]
b. de man wie zijn vader ik ken [the man whom his father I know]
c. de man van wie ik de vader ken [the man of whom I the father know]
c.' de winkel waarvan ik de eigenaar ken [the shop where.of I the owner know]
c.'' de winkel waar ik de eigenaar van ken [the shop where I the owner of know]

First, it stands to reason that the main DP in (41) and (42) moves, and not DP_{rel} or PP alone (stranding NP_1), since movement out of a DP is illegal (see also footnote 24). This explains the ungrammaticality of sentences like (45) = (31).

(45) a. * de jongen wiens ik (de) vader ken [the boy whose I (the) father know]
b. * de jongen wie zijn ik (de) vader ken [the boy whom his I (the) father know]
c. * de jongen wie ik (de) vader ken [the boy whom I (the) father know]
d. * de winkel waar ik (de) eigenaar ken [the shop where I (the) owner know]

Second, the relation between D_{rel} and P causes a $d \rightarrow w$ alternation in Dutch, thus *d*-relatives are overruled; see (46) = (28).

(46) a. * de jongen *d*iens vader ik ken [the boy whose$_d$ father I know]
b. * de jongen *d*ie zijn vader ik ken [the boy whom$_d$ his father I know]
c. * de jongen van *d*ie ik de vader ken [the boy of whom$_d$ I the father know]
c.' * de winkel *d*aarvan ik de eigenaar ken [the shop there.of I the owner know]
c.'' * de winkel *d*aar ik de eigenaar van ken [the shop there I the owner of know]

Third, the relation between D_{poss} and P_{poss} assures that D cannot be spelled out as a normal determiner; see (47) = (29).

(47) a. * de jongen wiens de/een vader ik ken [the boy whose the/a father I know]
b. * de jongen wie zijn de/een vader ik ken [the boy whom his the/a father I know]

Recall that a prenominal possessive phrase excludes an indefinite article, as well.[38]

Fourth, once lexical fronted PPs are recognized as adjuncts (cf. footnote 24), it follows that the possessum cannot be pied piped to SpecCP in a relative clause, since PP and DP do not form a constituent. Thus sentences like (48) are automatically excluded; see also (32) above.

(48) * *de jongen van wie(ns) vader ik ken* [the boy of who(se) father I know]

Fifth, if lexical PPs are fronted, the possessum DP is independent and D can be spelled out, contrary to the situation in genitive and possessive pronoun constructions, see e.g. the contrast in (49), or compare (25c/c'/c'') / (30) versus (29) above.

(49) a. *de jongen van wie ik **de** vader ken* [the boy of whom I the father know]
b. * *de jongen wie zijn **de** vader ik ken* [the boy whom his the father I know]

Sixth, phrases like (50) are simply impossible because a preposition cannot be genitive and lexically prepositional at the same time.

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38 Of course in (47) an indefinite article is semantically odd, but e.g. (i) gives the samme pattern:
(i) * *de jongen wiens een vriend ik ken* [the boy whose a friend I know].
I have assumed that the abstract D_{poss} is [+definite]. This would explain why an indefinite article is impossible. Moreover, if an indefinite article takes the same position as a definite article, there is another reason why it is excluded, since there are no inherently [+possessive] indefinite articles (apart from those in a position where genitive case is licenced, of course). Notice that a quantifier is acceptable: e.g. *the boy whose three friends*... All this suggests that an indefinite article must be treated on a par with a definite article, and differently from quantifiers.

(50) * *de jongen van wiens vader ik ken* [the boy of whose father I know]

A similar reasoning accounts for other doublings; see also (32) above.

I conclude that the analysis for normal attributive possession and the promotion theory of relative clauses cooperate in a feasible way to derive the data presented in section 4.1. Other instances of (heavy) pied piping in relative clauses are treated of in the next section.

5. (Heavy) pied piping in relative clauses

This section discusses some residual issues concerning (restrictive) possessive relatives: pied piping and preposition stranding in section 5.1, and heavy pied piping in 5.2.

5.1. Pied piping and preposition stranding

First, consider the regular patterns of pied piping and preposition stranding in (51). For more data see also Smits (1988).

(51) a. de bron *waaruit* hij putte 'the well *from which* he drew'
b. de bron *waar* hij *uit* putte 'the well *which* he drew *from*'

In Dutch, this is only possible with R-pronouns (*er* 'there', *daar* 'there', *waar* 'where', *hier* 'here', *ergens* 'somewhere', *nergens* 'nowhere', *overal* 'everywhere'). These are pronouns that are spelled out in a locative form. For some reason, pronouns that are selected by a preposition are often transformed into an R-pronoun. This process goes along with a reversed order of the preposition and the pronoun. According to Van Riemsdijk (1978a) this indicates movement to SpecPP. Hence we have e.g. *van dat* → *ervan* 'of that → there.of', *om wat* → *waarom* 'around what → where.around / why', *uit welke* → *waaruit* 'from what → where.from'. In some cases the preposition changes too, e.g. *met iets* → *ergens mee* 'with$_1$ something → somewhere with$_2$'.

This transformation is reserved for non-human pronouns, so *van wie* → **wievan* 'of whom → *whom.of' is impossible, because a +human pronoun cannot be replaced by a non-human locative pronoun. In colloquial Dutch the human/non-human distinction can be neglected; this gives *van wie* → *waarvan* 'of whom → where.of'. The examples in (52) show that preposition stranding is dependent on the R-transformation. Consequently, preposition stranding in a relative clause with a human antecedent is not possible, unless a colloquial variant like (52c) is chosen.[39]

[39] A left-peripheral definite and/or relative R-pronoun may refer to a person in Dutch. However, in other positions or in questions this is not possible in the standard language. Hence we have the following pattern for [+human] reference, where in each case reference to a [-human] is acceptable:
(i) * Hij heeft *daar*mee/*er*mee gespeeld. [he has there.with played] *demonstrative*

to be continued...

(52) a. de jongen *met wie* hij sprak ‘the boy *with whom* he spoke’
b. * de jongen *wie* hij *mee/met* sprak ‘the boy *whom* he spoke *with*’
c. de jongen *waar* hij *mee/*met* sprak [the boy *where* he spoke *with*]

Notice that in English the equivalent of (52b) is acceptable.

I have argued in section 4 that the structure of a phrase like *bron waaruit* is (53a), and one like *jongen met wie* is (53b). The relation between D_{rel} and P which triggers the *w* in Dutch, is checked in spec-head configuration if an R-transformation is possible – hence DP_{rel} moves to SpecPP in (53a) – or else by formal feature movement – hence $FF(D_{rel})$ moves to P in (53b). The ϕ-features of NP and D_{rel} are checked in a spec-head configuration, so NP moves to $SpecDP_{rel}$ or SpecPP depending on whether D_{rel} and P are linked. (53a) will be elaborated further below.

(53) a. $[_{PP}\ [_{DP\text{-}rel}\ NP\ D_{rel}\ t_{np}]\ \ P\ \ t_{DP\text{-}rel}\ ]$ *bron waaruit* [well where.from]

b. $[_{PP}\ NP\ \ D_{rel,\ FF}{+}P\ [_{DP\text{-}rel}\ D_{rel,\ PF}\ t_{np}]]$ *jongen met wie* [boy with whom]

The link between D_{rel} and P in (53b) leads to pied piping automatically, since the *wh*-feature resides in the complex head D+P, so this gives (52a). On the other hand, the derivation in (53a) is compatible with preposition stranding, as in (51b) or (52c): DP_{rel} is moved further to a higher position, viz. SpecCP. Clearly, preposition stranding is impossible to derive from (53b), because NP and D_{rel} do not form a constituent, cf. (52b).

This is all straightforward, but two questions remain. First, how is pied piping derived from (53a), as exemplified in (51a)? Second, why is preposition stranding as in (52b) possible in English, and how can it be derived? To start with the second question: the answer is that it is not derived from (53b); an English phrase like *the boy whom he spoke with* must be derived from (53a), just as *the thing which he thought of*. This can be so since in English lexical R-transformations are not obligatory, but they do exist: *thereof*, etc. In other words, English allows for movement of a DP to SpecPP (and subsequently to SpecCP) without visibly marking this process as an R-transformation.[40]

... continued

(ii) * *Waar* heeft hij mee gespeeld? [where has he with played?] *interrogative*
(iii) *Daar* heb ik mee gespeeld. [there have I with played] *topicalized*
(iv) Het meisje, *daar* heb ik mee gespeeld. [the girl, there have I with played] *left-dislocated*
(v) Het meisje *waar* ik mee heb gespeeld. [the girl where I with have played] *relative*

40 Perhaps there can be simply R-less movement via SpecPP. The question remains why unmarked movement to SpecPP is excluded if there is no further movement: e.g. of which → *whichof → which … of. It seems to me that the fossilized form *whereof* could cause a blocking effect: it takes precedence over a syntactically formed representation with an equivalent meaning. However, it is not clear if this reasoning is valid for non-possessive contexts.

The first question is more interesting. I have claimed in Chapter 4 that pied piping is the result of feature movement:

Theorem VI, from Chapter 4
Pied piping can be the result of feature percolation to a higher head (or projection) which itself does not bear these kind of features.

In (53b) it is clear that the formal features of D_{rel} – including the *wh*-feature – have moved to P. In (53a) an additional movement is necessary in order to cause pied piping. Therefore assume that D_{rel}'s *wh*-feature optionally percolates up to P (before DP_{rel} moves to SPecPP). If it does, this yields (54).

(54) $[_{PP}\ [_{DP\text{-}rel}\ NP\ D_{rel\ (-wh)}\ t_{np}]\ wh{+}P\ \ t_{DP\text{-}rel}\ ]$ *bron waaruit* [well where.from]

Notice that "*wh*+P" is only the formalization of the empirical fact that a larger constituent (e.g. PP) can take over a characteristic (+*wh*) of an embedded constituent (e.g. DP), which causes pied piping.

To conclude, the regular patterns of pied piping and preposition stranding are found in relative clauses, too. Technically, pied piping can be seen as the result of formal feature movement. If so, the promotion theory of relative clauses has no particular difficulties in deriving the pied piping and preposition facts. The difference between English and Dutch is that English allows for movement of a DP to SpecPP (and subsequently to SpecCP) without lexically marking this process as an R-transformation, contrary to Dutch. This results in a little more liberal behaviour concerning preposition stranding.

5.2. Heavy pied piping

At this point consider some data concerning heavy pied piping in possessive relative clauses. I will not repeat the analysis for instances of simpler possessive relatives as discussed in section 4 above. Most examples in this section are in Dutch. André Meinunger (p.c.) has informed me that German shows the same patterns.[41]

At first sight it seems that heavy pied piping is excluded in relative clauses, contrary to the situation in questions; see (55) through (58).[42] I must state right away

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41 (Heavy) pied piping is also discussed in Bianchi (1995:Ch6), on the basis of Italian. Although her overall approach and technique are somewhat different, she reaches at least some conclusions that conform to the ones in this chapter, namely i) that heavy pied piping can be accounted for within a promotion analysis of relative clauses; ii) that D_{rel} and P can enter into a relationship which has the (side-)effect that the movement domain for NP is widened. Notably, all examples presented here are restrictive relatives, contrary to the data in Bianchi (1995) that concerns appositive relatives mostly. This difference might be very relevant, but I will not discuss it here.

42 Safir (1986) claims that examples that parallel (55b) are grammatical in English: *that picture, the owner of which Mary knows, is on sale*. Crucially, however, these contain *appositive* relatives, contrary to (55)ff. At present I am not sure how to treat this kind of heavy pied piping in English appositives. Notably, in Dutch and German, heavy pied piping of this type is (almost) as bad in appositives as in restrictives: **die man, de vader van wie jij hebt uitgenodigd*... 'that man, the father of whom you have invited…'

that this contrast is only apparent: the examples in (a) involve echo questions, really. Therefore, these do not show pied piping at all, but simply topicalization of a large constituent, within which a smaller constituent is questioned in situ. The phrase that must be stressed is underlined in these examples. Thus the (a) and (b) sentences do not involve parallel cases of *wh*-movement.

(55) a. *De vader van wie* heb je uitgenodigd?
the father of whom have you invited
b. * Ik ken de *man de vader van wie* je uitgenodigd hebt, niet.
I know the man the father of whom you invited have, not

(56) a. *De vader van wiens vrouw* heb je uitgenodigd?
the father of whose wife have you invited
b. * Ik ken de *man de vader van wiens vrouw* je hebt uitgenodigd, niet.
I know the man the father of whose wife you have invited, not

(57) a. *De vader van wie zijn vrouw* heb je uitgenodigd?
the father of who his wife have you invited
b. * Ik ken de *man de vader van wie zijn vrouw* je hebt uitgenodigd, niet.
I know the man the father of who his wife you have invited, not

(58) a. *De eigenaar waarvan (/ van wát)* heb je uitgenodigd?
the owner where.of (/ of whát) have you invited
b. * Ik ken de *winkel de eigenaar waarvan* je hebt uitgenodigd, niet.
I know the shop the owner where.of you have invited, not.

Obviously, relative clauses cannot invoke an echo reading. Thus it must be explained why heavy pied piping is ungrammatical in these cases.

Now consider the following examples of even heavier pied piping (there is an additional PP). It turns out that these are acceptable. This is a mystery that calls for an explanation.

(59) a. *Met wiens vader* heb je gisteren gesproken?
with whose father have you yesterday spoken
a.' *Aan wiens vader* heb je gisteren gedacht?
of whose father have you yesterday thought
b. Ik ken de *man met wiens vader* jij gisteren hebt gesproken.
I know the man with whose father you yesterday have spoken
b.' Ik ken de *man aan wiens vader* jij gisteren hebt gedacht.
I know the man of whose father you yesterday have thought

(60) a. *Met de vader van wie* heb je gisteren gesproken?
with the father of whom have you yesterday spoken
a.' *Aan de vader van wie* heb je gisteren gedacht?
of the father of whom have you yesterday thought

b. Ik ken de *man met de vader van wie* je gisteren gesproken hebt, niet.
I know the man with the father of who you yesterday spoken have, not
b.' Ik ken de *man aan de vader van wie* je gisteren gedacht hebt, niet.
I know the man of the father of whom you yesterday thought have, not
b.'' Ik ken de *man in de tuin van wie* je gisteren hebt gezeten, niet.
I know the man in the garden of whom you yesterday have sat, not

(61) a. *Met de vader van wiens vrouw* heb je gisteren gesproken?
with the father of whose wife have you yesterday spoken
a.' *Aan de vader van wiens vrouw* heb je gisteren gedacht?
of the father of whose wife have you yesterday thought
b. Ik ken de *man met de vader van wiens vrouw* je gisteren hebt gesproken.
I know the man with the father of whose wife you yesterday have spoken
b.' Ik ken de *man aan de vader van wiens vrouw* je gisteren hebt gedacht, niet.
I know the man of the father of whose wife you yesterday have thought, not
b.'' Ik haat de *man onder het wiel van wiens wagen* ik gisteren ben gekomen.
I hate the man under the wheel of whose car I yesterday have come

(62) a. *Met de vader van wie zijn vrouw* heb je gisteren gesproken?
with the father of who his wife have you yesterday spoken
a.' *Aan de vader van wie zijn vrouw* heb je gisteren gedacht?
of the father of who his wife have you yesterday thought
b. Ik ken de *man met de vader van wie zijn vrouw* je gisteren hebt gesproken.
I know the man with the father of who his wife you yesterday have spoken
b.' Ik ken de *man aan de vader van wie zijn vrouw* je gisteren hebt gedacht.
I know the man of the father of who his wife you yesterday have thought
b.'' Ik ken de *man in de tuin van wie zijn vrouw* je gisteren hebt gezeten.
I know the man in the garden of who his wife you yesterday have sat

Not only are the relative clauses acceptable (although hard to comprehend, of course; but that is only a performance problem), it is also the case that the need for an echo reading is much weaker in the question sentences, compared to the examples in (55a) through (58a).

So the question is why the addition of a prepositional phrase makes heavy pied piping possible. The answer is actually in Theorem VI above: "Pied piping is the result of feature percolation to a higher head (or projection) *which itself does not bear these kind of features*." Since *wh* resides in D originally, it cannot move to another D. On the other hand, D-features can move to P, which is not specified for this kind of features, so there is 'room' to host these additions.

Consider first (63), an unacceptable example that shows why (55b) through (58b) are impossible. The selection structure of the relevant phrase to be raised is given in (63a). The movements within the PP must be the usual ones: P and D_{rel} are linked, henceforth NP moves to SpecPP for ϕ-feature checking; cf. (53b) above. D_1 and N_1 are a normal determiner-noun pair, hence they are covertly linked. This gives (63b).

(63) a. $[_{DP1}\ D_1\ [_{NP1}\ N_1\ [_{PP}\ P\ [_{DP\text{-}rel}\ D_{rel}\ NP_2]]]]$ →
de vader van die man

b. $[_{DP1}\ N_{1,FF}{+}D_1\ [_{NP}\ N_{1,PF}\ [_{PP}\ NP_2\ D_{rel,FF}{+}P\ [_{DP\text{-}rel}\ D_{rel,PF}\ t_{np}]]]]$ →*
de vader man van wie

c. * man de vader van wie

D_{rel}'s *wh*-feature resides in the complex D_{rel}+P and has no other place to go. There is no way to derive the desired word order in (63c). Moreover, an example that contains (63) crashes for two reasons: NP does not reach the determiner that selects the relative clause, hence its Case feature and D_{matrix}'s ϕ-features remain unchecked; and the PP is stuck within a DP, hence the *wh*-feature cannot be checked within the complementizer domain.

Next, consider what happens if (63) is part of a PP. Example (64) shows why (59) through (62) is acceptable. The selection structure of the relevant phrase is (64a). At first, nothing happens within the internal PP. (If something does, the derivation crashes later on, as before.)

(64) a. $[_{PP1}\ P_1\ [_{DP1}\ D_1\ [_{NP1}\ N_1\ [_{PP2}\ P_2\ [_{DP\text{-}rel}\ D_{rel}\ NP_2]]]]]$ →
met de vader van die man

b. $[_{PP1}\ NP_2\ D_{rel,FF}{+}P_1\ [_{DP1}\ N_{1,FF}{+}D_1\ [_{NP1}\ N_{1,PF}\ [_{PP2}\ P_2\ [_{DP\text{-}rel}\ D_{rel,PF}\ t_{np2}\ ]]]]]$
man met de vader van wie

As the derivation proceeds, N_1 and subsequently D_1 are merged to the phrase existing at that moment. As usual, N_1 and D_1 are linked. Then DP_1 is selected as the complement of P_1. At this point the formal features of D_{rel} take their chance and move to P_1. This is the factor that causes pied piping. The link between D_{rel} and this preposition licences a *w*-morphology (as before, but now there is another, higher, P involved). D_{rel}'s features attract an NP, as usual. Since N_1 is already allied to D_1, and excorporation is impossible (cf. Chapter 4, Theorem V.i), the next closest NP is raised: this is NP_2, as required. All this is shown in (64b). The *wh*-feature, which is part of the formal features of D_{rel}, resides at the highest level now, and this causes pied piping of the whole phrase in (64b) to SpecCP. In fact, the derivation in (64b) is similar to (53b); the only difference is that there is an intermediate DP that does not interfere with the relevant steps in the derivation.

Obviously, (64) is not a very economical derivation. Probably this explains why sentences like this are a bit marginal. However, it is the only grammatical derivation. I will not explain every possible option that leads to a crash, because it is quite clear that if $D_{rel,FF}$ does not reach P_1, NP_2 cannot be raised to $SpecPP_1$, which is necessary for promotion, i.e. to check D_{matrix}'s ϕ-features, etc. One issue is interesting, however: what about the possible intermediate landing site in $SpecPP_2$? NP_2 cannot move to $SpecPP_2$ just like that, because there is no trigger for it. If the formal features of D_{rel} are moved to P_2, there is a trigger for NP-movement to the spec of $D_{rel,FF}$+P_2. However, since excorporation is impossible, $D_{rel,FF}$, including *wh*, is stuck in P_2, consequently NP_2 is stuck in $SpecPP_2$. So the derivation will crash. A final option is movement of DP_{rel} to $SpecPP_2$, so that DP_{rel} and P_2 enter a spec-head

relation. This would cause an R-transformation. Now D_{rel} has no reason to move to another (higher) P, hence NP_2 cannot be moved to the highest specifier position either, and the derivation crashes, because the ϕ-features of D_{matrix} cannot be checked. Hence it is predicted that examples like (65b/b') are unacceptable, because they cannot be derived.[43] This prediction is borne out. The examples in (65a/a') are saved by an obligatory echo reading.

(65) a. *Met de eigenaar <u>waarvan</u>* heb je gisteren gesproken?
with the owner where.of have you yesterday spoken
a.' *Aan de eigenaar <u>waarvan</u>* heb je gisteren gedacht?
of the owner where.of have you yesterday thought
b. ?* Ik ken de *winkel met de eigenaar waarvan* je gisteren hebt gesproken.
I know the shop with the owner where.of you yesterday have spoken
b.' ?* Ik ken de *winkel aan de eigenaar waarvan* je gisteren hebt gedacht, niet.
I know the shop of the owner where.of you yesterday have thougt, not

Notice that (65b) differs only minimally from (60b), e.g. *(ik ken de) man met de vader van wie…* '(I know the) man with the father of whom…'. The difference is that D_{rel} and NP_2 (the antecedent) can move to the highest P and SpecPP, respectively, at once in (60b), whereas the R-transformation in (65b) indicates that an intermediate position must be visited, which leads to inertness, hence to a crash later on.

In short, I have introduced some new data concerning heavy pied piping in restrictive possessive relatives. From these data some apparently mysterious patterns emerge. First, pied piping in relatives is limited, which differs from apparent pied piping in questions. Actually this involves topicalization of constituent containing an echo question. Furthermore, an additional prepositional shell facilitates pied piping in general. On second thoughts this second pattern follows from the nature of feature percolation. A natural restriction on the transmission of properties to a higher projection is that this projection has a nature different from the source projection, so that the properties to be transferred do not collide with properties of a similar kind that already belong to the target projection. I have shown how this idea can be implemented within the promotion theory of relative clauses. Again, the technical analysis is rather complicated (and probably subject to future amendments), but the ideas behind it are actually simple, and most probably on the right track.

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[43] For some people they are marginally acceptable, however. Anyway, there is a contrast between (65b/b') and (59)–(62). It becomes clearer if the antecedent is human. Example (i) is degraded for everybody, I believe. If *waarvan* 'where.of' is replaced by *van wie* 'of who', it is fine.
(i) ?* Ik ken de man met de vader waarvan je gisteren gesproken hebt.
I know the man with the father where.of you yesterday spoken have
Perhaps (65b/b') is somewhat more acceptable because it fills a gap in the paradigm.

6. Conclusion

The facts concerning possessive phrases and possessive relatives are rather complicated. In this chapter I have focused on Dutch, German and English. I have argued that there are three basic possessive constructions: the periphrastic (i.e. lexical prepositional) one, the morphological genitive, and the possessive pronoun construction. These three can express similar semantic relations. The analysis generalizes over these constructions by assigning them a similar underlying structure in syntax. The periphrastic possessive is taken to be the basis, for many reasons: etymological, empirical and theoretical. In my specific implementation, a hidden or lexical preposition that bears a generalized possessive feature, is present in all cases. Thus, the generalization that only verbs and prepositions (i.e. [-N] categories) – or their extended projections – licence Case can be maintained. I have stressed the facts concerning Case throughout this chapter, since they pose difficulties or counter-evidence for several potential alternative approaches to possession. In addition, I have shown that no additional functional layers within DP are needed in order to explain the behaviour of possessives.

Furthermore, the analysis for possessive relatives is an interesting interplay between the theory established for normal possessive structures and the promotion theory of relative clauses argued for in the previous chapters. I have shown that the grammaticality patterns extracted from the data presented follow from the theory unproblematically, even the complicated facts concerning heavy pied piping.

Finally, next to the above discussion of the periphrastic genitive, the morphological genitive and possessive pronouns, I will elaborate upon the Saxon genitive and some other special constructions, viz. the double genitive, multiple objects within nominal phrases, independent possessives and the binominal qualitative construction in the Appendix. Although they have some additional properties, they fit well into the system laid down for ‘normal’ possessives. Future research will have to show if and how the approach to possession and possessive relatives can be extended to possessive constructions in languages other than Dutch, German and English.

Appendix: special constructions

Constructions that I have ignored so far are the Saxon genitive, the double genitive, independent possessives and the qualitative construction:

(1) a. Jo's friend *[Saxon genitive]*
b. a friend of Jo's *[double genitive]*
c. (it is) hers *[independent possessive]*
d. a beast of a guy *[qualitative]*

These are discussed here in separate sections.

A1. The Saxon genitive

Weerman & De Wit (1998) clearly show that the Saxon genitive, the "*s*-construction" in their terms, – see (2) – is not a real morphological genitive for various reasons.

(2)	a.	John's book	Mary's book	*[English]*
	b.	Jans boek	Maries boek	*[Dutch]*
	c.	Johanns Buch	Maries Buch	*[German]*

For instance, the form is rigidly *–s*, irrespective of gender and number. It may differ from suffixes of morphological genitives. This can be shown in German and Dutch:

(3)	a.	Mutter**s** Buch	[mothers book]	*Saxon genitive*
	b.	das Buch de**r** Mutter	[the book the$_{gen}$ mother$_{gen}$]	*morphological genitive*
	c.	de moed de**r** wanhoop	[the courage the$_{gen}$ despair]	*morphological genitive*
	d.	een wanhoop**s**daad	[an act of despair]	*compound with S. genitive-like **s** connection*

Furthermore, it is rigidly prenominal; compare (4) to (2).

(4) a. * (the) book John's
b. * (het) boek Jans
c. * (das) Buch Mutters[1]

[1] Since the morphological genitive paradigm prescribes *-s* or *-ø* for proper names in modern German, the distinction between a Saxon genitive and a morphological one may seem unclear in some cases. For instance, *die Werke Goethes* [the works Goethe's] looks like a postnominal Saxon genitive, given that *die Werke des Goethe* [the works the$_{gen}$ G.] also exists. However, it is not, probably, because if appositive material is added, it must be inflected, e.g. *das Leben Katharinas der Großen*

to be continued...

Contrary to morphological genitives, it cannot be selected by genitive-assigning verbs and prepositions, see (5) in German.

(5) a. * wegen$_{+gen}$ Mutters [because of mother]
a.' wegen$_{+gen}$ der Mutter
b. * wir bedürfen$_{+gen}$ Mutters [we need mother]
b.' wir bedürfen$_{+gen}$ der Mutter

Moreover, the *s*-marker is solitary: it cannot be doubled on determiners, etc.

(6) a. aunt(*'s) Mary's house; the(*'s)/my(*'s) baker's shop
b. tante(*s) Jokes huis; de(*s)/mijn(*s) bakkers winkel
c. Tante(*s) Ilses Haus der(*s)/mein(*s) Bäckers Laden

Unlike the English one, the Dutch and German Saxon genitive is confined to (semi-)proper names, as in (6). An inanimate DP cannot be a Saxon possessor:

(7) a. the car's tyre
b. * (de) auto's band
c. * (der) Auto's Reifen

Finally, like prenominal morphological genitives, but unlike postnominal ones, the Saxon genitive renders the main DP definite. For that reason it is in complementary distribution with determiners; compare (8) to (9).

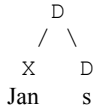
(8) a. * het/een Jans boek
b. * das/ein Jans Buch
c. * the/a John's book

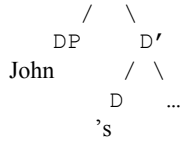
(9) a. * de/een 's konings scepter de/een scepter des konings
the/a the$_{gen}$ king$_{gen}$ sceptre the/a sceptre the$_{gen}$ king$_{gen}$
b. * das/ein des Knaben Wunderhorn das/ein Horn des Knaben
the/a the$_{gen}$ boy$_{gen}$ magic.horn the/a horn the$_{gen}$ boy$_{gen}$

De Wit (1997) and Weerman & De Wit (1998) argue that the Dutch Saxon genitive is a complex D-head as in (10a). The English Saxon genitive is like (10b), since it can be more complex.

... continued

[the life K. the$_{gen}$ great$_{gen}$], (Duden 1998:248). Reversely, I have not found inflected material in prenominal genitives. Thus we can maintain that the Saxon genitive is exclusively prenominal.

(10) a. 

b. 

[Weerman and De Wit]

Thus, they derive that it is prenominal, in complementary distribution with determiners, and requires a definite reading for the full DP.

However, I think the Dutch Saxon genitive cannot be analysed as a head instead of a maximal projection, since 'complex proper names' and recursion are possible, viz. (11).

(11) a. de bakkers winkel [the baker's shop]
b. mijn moeders grootvaders huis [my mother's grandfather's house]

So (10a) cannot be correct. The Saxon genitive possessor must be a full DP, although it is semantically restricted; see below. Moreover, it should fit into the general system concerning possessives presented in section 3 of this Chapter.

Weerman & De Wit (1998) show that historically, the Dutch and German Saxon genitive is derived from the morphological genitive. On the other hand, it is generally assumed that the English one is derived from the topic plus pronoun construction (John his book > John's book).[2] Thus, although appearances are similar, the origin and hence possibly the syntactic structure is different.

First consider the Dutch and German construction. From a historical perspective, the Saxon genitive is a 'degenerate' genitive Case. Degenerate, because i) there is no distinction in gender or number, ii) the *s* is not copied onto an article or pronoun that precedes the noun, and iii) the construction is confined to (semi-)proper names. The Saxon genitive consists of just adding an *s* to a DP – an *s*, because this is or was the most prominent sound of the morphological genitive.[3] (This does not mean that the Saxon genitive is not productive. Moreover, an individual speaker does not need to have historical knowledge of the genitive.) Presumably the structure mimics the one for the morphological genitive; cf. (23c) in section 3 above. It may be represented as follows:

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[2] However, Hans den Besten (p.c.) notes that this may be incorrect, since Old Saxon and Old English are related. Therefore the English construction may have the same origin as the Dutch and German one (i.e. it is derived from a morphological genitive), but it has evolved into the next stage in which the *s* is a free morpheme. If this is true, it is still justified to associate a different syntax with the English construction, as I will do.

[3] Do we need to insure syntactically that this *s* is on the right edge, as in (10a)? Perhaps, but morphological genitive inflection is also on the right, so this is taken care of *within* the genitive DP. There is even some counterevidence to an external *s*, viz. (i), from Duden (1998:246), where the *s* is attached to the head. It precedes a geographical complement.

(i) a. Wolfram**s** von Eschenbach Gedichte [W.'s of E. poems]
b. Roswitha**s** von Gandersheim Dichtung [R.'s of G. poetry]

Notably, the *s*-final variant is also correct, which supports the view that the possessor is a DP.

(12) $[_{DP}\ [_{PP}\ \text{P}\!\!\!/_{degen}\ DP_{degen}]\ \text{D}\!\!\!/_{poss}\ [N\ t_{pp}]]$ Joops eer / Johanns Ehre

Here *degen*, or 'degenitive', indicates a degenerate genitive Case. The abstract preposition licences a degenitive/Saxon Case.

The degenerate morphology goes together with a limited meaning: it is confined to (semi-)proper names. The theory correctly predicts that if it is prenominal, as in (12), there can be no main article and the main DP is definite. The theory does not exclude the syntactic possibility of a degenerate postnominal PP. However, this would be odd, since we already have the (non-degenerate) periphrastic postnominal genitive. In other words, there is no need for a degenerate possessive that could express less than the existing periphrastic one. Moreover, the postnominal morphological genitive is still productive in German.

In English, the Saxon genitive may be syntactically represented as in (13) – compare (23e) in section 3 above.[4]

(13) $[_{DP}\ DP_{obj}\ [P_{poss,Saxon}+D_{poss}]\ [N\ \ [_{PP}\ t_p\ t_{dp}]\ ]]$ John's honour

Here, $D_{poss}+P_{poss,Saxon}$ yields a reduced possessive pronoun: just *'s*. The topic DP may be any DP of the right type, just like the topic DP in a normal pronoun construction. Now, the **s** *is* external to the 'genitive' (topic) DP, which is strongly suggested by examples like (14).[5]

(14) a. the man from Alabama's hat
b. the woman in white's dress
c. the man that I saw's friend

It also follows from the structure that the English Saxon genitive is prenominal, that it excludes main determiners, and that it requires a definite reading.

To conclude, in fact there are two types of Saxon genitives – the English one, which has a structure similar to the topic plus possessive pronoun construction, and the Dutch/German one, which is more like a prenominal genitive.

A2. Multiple objects and the English double genitive

When the semantics of the noun phrase allows it, there may be more than one complement to the noun. We can account for this in a binary branching grammar by assuming multiple NP layers, analogous to double object shells in VP. Below this is

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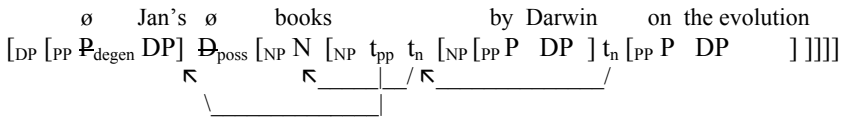
4 In fact the structure argued for here looks like (10b) – which is assumed by several authors. An important difference is that the *'s* is not just a determiner, but P+D. All arguments used for this analysis in the discussion on the possessive pronoun construction (cf. section 3) carry over to the Saxon genitive, e.g. the problem concerning the extra θ-role and the Case of the possessor.

5 Similar examples can be found in Afrikaans; cf. Donaldson (1993:98-100).

illustrated with a worst-case scenario in Dutch, i.e. an example where N has three complements.[6]

(15) Jans boeken van Darwin over de evolutie



In (15) the Saxon genitive raises to $SpecDP_{poss}$ as usual. This process is not hampered by the extra complements deep down in NP. Nothing hinges on the exact multiple argument structure. Notice that two different possessives in one DP are quite possible, provided that their functions and positions differ. Some additional examples (a/b/c in Dutch; and a' in German) are given in (16).

(16) a. onze commissaris der koningin [our commissioner the$_{gen}$ queen$_{gen}$]
a.' unsere Beschreibung dieser alten Stadt [our description the$_{gen}$ old$_{gen}$ city$_{gen}$]
b. Columbus' ontdekking van Amerika [Columbus's discovery of America]
c. jouw kennis van vroeger [your acquaintance of formerly (/ the past)]

At this point it seems appropriate to take a look at the English double genitive, or *post-genitive*, as exemplified in (17).

(17) a car of John's

An important characteristic is that the first nominal phrase, which is the head of the construction, must be indefinite. Moreover, the postmodifier must be definite and human; see (18), based on Quirk et al. (1985:1283/4).

(18) a. a/*the car of John's
b. a car of *a/my friend's
c. * a car of the firm's

Notably, demonstrative pronouns are allowed, in spite of the indefiniteness restriction; compare (19) to (18a):

(19) a. that Ferrari of John's
b. this hand of mine

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6 Notice that within the shell theory a specifyer of a lower shell has the status of a complement with respect to the highest instance of the head noun; hence in (15) all PPs count as complements of the head noun. I am aware that this blurs the specifyer-complement distinction more or less, but I do not know of any obvious alternative. This potential problem is not crucial to the discussion here; moreover, a detailed discussion of multiple object constructions is far beyond the scope of this section.

De Wit (1997) stresses the differences between the prenominal genitive and the double genitive. First, the meaning of the double genitive is confined to strict possession, whereas the Saxon genitive can express the whole range of generalized possessive meanings, see (20).

(20) a. Van Gogh's painting — 'a painting by VG, belonging to VG, or depicting VG'
b. a painting of Van Gogh's — 'a painting belonging to (or by) VG'

I think the possible agent reading in (20b) is somehow implied by knowledge of the world and by the fact that if one paints a painting, one is in an abstract way the owner of the painting. A real agent reading is not compatible with the double genitive, viz. (21).

(21) * that fighting of John's

So the double genitive can only invoke the canonical *belong to* relation.

Second, as noted, the double genitive must be definite and human, i.e. a (semi-)proper name, whereas this restriction does not count for the English Saxon genitive; see (22). (However it does for the Dutch and German Saxon genitive – cf. section A1.)

(22) a. the book's cover
b. * a page of the book's

Finally, notice the morphological difference between the prenominal and the double genitive if a possessive pronoun is used:

(23) a. her friend — John's friend
b. a friend of hers — a friend of John's

Hence the two instances of *John's* in (23a/b) must also be structurally different. Therefore consider how *hers* differs from *her*. The examples in (24) show that English has two ways of lexicalizing an 'elided' NP: *one* or *s*. *One* can be independent but refers to countable NPs only; *s* is a suffix hence dependent.

(24) a. It is this one.
b. It is hers.

Thus the suffix *s* indicates that there is an 'empty' noun. It is the predominant morpheme of a paradigm: *my-n [>mine], your-s, his-ø, her-s, our-s, their-s*. A zero suffix is only possible after an *s*. This is confirmed by the Saxon genitive; in (25b) we have *Mary's-ø*.

(25) a. It is Mary's one.
b. It is Mary's.

The latter example can be compared to the 'locative genitive' as in (26).

(26) We will meet at Bill's.

Here *Bill's* is short for something like *Bill's place*, so the locative genitive is simply a prenominal (Saxon) genitive to an elliptical noun phrase.

The syntactic structure of phrases like *it is hers* and *it is Mary's* are the following – in accordance with the previous sections; cf. (23e/f) in section 3 above, and (13) in section A1 in particular:

(27)	it is	$[_{DP}$ DP	P+D_{poss}	$[_{NP}$ N	$[_{PP}$ t_p	$t_{dp}]]]$ 'it is hers'
a.		*pro*	her	s		
b.		Mary	's	ø		'it is Mary's'

Similarly, *John's* in the double genitive *a friend of John's* – cf. (23b) on the previous page – must be *John's-ø*, actually. Obviously, the whole phrase *a friend of John's* does not fit into the above structure. In (27) there are only two NP positions, whereas three of them are needed: one for *friend*, *John* and *ø*.

In Klooster (1997), it is assumed (based on Kayne 1994), that the main determiner in the double genitive is spelled out as *of* as the consequence of raising the main NP (or QP). Hence we have $[_{DP}$ $[a\ friend]_i$ $[_D$ *of*$]$ $[_{QP}$ $[_{DPgen}$ *John's*$]_j$ t_i $t_j]]$. However, the English Saxon genitive has been analysed quite differently in the previous section. The *'s* is a reduced possessive pronoun, which is the result of incorporation of a P_{poss} into D; see also (27). So D is not available anymore and cannot be spelled out as *of*. Moreover, the idea that a determiner may take the shape of a preposition seems odd to me. What is important, though, is the acknowledgement that *of* in the double genitive is not the normal periphrastic genitive *of*. Rather, it indicates *partitivity*. In English, the partitive construction makes use of the preposition *of*: *a number of examples, a glass of beer*. Obviously, the first NP in the double genitive is not 'part' of the genitive NP: it is part of the elided NP of which the genitive is a modifier. This is in accordance with the analysis of *hers* above. Thus the structure of the double genitive is the following:

(28)	$[_{DP1}$ D_1	N_1	$[_{PP}$ P_{part}	$[_{DP2}$	DP_3	P_{poss}+D_2	$[_{NP2}$ N_2	$[_{PP}$ $t_{p\text{-}poss}$ $t_{dp3}]]]]]$
a.	a	friend	of	John		's	ø	
b.	a	friend	of	*pro*		her	s	

The head noun N_1 takes a partitive complement PP. The DP_2 with the elliptical head N_2 indicates the class of objects or persons of which N_1 is a member. This class of, say, 'friendly people' is possessed by someone, so N_2 has a possessive complement PP. The possession has the shape of a Saxon genitive. Therefore movement of DP_3 and P_{poss} creates a topic plus pronoun construction within DP_2.

The semantics of partitivity immediately explains why the main NP must normally be indefinite, e.g. **the glass of beer*, etc. Contrary to Klooster's structure,

(28) has a main determiner position available, which is necessary to accommodate for demonstrative pronouns in phrases like (19): *this hand of mine*.[7]

De Wit (1997:157) objects that a partitive source for double genitives is problematic, because, for example, *a problem of John's* does not necessarily imply a set of problems. John does not need to have more than one problem. However, this objection is only valid if the main NP, *a problem*, is supposed to be raised from the complement of the partitive preposition, e.g. [$_{DP}$ a [$_{NP}$ problem$_i$ [$_{PP}$ of t$_i$]]] – equivalent to De Wit (1997:157,ex.51a) citing Barker's work. In (28) this is not the case; the 'part'-NP$_1$ and the 'set'-NP$_2$ are different NPs. The 'set'-NP is elliptic. It does not need to be a set consisting of just friends or problems, it may represent a more abstract set of things belonging to the topic *John*, of whom a friend or problem is part, next to other things not particularly of interest, possibly more friends or problems, possibly not. The fact that the elliptical NP is inherently vague is confirmed by the locative genitive in (26), which shows ellipsis of an equivalent nature.

Finally, notice that the Dutch and German partitive does not use the preposition *van/von* (*een glas (*van) bier, ein Glas (*von) Bier* 'a glass of beer').[8] Hence it is correctly predicted that the double genitive does not exist in those languages. A Romance language like French does have a partitive preposition (*un verre de bière*), but it lacks a (Saxon) prenominal genitive, hence it has no double genitive, either (assuming that a structure like *un ami de ø de Jean* [a friend of$_{part}$ [ø of$_{poss}$ Jean]] is incomprehensible).

A3. Independent possessives in Dutch

Dutch independent possessives are different from English ones. First, a definite article is required. Second, a topic is impossible, see (29) and (30).

(29)	a.	het hare	*	the hers
	b.	* een hare	*	a hers
	c.	* hare		hers

(30)	a.	Joke haar boek		Joke her book → Joke's book
	b.	* Joke het hare	*	Joke the hers
	c.	* Joke hare		Joke hers → Joke's

Hence *it is hers* must be translated with 'het is het hare' (or 'het is van haar'); *it is Joke's* cannot be phrased with an independent possessive in Dutch (but 'het is van Joke' with a periphrastic genitive is all right).

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7 Addition of a relative clause is also possible, because it licences a set interpretation of the partitive: *the glass of beer you gave me*. This is similar for double genitives: *the friend of yours I saw yesterday*.

8 Strangely, it seems that a partitive *van* does show up in questions like the following: *Waar heb je een glas van op?* 'Where did you drink a glass of?'

Since a possessive pronoun is associated with D, the determiner in (29a) poses a problem. A possible solution is that in Dutch, unlike in English, independent possessive pronouns have become lexical nouns, i.e. the structure of (29a) is simply [$_{DP}$ [$_{D}$ het] [$_{NP}$ hare]]. The meaning of the noun forces the presence of a definite determiner and precludes a possessive topic, then.

However, I do not find this completely satisfactory. The assumption that the above structure is derived allows us to keep more unity in the system. Suppose the underlying structure is [$_{DP1}$ D_1 [$_{NP}$ N [$_{PP}$ P_{poss} DP_2]]], as in all possessive DPs. If the lower D_2 selects a possessive feature instead of D_1, then P will not raise to D_1, but D_2 will incorporate into P in order to check the possessive feature. Thus a possessive pronoun arises (that is, if X+Y equals Y+X).[9] Since the pronoun must be independent, it incorporates into N, thereby forming a full noun; see (31).

(31) a. [$_{DP1}$ D_1 [$_{NP}$ N [$_{PP}$ P_{poss} [$_{DP2}$ D_{poss} ø]]]] →
het -e "van hem"

b. [$_{DP1}$ D_1 [$_{NP}$ N [$_{PP}$ [$_{P}$ D_2+P]$_{poss}$ [$_{DP2}$ t_{d2} ø]]]] →
het -e zijn

c. [$_{DP1}$ D_1 [$_{NP}$ [$_{N}$ [D+P]$_{poss}$+N] [$_{PP}$ t_p [$_{DP}$ t_d ø]]]]
het zijne

The lower DP_2 must be empty – this is indicated by ø – because D_2 (the licencer of a possible NP_2) is already 'used up'.[10] Therefore it follows almost trivially from the structure that i) a topic possessor is impossible and ii) this construction is only possible with possessive pronouns. For example, * *het Joop zijne* [the Joop his] or * *het Joopse* [the Joop's-e] is unacceptable.

A4. Qualitatives

The next construction that deserves some extra attention is the binominal qualitative, exemplified in (32).[11]

(32) a. een beer van een vent [a bear of a guy] 'a big guy'
b. ce bijou d'église [that jewel of a church]

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[9] This technique could also be a solution for the postnominal possessive pronoun construction, for instance in Italian (*mama mia*), or Norwegian (*hatten min* 'hat.the my'). Moreover, the *proprial construction* – cf. Delsing (1993) – can be treated in this way; see (i).

(i) [$_{DP1}$ N_1+D_1 [$_{NP}$ t_{n1} [$_{PP}$ D_2+P_{poss} [$_{DP2}$ t_{d2} NP]]]]
huset hans Per [house-the his Per] 'Per's house'

[10] Klooster (1997) assumes that a possessive pronoun is D+Q+N. Translated into the pertinent framework, it could be that also the lower N_2 incorporates into D_1+P+N_1. Similarly, there could be incorporation of the subordinate heads into the normal dependent possessive pronoun construction ([$_{N+D+P+D}$ *his] book* t_p t_d t_n), instead of a *pro* topic; cf. (23f) in section 3 above. However, this raises serious problems if there is a lexical topic (*Jan zijn boek, John's book*).

[11] The qualitative has been explored systematically in Paardekooper (1956) first. Further inquiries are e.g. Everaert (1992), Den Dikken (1995), and Hulk & Tellier (2000); see also the references there.

c. a hell of a problem

It is compared to the periphrastic genitive (e.g. *the tail of a dog*) – which looks exactly the same – in (33). The numbers in N_1 and N_2 refer to the linear order of nouns. Examples and comment follow directly below.

(33)		*Qualitative*	*Possessive*
a.	semantic head	N_2	N_1
b.	syntactic head	N_1	N_1
c.	external (verbal) number agreement with	N_1	N_1
d.	external (nominal) gender agreement with	mostly N_2	N_1
e.	internal N-N number agreement	yes	no (or accid.)
f.	internal N-N gender agreement	only if possible	no (or accid.)
g.	main determiner agrees with	N_1, if possible	N_1
h.	main determiner semantically belongs to	N_2	N_1
i.	N_2 is a full DP	no	yes
j.	N_1 is affective	yes	no

By definition, the semantic head of the qualitative is N_2 (contrary to the situation in the possessive construction), so the first noun is a kind of affective modifier. Therefore, the outer determiner semantically selects N_2 (or the whole binominal group). For instance, *that* in *that monster of a daughter of your's* refers to a particular girl, not a particular monster.

Still, N_1 can be argued to be the syntactic head, since i) the outer determiner agrees with N_1,[12] and ii) possible verb agreement is triggered by N_1 (or rather: D_1). Since there is obligatory internal number agreement between the two nouns, the latter seems to prove nothing; however, there are some affective collective nouns, which can be used to show the point: *tuig, schorem, schorriemorrie, gepeupel, janhagel, uitschot* 'scum, ragtag'; see (34).

(34) a. $\text{Dat}_{\text{n(euter),s(ingular)}}$ $\text{uitschot}_{\text{n,s}}$ van een $\text{voetbalvandalen}_{\text{nonn,pl}}$ heeft_{s}/*$\text{hebben}_{\text{pl}}$
that scum of a football.vandals has/*have
alles vernield.
everything destroyed

b. $\text{Dat}_{\text{n,s}}$ $\text{tuig}_{\text{n,s}}$ van een $\text{directeuren}_{\text{nonn,pl}}$ $\text{verrijkt}_{\text{s}}$/*$\text{verrijken}_{\text{pl}}$ zich ten
that ragtag of a managers enriches/*enrich SE at.the
koste van de arbeiders.
cost of the working.men

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12 In French, the outer determiner always agrees with the first head noun (except if N_1 is genderless); see Hulk & Tellier (2000). In Dutch, the situation is more complicated (see also Everaert (1992)). Mismatches are rarer to begin with. If N_1's gender differs from N_2's gender, there are two possibilities: if N_1 is neuter and N_2 non-neuter, Det agrees with N_1 preferably; if N_1 is non-neuter and N_2 neuter, Det is preferably gender-neutral in order to prevent a mismatch (e.g. *een* 'a'or *zo'n* 'such a'); if not, for some people the construction is unacceptable (including Paardekooper and myself), for some people Det agrees with N_1, for some with N_2, and some accept both options. I conclude that, on average, Det agrees with N_1 in French always and in Dutch preferably. In (34) nobody accepts agreement with N_2.

As stated, normally (i.e. without a collective noun) there is internal internominal number agreement:

(35) a.	a $hell_s$ of (a) $problem_s$		$hells_p$ of $problems_p$
a.'	* a $hell_s$ of (a) $problems_p$	*	$hells_p$ of a $problem_s$
b.	een $schat_s$ van een $kind_s$		$schatten_p$ van $kinderen_p$
b.'	* een $schat_s$ van (een) $kinderen_p$	*	$schatten_p$ van een $kind_s$
	(a) darling(s) of (a) child(ren)		

Internal gender agreement is impossible (unless accidentally) if both nouns have a fixed gender. However, if N_1 is flexible, it must agree with N_2, as shown for French in (36).

(36) a.	ce_m $coquin_m$/*$coquine_f$ d'$homme_m$	[that rascal of man]
b.	$cette_f$ $coquine_f$/*$coquin_m$ de $femme_f$	[that rascal of woman]

External gender agreement in French – i.e. semantic gender agreement between the binominal phrase and a past participle, or an adjective or flexible noun phrase connected to it by a copula – displays a more complicated pattern, as shown by Hulk & Tellier (2000). If there is (accidental) internal agreement, external agreement is likewise, of course. If there is an internal gender conflict, and N_2 is animate, the external noun agrees with N_2 – the semantic head. If N_2 is non-animate, the external noun is male by default. This is shown in (37). Examples are Hulk and Tellier's.

(37) a.	N_m	N_m	A_m	ce coquin d'homme est craint(*e) …
				that rascal of man is feared
a.'	N_f	N_f	A_f	cette coquine de femme est craint*(e) …
				that rascal of woman is feared
b.	n_f	N_m	A_m	… ta tornade de fils … être étourdissant(*e)
				… your tornado of son … be dizzying
b.'	n_m	N_f	A_f	ton phénomène de fille est … distrait*(e)
				your phenomenon of daughter is absent-minded
c.	n_f	n_m	A_m	ta saleté de toit a été repeint(*e) ...
				your dirt of roof has been repainted …
c.'	n_m	n_f	A_m	ce bijou d'église … a été reconstruit(*e)
				that jewel of church … has been rebuilt …

If N_1 has no gender at all, then both the determiner and the external noun agree with N_2, also if N_2 is inanimate; see (38).

(38) $cette_f$ nom de dieu, de $voiture_f$ est $cassée_f$
this name of god ('damned') of car is broken

Finally, notice that N_2 is not a full DP. Sometimes N_2 can have a complement (*a hell of a state of affairs*, *dat monster van een dochter van jou* 'that monster of a daughter of yours'), but not a determiner or prenominal adjective of its own.[13,14]

(39) a. * een beer van een blonde vent [a bear of a blond guy] 'a big blond guy'
b. * le bijou de cette église [the jewel of that church]
c. * a hell of your problem

In English and Dutch it seems that (the second) *a/een* is a determiner of N_2 (e.g. in *a hell of **a** problem; een schat van **een** kind*). However, at closer inspection this cannot be the case, since *a/een* can be used to introduce a plural in a qualitative, which is normally impossible; see (40).

(40) a. deze schatten van **een** kinderen * een kinderen
b. these darlings of **a** children * a children

Therefore *a/een* preceding N_2 in the qualitative has a special status. It is identified by Hulk & Tellier (2000) – based on work by Hans Bennis – as an affective operator without ϕ-features. The same operator is used in exclamatives, etc.

(41) a. Wat een kinderen heb jij! [what a children have you]
b. Wat voor een kinderen? [what for a children?]

Hulk and Tellier take *een/a* as a Q-head. Their syntactic account of the qualitative, compared to the normal possessive, is the following:

(42) a. $[_{DP}$ D $[_{NumP}$ NP_1 Num+F+Q $[_{FP}$ NP_2 t_{F+Q} $[_{QP}$ t_Q t_1]]]] *[qualitative]*
that idiot of a doctor
b. $[_{DP}$ D $[_{NumP}$ NP_1 Num $[_{FP}$ t_1 F+P $[_{PP}$ t_p $[_{DP}$ D..NP_2]]]]] *[possessive]*
the car of the doctor

In accordance with Den Dikken (1995), there is a small clause substructure in both cases. The semantic head of the phrase originates in SpecFP. Predicate inversion leads to the qualitative construction. Hulk and Tellier assume that both (empty) P and Q needs to be licenced in F, which is spelled out as *of/van/de,* etc. Given the "Affective Operator Criterion", the affective Q-head must be in spec-head configuration with an affective XP, that is, NP_1. This cannot take place within FP, since SpecFP is already filled with NP_2, hence F+Q moves to Num and NP_1 moves to SpecNumP.

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13 Some lexicalized phrases are exceptional: e.g. *een kwal van een jongste bediende* 'a jellyfish (jerk) of a junior clerk', where *jongste bediende* is a fixed expression.

14 The contrast between *that monster of [a daughter of your's]* and * *that monster of [your daughter]* is another indication that the double genitive must not be analysed as a structure in which *of* is a D whose specifier hosts the (raised) main noun.

Many properties mentioned above follow from the proposed structures. In principle the above account is compatible with the theory on possessives in the previous sections – that is, if we are prepared to acknowledge some extra layers in the structure. However, (42) raises many questions. What is F? Why is SpecFP the semantic head of the structure? Why does F look like a preposition? How is the Case of the subconstituents licenced? How do we get the right word order *of a* instead of *a of* if right-adjunction is impossible (Kayne 1994)?[15] Moreover, Hulk and Tellier need three functional layers – NumP, FP, QP – to explain the differences between the possessive and qualitative. This might be correct, but I prefer to develop a more modest alternative, which is based on an extremely simple, but unusual idea: D-promotion.

Suppose the qualitative has the same underlying structure as the periphrastic genitive: $[_{DPmain}\ D_1\ [_{NP}\ N_1\ [_{PP}\ P\ [_{DP}\ D_2\ NP_2]]]]$.[16] This immediately explains the presence of the preposition *of*,[17] and the Case licencing mechanism. N_1 (that belongs to D_1) is the syntactic head (not the semantic head: see below), which has a complement PP that includes N_2. D_2 is the determiner of N_2. D_2 is semantically affective, hence lexically zero, or *a/een* in English/Dutch. (We don't need a QP layer to express that, a feature [+affective] will do.) Furthermore, there must be a formal link between D and N (see Chapter 4), i.e. there is a (covert) link D_1-N_1 and a link D_2-N_2. The inner determiner D_2, which inherently lacks ϕ-features (see (40) and (41) above), takes over the ϕ-features of N_2. The outer determiner D_1 agrees with N_1 (cf. (33g), (34) and footnote 12). Since N_1 is affective, cf. (33j), D_1 (which is linked to it) must be compatible with an affective meaning, hence it is demonstrative (*that/die,dat*) or *a/een*, but never *the/de*; see also Paardekooper (1956).

Right now, most of the properties of the qualitative are accounted for, but the crucial part is still to come. The outer DP-layer contains an affective N, whereas the inner DP has an affective D. Suppose the affectedness feature – which is the syntactic reflex of a semantic characteristic – must be checked between D and N, like all formal features. Then, inevitably, the features of D_2 must be raised. What does this mean? The syntactic head of the inner DP, i.e. D_2, is promoted to the outer DP. This may be viewed as a theoretic variant of *predicate inversion*: since the syntactic head of the second DP is promoted, it is plausible to assume that the

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15 Hulk & Tellier state that it simply the complex Q+F that is spelled out as *of a*, but since it concerns two words and since one of these, *a*, can also be associated with Q alone, the problem remains.

16 Aafke Hulk (p.c.) objects that this is contradicted by the differences in extraction possibilities between the two constructions. Compare for instance (i) and (ii), where latter shows potential extraction from a qualitative.

(i) de man van wie ik een vriend ontmoet heb… [the man of whom I a friend met have]
(ii) * een vent van wie ik een idioot ontmoet heb… [a guy of whom I an idiot met have]

However, there cannot be extraction at all in either (i) or (ii); recall section 4.2 and footnote 24 above. Klein & Van den Toorn (1980)'s robust conclusion is that prenominal PPs are adverbial; they are not fronted from within a DP. This immediately explains the difference between (i) and (ii) above: (i) can be paraphrased as *as for this man, I met a friend of him*, whereas this is impossible for (ii): # *as for this guy, I met an idiot of him.*

17 Notice that *of* is the default preposition within nominal constituents. In the qualitative, *of* is not the standard possessive *of*, hence there is probably no feature [+poss] associated with it.

semantics associated with DP_2 is also promoted, i.e. N_2 becomes the semantic head of the whole construction, as required.[18]

Moreover, (covert) raising of D_2 predicts the internal agreement patterns. If D_2-N_2 does not agree in number with D_1-N_1, the derivation crashes, hence there is automatic number agreement; cf. (35). If N_1's gender is optional or unclear, as in (36) and (38), it will conform to N_2's. Of course inherently fixed gender of N_1 cannot be altered, as in many cases; cf. (37b/b'). Finally, since NP_2 is the semantic head of the construction due to the promotion of D_2, external gender agreement is expected to conform to NP_2. This is indeed the case – cf. (37a/a'/b/b'). However, there is one exception, namely if there is a gender conflict within the qualitative construction, *and* DP_2 is inanimate (hence less prominent). Following Hulk & Tellier (2000), I will simply assume that it is possible that in this impasse the external participle or adjective is assigned the default gender (which is male); cf. the French data in (37c/c'). Notice that Hulk and Tellier warn that strategies to cope with difficulties probably differ from language to language.

I tentatively conclude that there is an alternative to Hulk & Tellier's (2000) proposal depicted in (42), which is maximally simple. The basic structure equals that of the periphrastic genitive; the difference is that N_1 and D_2 contain an [+affective] feature, which causes movement of D_2 hence 'promotion' or 'predicate inversion', and consequently internal agreement, etc. The syntactic structure is given in (43). For the sake of completeness the D-N links are also indicated.

(43) a hell of a problem

$[_{DP1}\ D_{2,FF}+N_{1,FF}+D_1\ [_{NP1}\ N_{1,PF,t(FF)}\ [_{PP}\ P\ [_{DP2}\ N_{2,FF}+D_{2,PF,t(FF)}\ [_{NP2}\ N_{2,PF,t(FF)}]]]]$

No additional functional layers are needed. Moreover, the usual lexical association of *a* with D and *of* with P does not need to be broken. Finally, we maintain unity in the Case licencing system and enlarge the empirical reach of the system for attributive possession and related constructions put forward in this chapter.

[18] This may be compared to a wide scope reading after covert raising of an operator of category D (e.g. quantifier raising).

Conclusion

In this thesis I have tried to gain insight into the syntax of relativization. As a necessary background I have compiled data from several authors and provided a systematic typology on most aspects of the relative construction. Several competing syntactic theories have been defined and evaluated on the basis of possible derivations of the syntactic main types of relatives and their word order variants, and on the basis of many relevant properties of relative constructions, mainly concerning the relation between the antecedent and the gap. I have concluded that the so-called promotion theory is the most promising. It combines two independent ideas: i) the relative clause is the complement of the external determiner, and ii) the head noun is raised from within the relative clause. This theory provides the possibility of treating all main types of relative constructions as syntactically closely related. I have argued that all types of relatives involve roughly the same syntactic components. When implemented within a derivational grammar, the differences can be traced back to overt/covert distinctions, that is, differences in the syntactic feature checking procedure. The features that are relevant in this respect are *wh*, Case, and ϕ-features. Furthermore, there are differences in pied piping, which is accounted for in terms of covert feature movement. Furthermore, I have investigated how the presence (and absence) of various relative elements can be represented within this framework. On the basis of the typological data mentioned above, a fine-grained classification of relative elements has been presented.

Next to the discussion concerning the core syntax of relativization, I have tried to provide an independently motivated approach to three broad phenomena which have been claimed to be potentially problematic for the promotion theory of relatives. These are apposition, extraposition and possession. Concerning apposition, I have compiled a large collection of properties of appositive relatives, especially those in which they deviate from restrictives. Theoretically, I have argued that apposition in general is specifying coordination. This allows us to generalize over appositions and appositive relatives. The latter are analysed as so-called false free relatives that are specifying conjuncts to the 'antecedent'. This theory of apposition is independent of the precise theory on relativization. Therefore I have argued – in consistence with the first part of this book – that there is promotion (of an empty head) within the false free relative. Thus we can generalize over restrictive and appositive relatives, and attribute the differences to the specific configuration in which appositives occur. The concept of specifying coordination gains strength since it turns out to be central to the theory of extraposition as well. I have shown at length that an analysis in terms of specifying coordination plus ellipsis is to be preferred over rightward movement, adjunction and stranding approaches to extraposition. The analysis proposed can be easily generalized to all instances of extraposition. Crucially, the promotion theory of relatives can be maintained here as well: as in appositive structures, promotion is performed within the second conjunct. Finally, I have addressed the possessive (relative) construction, which is related to (heavy) pied piping. I have focused on the Germanic languages here. It is shown that all

possessive configurations are syntactically derived from the periphrastic genitive. The analysis for possessive relatives is an interesting interplay between the theory established for simple possessive structures and the promotion theory of relative clauses.

In conclusion, the syntax of relativization, when decomposed into the syntactic components as argued for, is maximally general: it now covers all syntactic and semantic main types of relatives. The differences between the many types of relatives can be attributed to parametrical overt/covert distinctions, and to the specific configuration in which a relative occurs.

Samenvatting in het Nederlands (Summary in Dutch)

Dit proefschrift handelt over de grammatica van betrekkelijke bijzinnen – in andere woorden: de syntaxis van relativisatie.[1] Een voorbeeld van zo'n zinsconstructie is gegeven in (1):

(1) Joop las ***de roman*** *die Jaap hem gegeven had*.

Hier is *die Jaap hem gegeven had* de relatiefzin en *de roman* het antecedent waar deze bij hoort; het betrekkelijk voornaamwoord *die* verwijst naar *de roman*. De gehele relatiefconstructie *de roman die Jaap hem gegeven had* is in dit voorbeeld het lijdend voorwerp in de hoofdzin.

Relatieve zinnen hebben altijd al de aandacht getrokken van taalwetenschappers, en niet zonder reden. Ze zijn interessant vanuit het oogpunt van de syntaxis (grammatica), de semantiek (betekenis) en de typologie (classificatie). Als een voorbeeld waarom dat zo zou zijn, zal ik hier kort bespreken wat ik in de introductie – **hoofdstuk 1** – "het probleem van de spil" heb genoemd.

Wat betrekkelijke bijzinnen onderscheidt van andere bijzinnen is dat er een direct verband is tussen een element in de relatiefzin en in de hoofdzin. Sterker geformuleerd: er is een *spil* die een rol speelt in beide (deel)zinnen. Een illustratie hiervan is de zin in (2):

(2) Joop leest nooit ***boeken*** *die Jaap hem aanraadt*.

Deze complexe zin is samengesteld uit de twee eenvoudige zinnen in (3):

(3) a. Joop leest nooit *boeken*.
b. Jaap raadt hem *boeken* aan.

Toch is (2) duidelijk meer dan een eenvoudige optelling van deze twee onderdelen. Het woord *boeken* is hier de spil die beide zinnen met elkaar verbindt. Maar hoe kan één woord nu twee functies tegelijk hebben? En wat is eigenlijk zijn positie in de zin? Zit het in de hoofdzin of in de bijzin? Merk hierbij twee dingen op. Ten eerste is het lijdend voorwerp in de hoofdzin (2) niet *boeken*, maar *boeken die Jaap hem aanraadt*. Ten tweede zit er een 'gat' in de bijzin. *(Ze zei dat…) Jaap hem aanraadt* is geen Nederlands, want er ontbreekt een lijdend voorwerp. *(Ze zei dat…) Jaap hem boeken aanraadt* is wel goed. In (2) staat *boeken* echter op een hele andere plek in de zin; bovendien is er een element bijgekomen: het betrekkelijk voornaamwoord *die*.

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[1] Deze samenvatting is met name bedoeld voor niet-taalkundigen. Vakgenoten stellen wellicht ook – en meer – belang in de introductie en conclusie bij dit boek en bij de afzonderlijke hoofdstukken.

Er moet dus een speciale procedure zijn die verklaart hoe de zin in (2) gevormd kan worden. Een mogelijke afleiding is de volgende. Stel dat *die* de positie inneemt van het lijdend voorwerp in een bijzin. Vervolgens verhuist *die* naar het begin van de bijzin. Tenslotte wordt deze bijzin aan het lijdend voorwerp in de hoofdzin geplakt. Dit is weergegeven in (4).

(4) a. (Ze zei dat…) Jaap hem die aanraadt. →
b. (…) die Jaap hem aanraadt. →
c. Joop leest nooit boeken die Jaap hem aanraadt.

Die verwijst naar *boeken* en de bijzin wordt nu geïnterpreteerd als een betrekkelijke bijzin. De verhuizing van *die* naar het begin van de bijzin in (4b) is minder ad hoc dan het misschien lijkt. Deze kan namelijk in verband worden gebracht met vooropplaatsing van vraagwoorden, zoals in *(hij vroeg...)* ***wie*** *Jaap hem zou aanraden*.

Hoe zou zo'n afleiding verlopen met betrekking tot het Engelse equivalent in (5), waar een betrekkelijk voornaamwoord ontbreekt?

(5) Joop never reads books Jaap recommends to him.

Misschien is er een leeg (d.w.z. onuitgesproken) element [ø] dat de plaats van het lijdend voorwerp in de bijzin opvult, zoals weergegeven in (6):

(6) Joop never reads books [ø] Jaap recommends to him.

Ergens is dit vreemd, want de deelzin *Jaap recommends [ø] to him* op zichzelf is ongrammaticaal. Daarom zou men een andere mogelijke afleiding in overweging kunnen nemen. Stel dat *books* als lijdend voorwerp in de bijzin wordt gegenereerd. Vervolgens wordt het naar voren verplaatst; het geheel kan dan worden ingevoegd als het lijdend voorwerp in de hoofdzin. Zie (7):

(7) a. (…) Jaap recommends books to him. →
b. (…) books Jaap recommends to him. →
c. Joop never reads books Jaap recommends to him.

Als dit juist is, kan de afleiding van de Nederlandse zin worden heroverwogen. Volgens dit scenario zou het volgende gebeuren: *die* plus *boeken* wordt gegenereerd als het lijdend voorwerp in de bijzin, beide verhuizen naar het begin (en *boeken* gaat voorop staan), en het geheel wordt het lijdend voorwerp in de hoofdzin; zie (8).

(8) a. (…) Jaap hem die boeken aanraadt. →
b. (…) boeken die Jaap hem aanraadt. →
c. Joop leest nooit boeken die Jaap hem aanraadt.

Deze analyse staat bekend als de "promotie-theorie". De spil *boeken* promoveert als het ware van de bijzin naar de hoofdzin. Ik kom hierop terug.

Het bovenstaande verhaal laat in versimpelde vorm een aantal dingen zien. Er zijn verschillende strategieën om het probleem van de spil aan te pakken. A priori is het dan ook niet verbazingwekkend dat verschillende talen verschillende oplossingen hanteren. Het Nederlands en Engels lijken veel op elkaar, maar hieronder zal ik laten zien dat de structuur van talen uit andere taalfamilies drastisch kan verschillen van het Nederlands. Niettemin kan op een bepaald abstractieniveau de afleiding van betrekkelijke bijzinnen in verschillende talen met elkaar in verband worden gebracht. Zo is hierboven de afleiding van de Nederlandse zin in (4) naar het Engels gegeneraliseerd in (6). Omgekeerd is de afleiding in (7) naar het Nederlands gegeneraliseerd in (8). Welke oplossing de juiste is, is onderwerp van discussie. In dit proefschrift beargumenteer ik uitgebreid dat een analyse in de trant van (7) en (8) correct is.

Hieronder zal ik kort aanduiden waar de verschillende hoofdstukken van dit proefschrift over gaan. Het geheel is onderverdeeld in twee delen. Het eerste (hoofdstuk 2 t/m 5) behandelt verschillende aspecten van de syntaxis en de typologie van betrekkelijke bijzinnen (en de interactie tussen deze). Het tweede (hoofdstuk 5 t/m 8) bevat drie studies met een algemener karakter, maar met de nadruk op relativisatie. Kort samengevat zijn de primaire doelen van dit onderzoek de volgende:

- een systematische en toegankelijke classificatie van relatiefconstructies samen te stellen, als achtergrond voor dit en toekomstig onderzoek (H2);
- de verscheidene concurrerende syntactische theorieën over relativisatie uitgebreid te evalueren (H3);
- een gedetailleerde beschrijving te verschaffen van de syntaxis van de verschillende types relatiefconstructies (H4/5);
- een onafhankelijk gemotiveerde oplossing te bieden voor potentiële problemen die tot op heden nog niet bevredigend zijn behandeld (vanuit het perspectief van de promotie-theorie); deze zijn:
  - de syntaxis van uitbreidende betrekkelijke bijzinnen (H6);
  - extrapositie (achteropplaatsing) van betrekkelijke bijzinnen (H7);
  - de grammatica van "possessieve relatiefzinnen" (H8).

Hoofdstuk 2 behandelt de classificatie (en terminologie) van relatiefconstructies. Deze is gebaseerd op informatie uit 172 talen uit verscheidene taalfamilies (zie Appendix II). Voor de aardigheid laat ik zien dat als alle microvariatie wordt meegeteld, men in theorie meer dan vierduizend types kan onderscheiden. Van meer belang zijn natuurlijk de hoofdsoorten. Naar de betekenis kan men er drie onderscheiden:

(9) a. Het papier *dat hier ligt*, is bedoeld om weg te gooien. *[beperkend]*
b. Dit papier, *dat ik hier gisteren neergelegd heb*, is bedoeld om weg te gooien. *[uitbreidend]*

c. Je zou een container kunnen vullen met het papier *dat er hier verspild wordt*. *[kwantitatief]*

De *beperkende* relatiefzin zoals in (9a) legt een restrictie op aan de interpretatie van het antecedent. Dit roept een contrast op: alleen het papier dat hier ligt is bedoeld om weg te gooien, niet het papier dat ergens anders ligt. Een *uitbreidende* relatiefzin zoals in (9b) geeft extra informatie over het antecedent. Er is geen sprake van een contrast met eventueel ander papier. Uit recent onderzoek blijkt dat er nog een derde hoofdtype is. Ik noem het hier *kwantitatief*. In (9c) gaat het om de *hoeveelheid* papier die verspild wordt. Er is geen contrast met ander papier, dus de relatiefzin is niet beperkend. Hij is ook niet uitbreidend, want de informatie in de bijzin is niet extra, maar essentieel voor de betekenis.

Naar de grammatica kan men vier hoofdsoorten onderscheiden: de postnominale, de prenominale, de circumnominale en de correlatieve betrekkelijke bijzin. Deze komen maar zelden tegelijkertijd in een taal voor. Het Nederlands kent alleen de postnominale. Dat wil zeggen dat de relatiefzin volgt op het antecedent, zoals in (10).

(10) Zij zag ***de hoed*** *die de man had laten liggen*.

Vertaald in Nederlandse woorden zien de andere types – met dezelfde betekenis – er (ongeveer) als volgt uit:

(11) a. < Zij zag *(die) de man had laten liggen* ***de hoed***. > *[prenominaal]*
b. < Zij zag *de man had* ***(de) hoed*** *laten liggen*. > *[circumnominaal]*
c. < ***Welke hoed*** *de man had laten liggen*, zij zag *die*. > *[correlatief]*

Het prenominale type in (11a) komt bijvoorbeeld in het Chinees voor, het circumnominale zoals in (11b) in het Quechua, en het correlatieve zoals in (11c) in het Hindi.

Verder is van belang de zogenaamde "vrije relatiefzin", oftewel een betrekkelijke bijzin met ingesloten antecedent, zoals in *wie zoet is krijgt lekkers*. Hierin kan *wie* omschreven worden met *degene/iedereen die* of *de/elke persoon die*. Ook de niet-Nederlandse hoofdtypes in (11) kennen vrije relatiefzinnen.

In **hoofdstuk 3** worden verschillende mogelijke syntactische theorieën over relativisatie besproken. De (generatieve) syntaxis in het algemeen heeft als doel om de regels te formuleren op basis waarvan woorden aan elkaar kunnen worden geplakt tot zinnen. Dit formele systeem moet algemeen genoeg geformuleerd zijn om bruikbaar te zijn voor alle menselijke talen, maar specifiek genoeg om de bouwstenen te verschaffen waarmee een concrete taalconstructie correct kan worden gegenereerd en waarmee de essentiële verschillen tussen talen kunnen worden afgeleid. Ik heb laten zien dat verschillende theorieën over relatiefzinnen (waaronder de gangbare standaardanalyse), die veelal opgesteld zijn aan de hand van West-Europese talen, de exotischere types zoals in (11) niet goed af kunnen leiden. De promotie-theorie daarentegen is juist wel goed generaliseerbaar naar deze types. Deze verdient daarom de voorkeur.

Behalve de afleiding van verschillende grammaticale types zijn er ook andere criteria die de promotie-theorie (waarbij, zoals boven vermeld, het antecedent uit de bijzin naar de hoofdzin promoveert) ondersteunen. Een voorbeeld is het volgende. In het algemeen geldt dat een verwijswoord zoals *zichzelf* moet volgen op zijn antecedent. Je zegt dan ook *Paul/hij bekeek zichzelf in de spiegel* en niet *zichzelf bekeek Paul/hem in de spiegel*. Zie nu echter (12), met een betrekkelijke bijzin:

(12) De verhalen over *zichzelf* die *Paul* hoorde, waren pure leugens.

Hier gaat *zichzelf* aan *Paul* vooraf, wat op het eerste gezicht merkwaardig is. Volgens de promotie-theorie is (12) afgeleid zoals in (13), vergelijkbaar met (8) hierboven. *De verhalen over zichzelf* is dan eerst het lijdend voorwerp in de bijzin. In (13c) wordt de hele relatiefconstructie het onderwerp van de hoofdzin.

(13) a. (dat…) *Paul* die verhalen over *zichzelf* hoorde. →
b. (…) de verhalen over zichzelf die Paul hoorde. →
c. De verhalen over zichzelf die Paul hoorde, waren pure leugens.

Merk op dat in (13a), het eerste stadium van de afleiding, *zichzelf* volgt op *Paul*, zoals vereist. Later wordt dan de bijzin omgebouwd tot een relatiefconstructie binnen een hoofdzin. Zonder de promotie-theorie – dus de transformatie van (13a) naar (13b) – wordt het bijzonder moeilijk om te verklaren waarom dit een correcte zin is en, niet te vergeten, waarom het omgekeerde onmogelijk is (*de verhalen over Paul die zichzelf hoorde…* kan niet).

Hoofdstuk 4 is een gedetailleerde uitwerking van de promotie-theorie. Deze is noodzakelijkerwijs vrij technisch van aard en daarom moeilijk toegankelijk voor niet-syntactici. Het achterliggende idee is dat elke stap van de afleiding van relatiefconstructies afgedwongen wordt, doordat allerlei onafhankelijk gedefinieerde elementen in de grammatica-opbouw gecontroleerd moeten worden. Dergelijke elementen zijn bijvoorbeeld naamvallen, getals-, geslachts- en persoons-overeenkomst, vraagwoordkenmerken, enz. Een voorbeeld dat hierboven al even genoemd is, is het volgende. Elk betrekkelijk voornaamwoord heeft een vraagwoord-achtig kenmerk. Dit kan alleen aan het begin van de (deel)zin gecontroleerd worden en dat drijft de promotie van het betrekkelijk voornaamwoord plus het antecedent aan. Een ander voorbeeld is de naamval van het lidwoord en de zelfstandig-naamwoordgroep die het antecedent vormt. Deze moet in overeen-stemming zijn, en dat dwingt af dat de woorden ‘naast elkaar’ komen te staan. (Let wel dat dit een vereenvoudigde weergave is. Een grammatica werkt in termen van hiërarchie, niet van lineaire opeenvolging.)

Alle talen maken gebruik van dezelfde bouwstenen om relatiefconstructies te maken, maar tegelijkertijd vormen deze bouwstenen (micro)parameters. Dat wil zeggen dat het controlemechanisme anders reageert op zo’n parameter als die anders is ingesteld. Dit zorgt voor de variatie zoals aangegeven in (11) hierboven.

Hoofdstuk 5 gaat over de grammatica en classificatie van betrekkelijke voornaamwoorden en aanverwante “relatieve elementen”. Het (standaard) Nederlands maakt alleen gebruik van betrekkelijke voornaamwoorden, maar een

verwante taal als het Engels biedt al meer keuzes. Zie bijvoorbeeld de zinnen in (14), die precies hetzelfde betekenen.

(14) a. Joop never reads books *which* Jaap recommends to him.
b. Joop never reads books *that* Jaap recommends to him.
c. Joop never reads books Jaap recommends to him.

Which in (14a) is een betrekkelijk voornaamwoord; *that* in (14b) is een voegwoord dat betrekkelijk gebruikt wordt; en (14c) toont zogenaamde nul-relativisatie, waarbij er helemaal geen relatief element wordt gebruikt.

In verschillende dialecten van de Germaanse talen, maar ook in oudere stadia van bijvoorbeeld het Nederlands en Engels, kan zowel een betrekkelijk voornaamwoord als een voegwoord worden gebruikt. In Nederlandse woorden:

(15) < Joop leest nooit boeken *die dat* Jaap hem aanraadt. >

Er is dus een positie voor betrekkelijke voornaamwoorden aan het begin van een (deel)zin en een voegwoordpositie die daarop volgt. Volgens mijn theorie worden beide altijd gebruikt, maar het verschilt per taal of (en hoe) dat lexicaal zichtbaar is.

Wat betreft relatieve elementen zijn er nog meer strategieën. In bijvoorbeeld het Hebreeuws wordt gebruik gemaakt van "resumptieve" voornaamwoorden. In Nederlandse woorden zou dat er uitzien als in (16):

(16) < Joop leest nooit boeken Jaap hem *ze* aanraadt. >

Hier neemt een persoonlijk of demonstratief voornaamwoord in de relatiefzin de normale plaats van het 'gat' in. In dit voorbeeld is dat het lijdend voorwerp.

De laatste strategie die ik hier wil noemen, is het gebruik van een speciale werkwoordsuitgang, zoals in het Hopi. In Nederlandse woorden:

(17) < Joop leest nooit boeken Jaap hem aanraadt-REL. >

Hoe dit in de syntaxis behandeld moet worden is nog onvoldoende onderzocht.

In **hoofdstuk 6** worden uitbreidende ("appositieve") betrekkelijke bijzinnen besproken. Ik heb een lijst met eigenschappen samengesteld waarin ze verschillen van beperkende relatiefzinnen, en ook een lijst met misverstanden in de wetenschappelijke literatuur, waarin ten onrechte wordt beweerd dat er bepaalde verschillen zijn. Een voorbeeld van een eigenschap waarin ze duidelijk verschillen is dat een uitbreidende relatiefzin kan verwijzen naar een hele zin (dit is onmogelijk voor een beperkende):

(18) De drie wijze mannen adviseerden het aftreden van de commissie, *wat* een juiste beslissing was.

Hier verwijst *wat* naar de hele voorgaande bewering.

Een voorbeeld van een misverstand is dat wel beweerd wordt dat uitbreidende relatiefzinnen niet achterop geplaatst kunnen worden, in tegenstelling tot beperkende relatiefzinnen. Het voorbeeld in (19) toont eenvoudig dat dit wel kan.

(19) a. Ik heb met Jaap, die blond haar heeft, gesproken. →
b. Ik heb met Jaap gesproken, die blond haar heeft.

Over de syntaxis van uitbreidende relatiefzinnen zijn de meest uiteenlopende dingen beweerd. Volgens mij is er een duidelijk verband tussen uitbreidende relatiefzinnen en gewone appositions zoals *Jaap, die blonde vent*. Appositie in het algemeen kan behandeld worden als *specificerende coördinatie*. Voor de duidelijkheid: coördinatie betekent het aan elkaar plakken van zinnen of zinsdelen met de voegwoorden *en*, *of* of *maar*. De structuur van *Jaap, die blond haar heeft* kan dan als volgt worden geparafraseerd:

(20) *Jaap, en wel hij die blond haar heeft*.

Hierin geeft *en wel* de specificerende verbinding aan. Merk op dat *binnen* het specificerende deel een soort vrije relatiefzin staat: *hij die blond haar heeft*. Het voornaamwoord *hij* verwijst naar *Jaap*. De relatie tussen *hij* en de relatiefzin is beperkend. Uit dit alles volgt dat de syntaxis die vastgesteld is voor beperkende relatiefzinnen (inclusief de promotie-theorie) kan worden gegeneraliseerd naar uitbreidende. Het verschil zit in de speciale context waarbinnen een uitbreidende relatiefzin wordt gebruikt (i.t.t. een beperkende), namelijk als specificerend conjunct. Specificerende coördinatie zelf is een grammaticaal concept met een algemenere strekking (zie ook het volgende hoofdstuk). Hoe deze het best kan worden behandeld in de syntaxis is een vraag apart. Ik heb voorgesteld om hiervoor gebruik te maken van een derde dimensie in de syntactische structuur.

Hoofdstuk 7 gaat over extrapositie van zinsdelen, en van betrekkelijke bijzinnen in het bijzonder. Verschillende theorieën hierover worden geëvalueerd aan de hand van een serie eigenschappen die hiermee samenhangen. Een voorbeeld is het gegeven dat een antecedent en een relatiefzin wel kunnen worden gescheiden door achteropplaatsing (extrapositie), maar niet door vooropplaatsing (topicalisatie):

(21) Zij heeft *de man die een bos bloemen droeg* gezien →
a. Zij heeft *de man* gezien *die een bos bloemen droeg*.
b. * *Die een bos bloemen droeg* heeft zij *de man* gezien. <uitgesloten>

Niet-taalkundigen vragen zich waarschijnlijk zelden af waarom (21b) niet kan, maar strikt genomen is het een logische mogelijkheid waarvan verklaard moet worden waarom die uitgesloten is in natuurlijke taal.

Een ander voorbeeld is (22), waarin het antecedent is ingebed in het zinsdeel tussen haken.

(22) De detective heeft [Jaaps beschrijving van *de man die hij zocht*] genoteerd. →
De detective heeft [Jaaps beschrijving van *de man*] genoteerd *die hij zocht*.

Op het eerste gezicht is het vreemd dat er een relatie kan zijn tussen het diep ingebedde antecedent *de man* en de geëxtraponeerde relatiefzin. (Plastisch gezegd: hoe kan de bijzin uit zo'n diepe put springen?) Ter vergelijking: *zichzelf* in een vergelijkbare positie kan *niet* verwijzen naar een antecedent (*de vrouw*) buiten de haken:

(23) ***** *De vrouw* heeft [Jaaps beschrijving van *zichzelf*] genoteerd. <uitgesloten>

Uiteraard kan *zichzelf* wel op *Jaap* binnen de haken terugslaan.

De syntaxis van extrapositie heeft m.i. ook met specificerende coördinatie te maken. De parafrase van *zij heeft de man gezien die een bos bloemen droeg* is dan als in (24):

(24) Zij heeft de man gezien, en wel de man die een bos bloemen droeg (gezien).

Het predikaat *de man gezien* wordt nader gespecificeerd door in het tweede conjunct een relatiefzin toe te voegen. In de syntactische structuur is *de man* dus twee maal aanwezig. In de uitspraak wordt alles wat herhaald is weggelaten:

(25) Zij heeft de man gezien, ~~en wel de man~~ die een bos bloemen droeg ~~(gezien)~~.

Dit procédé is onafhankelijk van relativisatie. Allerlei zinsdelen kunnen worden geëxtraponeerd, bv. een comparatiefzin zoals in *ze heeft <u>meer</u> gegeten <u>dan ze op kon</u>*. De eigenschappen die samenhangen met extrapositie van relatiefzinnen moeten dan ook terug te voeren zijn op de theorie voor extrapositie in het algemeen. Dat wordt ondersteund door het feit dat andere geëxtraponeerde zinsdelen zich vergelijkbaar gedragen (zie de appendix bij hoofdstuk 7). De analyse voor relativisatie zoals voorgesteld kan dan ook gehandhaafd blijven, zij het dat die in het geval van extrapositie optreedt binnen een speciale syntactische context. Dit is vergelijkbaar met de oplossingsstrategie voor appositie die verdedigd is in hoofdstuk 6. Indien dit juist is, komen de bezwaren tegen de promotie-theorie die wel geopperd zijn in de wetenschappelijke literatuur, te vervallen.

Hoofdstuk 8, tenslotte, handelt over bezittelijke structuren, voornamelijk in de Germaanse talen. Er zijn vele grammaticale manieren om een bezittelijke relatie aan te duiden. Zie (26):

(26)
a. de eer van de man < perifrastische genitief >
b. zijn eer < bezittelijk voornaamwoord >
c. Joops eer < Saxische genitief >
d. Joop zijn eer < adnominale possessieve datief>
e. het zijne < zelfstandige possessief >
f. 's lands wijs, 's lands eer < prenominale morfologische genitief >
g. de commissaris der koningin < postnominale morfologische genitief >

De laatste twee zijn verouderd in het Nederlands.

Ik denk dat al deze mogelijkheden syntactisch aan elkaar gerelateerd zijn. De abstracte basis waarvan de andere afgeleid zijn is de perifrastische genitief in (26a). De implementatie hiervan impliceert een controlemechanisme met betrekking tot al dan niet aanwezige syntactische kenmerken zoals *possessief* en *genitief* die tegelijkertijd als microparameters dienen.

Een aantal van de mogelijkheden hierboven is terug te vinden in het gebruik van possessieve relatiefzinnen:

(27) a. Hij begroette een man *van wie* ik de naam niet ken.
b. Hij begroette een man *wiens* naam ik niet ken.
c. Hij begroette een man *wie zijn* naam ik niet ken.

De constructie in (27a) bevat een perifrastische genitief, die in (27b) een morfologische genitief en die in (27c) een bezittelijk voornaamwoord plus een possessieve datief. In combinatie met de promotie-theorie voor relativisatie levert dit een tamelijk ingewikkelde – maar verdedigbare– syntactische afleiding op.

Onderdeel van die afleiding is een fenomeen dat bekend staat onder de merkwaardige naam *pied piping*. (Deze is afgeleid van de Engelse term Pied Piper, waarmee de rattenvanger van Hamelen wordt bedoeld.) Pied piping wil zeggen dat een woordgroep verplaatst wordt die groter is dan strikt genomen nodig is of lijkt (de rest wordt dus meegelokt). In de zin "*Met welke liefhebber van opera* heb je gedineerd?" is bijvoorbeeld niet alleen het vraagwoord naar voren verplaatst, maar de hele voorzetselvoorwerpgroep. In de zinnen "Waar denk je aan?" versus "Waaraan denk je?" kan men kiezen tussen pied piping of *prepositie-stranding* (d.w.z. geen pied piping). In relatiefzinnen zoals (27b) is – volgens de promotie-theorie – de woordgroep *man wiens naam* gepromoveerd, waarbij pied piping wordt toegepast.

Pied piping moet m.i. gezien worden als het gevolg van het verplaatsen van syntactische kenmerken naar een hiërarchisch hoger gelegen positie. Vanwege bepaalde restricties op dit soort verplaatsingen is pied piping vaak afhankelijk van de aanwezigheid van een voorzetsel. Dat verklaart het mysterieuze contrast tussen (28a) – onacceptabel – en (28b) – correct.

(28) a. * Ik ken de man *de vader van wiens vrouw* je hebt uitgenodigd.
b. Ik ken de man *met de vader van wiens vrouw* je hebt gesproken.

Merk op dat de woordgroep die 'zware pied piping' ondergaat in feite *groter* is in (28b) dan in (28a).

De **conclusie** luidt dat de grammatica van relativisatie, mits ontleed in de syntactische componenten zoals beargumenteerd, generaliseerbaar is naar alle types van relatiefzinnen. De verschillen tussen de types kan worden toegeschreven aan grammaticale kenmerken die als (micro)parameter dienen en aan de specifieke syntactische context waarin een bepaalde relatiefzin wordt gebruikt.

Appendix I Abbreviations

1	=	first person
2	=	second person
3	=	third person
ABL	=	ablative Case
ABS	=	absolutive Case
ACC	=	accusative Case
ACT	=	active
AdvP	=	adverbial phrase
AgrP	=	agreement phrase
AgrOP	=	object agreement phrase
AgrSP	=	subject agreement phrase
AP	=	adjective phrase
ARC	=	appositive relative clause
ASS	=	assertion
ATB	=	across-the-board
AUX	=	auxiliary
CFR	=	"specifying coordination plus free relative" theory
CL	=	classifier
CMPL	=	completive
CON	=	connective
CoP	=	coordination phrase
CP	=	complementizer phrase
CSC	=	Coordinate Structure Constraint
D	=	determiner / demonstrative
D_{rel}	=	relative pronoun
DAT	=	dative Case
DEF	=	definite
DEM	=	demonstrative
DET	=	determiner
DIM	=	diminutive
DO	=	direct object
DP	=	determiner phrase
DRT	=	Discourse Representation Theory
EHRC	=	externally headed relative clause
EPP	=	Extended Projection Principle
ERG	=	ergative Case
EVID	=	evidential
EX	=	extraposed constituent
FF	=	formal feature(s)
FR	=	free relative
FUT	=	future tense
GEN	=	genitive Case
HNP	=	heavy NP
HPP	=	heavy pied piping
HUM	=	human
IEE	=	identifying emphatic expression
IHRC	=	internally headed relative clause
IMPF	=	imperfect tense
INST	=	instrumental
IO	=	indirect object
IP	=	inflectional phrase
LF	=	logical form
LIV	=	living entity
MCH	=	Main Clause Hypothesis
MD	=	medium distance
NLIV	=	non-living entity
NOM	=	nominative Case
NP	=	noun phrase
NPI	=	negative polarity item
NR	=	nominalizing particle
OBJ	=	objective Case
PAST	=	past tense
PART	=	participle
PERF	=	perfect tense
PF	=	phonological form / phonological feature(s)
PL	=	plural
POSS	=	possessive
PP	=	prepositional phrase
PRET	=	preterite tense
PRES	=	present tense
PTL	=	particle
RA	=	relative affix
REAL	=	realized
RC	=	relative clause / relative complementizer
REL	=	relative element
RM	=	relative marker
RP	=	relative pronoun
RRC	=	restrictive relative clause
S	=	subject / sentence
SBJ	=	subject
SCH	=	Subordinate Clause Hypothesis

SD	=	short distance
SE	=	(MD) anaphor
-SELF	=	(SD) anaphor / emphatic reflexive
SG	=	singular
SPC	=	specific
SR	=	subordinating particle
SS	=	same subject
SUBJ	=	subjunctive mood
TFR	=	transparent free relative
VP	=	verb phrase

Appendix II Typological data

This appendix summarizes the syntactic characteristics of relative constructions in a large sample of languages around the world.

The following tables are included:

Table 1: Genetic and geographical distribution of the languages in the sample.
Table 2: Characteristics of relative clauses.
Figure 1: Relative clauses around the world.

All other tables are derived from table 2. Tables 3-7 list all main types of relative clauses; 8-14 list relative pronouns and particles; 16-20 concern the position of the determiner; 21-24 list unexpected relative strategies with respect to the basic word orders of the languages involved; 25 lists relative strategies in ergative languages; 26 lists languages with more than one main strategy.

Table 3: Circumnominal relatives.
Table 4: Correlatives.
Table 5: Prenominal relatives.
Table 6: Participial relatives.
Table 7: Postnominal relatives.

Table 8: Relative pronouns.
Table 9: Resumptive pronouns and clitics.
Table 10: Relative complementizers.
Table 11: Relative markers.
Table 12: Relative affixes.
Table 13: Strange relative particles.
Table 14: Nominalizing/attributive particles.
Table 15: Zero relativization.

Table 16: The position of the determiner in postnominal relative constructions.
Table 17: The position of the determiner in prenominal relative constructions.
Table 18: The position of the determiner in circumnominal relative constructions.
Table 19: Split determiners.
Table 20: Determiners non-adjacent to N.

Table 21: Circumnominal relatives in non-SOV languages.
Table 22: Correlatives in non-SOV languages.
Table 23: Prenominal relatives in non-SOV languages.
Table 24: Postnominal relatives in non-SVO languages.

Table 25: Relative clauses in ergative languages.
Table 26: Languages with more than one relative strategy.

The sample contains all languages on which I found a description of relative clauses in the sources mentioned below. As is clear from table 1, there are examples from many different language families. I am convinced that the typology is nearly complete, in the sense that if more data is added, this will probably not increase the number of patterns found so far (although several details can be added).

I have tried to standardize the relevant information on relative clauses. Hence the description here frequently diverges from those in the sources consulted. This is necessary, because the terminology and the degree of detail in the notation differ greatly with author. The objective of the tables below is to facilitate a comparison between relative clause systems in different languages, and to reveal the patterns made possible by the language faculty.

Since I have included all information easily accessible to me, the tables are biased towards Indo-European languages. Hence it is not possible to draw statistical conclusions from this sample without further processing. For instructions on this matter I refer to Bakker & Hengeveld (2001) and the references there. To me, information on *possible* patterns is more important than knowledge of the frequency of these patterns.

Finally, notice that an interpretation of secondary sources as presented here runs the risk of errors. At this point I wish to express the hope that future work will reveal possible mistakes here, add new data, and, most importantly, follow the standardized typology argued for, and of course the corresponding notational system.

The first table contains genetic and geographical information on the languages in question. The columns **phylum > stock > family > branch > group > language** contain a genetic classification of the pertinent languages. It is mainly based on Grimes's (1992) *Ethnologue: Languages of the World* and Moseley & Asher's (1994) *Atlas of the World's Languages.* The spelling is according to the *Ethnologue*. (The *Ethnologue's* index contains many possible alternative names. I have added synonyms only if the name used here poses difficulties for finding a language in the sources mentioned.) Where the sources diverge on the genetic classification, the compromise is my responsibility. The *Ethnologue*'s classification is often more fine-grained than the *Atlas*'s. Since it concerns geographical notions mainly, and confusion is unlikely, I follow the *Atlas* in many cases. Finally, I think the genetic hierarchy must be seen as relative, not absolute. An absolute classification in terms of phyla, families, etc. is quite arbitrary. It seems that the *Atlas* tries to do so, but it is inconsistent in different chapters.

The columns **code** and **place** contain the Ethnologue's unique 3-letter code of the language, and the principal country where the language is spoken.

Table 1. *Genetic and geographical distribution of the languages in the sample.*

phylum > stock > family > branch > group >					language	code	place
Afro-Asiatic	Chadic	East		Kwang-Kera	Kera	[KER]	Chad
		West		Hausa	Hausa	[HUA]	Nigeria
	Cushitic		Eastern		Komso [=konso]	[KXC]	Ethiopia
					Oromo [=Gall(iny)a]	[GAZ]	Ethiopia
					Saho-Afar	[AFR], [SSY]	Ethiopia
	Egyptian				Coptic	[COP]	(old) Egypt
					Egyptian (ancient)		(ancient) Egypt
	Semitic				Akkadian [=Old Babylonic]		(ancient) Meso-potamia
		Central	South		Arabic (classical)	[ARA]	Saudi Arabia
					Arabic (modern standard)	[ABV]	Saudi Arabia
					Arabic (Tunisian)	[AEB]	Tunisia
			South Canaanite		Hebrew	[HBR]	Israel
		Ethio-semitic	North		Geez	[GEE]	(ancient) Ethiopia
					Tigré	[TIE]	Ethiopia
			South	Transversal	Amharic	[AMH]	Ethiopia
Algic					Yurok	[YUR]	USA
Algonquian		Ojibwa			Ojibwa (Eastern, Northern, Western)	[OJG], [OJB], [OJI]	Canada
Altaic	Japanese				Japanese	[JPN]	Japan
	Korean				Korean	[KKN]	Korea
	Mongolian	Eastern			Mongolian	[KHK]	Mongolia
	Turkic	Oghuz			Turkish	[TRK]	Turkey
Arawakan	Maipuran	Campa			Ashéninca	[CPU]	Peru
Australian	Murrinh-Patha				Murrinh-Patha	[MWF]	Australia
	Pama-Nyungan	Arandic	Artuya		Gaididj [=Kaititj]	[GBB]	Australia
			Urtwa		Arrernte (Eastern) [= Mparntwe Arende]	[AER]	Australia
		Djirbalic			Djirbal	[DBL]	Australia
		Kala Lagaw Ya			Kala Lagaw Ya [=Mabuiag]	[MWP]	Australia
		South-West	Ngarga		Warlpiri	[WBP]	Australia
Austro-Asiatic	Mon-Khmer	Khmer			Khmer [=Cambodian]	[KMR]	Cambodia
		Vietnamese			Vietnamese	[VIE]	Viet Nam

phylum > stock > family > branch > group >							language	code	place
Austro-nesian	Malaio-Poly-nesian	Central Eastern	Oceanic	Micronesian			Ponapean	[PNF]	Micro-nesia
							Kiribati [=Gilbertese]	[GLB]	Kiribati
				New Georgia	Rovi-ana		Roviana	[RUG]	Solomon Islands
				North & Central Vanuatu	East Vanu-atu		Ambae (East) [=Aoban]	[OMB]	Vanuatu
				Poly-nesian	Nuc-lear→ East		Maori	[MBF]	New Zealand
					Tongic		Tongan	[TOV]	Tonga
		Wes-tern	Borneo	Barito	East		Malagasy	[MEX]	Mada-gascar
			Chamorro-Palauan				Palauan	[PLU]	Belau
			Meso-Philip-pine	Cen-tral	Bikol		Bicolano (central) [=Bikol]	[BKL]	Philippines
							Tagalog	[TGL]	Philippines
					East Mindanao		Kalagan	[KQE]	Philippines
			Natan				Ivatan	[IVV]	Philippines
			Sundic	Javanese			Javanese	[JAN	Indonesia (Java)
				Malayic	Local Malay		Indonesian	[INZ]	Indonesia
							Malay	[MLI]	Malaysia
					Malayic -Dayak		Iban [=Sea Dayak]	[IBA]	Indonesia (Kaliman-tan)
					Para-Malay		Minang-Kabau	[MPU]	Indonesia (Sumatra)
				Sumatra	Batak, Southern		Batak Toba	[BBC]	Indonesia (Sumatra)
Azteco-Tanoan	Kiowa-Tanoan			Kiowa-Towa			Kiowa	[KIO]	USA
				Tewa-Tiwa			Tewa (Arizona)	[TEW]	USA
	Uto-Aztecan	Aztecan					Nahuatl	[NAI]	Mexico
		Northern					Hopi	[HOP]	USA
		Numic					Shoshoni	[SHH]	USA
							Ute / Paiute	[UTE]	USA
		Sonoran	Corachol				Huichol	[HCH]	Mexico
			Pimic		Papago-Pima		Papago-Pima	[PAP]	USA
			Tara-cahitian		Cahitan		Yaqui	[YAQ]	Mexico
					Tara-humaran		Tarahumaran (Central, Northern, Southwest)	[TAR], [THH], [TWR]	Mexico
			Tepiman				Tepecano	[TEP]	Mexico
		Takic		Cupan			Cahuilla	[CHL]	USA
							Luiseño	[LUI]	USA
Boran-Witotoan	Boran						Bora	[BOA]	Peru

phylum > stock > family > branch > group >				language	code	place
Dravidian	Southern	Tamil-Kannada		Kannada [=Kanaresian]	[KJV]	India
				Tamil	[KJV]	India
	Central	Telugu-Kui		Telugu	[TCW]	India
Eskimo-Aleut	Eskimo	Inuit		Green-landic	[ESG]	Green-land
Hokan	Yuman	Delta-Californian		Diegueño	[DIH]	Mexico
		River Yuman		Mohave	[MOV]	USA
		Upland Yuman		Yavapai	[YUF]	USA
Indo-European …	Albanian			Albanian [=Tosk]	[ALN]	Albania
	Anatolic			Hittite		(ancient) Turkey
	Balto-Slavic	Slavic	East	Russian	[RUS]	Russia
				Russian (Medieval)		(Medieval) Russia
				Ukrainian	[UKR]	Ukraine
			South	Bulgarian	[BLG]	Bulgaria
				Macedonian	[MKJ]	Macedonia
				Serbo-Croatian	[SRC]	Yugaslovia / Croatia
			West	Czech	[CZC]	Czecho-slovakia
				Polish	[PQL]	Poland
				Slovenian	[SLV]	Slovenia
	Celtic	Brythonic		Welsh [=Kymric]	[WLS]	United Kingdom
		Goidelic		Gaelic [=Irish]	[GLI]	Ireland
	Germanic	North		Danish	[DNS]	Denmark
				Icelandic	[ICE]	Iceland
				Norwegian	[NRR]	Norway
				Swedish	[SWD]	Sweden
		West		Dutch	[DUT]	Nether-lands
				English	[ENG]	UK, USA
				Frisian (Northern)	[FFR]	Germany
				German	[GER]	Germany
				Schwyzer-dütsch (Zurich) [=Züritüüts, Swiss German (Zurich)]	[GSW]	Switzer-land
	Greek			Greek (modern)	[GRK]	Greece
				Greek (ancient) [=Homeric, Attic]	[GKO]	Greece

phylum > stock > family > branch > group >				language	code	place
… Indo-European	Indo-Iranian	Indo-Aryan	Central	Hindi	[HND]	India
			Eastern	Bengali	[BNG]	Bangla-desh
			Southern	Sinhala	[SNH]	Sri Lanka
			Western	Gujarati	[GJR]	India
				Marathi	[MRT]	India
				Sanskrit (Vedic)	[SKT]	(ancient) India
		Iranian		Avestic		(ancient) Persia
				Farsi [= Persian]	[PES]	Iran
	Romance	Daco-Romance		Rumanian	[RUM]	Romania
		Gallo-Romance		French	[FRN]	France
				Ligurian (Genoese)	[LIJ]	Italy
		Ibero-Romance		Catalan	[CLN]	Spain
				Portuguese	[POR]	Portugal, Brazil
				Spanish	[SPN]	Spain
		Italo-Romance		Italian	[ITN]	Italy
		Latino-Faliscan		Latin	[LTN]	(ancient) Mediter-ranean, Vatican State
Khoisan	Khoe/Central			Nama [=Hottentot]	[NAQ]	Namibia
Maya	Cholan-Tzeltalan			Tzeltal	[TZH]	Mexico
	Kanjobalan-Chujean	Kanjobalan		Jacaltec	[JAI]	Guate-mala
	Quichean			Kekchí	[KEK]	Guate-mala
	Yukatecan			Yucatecan	[YUA]	Mexico
Na-Dene	Athapaskan-Eyak	Athapaskan	Apachean	Navaho	[NAV]	USA
Niger-Congo …	Adamawa-Ubangi	Mbum	Southern	Mbum	[MDD]	Cameroon
	Atlantic	Northern	Eastern Senegal-Guinea	Bainouk	[BCZ]	Senegal
			Senegambian	Fulfulde (Adamawa) [=Fula(ni)]	[FUB]	Cameroon
				Wolof	[WOL]	Senegal
	Benue-Congo …	Bantu …	Central East	Shona	[SHD]	Zimbabwe
			Central West	Kimbundu	Mbundu (Loanda)	[MLO]	Angola
				Kongo	Kongo [=Dzamba]	[KON]	Kongo
				Mbana	Hungana [=KiHungana]	[HUM]	Kongo

phylum > stock > family > branch > group >					language	code	place
… Niger-Congo	… Benue-Congo	… Bantu	North-East	Ganda	Ganda [=Luganda]	[LAP]	Uganda
				Rwanda-Rundi	Rwanda [=Kinya-Rwanda]	[RUA]	Rwanda
				Sabaki	Swahili	[SWA]	Tanzania
				Zinza	Haya	[HAY]	Tanzania
			North-West	Mbere	Mbama [=Bamba, Bemba]	[MBM]	Gabon
		Defoid		Yoruboid	Yoruba	[YOR]	Nigeria
		Edoid		South	Urhobo	[URH]	Nigeria
		Igboid			Igbo	[IGR]	Nigeria
		Kainji		Kauru	Kinuku [=Kinung'an]	[KKD]	Nigeria
	Dogon				Dogon (Donno So)	[DOG]	Mali
					Dogon (Togo Kã)		
	Gur	Oti-Volta		Northwest	Moore	[MHM]	Burkina Faso
				Southwest	Dagbani	[DAG]	Ghana
	Ijoid				Ijo [=Kolokuma]	[IJC]	Nigeria
	Kru		East		Godié [=Koyo]	[GOD]	Ivory Coast
	Kwa		Gbe		Éwé	[EWE]	Ghana
			Tano		Akan	[TWS]	Ghana
	Mande	Western			Bambara	[BRA]	Mali
					Maninka	[MNI]	Senegal
					Mandinka	[MNK]	Guinea
				North	Vai	[VAI]	Liberia
Nilo-Saharan	Eastern Sudanic	Nilotic		East	Lango	[LNO]	Sudan
				West	Lango	[LAJ]	Uganda
				Kalenjin	Kupsabiny [=Sebei, Nandi]	[KPZ]	Uganda
North Caucasian	Northwest				Abkhaz	[ABK]	Georgia
					Hurric		(ancient) Meso-potamia
					Sumerian		(ancient) Meso-potamia
Oto-Manguean	Zapotecan		Zapotec		'Zapoteco'	[…]	Mexico
Papua	Sepik-Ramu	Sepik	Sepik Hill	Sanio	Hewa	[HAM]	Papua New Guinea

phylum > stock > family > branch > group >				language	code	place
Quechu-Aymaran	Quechuan	Central		Ancash	[QED, QAN..]	Peru
				Cuzco	[QUZ]	Peru
				Huanca Huaylla / Jauja	[QHU/ QHJ]	Peru
				Huánuco Huallaga	[QUB]	Peru
		Peripheral		Ayacucho	[QUY]	Peru
				Imbabura	?	Equador
Sino-Tibetan	Chinese			Chinese (Mandarin)	[CHN]	China
	Tibeto-Burman	Burmese-Lolo	Burmish	Burmese	[BMS]	Myanmar [=Burma]
			Lolo	Lahu	[LAH]	China
		Naga-Kuki-Chin		Lushai	[LSH]	India
		Tibetan		Tibetan	[TIC]	Tibet
Siouan	Mississippi Valley	Dakota		Lakota	[DHG]	USA
	Missouri Valley			Crow	[CRO]	USA
South Caucasian				Georgian	[GEO]	Georgia
Tai-Kadai	Kam-Tai	Tai		Thai	[THJ]	Thailand
Trans-New Guinea	Eastern New Guinea Highlands	East-Central		Alekano [=Gahuku]	[GAH]	Papua New Guinea
Tupi	Tupi-Guarani			Guaraní	[GUG]	Paraguay
Uralic	Finno-Ugric	Finnic		Finnish	[FIN]	Finland
		Ugric		Hungarian	[HNG]	Hungary
		Finno-Cheremisic		Mari	[MAL]	Russia
				Erzya [=Mordvin]	[MYV]	Russia
Yuki				Wappo	[WAO]	USA
(Isolated)				Basque	[BSQ]	Spain
(Unclassified)				American Sign Language	[ASE]	USA

Table 2 – the main table – contains all relevant information on relative clauses in the languages under consideration. There are nine columns, where I use the following abbreviations:

(2-4) A characterization of the language.

S,O,V The main constituent order: a permutation of Subject, Object, Verb.

acc/erg Accusative or ergative system.

Case Indicates possible Case markings:

- \- no visible Case;
- s suffixal Case on N;
- s+ suffixal Case on N which is doubled on a restrictive relative clause;
- $s_{(+)}$ suffixal Case on N or a free relative;
- p prefixal Case on N;
- f non-suffixal Case following the relevant constituent.
- 1 non-suffixal Case preceding the relevant constituent.

(5) **RC type**. *The relative clause main type.*

pre prenominal relative;
pre_{par} prenominal participial relative;[1]
post postnominal relative;
$post_{par}$ postnominal participial relative;
cir circumnominal relative;
cor correlative.

(6) **Det**. *The matrix clause determiner* ((in)definiteness).

\- normally no determiner;
D1 D first (i.e. for *post* D-N-RC, for *pre* D-RC-N);
Dm D middle (i.e. for *post* N-D-RC, for *pre* RC-D-N);
Df D final (i.e. for *post* N-RC-D, for *pre* RC-N-D, for *cir* RC-D);
cD Correlative Demonstrative or personal pronoun in the matrix clause.

[1] Many languages can use a partial participial strategy, e.g. *the winning athlete = the athlete who wins*. This is not indicated in the tables. A complete participial strategy has at least the possibility of object relatives, e.g. a structure like *the he liking man = the man whom he likes*.

(7) **Gap**. *Occupation of the gap in the relative clause*.

- zero gap;

RP relative pronoun (first position, ϕ, (abstract) subCase):
- RP_{wh} a relative pronoun in *wh* (question) format;
- RP_{d} a relative pronoun in *d* (demonstrative) format;
- RP_{sp} a relative pronoun in specialized format;

GD the gap contains a *resumptive* demonstrative/personal pronoun;[2]

GA the gap contains (a trace of) a *resumptive* affix/clitic (notice that if the gap is a prepositional/genitive object then the affix is on P or N);

N the gap contains (a copy of) the head noun N.

(8) **C/REL**. *Relative particles, etc.* (no gap occupation).

- no relative particle;

RC relative complementizer (C position (normally first), no ϕ, no Case):
- RC_{SR} relative subordinator;
- RC_{NR} nominalizing relative complementizer;
- RC_{AT} attributive relative complementizer;
- RC_{sp} specialized relative complementizer;

RM relative marker (first position, ϕ, if Case then mainCase):
- RM_{CL} relative classifier marker;[3]

RA relative affix on V (specialized, sometimes ϕ and/or subCase):
- RA(Agr) relative agreement affix (replaces Agr on V);
- RA(T) relative temporal affix (replaces T on V);
- RA(NR) nominalizing affix:
  - $RA(NR_{T})$ nominalizing affix that replaces a temporal affix;
  - $RA(NR_{add})$ additional nominalizing affix;
- RA(AT) attributive affix;
- RA(SR) subordinating affix;
- RA(CL) relative classifier affix;
- RA(add) other additional relative affix;

R unclassified relative particle.

N.B. Relative pronouns and particles are discussed in Chapter 5. See especially Ch5§4 for more details on the classification used.

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2 Resumptive strategies for functions very low on the syntactic function hierarchy (cf. Ch2§4) such as *genitive* are not indicated.

3 If my analysis in Ch5§3.3.1 is correct, classifier markers are (remnants of) relative pronouns, contrary to appearances.

(9) The **Source** *of information.*

C	Comrie (1981)
Cu	Culy (1990)
D	Downing (1978)
G	Givón (1984)
K	Keenan (1985)
KC	Keenan & Comrie (1977)
L	Lehmann (1984)
P	Peranteau et al. (1972)[4]
S	Smits (1988)

If the source is between brackets, it only mentions the facts without (extensive) illustration. Lehmann, Smits and Peranteau et al. are often much more detailed than the others. Note that there are cross-references between the cited authors; they sometimes base themselves on the same primary sources, too.

General annotations:

(…)	conditional or optional
1	first position
2	second position
f	final position
s	suffix
p	prefix
?	presumption, but not certain
+	in combination with
…	possibly separated
add	additional
CL	classifier
[*blank*]	no (clear) information from the sources consulted

The number of languages is 172.
The number of strategies described is 223.

[4] The volume edited by Peranteau et al. contains the following contributions: H. Berman (Hittite, Yurok), D. Adams (Ancient Greek), J. Ehrenkranz & E. Hirschland (Latin), Z. Gołąb (Russian, Czech, Ukrainian), V. Friedman (Slovenian, Serbo-Croatian, Macedonian, Bulgarian), A. Loetscher (German), J. Sadock (Danish), J. Morgan (Albanian, English), D. Perlmutter (French, (Arabic, Japanese, Turkish)), F. Karlsson (Finnish), R. de Rijk (Basque), H. Aronson (Georgean), C. Killean (Arabic), G. Gragg (Sumerian, Geez, Amharic, Oromo), E. Keenan (Malagasy, (Kalagan, Ivatan, Batak Toba, Javanese, Malay, Ganda, Shona)), T. Givón (Kongo, Mbama, Kinuku, Swahili, (Hebrew, Bambara, Amharic)), C. Masica (Hindi, Bengali, Gujarati, Telugu), J. McCawley (Japanese), Y. Tagashira (Korean), J. Heath (Huichol, Tarahumara, Papago-Pima, Tepecano, Hopi, Tubatulabal, Luiseño, Shoshoni), J. Rosenthal (Nahuatl).

Table 2. *Characteristics of relative clauses.*

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL	Source
Abkhaz	SOV	erg	-	pre	Dm_p	-	$RA(Agr)_p$	L
Akkadian	SOV	acc	s	post	- ?	(GA_s)	RC_{AT}	L
Akan[5]	SVO			post		GD	RC_{SR}	(D)
Albanian[6]	SVO	acc	s	post	Dm_s	RP_{wh}	-	P,(D)
						-	RC_{SR}	
Alekano		erg	s	pre	-	-	-	(KC)
Ambae (East)	SVO			post		GD ?		(KC)
American Sign Language[7]	SVO			cir	-	N		Cu
				post				(Cu)
Amharic[8]	SOV		-	pre	Dm_s	-	$RA(SR_{add})_p$	L,P,(D)
Ancash Quechua	SOV	acc	$s_{(+)}$	pre_{par}	-	-	$RA(NR_T)_s$	L,(Cu,K)
			s+	cir	-	N	$RA(NR_T)_s$	Cu,(L,K)
			$s_{(+)}$	post				(D,L)
Arabic (classical)	VSO	acc	s	post	$D1_p$	(GA_s)	RM	L,P,(KC)
Arabic (Tunisian)	VSO	acc	s	post		(RP)	(RC)	(D)
Arrernte (Eastern)	SOV	erg ?	s+	cir	- ?	N	RA_s	(Cu)
Ashéninca	VSO		-	post	-	-	$RA(add)_s$	G
Avestic	SOV ?	acc	s	cor	cD	RP+N		(L)
				post		RP		
Ayacucho Quechua	SOV	acc	s+	cir	-	N		Cu
			s	pre	-	-		(Cu)
Bainouk	SVO		- ?	post		-	RM_{CL}	(L)
Bambara[9]	SOV		-	cor	cD	N + RP_{wh}	-	Cu,D,G,L,(C,K,P)
				post	-	RP_{wh}	-	(G,L)
Basque[10]	SOV / (SVO)	erg	$s_{(+)}$	pre	Df_s	-	$RA(NR_{add})_{s,f}$	L,P,(C,D,K,KC)
Batak Toba	VOS		-	post	Df	$(GD)_{prep}$	RC_{SR}	KC,P

5 There is also a tone change which indicates subordination.

6 Additional clitic doubles are possible in both variants.

7 American Sign Language has also a kind of relative marker, but it is not clear to me how to classify it.

8 The definite suffix belonging to the head noun is placed on the preceding RC verb. Case marking is verbal only.

9 The relative pronoun (in cor and post) and the head noun (cor) are in situ, as in Maninka, Mandinka and Vai. Almost all authors assume that Bambara has circumnominal relatives, too. These claims are based on Bird (1968). However, Culy (1990) clearly and extensively shows that this is a mistake.

10 The relative affix is identical to the complementizer used in indirect questions. Hence it could be simply $RC_{SR,s,f}$, as suggested in P(p.117).

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL	Source
Bengali	SOV	acc	s	cor	cD	RP_{sp} +N	-	P,(L)
				post	D1	RP_{sp}	-	
Bicolano	VSO	acc	p	post	- ?	-	RC_{sp}	G
Bora	SOV	acc	s	post	-	-	$RA(CL_{add})_s$	G
Bulgarian	SVO	acc	s	post	-	RP_{sp}	-	P
						-	RC_{SR}	
Burmese	SOV			pre	- ?	- ?	$RC_{NR,f}$	(L)
Cahuilla	SOV	acc	s	post			$RA(NR_T)_s$	(L)
				$post_{par}$				
Catalan[11]	SVO	(acc)	-	post	D1	-	RC_{SR}	S,(KC)
						RP_{wh}	-	
Chinese (Mandarin)	SVO / (SOV)		-	pre	-	(GD)	$RC_{NR,f}$	L,(D,G, K,KC)
Coptic				post				(L)
Crow	VSO		- ?	cir	Df ?	N		(L)
				post	Df	-	RM ?	
Cuzco Quechua[12]	SOV	acc	s+	cir	-	N	-	Cu
			s	pre	-	-	-	(Cu)
Czech	SVO	acc	s	post	D1	(GD_2)	RC_{sp}	P, (C,K,KC)
						RP_{wh}	-	
Dagbani[13]	SVO		-	cir	Df+	N	RC_{SR}	Cu,L
				post	-	-	RC_{SR}	(Cu,L)
Danish	SVO	(acc)	-	post	D1	-	(RC_{SR})	P,S,(D,L)
						$RP_{d/wh}$	-	
Diegueño[14]	SOV	acc	s+	cir	Df_s+	N	$(RA(Agr)_p)$	Cu,L, (C,K,KC)
			s	cor	cD	N		(L)
				post		GD	-	(Cu)
				pre ?		N	-	(Cu)
Djirbal	OSV	erg	s+	$post_{par}$	D1	-	$RA(T)_s$	D,L,(K,KC)
Dogon (Donno So)	SOV	acc	s	cir	$Df_{(s)}$+	N	-	Cu
Dogon (Togo Kã)	SOV		-	cir	Df+	N	-	Cu
Dutch	SOV	(acc)	-	post	D1	$RP_{d/wh}$	-	S,(KC)
Egyptian (ancient)	VSO			post		-	(RM)	(L)

[11] See the footnote on French.

[12] Culy reports *Case attraction* in both strategies: the RC or external head displays subordinate clause Case, where it should have been main clause Case.

[13] The particle which is always at the second position is classified as RC_{SR} here. This may be correct if there is always a topic/subject in SpecCP preceding it. Apart from this, there is a particle *la* following the RC. It marks the definiteness of the relative construction, hence Df+. This is strange, because normally definiteness is not expressed.

[14] Concerning the mysterial prenominal variant: see the footnote on Hewa.

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL	Source
English	SVO	(acc)	-	post	D1	RP_{wh}	-	C,D,G,K, KC,L,P,S
						-	(RC_{SR})	
Erzya	SOV ?			cor	cD	RP_{wh} +N	-	(L)
Éwé[15]	SVO		-	post	Df	-	RM	L
Farsi	SOV	acc	s	post	Dm_s (+D1)	(GD)	RC_{SR}	C,L, (D,K,KC)
				cor				(D,L)
Finnish[16]	SVO	acc ?	s ?	post	-	RP	-	P, (K,KC,L)
				pre_{par}	-	-	-	
French[17]	SVO	(acc)	-	post	D1	-	RC_{SR}	P,S,(D,K, KC,L)
						RP_{wh}	-	
Frisian (Northern)	SOV	(acc)	-	post	D1	-	RC_{SR}	(KC)
Fulfulde (Adamawa)	SVO		-	post	-	GD	RC_{SR} ?	(Cu, KC)
Gaelic	VSO			post		-	RC_{SR}	(D,L)
Gaididj		acc	s+	cor	cD	N	RC_{SR}	L
				cir		N		(L)
Ganda	SVO		-	post	-	-	RA(SR/ $Agr_{add})_p$	P,(K,KC)
Geez	VSO	acc	s	post	-	(GA_s)	RM_p	P
Georgian	SVO	acc	s	post		RP_{wh}	-	P
						-	RC_{SR}	
German	SOV	acc	s	post	D1	$RP_{d/wh}$	-	G,K,L,P, S,(D,KC)
Godié[18]	SVO		-	post	Dm_s+f	(GD)	R	L
Greek (modern)	SVO / VOS	acc	s	post	D1	(GD)	RC_{SR}	L,(Cu,K, KC)
Greek (ancient)	SVO	acc	s	post	-	RP_{wh}	-	L,P_2,(C_2D)
				cor	cD	RP_{wh} +…N	-	(L)
				cir		N		

[15] The particle looks like RC_{sp}, but the plural marker is different according to Lehmann, hence it cannot be a complementizer (since complementizers do not intrinsically bear ϕ-features).

[16] L(p.58) suggests that only subject-participials are possible, like in German and many other languages. However, from other authors I conclude that Finnish has a real participial relative; see e.g. P(p.107,ex.9): an object participial. Still, there are severe restrictions on the use of this strategy.

[17] Italian and French marginally allow for resumptive clitics (GA). Clitics in Rumanian and (most varieties of) Catalan RCs do *not* occupy the gap, since i) those languages allow for clitic doubling, ii) long relativization is impossible, iii) clitics may coocur with relative pronouns. The situation in Spanish is ambiguous. See Smits (1988:56-60) for discussion.

[18] The unclassified relative particle follows the verb. The RC is followed by another element, glossed as 'specific', which seems to be the second part of a discontinuous determiner; hence Dm_s+f, as in Yucatecan.

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL	Source
Greenlandic[19]	SOV ?	erg	s	$post_{par}$	-	-	$RA(T)_s$	L,(KC)
Guaraní	SVO		-	post	D1	-	$RA(add)_s$	D,(L)
Gujarati	SOV	acc	s	cor	cD	RP_{sp} +N	-	D,P,(L,K)
Hausa	SVO			post		$(GD)_{prep}$	RC_{SR}	KC,(C,D)
Haya				post				(K)
Hebrew	SVO	acc	p	post	$D1_p$	(GD) (GA_s)	$RC_{SR,p}$	K,G,(C,D,KC,L,P)
Hewa[20]	SOV	acc	s	pre ?	- cD	N_1	-	G
Hindi	SOV	acc / (erg)	s	cor	cD	RP_{sp} +N	-	L,P,(C,D,K,KC)
				post	D1	RP_{sp}	-	P,(KC,L)
Hittite	SOV	acc	s	cor	cD	RP_{wh} +N	-	D,L,P
Hopi	SOV	acc	s	post cir pre		- N -	$RA(add)_s$	(Cu,L)
Huánuco Huallaga Quechua	SOV	acc	s+	cir	-	N	-	Cu
			s	pre				(Cu)
Huanca Quechua	SOV	acc	s+	cir		N		(L)
Huichol	SOV			post	D1	-	$RA(add_{SR})_p$	(L)
Hungana	VSO / SVO ?		-	post	- ?	$(GA_s)_{prep}$	RM_{CL}	L
Hungarian[21]	SVO	acc	s	post	D1	RP	(RC_{SR})	(C,D,L)
Hurric	SOV / OSV	erg	s+	post pre cir cor	 cD	- - N RP_{wh} + N	$RA(add)_s$ $(RA(add)_s)$	L
Iban	SVO			post				(KC)
Icelandic	SVO	acc	s	post	Dm_s	-	RC_{SR}	S
Igbo				post				(L)
Ijo	SOV		-	pre	Df_s	-	-	L
Imbabura Quechua	SOV	acc	s+	cir	-	N	$RA(NR)_s$	Cu,(C,L)
			s	pre		-		C,(Cu)

19 See the footnote on Tamil.

20 Hence the head noun is used twice: in the main clause and the subordinate clause, with different Cases. N_{main} may be accompanied by or replaced by a demonstrative. Thus the whole construction looks more like a correlative than a prenominal relative. However, the RC is not left-peripheral (as normal correlatives are), but *in situ.* This issue remains to be clarified.

21 According to Downing, the subordinator precedes the relative pronoun, which is unusual.

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL	Source
Indonesian[22]	SVO		-	post	Df	-	RC_{sp}	L,(D,K)
Italian[23]	SVO	(acc)	-	post	D1	-	RC_{SR}	S,(KC,L)
						RP_{wh}	-	
Ivatan				post		-	RC_{sp}	(P)
Jacaltec[24]	VSO	erg	s	post		$(GA_s)_{prep}$	$(RA(add)_s)$	(D,KC,L)
Japanese[25]	SOV	acc	s	pre	-	-	-	G,L,P,(Cu, D,K,KC)
			s+	cir	-	N	$RA(NR_{add})_s$	Cu,(L)
Javanese	SVO		-	post		-	RC_{sp}	(KC,P)
Kalagan	VSO	acc	1	post		-	RC_{sp}	P
Kala Lagaw Ya	SOV	acc	s	cor	cD	(RP_{wh}) + N	-	D,L,(K)
Kannada[26]	SOV	acc	$s_{(+)}$	pre_{par}	- ?	-	$RA(T)_s$	L
				cor	cD	RP_{wh} +N	-	(L)
Kekchí	VSO / SVO ?	erg	s	post	D1	-	RC_{SR}	(K)
Kera				post		(GD) ?		(KC)
Khmer (Central)	SVO			post			RC	(L)
Kinuku	SVO		-	post	-	-	$RA(add)_p$	(P)
Kiowa				cir		N		(Cu)
Kiribati	VOS			post		(GD) ?		(KC)
Komso	SOV			post		-	-	(L)
Kongo	SVO		-	post	$D1_p$	(GA_p)	$RA(add)_p$	(P)
Korean[27]	SOV	acc	s	pre	Dm	-	$RA(T)_s$	P, (C,K,KC)
Kupsabiny	VSO		- ?	post		-	RM_{CL}	(L)
Lahu	SOV	acc	f	pre	(Df)	-	$RC_{NR,f}$	L
Lakota	SOV		-	post	Df	-	-	L
				cir	Df+	N	-	Cu
Lango[28]				post		$(GA_s)_{prep}$	RC_{SR}	(see fn.)
Latin	SVO ?	acc	s	post	-	RP_{wh}	-	L,P,(D,K)
				cir		N		(L)
Ligurian (Genoese)	SVO			post		(GD) ?		(KC)

22 Keenan reports the use of RP_{wh} as a prepositional object (instead of RC_{sp}).

23 See the footnote on French.

24 Moreover there is deletion of the agreement affix on V that corresponds to the relative gap.

25 There is a debate concerning circumnominal relatives in Japanese. Murasugi (2000) claims that they do not exist, i.e. that they are adverbial adjuncts that are misanalysed.

26 See the footnote on Tamil.

27 There is is whole series of tense markers specialized for relative clauses, hence the Korean RC is *not* participial.

28 From Bakker & Hengeveld (2001)

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL	Source
Lushai	SOV	erg	s	post	(Df)	-	$RA(add)_s$	(L)
				$post_{par}$		-	$RA(T)_s$?	
Macedonian	SVO	acc	s	post	-	RP_{sp}	-	P
						-	RC_{SR}	
Malagasy	VOS	(acc)	- ?	post	D1	-	(RC_{sp})	C,K,KC,L,P
Malay[29]	SVO		-	post	Df	-	RC_{sp}	KC,P, (C,D)
Maninka / Mandinka[30]	SOV		-	cor	cD	N + RP_{wh}	-	(Cu,L)
Maori	VSO		- ?	post				(KC)
Marathi	SOV	acc / (erg)	s	cor	cD	RP_{sp} +N	-	L,(D)
				post	D1	RP_{sp}	-	(L)
Mari[31]	SOV ?			pre_{par}		-	$RA(T)_s$	(L)
							$RA(NR_T)_s$?	
Mbama	SVO		-	post	-	-	$RA(AT_{add})_p$	(G,P)
							RC_{SR}	
Mbum[32]			-	post	Dm+f ?	-	-	(Cu)
Mbundu (Loanda)				post				(L)
Minang-Kabau	SVO			post				(KC)
Mohave	SOV	acc	s+	cir	Df_s	N	$(RA(Agr)_p)$	L
			s	cor	cD	N		(L)
Mongolian	SOV ?			pre_{par}				(L)
Moore	SVO		-	cir	Df+	N	-	Cu
				post	Df	-	- ?	
Murinh-Patha	SOV			cir		N		(L)
Nahuatl[33]	SVO	acc	s	post	D1	-	(RC_{SR})	L,P
Nama[34]	SOV	acc?	f_s	pre	Df_s	$(GD)_{prep}$	-	(see fn.)

[29] The distinction between Malay and Indonesian is more political than linguistic. Hence see also the references on Indonesian.

[30] See the footnote on Bambara.

[31] The non-nominalizing tense-replacing affix is in fact not specialized for relativization.

[32] The relative clause starts and ends with a particle, which might be compared with the discontinuous determiners in Yucatecan and Godié, as suggested in Lehmann(p. 159), hence Dm+f. However, if I understand correctly, simple nouns are not accompanied by these elements.

[33] I think the agreement morphemes on the verb are like clitic doubles, not resumptive pronouns. P(p. 246) exemplifies the use of relative pronouns (RP_{wh}), but this involves free relatives (and possibly adverbial relatives) only. Finally notice that Nahuatl uses a definiteness marker as a general subordinator, hence its function is RC_{SR} here.

[34] Nama is described in Hagman (1973), Olpp (1977) and Rust (1965). There is a determiner suffix and a construction-final (rudimentary) Case ending. (There can also be an additional initial demonstrative.) A relative clause contains a gap, unless in postpositional contexts, where a resumptive pronoun shows up. Hagman (1973:232) shows that in some of these cases the

to be continued...

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL	Source
Navaho	SOV		-	cir	-	N	$RA(NR_{add})_s$	Cu,D,L,(K)
				pre	-	-		(Cu,D,K,L)
Norwegian	SVO	(acc)	-	post	D1(+) Dm_s	-	(RC_{SR})	S
						$RP_{d/wh}$	-	
Ojibwa[35]	SVO			$post_{par}$		-	$R(T)_1$	D,(L)
Oromo[36]	SOV		-	post	Dm_s	(GD)	$(RC_{SR,f})$ + (R)	P,(L)
				pre	Df_s		$(RC_{SR,f})$ +R	
Oskian				post				(L)
Palauan	SVO			post				(L)
				pre				
Papago-Pima				post				(D)
				pre				
Polish	SVO	acc	s	post	-	RP_{wh}	-	P,(KC)
						-	RC_{sp}	
Ponapean	SVO		(s)	post	Df_s	-	RC_{sp}	G
Portuguese	SVO	(acc)	-	post	D1	-	RC_{SR}	S,(L)
						RP_{wh}	-	
Roviana	VSO		-	post	D1	-	RC_{SR}	KC
Rumanian[37]	SVO	acc	s	post	D1	RP_{wh}	-	S,(D,KC)
						-	RC_{SR}	
Russian	SVO	acc	s	post	-	RP_{wh}	-	C,P, (D,KC,L)
						-	RC_{SR}	
Russian (Medieval)	SVO ?	acc	s	cor	cD	RP_{wh} +N		(K)
Rwanda	SVO		-	post	-	-	$(RA(clitic)_p)_{sub}$	G,(C,K)
Saho-Afar	SOV			pre		-	-	(L)
Sanskrit (Vedic)	SOV	acc	s	cor	cD	RP_{sp} +...N	-	D,L
				cir		N		(L)
				post				
				pre				

... continued

postposition can be deleted instead of inserting a resumptive pronoun, but it is not confirmed in the other grammars. Furthermore, free relatives are always false free relatives. Interestingly, all three authors mention a construction which shows a false free relative that is in apposition to a DP, and therefore has an appositive meaning. This is mistakenly referred to as a postnominal relative in Lehmann (1984:103). The FR in apposition behaves as usual, exept for one mysterious property: it has an optional, clause-initial relative complementizer particle.

35 In fact, what is called a relative tense particle here, is a specialized auxiliary. Perhaps it must be considered as RC_{SR} nowadays.

36 Apart from the optional relative complementizer and an optional resumptive pronoun, there is a relative particle R (derived from *kana* 'this') which has a *free position* (!) in the relative clause. In postnominal RCs it is optional, in prenominal RCs obligatory.

37 See the footnote on French.

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL	Source
Schwyzer-dütsch (Zurich)	SOV	acc	s	post	D1	(GD)	RC_{SR}	S,(KC)
Serbo-Croatian	SVO	acc	s	post	-	RP_{wh}	-	P,(K)
						-	RC_{SR}	
Shona	SVO		-	post	-	$(GA_s)_{prep}$	$(RA(Agr_{add}))$	(KC,L,P)
Shoshoni[38]	SOV	acc	s+	post	- ?	-	$RA(NR_{add})_s$	L
				$post_{par}$		-	$RA(T)_s$	(L)
Sinhala	SOV			pre				(KC)
Slovenian	SVO	acc	s	post	-	RP_{sp}	-	P,(K,KC)
						(GD)	RC_{SR}	
Spanish[39]	SVO	(acc)	-	post	D1	-	RC_{SR}	S,(KC,L)
						RP_{wh}	-	
Sumerian	SOV	erg	s	post	-	-	$RA(NR_{add})_s$	L,P
Swahili	SVO		-	post	-	$(GA_s)_{prep}$	$RA(CL_{add})_{p/s}$	L,P,(K)
							$RC_{sp}+CL_s$	
Swedish	SVO	(acc)	-	post	Dm_s	-	(RC_{SR})	S,(K,KC, L)
						RP_{wh}	-	
Tagalog	SVO ?		s/f ?	post	- ?	-	$RC_{SR,s}$	(C,K,KC, L)
				pre		-	$R_{SR,s,f}$	
Tamil[40]	SOV	acc	$s_{(+)}$	pre_{par}	- ?	-	$RA(T)_s$	L,(KC)
				cor	cD	RP_{wh} +N	-	(L,KC)
Telugu[41]	SOV	acc	$s_{(+)}$	pre_{par}	- ?	-	$RA(T)_s$	L,P
				cor	cD	RP_{wh}	-	(L,P)
Tewa (Arizona)				cir		N		(Cu)
Thai	SVO			post		-	RC_{sp}	(L)
Tibetan	SOV	erg	s	pre_{par}	- ?	-	$RA(NR_T)_{s,f}$	G,K,(D,L)
				cir	Df	N		(K,L)
				post				(D)
Tigré	SOV			pre	D1	-	RA_p	(L)
Tongan	VSO	erg	f	post	D1	$(GA_s)_{prep}$	-	KC

38 Regarding RA(T), see the footnote on Tamil.

39 See the footnote on French.

40 I don't know if the tense-replacing affix is the normal participial form or a form specialised for relativisation. Lehmann's glosses suggest the former.

41 See the footnote on Tamil.

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL	Source
Turkish[42]	SOV	acc	$s_{(+)}$	pre_{par}	-	-	$RA(T)_s$ / $RA(NR_T)_s$	D,G,L,(C,K,KC,P)
				post				(D)
Tzeltal	VOS		-	post	D1	RP_{wh}	-	(K)
Ukrainian	SVO	acc	s	post	-	RP_{wh} / -	- / RC_{SR}	P
Umbrian				post				(L)
Urhobo	SOV ?		-	post	Dm	GD	$RC_{SR,p}$	(K,KC)
Ute / Paiute	VSO ?	acc	s	post	Dm ?	-	$RA(NR_{add})_s$	G
Vai[43]	SOV		-	cor	cD	N+ RP_{wh}	-	L
Vietnamese	SVO			post		-	RC_{SR}	(D,L)
Wappo[44]	SOV	acc	s	cor	cD	N	-	L,(K)
				cir	-	N	-	(Cu,K,L)
Warlpiri[45]	SOV	erg	s	cor	cD	N	$RC_{SR,p}$	D,L,(C,K,KC)
Welsh	VSO		-	post	D1	(GA_s)	(RC_{SR})	(K,KC,L)
Wolof[46]	SVO		-	post	Df ?	- ?	RM_{CL}	L
Yaqui	SOV	acc	$s_{(+)}$	post	D1	- ?	$RA(add)_s$	L,(K)
Yavapai	SOV	acc	s+	cir	Df_s	N_1	$(RA(add)_p)$	L
Yoruba	SVO		-	post	Df	-	RC_{sp}	(K,KC,L)
Yucatecan[47]	VSO		-	post	$D1+f_s$	-	-	L
Yurok[48]			-	post	D1	-	RC_{SR}	P
				pre	D1	-	-	
Zapoteco	VSO			post		RP ?		(D)

Figure 1 shows the distribution of the relative clauses in the sample on a world map. I must repeat here that statistical conclusions cannot be based on this sample without further processing. Nevertheless some general statements are justified. Postnominal relatives are dominant around the world. The other types (prenominal, circumnominal and correlative) are rarer, but they do occur in different language families in different parts of the world.

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42 RA(T) is the normal participial form. It is used if the head is subject or genitive in the relative clause. Otherwise, the nominalization strategy is used.

43 See the footnote on Bambara.

44 N is in situ or fronted as a topic. There is no relative pronoun.

45 N is in situ or fronted as a topic. There is no relative pronoun. RC_{SR} is a prefix on AUX; it may be preceded by topic/subject (cf. Dagbani).

46 The classifier is combined with a determiner.

47 Yucatecan has discontinuous determiners, as indicated, cf. Godié.

48 In addition, the verb may be in *attributive mood*, which is reserved for relative clauses. The definite article equals the relative subordinator. Hence the question is whether D1 or RC_{SR} is missing in prenominal relatives. In my view it makes more sense that RC_{SR} fails – assuming that the RC splits D and N – but Berman (P (p. 257)) suggests the opposite, i.e. D fails.

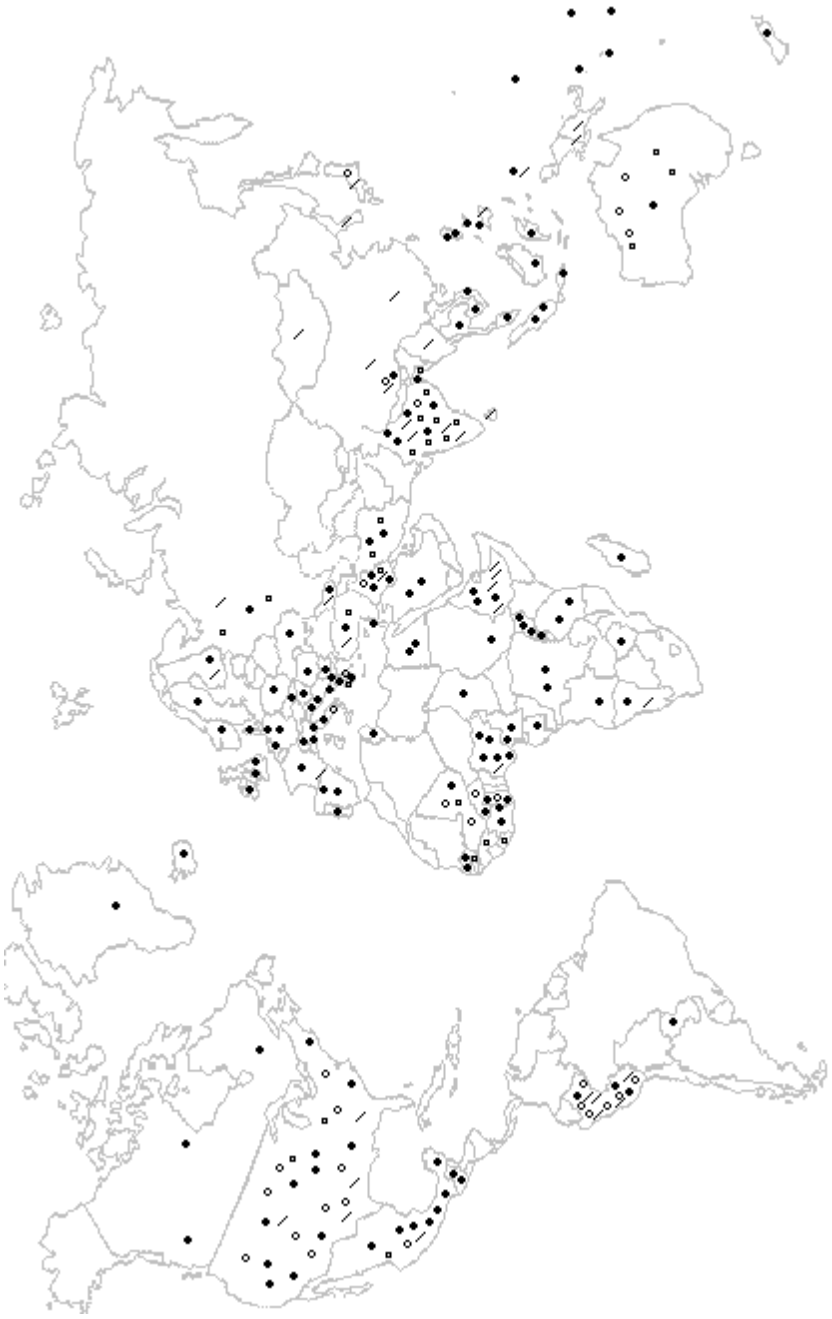


Figure 1. *Relative clauses around the world.* Dot = postnominal; backslash = prenominal; circle = circumnominal; square = correlative.

The remaining tables in this appendix contain useful selections of table 2, the main table. Footnotes and information on strategies not belonging to particular selections are *not* repeated and must be looked up in table 2 if relevant.

Tables 3 through 7 contain all main types of relatives.

Table 3 is a list of all languages in the sample with circumnominal relatives. There are no relative pronouns, because these would trigger the promotion of the head, which would lead to another main type. Notice that circumnominal relatives with a fronted internal head as a main strategy are found only in Yavapai. However, according to Lehmann (1984:121) it is a secondary strategy in Gaididj, Mohave, Diegueño, Latin and Sanskrit.[49]

Table 3. *Circumnominal relatives.*

language	**S,O,V**	**acc/ erg**	**Case**	**RC type**	**Det**	**gap**	**C/REL**	*other* **strat-egies**
American Sign Language	SVO			cir	-	N		post
Ancash Quechua	SOV	acc	s+	cir	-	N	$RA(NR_T)_s$	post, pre_{par}
Arrernte (Eastern)	SOV	erg ?	s+	cir	- ?	N	RA_s	
Ayacucho Quechua	SOV	acc	s+	cir	-	N		pre
Crow	VSO		- ?	cir	Df ?	N		post
Cuzco Quechua	SOV			cir	-	N	-	pre
Dagbani	SVO		-	cir	Df+	N	RC_{SR}	post
Diegueño	SOV	acc	s+	cir	Df_s+	N	$(RA(Agr)_p)$	pre, post, cor
Dogon (Donno So)	SOV	acc	s	cir	$Df_{(s)}$+	N	-	
Dogon (Togo Kã)	SOV		-	cir	Df+	N	-	
Gaididj		acc	s+	cir		N		cor
Greek (ancient)	SVO	acc	s	cir		N		post, cor
Hopi	SOV	acc	s	cir		N	$RA(add)_s$	pre, post
Huánuco Huallaga Quechua	SOV	acc	s+	cir	-	N	-	pre

[49] See further Chapter 4, section 5.

language	**S,O,V**	**acc/ erg**	**Case**	**RC type**	**Det**	**gap**	**C/REL**	*other* **strat-egies**
Huanca Quechua	SOV	acc	s+	cir		N		
Hurric	SOV / OSV	erg	s+	cir		N	$RA(add)_s$	cor, pre, post
Imbabura Quechua	SOV	acc	s+	cir	-	N	$RA(NR)_s$	pre
Japanese	SOV	acc	s+	cir	-	N	$RA(NR_{add})_s$	pre
Kiowa				cir		N		
Lakota	SOV		-	cir	Df+	N	-	post
Latin	SOV ?	acc	s	cir		N		post
Mohave	SOV	acc	s+	cir	Df_s	N	$(RA(Agr)_p)$	cor
Moore	SVO		-	cir	Df+	N	-	post
Murrinh-Pata	SOV			cir		N		
Navaho	SOV		-	cir	-	N	$RA(NR_{add})_s$	pre
Sanskrit (Vedic)	SOV	acc	s	cir		N		cor, pre, post
Tewa (Arizona)				cir		N		
Tibetan	SOV	erg	s	cir	Df	N		post, pre_{par}
Wappo	SOV	acc	s	cir	-	N	-	cor
Yavapai	SOV	acc	s+	cir	Df_s	N_1	$(RA(add)_p)$	

The following table contains a list of all correlatives in the sample. Notice that there is no relative pronoun in Diegueño, Gaididj, Mohave, Wappo and Warlpiri.

Table 4. *Correlatives.*

language	**S,O,V**	**acc/ erg**	**Case**	**RC type**	**Det**	**gap**	**C/REL**	**other strat-egies**
Avestic	SOV ?	acc	s	cor	cD	RP + N		post
Bambara	SOV		-	cor	cD	N +RP_{wh}	-	post
Bengali	SOV	acc	s	cor	cD	RP_{sp}+N	-	post
Diegueño	SOV	acc	s	cor	cD	N		cir, post, pre
Erzya	SOV ?			cor	cD	RP_{wh}+N	-	
Farsi	SOV	acc	s	cor				post
Gaididj		acc	s+	cor	cD	N	RC_{SR}	cir
Greek (ancient)	SVO	acc	s	cor	cD	RP_{wh} +…N	-	post, cir
Gujarati	SOV	acc	s	cor	cD	RP_{sp}+N	-	
Hindi	SOV	acc / (erg)	s	cor	cD	RP_{sp}+N	-	post
Hittite	SOV	acc	s	cor	cD	RP_{wh}+N	-	
Hurric	SOV / OSV	erg	s+	cor	cD	RP_{wh}+N	$(RA(add)_s)$	pre, cir, post
Kala Lagaw Ya	SOV	acc	s	cor	cD	(RP_{wh}) + N	-	
Kannada	SOV	acc	$s_{(+)}$	cor	cD	RP_{wh}+N	-	pre_{par}
Maninka / Mandinka	SOV		-	cor	cD	N+RP_{wh}	-	
Marathi	SOV	acc / (erg)	s	cor	cD	RP_{sp}+N	-	post
Mohave	SOV	acc	s	cor	cD	GN		cir
Russian (Medieval)	SVO ?	acc	s	cor	cD	RP_{wh}+N		
Sanskrit (Vedic)	SOV	acc	s	cor	cD	RP_{sp} +…N	-	cir, pre, post
Tamil	SOV	acc	$s_{(+)}$	cor	cD	RP_{wh}+N	-	pre_{par}
Telugu	SOV	acc	$s_{(+)}$	cor	cD	RP_{wh}+N	-	pre_{par}
Vai	SOV		-	cor	cD	N +RP_{wh}	-	
Wappo	SOV	acc	s	cor	cD	N	-	cir
Warlpiri	SOV	erg	s	cor	cD	N	$RC_{SR,p}$	

Table 5 contains a list of all prenominal relatives in the sample.

Table 5. *Prenominal relatives.*

language	S,O,V	acc/ erg	Case	RC type	Det	gap	C/REL	other strat-egies
Abkhaz	SOV	erg	-	pre	Dm_p	-	$RA(Agr)_p$	
Alekano		erg	s	pre	-	-	-	
Amharic	SOV		-	pre	Dm_s	-	$RA(SR_{add})_p$	
Ancash Quechua	SOV	acc	$s_{(+)}$	pre_{par}	-	-	$RA(NR_T)_s$	cir, post
Ayacucho Quechua	SOV	acc	s	pre	-	-		cir
Basque	SOV / (SVO)	erg	$s_{(+)}$	pre	Df_s	-	$RA(NR_{add})_{s,f}$	
Burmese	SOV			pre	- ?	- ?	$RC_{NR,f}$	
Chinese (Mandarin)	SVO / (SOV)		-	pre	-	(GD)	$RC_{NR,f}$	
Cuzco Quechua	SOV	acc	s	pre	-	-	-	cir
Diegueño	SOV	acc	s	pre ?		N	-	cir, post, cor
Finnish	SVO	acc ?	s ?	pre_{par}	-	-	-	post
Hewa	SOV	acc	s	pre ?	-	N_1	-	
Hopi	SOV	acc	s	pre		-	$RA(add)_s$	cir, post
Huánuco Huallaga Quechua	SOV	acc	s	pre				cir
Hurric	SOV / OSV	erg	s+	pre		-	$RA(add)_s$	cir, post, cor
Ijo	SOV		-	pre	Df_s	-	-	
Imbabura Quechua	SOV	acc	s	pre		-	$RA(NR)_s$	cir
Japanese	SOV	acc	s	pre	-	-	-	cir
Kannada	SOV	acc	$s_{(+)}$	pre_{par}	- ?	-	$RA(T)_s$	cor
Korean	SOV	acc	s	pre	Dm	-	$RA(T)_s$	
Lahu	SOV	acc	f	pre	(Df)	-	$RC_{NR,f}$	
Mari	SOV ?			pre_{par}		-	$RA(T)_s$ / $RA(NR_T)_s$?	
Mongolian	SOV ?			pre_{par}				
Nama	SOV	acc?	f_s	pre	Df_s	$(GD)_{prep}$	-	
Navaho	SOV		-	pre	-	-	$RA(NR_{add})_s$	cir
Oromo	SOV		-	pre	Df_s		$(RC_{SR,f})$ + R	post
Palauan	SVO			pre				post

language	S,O,V	acc/ erg	Case	RC type	Det	gap	C/REL	other strat-egies
Papago-Pima				pre				post
Saho-Afar	SOV			pre		-	-	
Sanskrit (Vedic)	SOV	acc	s	pre				cor, cir, post,
Sinhala	SOV			pre				
Tagalog	SOV ?		s/f ?	pre		-	$R_{SR,s,f}$	post
Tamil	SOV	acc	$s_{(+)}$	pre_{par}	- ?	-	$RA(T)_s$	cor
Telugu	SOV	acc	$s_{(+)}$	pre_{par}	- ?	-	$RA(T)_s$	cor
Tibetan	SOV	erg	s	pre_{par}	- ?	-	$RA(NR_T)_{s,f}$	cir, post
Tigré	SOV			pre	D1	-	RA_p	
Turkish	SOV	acc	$s_{(+)}$	pre_{par}	-	-	$RA(T)_s$ / $RA(NR_T)_s$	post
Yurok			-	pre	D1	-	-	post

The following table contains a list of all participial relatives in the sample, both prenominal and postnominal.

Table 6. *Participial relatives.*

language	S,O,V	acc/ erg	Case	RC type	Det	gap	C/REL	other strat-egies
Ancash Quechua	SOV	acc	$s_{(+)}$	pre_{par}	-	-	$RA(NR_T)_s$	cir, post
Finnish	SVO	acc ?	s ?	pre_{par}	-	-	-	post
Kannada	SOV	acc	$s_{(+)}$	pre_{par}	- ?	-	$RA(T)_s$	cor
Mari	SOV ?			pre_{par}		-	$RA(T)_s$ / $RA(NR_T)_s$?	
Mongolian	SOV ?			pre_{par}				
Tamil	SOV	acc	$s_{(+)}$	pre_{par}	- ?	-	$RA(T)_s$	cor
Telugu	SOV	acc	$s_{(+)}$	pre_{par}	- ?	-	$RA(T)_s$	cor
Tibetan	SOV	erg	s	pre_{par}	- ?	-	$RA(NR_T)_{s,f}$	cir, post
Turkish	SOV	acc	$s_{(+)}$	pre_{par}	-	-	$RA(T)_s$ / $RA(NR_T)_s$	post
Cahuilla	SOV	acc	s	$post_{par}$			$RA(NR_T)_s$	post
Djirbal	OSV	erg	s+	$post_{par}$	D1	-	$RA(T)_s$	
Greenlandic	SOV ?	erg	s	$post_{par}$	-	-	$RA(T)_s$	
Lushai	SOV	erg	s	$post_{par}$		-	$RA(T)_s$?	post
Ojibwa	SVO			$post_{par}$		-	$R(T)_1$	
Shoshoni	SOV	acc	s+	$post_{par}$		-	$RA(T)_s$	post

Table 7 is a list of all postnominal relatives in the sample. This is the largest group.

Table 7. *Postnominal relatives.*

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL	other strat-egies
Akkadian	SOV	acc	s	post	- ?	(GA_s)	RC_{AT}	
Akan	SVO			post		GD	RC_{SR}	
Albanian	SVO	acc	s	post	Dm_s	RP_{wh} -	- RC_{SR}	
Ambae (East)	SVO			post		GD ?		
American Sign Language	SVO			post				cir
Ancash Quechua	SOV	acc	$s_{(+)}$	post				cir, pre_{par}
Arabic (classical)	VSO	acc	s	post	$D1_p$	(GA_s)	RM	
Arabic (Tunisian)	VSO	acc	s	post		(RP)	(RC)	
Ashéninca	VSO		-	post	-	-	$RA(add)_s$	
Avestic	SOV ?	acc	s	post		RP		cor
Bainouk	SVO		- ?	post		-	RM_{CL}	
Bambara	SOV		-	post	-	RP_{wh}	-	cor
Batak Toba	VOS		-	post	Df	$(GD)_{prep}$	RC_{SR}	
Bengali	SOV	acc	s	post	D1	RP_{sp}	-	cor
Bicolano	VSO	acc	p	post	- ?	-	RC_{sp}	
Bora	SOV	acc	s	post	-	-	$RA(CL_{add})_s$	
Bulgarian	SVO	acc	s	post	-	RP_{sp} -	- RC_{SR}	
Cahuilla	SOV	acc	s	post $post_{par}$			$RA(NR_T)_s$	
Catalan	SVO	(acc)	-	post	D1	- RP_{wh}	RC_{SR} -	
Coptic				post				
Crow	VSO		- ?	post	Df	-	RM ?	cir
Czech	SVO			post	D1	(GD_2) RP_{wh}	RC_{sp} -	
Dagbani	SVO		-	post	-	-	RC_{SR}	cir
Danish	SVO	(acc)	-	post	D1	- $RP_{d/wh}$	(RC_{SR}) -	
Diegueño	SOV	acc	s	post		GD	-	cir, cor, pre
Djirbal	OSV	erg	s+	$post_{par}$	D1	-	$RA(T)_s$	
Dutch	SOV	(acc)	-	post	D1	$RP_{d/wh}$	-	
Egyptian (ancient)	VSO			post		-	(RM)	

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL	other strat-egies
English	SVO	(acc)	-	post	D1	RP_{wh}	-	
						-	(RC_{SR})	
Éwé	SVO		-	post	Df	-	RM	
Farsi	SOV	acc	s	post	Dm_s (+D1)	(GD)	RC_{SR}	cor
Finnish	SVO	acc ?	s ?	post	-	RP	-	pre_{par}
French	SVO	(acc)	-	post	D1	-	RC_{SR}	
						RP_{wh}	-	
Frisian (Northern)	SOV	(acc)	-	post	D1	-	RC_{SR}	
Fulfulde (Adamawa)	SVO		-	post	-	GD	RC_{SR} ?	
Gaelic	VSO			post		-	RC_{SR}	
Ganda	SVO		-	post	-	-	$RA(SR/Agr_{add})_p$	
Geez	VSO	acc	s	post	-	(GA_s)	RM_p	
Georgian	SVO	acc	s	post		RP_{wh}	-	
						-	RC_{SR}	
German	SOV	acc	s	post	D1	$RP_{d/wh}$	-	
Godié	SVO		-	post	Dm_s+f	(GD)	R	
Greek (modern)	SVO / VOS	acc	s	post	D1	(GD)	RC_{SR}	
Greek (ancient)	SVO	acc	s	post	-	RP_{wh}	-	cor, cir
Green-landic	SOV ?	erg	s	$post_{par}$	-	-	$RA(T)_s$	
Guaraní	SVO		-	post	D1	-	$RA(add)_s$	
Hausa	SVO			post		$(GD)_{prep}$	RC_{SR}	
Haya				post				
Hebrew	SVO	acc	p	post	$D1_p$	(GD)	$RC_{SR,p}$	
						(GA_s)		
Hindi	SOV	acc / (erg)	s	post	D1	RP_{sp}	-	cor
Hopi	SOV	acc	s	post		-	$RA(add)_s$	cir, pre
Huichol	SOV			post	D1	-	$RA(add_{SR})_p$	
Hungana	VSO / SVO ?		-	post	- ?	$(GA_s)_{prep}$	RM_{CL}	
Hungarian	SVO	acc	s	post	D1	RP	(RC_{SR})	
Hurric	SOV / OSV	erg	s+	post		-	$RA(add)_s$	pre, cir, cor
Iban	SVO			post				
Icelandic	SVO	acc	s	post	Dm_s	-	RC_{SR}	
Igbo				post				
Indonesian	SVO		-	post	Df	-	RC_{sp}	

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL	other strat-egies
Italian	SVO	(acc)	-	post	D1	- RP_{wh}	RC_{SR} -	
Ivatan				post		-	RC_{sp}	
Jacaltec	VSO	erg	s	post		$(GA_s)_{prep}$	$(RA(add)_s)$	
Javanese	SVO		-	post		-	RC_{sp}	
Kalagan	VSO	acc	1	post		-	RC_{sp}	
Kekchí	VSO / SVO ?	erg	s	post	D1	-	RC_{SR}	
Kera				post		(GD) ?		
Khmer (Central)	SVO			post			RC	
Kinuku	SVO		-	post	-	-	$RA(add)_p$	
Kiribati	VOS			post		(GD) ?		
Komso	SOV			post		-	-	
Kongo	SVO		-	post	$D1_p$	(GA_p)	$RA(add)_p$	
Kupsabiny	VSO		- ?	post		-	RM_{CL}	
Lakota	SOV		-	post	Df	-	-	cir
Lango				post		$(GA_s)_{prep}$	RC_{SR}	
Latin	SVO ?	acc	s	post	-	RP_{wh}	-	cir
Ligurian (Genoese)	SVO			post		(GD) ?		
Lushai	SOV	erg	s	post $post_{par}$	(Df)	- -	$RA(add)_s$ $RA(T)_s$?	
Macedonian	SVO	acc	s	post	-	RP_{sp} -	- RC_{SR}	
Malagasy	VOS	(acc)	- ?	post	D1	-	(RC_{sp})	
Malay	SVO		-	post	Df	-	RC_{sp}	
Maori	VSO		- ?	post				
Marathi	SOV	acc / (erg)	s	post	D1	RP_{sp}	-	cor
Mbama	SVO		-	post	-	-	$RA(AT_{add})_p$ RC_{SR}	
Mbum			-	post	Dm+f ?	-	-	
Mbundu (Loanda)				post				
Minang-Kabau	SVO			post				
Moore	SVO		-	post	Df	-	- ?	cir
Nahuatl	SVO	acc	s	post	D1	-	(RC_{SR})	
Norwegian	SVO	(acc)	-	post	D1(+) Dm_s	- $RP_{d/wh}$	(RC_{SR}) -	
Ojibwa	SVO			$post_{par}$		-	$R(T)_l$	
Oromo	SOV		-	post	Dm_s	(GD)	$(RC_{SR,f})$ + (R)	pre
Oskian				post				
Palauan	SVO			post				pre

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL	other strat-egies
Papago-Pima				post				pre
Polish	SVO	acc	s	post	-	RP_{wh} -	- RC_{sp}	
Ponapean	SVO		(s)	post	Df_s	-	RC_{sp}	
Portuguese	SVO	(acc)	-	post	D1	- RP_{wh}	RC_{SR} -	
Roviana	VSO		-	post	D1	-	RC_{SR}	
Rumanian	SVO	acc	s	post	D1	RP_{wh} -	- RC_{SR}	
Russian	SVO	acc	s	post	-	RP_{wh} -	- RC_{SR}	
Rwanda	SVO		-	post	-	-	$(RA(clitic)_p)_{sub}$	
Sanskrit (Vedic)	SOV	acc	s	post				cor, cir, pre
Schwyzer-dütsch (Zurich)	SOV	acc	s	post	D1	(GD)	RC_{SR}	
Serbo-Croatian	SVO	acc	s	post	-	RP_{wh} -	- RC_{SR}	
Shona	SVO		-	post	-	$(GA_s)_{prep}$	$(RA(Agr_{add}))$	
Shoshoni	SOV	acc	s+	post $post_{par}$	- ?	- -	$RA(NR_{add})_s$ $RA(T)_s$	
Slovenian	SVO	acc	s	post	-	RP_{sp} (GD)	- RC_{SR}	
Spanish	SVO	(acc)	-	post	D1	- RP_{wh}	RC_{SR} -	
Sumerian	SOV	erg	s	post	-	-	$RA(NR_{add})_s$	
Swahili	SVO		-	post	-	$(GA_s)_{prep}$	$RA(CL_{add})_{p/s}$ $RC_{sp}+CL_s$	
Swedish	SVO	(acc)	-	post	Dm_s	- RP_{wh}	(RC_{SR}) -	
Tagalog	SVO ?		s/f ?	post	- ?	-	$RC_{SR,s}$	pre
Thai	SVO			post		-	RC_{sp}	
Tibetan	SOV	erg	s	post				cir, pre_{par}
Tongan	VSO	erg	f	post	D1	$(GA_s)_{prep}$	-	
Turkish	SOV	acc	$s_{(+)}$	post				pre_{par}
Tzeltal	VOS		-	post	D1	RP_{wh}	-	
Ukrainian	SVO	acc	s	post	-	RP_{wh} -	- RC_{SR}	
Umbrian				post				
Urhobo	SOV ?		-	post	Dm	GD	$RC_{SR,p}$	
Ute / Paiute	VSO ?	acc	s	post	Dm ?	-	$RA(NR_{add})_s$	
Vietnamese	SVO			post		-	RC_{SR}	

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL	other strat-egies
Welsh	VSO		-	post	D1	(GA_s)	(RC_{SR})	
Wolof	SVO		-	post	Df ?	- ?	RM_{CL}	
Yaqui	SOV	acc	$s_{(+)}$	post	D1	- ?	$RA(add)_s$	
Yoruba	SVO		-	post	Df	-	RC_{sp}	
Yucatecan	VSO		-	post	$D1+f_s$	-	-	
Yurok			-	post	D1	-	RC_{SR}	pre
Zapoteco	VSO			post		RP ?		

The following eight tables contain lists of languages with relative pronouns, particles, etc.

Table 8 contains all languages in the sample that have relative pronouns. The table is divided into two sections: correlatives and postnominal relatives. The other main types do not have relative pronouns.

Table 8. *Relative pronouns.*

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Avestic	SOV ?	acc	s	cor	cD	RP + N	
Bambara	SOV		-	cor	cD	N + RP_{wh}	-
Bengali	SOV	acc	s	cor	cD	RP_{sp} +N	-
Erzya	SOV ?			cor	cD	RP_{wh} +N	-
Greek (ancient)	SVO	acc	s	cor	cD	RP_{wh} +…N	-
Gujarati	SOV	acc	s	cor	cD	RP_{sp} +N	-
Hindi	SOV	acc / (erg)	s	cor	cD	RP_{sp} +N	-
Hittite	SOV	acc	s	cor	cD	RP_{wh} +N	-
Hurric	SOV / OSV	erg	s+	cor	cD	RP_{wh} + N	($RA(add)_s$)
Kala Lagaw Ya	SOV	acc	s	cor	cD	(RP_{wh}) +N	-
Kannada	SOV	acc	$s_{(+)}$	cor	cD	RP_{wh} +N	-
Maninka / Mandinka	SOV		-	cor	cD	N + RP_{wh}	-
Marathi	SOV	acc / (erg)	s	cor	cD	RP_{sp} +N	-
Russian (Medieval)	SVO ?	acc	s	cor	cD	RP_{wh} +N	
Sanskrit (Vedic)	SOV	acc	s	cor	cD	RP_{sp} +...N	-
Tamil	SOV	acc	$s_{(+)}$	cor	cD	RP_{wh} +N	-

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Telugu	SOV	acc	$s_{(+)}$	cor	cD	RP_{wh}	-
Vai	SOV		-	cor	cD	N +RP_{wh}	-
Albanian	SVO	acc	s	post	Dm_s	RP_{wh}	-
Arabic (Tunisian)	VSO	acc	s	post		(RP)	(RC)
Avestic	SOV ?	acc	s	post		RP	
Bambara	SOV		-	post	-	RP_{wh}	-
Bengali	SOV	acc	s	post	D1	RP_{sp}	-
Bulgarian	SVO	acc	s	post	-	RP_{sp}	-
Catalan	SVO	(acc)	-	post	D1	RP_{wh}	-
Czech	SVO	acc	s	post	D1	RP_{wh}	-
Danish	SVO	(acc)	-	post	D1	$RP_{d/wh}$	-
Dutch	SOV	(acc)	-	post	D1	$RP_{d/wh}$	-
English	SVO	(acc)	-	post	D1	RP_{wh}	-
Finnish	SVO	acc ?	s ?	post	-	RP	-
French	SVO	(acc)	-	post	D1	RP_{wh}	-
Georgian	SVO	acc	s	post		RP_{wh}	-
German	SOV	acc	s	post	D1	$RP_{d/wh}$	-
Greek (ancient)	SVO	acc	s	post	-	RP_{wh}	-
Hindi	SOV	acc / (erg)	s	post	D1	RP_{sp}	-
Hungarian	SVO	acc	s	post	D1	RP	(RC_{SR})
Italian	SVO	(acc)	-	post	D1	RP_{wh}	-
Latin	SVO ?	acc	s	post	-	RP_{wh}	-
Macedonian	SVO	acc	s	post	-	RP_{sp}	-
Marathi	SOV	acc / (erg)	s	post	D1	RP_{sp}	-
Norwegian	SVO	(acc)	-	post	D1(+) Dm_s	$RP_{d/wh}$	-
Polish	SVO	acc	s	post	-	RP_{wh}	-
Portuguese	SVO	(acc)	-	post	D1	RP_{wh}	-
Rumanian	SVO	acc	s	post	D1	RP_{wh}	-
Russian	SVO	acc	s	post	-	RP_{wh}	-
Serbo-Croatian	SVO	acc	s	post	-	RP_{wh}	-
Slovenian	SVO	acc	s	post	-	RP_{sp}	-
Spanish	SVO	(acc)	-	post	D1	RP_{wh}	-
Swedish	SVO	(acc)	-	post	Dm_s	RP_{wh}	-
Tzeltal	VOS		-	post	D1	RP_{wh}	-
Ukrainian	SVO	acc	s	post	-	RP_{wh}	-
Zapoteco	VSO			post		RP ?	

Table 9 is a list of all languages in the sample that use resumptive pronouns or clitics.

Table 9. *Resumptive pronouns and clitics.*

language	S,O,V	acc/ erg	Case	RC type	Det	gap	C/REL
Akkadian	SOV	acc	s	post	- ?	(GA_s)	RC_{AT}
Akan	SVO			post		GD	RC_{SR}
Ambae (East)	SVO			post		GD ?	
Arabic (classical)	VSO	acc	s	post	$D1_p$	(GA_s)	RM
Batak Toba	VOS		-	post	Df	$(GD)_{prep}$	RC_{SR}
Chinese (Mandarin)	SVO / (SOV)		-	pre	-	(GD)	$RC_{NR,f}$
Czech	SVO	acc	s	post	D1	(GD_2)	RC_{sp}
Diegueño	SOV	acc	s	post		GD	-
Farsi	SOV	acc	s	post	Dm_s (+D1)	(GD)	RC_{SR}
Fulfulde (Adamawa)	SVO		-	post	-	GD	RC_{SR} ?
Ganda	SVO		-	post	-	GA_p	-
Geez	VSO	acc	s	post	-	(GA_s)	RM_p
Godié	SVO		-	post	Dm_s+f	(GD)	R
Greek (modern)	SVO / VOS	acc	s	post	D1	(GD)	RC_{SR}
Hausa	SVO			post		$(GD)_{prep}$	RC_{SR}
Hebrew	SVO	acc	p	post	$D1_p$	(GD) / (GA_s)	$RC_{SR,p}$
Hungana	VSO / SVO ?		-	post	- ?	$(GA_s)_{prep}$	RM_{CL}
Jacaltec	VSO	erg	s	post		$(GA_s)_{prep}$	$(RA(add)_s)$
Kera				post		(GD) ?	
Kiribati	VOS			post		(GD) ?	
Kongo	SVO		-	post	$D1_p$	(GA_p)	$RA(add)_p$
Lango				post		$(GA_s)_{prep}$	RC_{SR}
Ligurian (Genoese)	SVO			post		(GD) ?	
Nama	SOV	acc?	f_s	pre	Df_s	$(GD)_{prep}$	-
Oromo	SOV		-	post	Dm_s	(GD)	$(RC_{SR,f})$ +(R)
Schwyzer-dütsch (Zurich)	SOV	acc	s	post	D1	(GD)	RC_{SR}
Shona	SVO		-	post	-	$(GA_s)_{prep}$	$(RA(Agr_{add}))$
Slovenian	SVO	acc	s	post	-	(GD)	RC_{SR}
Swahili	SVO		-	post	-	$(GA_s)_{prep}$	$RA(CL_{add})_{p/s}$ / RC_{sp}+CL_s
Tongan	VSO	erg	f	post	D1	$(GA_s)_{prep}$	-
Urhobo	SOV ?		-	post	Dm	GD	$RC_{SR,p}$
Welsh	VSO		-	post	D1	(GA_s)	(RC_{SR})

The following table contains all languages in the sample with relative complementizers. It is divided into four sections: unclassified, nominalizing/ attributive, specialized, and subordinative.

Table 10. *Relative complementizers.*

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Arabic (Tunisian)	VSO	acc	s	post		(RP)	(RC)
Khmer (Central)	SVO			post			RC
Akkadian	SOV	acc	s	post	- ?	(GA_s)	RC_{AT}
Burmese	SOV			pre	- ?	- ?	$RC_{NR,f}$
Chinese (Mandarin)	SVO / (SOV)		-	pre	-	(GD)	$RC_{NR,f}$
Lahu	SOV	acc	f	pre	(Df)	-	$RC_{NR,f}$
Bicolano	VSO	acc	p	post	- ?	-	RC_{sp}
Czech	SVO	acc	s	post	D1	(GD_2)	RC_{sp}
Indonesian	SVO		-	post	Df	-	RC_{sp}
Ivatan				post		-	RC_{sp}
Javanese	SVO		-	post		-	RC_{sp}
Kalagan	VSO	acc	1	post		-	RC_{sp}
Malagasy	VOS	(acc)	- ?	post	D1	-	(RC_{sp})
Malay	SVO		-	post	Df	-	RC_{sp}
Polish	SVO	acc	s	post	-	-	RC_{sp}
Ponapean	SVO		(s)	post	Df_s	-	RC_{sp}
Swahili	SVO		-	post	-	$(GA_s)_{prep}$	$RC_{sp}+CL_s$
Thai	SVO			post		-	RC_{sp}
Yoruba	SVO		-	post	Df	-	RC_{sp}
Akan	SVO			post		GD	RC_{SR}
Albanian	SVO	acc	s	post	Dm_s	-	RC_{SR}
Batak Toba	VOS		-	post	Df	$(GD)_{prep}$	RC_{SR}
Bulgarian	SVO	acc	s	post	-	-	RC_{SR}
Catalan	SVO	(acc)	-	post	D1	-	RC_{SR}
Dagbani	SVO		-	post	-	-	RC_{SR}
				cir	Df+	N	RC_{SR}
Danish	SVO	(acc)	-	post	D1	-	(RC_{SR})
English	SVO	(acc)	-	post	D1	-	(RC_{SR})
Farsi	SOV	acc	s	post	Dm_s (+D1)	(GD)	RC_{SR}
French	SVO	(acc)	-	post	D1	-	RC_{SR}
Frisian (Northern)	SOV	(acc)	-	post	D1	-	RC_{SR}
Fulfulde (Adamawa)	SVO		-	post	-	GD	RC_{SR} ?
Gaelic	VSO			post		-	RC_{SR}

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Gaididj		acc	s+	cor	cD	N	RC_{SR}
Georgian	SVO	acc	s	post		-	RC_{SR}
Greek (modern)	SVO / VOS	acc	s	post	D1	(GD)	RC_{SR}
Hausa	SVO			post		$(GD)_{prep}$	RC_{SR}
Hebrew	SVO	acc	p	post	$D1_p$	(GD) / (GA_s)	$RC_{SR,p}$
Hungarian	SVO	acc	s	post	D1	RP	(RC_{SR})
Icelandic	SVO	acc	s	post	Dm_s	-	RC_{SR}
Italian	SVO	(acc)	-	post	D1	-	RC_{SR}
Kekchí	VSO / SVO ?	erg	s	post	D1	-	RC_{SR}
Lango				post		$(GA_s)_{prep}$	RC_{SR}
Macedonian	SVO	acc	s	post	-	-	RC_{SR}
Mbama	SVO		-	post	-	-	RC_{SR}
Nahuatl	SVO	acc	s	post	D1	-	(RC_{SR})
Norwegian	SVO	(acc)	-	post	D1(+) Dm_s	-	(RC_{SR})
Oromo	SOV		-	post	Dm_s	(GD)	$(RC_{SR,f})$ + (R)
				pre	Df_s		$(RC_{SR,f})$ +R
Portuguese	SVO	(acc)	-	post	D1	-	RC_{SR}
Roviana	VSO		-	post	D1	-	RC_{SR}
Rumanian	SVO	acc	s	post	D1	-	RC_{SR}
Russian	SVO	acc	s	post	-	-	RC_{SR}
Schwyzer-dütsch (Zurich)	SOV	acc	s	post	D1	(GD)	RC_{SR}
Serbo-Croatian	SVO	acc	s	post	-	-	RC_{SR}
Slovenian	SVO	acc	s	post	-	(GD)	RC_{SR}
Spanish	SVO	(acc)	-	post	D1	-	RC_{SR}
Swedish	SVO	(acc)	-	post	Dm_s	-	(RC_{SR})
Tagalog	SVO ?		s/f ?	post	- ?	-	$RC_{SR,s}$
Ukrainian	SVO	acc	s	post	-	-	RC_{SR}
Urhobo	SOV ?		-	post	Dm	GD	$RC_{SR,p}$
Vietnamese	SVO			post		-	RC_{SR}
Warlpiri	SOV	erg	s	cor	cD	N	$RC_{SR,p}$
Welsh	VSO		-	post	D1	(GA_s)	(RC_{SR})
Yurok			-	post	D1	-	RC_{SR}

The following table contains all languages in the sample with relative markers. See Ch5§3.3.1 for a reconsideration of classifier markers as (remnants of) relative pronouns), e.g. in Bainouk, Hungana, Kupsabiny and Wolof.

Table 11. *Relative markers.*

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Arabic (classical)	VSO	acc	s	post	$D1_p$	(GA_s)	RM
Bainouk	SVO		- ?	post		-	RM_{CL}
Crow	VSO		- ?	post	Df	-	RM ?
Egyptian (ancient)	VSO			post		-	(RM)
Éwé	SVO		-	post	Df	-	RM
Geez	VSO	acc	s	post	-	(GA_s)	RM_p
Hungana	VSO / SVO ?		-	post	- ?	$(GA_s)_{prep}$	RM_{CL}
Kupsabiny	VSO		- ?	post		-	RM_{CL}
Wolof	SVO		-	post	Df ?	- ?	RM_{CL}

Table 12 contains a list of all languages in the sample with relative affixes.

Table 12. *Relative affixes.*

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Abkhaz	SOV	erg	-	pre	Dm_p	-	$RA(Agr)_p$
Amharic	SOV		-	pre	Dm_s	-	$RA(SR_{add})_p$
Ancash Quechua	SOV	acc	$s_{(+)}$	pre_{par}	-	-	$RA(NR_T)_s$
			s+	cir	-	N	$RA(NR_T)_s$
Arrernte (Eastern)	SOV	erg ?	s+	cir	- ?	N	RA_s
Ashéninca	VSO		-	post	-	-	$RA(add)_s$
Basque	SOV / (SVO)	erg	$s_{(+)}$	pre	Df_s	-	$RA(NR_{add})_{s,f}$
Bora	SOV	acc	s	post	-	-	$RA(CL_{add})_s$
Cahuilla	SOV	acc	s	post			$RA(NR_T)_s$
				$post_{par}$			$RA(NR_T)_s$
Diegueño	SOV	acc	s+	cir	Df_s+	N	$(RA(Agr)_p)$
Djirbal	OSV	erg	s+	$post_{par}$	D1	-	$RA(T)_s$
Ganda	SVO		-	post	-	-	$RA(SR/Agr_{add})_p$
Greenlandic	SOV ?	erg	s	$post_{par}$	-	-	$RA(T)_s$
Guaraní	SVO		-	post	D1	-	$RA(add)_s$
Hopi	SOV	acc	s	post		-	$RA(add)_s$
				pre		-	$RA(add)_s$
				cir		N	$RA(add)_s$
Huichol	SOV			post	D1	-	$RA(add_{SR})_p$

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Hurric	SOV / OSV	erg	s+	cor	cD	RP_{wh} + N	$(RA(add)_s)$
				post		-	$RA(add)_s$
				pre		-	$RA(add)_s$
				cir		N	$RA(add)_s$
Imbabura Quechua	SOV	acc	s	pre		-	$RA(NR)_s$
			s+	cir	-	N	$RA(NR)_s$
Jacaltec	VSO	erg	s	post		$(GA_s)_{prep}$	$(RA(add)_s)$
Japanese	SOV	acc	s+	cir	-	N	$RA(NR_{add})_s$
Kannada	SOV	acc	$s_{(+)}$	pre_{par}	- ?	-	$RA(T)_s$
Kinuku	SVO		-	post	-	-	$RA(add)_p$
Kongo	SVO		-	post	$D1_p$	(GA_p)	$RA(add)_p$
Korean	SOV	acc	s	pre	Dm	-	$RA(T)_s$
Lushai	SOV	erg	s	post	(Df)	-	$RA(add)_s$
				$post_{par}$		-	$RA(T)_s$?
Mari	SOV ?			pre_{par}		-	$RA(NR_T)_s$?
							$RA(T)_s$
Mbama	SVO		-	post	-	-	$RA(AT_{add})_p$
Mohave	SOV	acc	s+	cir	Df_s	N	$(RA(Agr)_p)$
Navaho	SOV		-	pre	-	-	$RA(NR_{add})_s$
				cir	-	N	$RA(NR_{add})_s$
Rwanda	SVO		-	post	-	-	$(RA(clitic)_p)_{sub}$
Shona	SVO		-	post	-	$(GA_s)_{prep}$	$(RA(Agr_{add}))$
Shoshoni	SOV	acc	s+	post	- ?	-	$RA(NR_{add})_s$
				$post_{par}$		-	$RA(T)_s$
Sumerian	SOV	erg	s	post	-	-	$RA(NR_{add})_s$
Swahili	SVO		-	post	-	$(GA_s)_{prep}$	$RA(CL_{add})_{p/s}$
Tamil	SOV	acc	$s_{(+)}$	pre_{par}	- ?	-	$RA(T)_s$
Telugu	SOV	acc	$s_{(+)}$	pre_{par}	- ?	-	$RA(T)_s$
Tibetan	SOV	erg	s	pre_{par}	- ?	-	$RA(NR_T)_{s,f}$
Tigré	SOV			pre	D1	-	RA_p
Turkish	SOV	acc	$s_{(+)}$	pre_{par}	-	-	$RA(NR_T)_s$
							$RA(T)_s$
Ute / Paiute	VSO ?	acc	s	post	Dm ?	-	$RA(NR_{add})_s$
Yaqui	SOV	acc	s(+)	post	D1	- ?	$RA(add)_s$
Yavapai	SOV	acc	s+	cir	Df_s	N_1	$(RA(add)_p)$

Table 13 lists some unclassified or remarkable relative particles.

Table 13. *Strange relative particles.*

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Godié	SVO		-	post	Dm_s+f	(GD)	R
Ojibwa	SVO			$post_{par}$		-	$R(T)_l$
Oromo	SOV		-	post	Dm_s	(GD)	$(RC_{SR,f})$ + (R)
				pre	Df_s		$(RC_{SR,f})$ +R
Swahili	SVO		-	post	-	$(GA_s)_{prep}$	RC_{sp}+CL_s
Tagalog	SVO ?		s/f ?	pre		-	$R_{SR,s,f}$

Table 14 is a list of relative affixes and complementizers that are nominalizing or attributive.

Table 14. *Nominalizing/attributive relative particles.*

language	S,O,V	acc/ erg	Case	RC type	Det	gap	C/REL
Akkadian	SOV	acc	s	post	- ?	(GA_s)	RC_{AT}
Ancash Quechua	SOV	acc	$s_{(+)}$	pre_{par}	-	-	$RA(NR_T)_s$
			s+	cir	-	N	$RA(NR_T)_s$
Basque	SOV / (SVO)	erg	$s_{(+)}$	pre	Df_s	-	$RA(NR_{add})_{s,f}$
Burmese	SOV			pre	- ?	- ?	$RC_{NR,f}$
Cahuilla	SOV	acc	s	post			$RA(NR_T)_s$
				$post_{par}$			
Chinese (Mandarin)	SVO / (SOV)		-	pre	-	(GD)	$RC_{NR,f}$
Imbabura Quechua	SOV	acc	s+	cir	-	N	$RA(NR)_s$
			s	pre		-	
Japanese	SOV	acc	s+	cir	-	N	$RA(NR_{add})_s$
Lahu	SOV	acc	f	pre	(Df)	-	$RC_{NR,f}$
Mari	SOV ?			pre_{par}		-	$(RA(NR_T)_s)$?
Mbama	SVO		-	post	-	-	$(RA(AT_{add})_p)$
Navaho	SOV		-	cir	-	N	$RA(NR_{add})_s$
				pre	-	-	
Shoshoni	SOV	acc	s+	post	- ?	-	$RA(NR_{add})_s$
Sumerian	SOV	erg	s	post	-	-	$RA(NR_{add})_s$
Tibetan	SOV	erg	s	pre_{par}	- ?	-	$RA(NR_T)_{s,f}$
Turkish	SOV	acc	$s_{(+)}$	pre_{par}	-	-	$(RA(NR_T)_s)$
Ute / Paiute	VSO ?	acc	s	post	Dm ?	-	$RA(NR_{add})_s$

Finally, table 15 contains a list of languages that use a primary 'zero relativization' strategy.

Table 15. *Zero relativization.*

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL	other strategies
Komso	SOV			post		-	-	
Lakota	SOV		-	post	Df	-	-	cir
Mbum			-	post	Dm+f ?	-	-	
Moore	SVO		-	post	Df	-	- ?	cir
Yucatecan	VSO		-	post	$D1+f_s$	-	-	
Alekano		erg	s	pre	-	-	-	
Cuzco Quechua	SOV	acc	s	pre	-	-	-	cir
Finnish	SVO	acc ?	s ?	pre_{par}	-	-	-	post
Ijo	SOV		-	pre	Df_s	-	-	
Japanese	SOV	acc	s	pre	-	-	-	cir
Saho-Afar	SOV			pre		-	-	
Yurok			-	pre	D1	-	-	post

The following five tables concern the position of the determiner.

Table 16 contains a list of languages from the sample that have postnominal relatives and a regularly overt (definite) determiner. There are three sections: D1 N RC; N Dm RC; and N RC Df.

Table 16. *The position of the determiner in postnominal relative constructions.*

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Arabic (classical)	VSO	acc	s	post	$D1_p$	(GA_s)	RM
Bengali	SOV	acc	s	post	D1	RP_{sp}	-
Catalan	SVO	(acc)	-	post	D1	-	RC_{SR}
						RP_{wh}	-
Czech	SVO	acc	s	post	D1	(GD_2)	RC_{sp}
						RP_{wh}	-
Danish	SVO	(acc)	-	post	D1	-	(RC_{SR})
						$RP_{d/wh}$	-
Djirbal	OSV	erg	s+	$post_{par}$	D1	-	$RA(T)_s$
Dutch	SOV	(acc)	-	post	D1	$RP_{d/wh}$	-
English	SVO	(acc)	-	post	D1	-	(RC_{SR})
						RP_{wh}	-
French	SVO	(acc)	-	post	D1	-	RC_{SR}
						RP_{wh}	-
Frisian (Northern)	SOV	(acc)	-	post	D1	-	RC_{SR}
German	SOV	acc	s	post	D1	$RP_{d/wh}$	-
Greek (modern)	SVO / VOS	acc	s	post	D1	(GD)	RC_{SR}
Guaraní	SVO		-	post	D1	-	$RA(add)_s$
Hebrew	SVO	acc	p	post	$D1_p$	(GD) / (GA_s)	$RC_{SR,p}$
Hindi	SOV	acc / (erg)	s	post	D1	RP_{sp}	-
Huichol	SOV			post	D1	-	$RA(add_{SR})_p$
Hungarian	SVO	acc	s	post	D1	RP	(RC_{SR})
Italian	SVO	(acc)	-	post	D1	-	RC_{SR}
						RP_{wh}	-
Kekchí	VSO / SVO ?	erg	s	post	D1	-	RC_{SR}
Kongo	SVO		-	post	$D1_p$	(GA_p)	$RA(add)_p$
Malagasy	VOS	(acc)	- ?	post	D1	-	(RC_{sp})
Marathi	SOV	acc / (erg)	s	post	D1	RP_{sp}	-
Nahuatl	SVO	acc	s	post	D1	-	(RC_{SR})
Norwegian	SVO	(acc)	-	post	$D1(+)Dm_s$	-	(RC_{SR})
						$RP_{d/wh}$	-

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Portuguese	SVO	(acc)	-	post	D1	- RP_{wh}	RC_{SR} -
Roviana	VSO		-	post	D1	-	RC_{SR}
Rumanian	SVO	acc	s	post	D1	- RP_{wh}	RC_{SR} -
Schwyzer-dütsch (Zurich)	SOV	acc	s	post	D1	(GD)	RC_{SR}
Spanish	SVO	(acc)	-	post	D1	- RP_{wh}	RC_{SR} -
Tongan	VSO	erg	f	post	D1	$(GA_s)_{prep}$	-
Tzeltal	VOS		-	post	D1	RP_{wh}	-
Welsh	VSO		-	post	D1	(GA_s)	(RC_{SR})
Yaqui	SOV	acc	$s_{(+)}$	post	D1	- ?	$RA(add)_s$
Yucatecan	VSO		-	post	$D1+f_s$	-	-
Yurok			-	post	D1	-	RC_{SR}
Albanian	SVO	acc	s	post	Dm_s	- RP_{wh}	RC_{SR} -
Farsi	SOV	acc	s	post	Dm_s (+D1)	(GD)	RC_{SR}
Godié	SVO		-	post	Dm_s+f	(GD)	R
Icelandic	SVO	acc	s	post	Dm_s	-	RC_{SR}
Mbum			-	post	Dm+f ?	-	-
Oromo	SOV		-	post	Dm_s	(GD)	$(RC_{SR,f})$ + (R)
Swedish	SVO	(acc)	-	post	Dm_s	- RP_{wh}	(RC_{SR}) -
Urhobo	SOV ?		-	post	Dm	GD	$RC_{SR,p}$
Ute / Paiute	VSO ?	acc	s	post	Dm ?	-	$RA(NR_{add})_s$
Batak Toba	VOS		-	post	Df	$(GD)_{prep}$	RC_{SR}
Crow	VSO		- ?	post	Df	-	RM ?
Éwé	SVO		-	post	Df	-	RM
Indonesian	SVO		-	post	Df	-	RC_{sp}
Lakota	SOV		-	post	Df	-	-
Lushai	SOV	erg	s	post	(Df)	-	$RA(add)_s$
Malay	SVO		-	post	Df	-	RC_{sp}
Moore	SVO		-	post	Df	-	- ?
Ponapean	SVO		(s)	post	Df_s	-	RC_{sp}
Wolof	SVO		-	post	Df ?	- ?	RM_{CL}
Yoruba	SVO		-	post	Df	-	RC_{sp}

Table 17 contains a list of languages from the sample that have prenominal relatives and a regularly overt determiner. Again there are three sections: D1 RC N; RC Dm N; and RC N Df.

Table 17. *The position of the determiner in prenominal relative constructions.*

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Tigré	SOV			pre	D1	-	RA_p
Yurok			-	pre	D1	-	-
Abkhaz	SOV	erg	-	pre	Dm_p	-	$RA(Agr)_p$
Amharic	SOV		-	pre	Dm_s	-	$RA(SR_{add})_p$
Korean	SOV	acc	s	pre	Dm	-	$RA(T)_s$
Basque	SOV / (SVO)	erg	$s_{(+)}$	pre	Df_s	-	$RA(NR_{add})_{s,f}$
Ijo	SOV		-	pre	Df_s	-	-
Lahu	SOV	acc	f	pre	(Df)	-	$RC_{NR,f}$
Nama	SOV	acc?	f_s	pre	Df_s	$(GD)_{prep}$	-
Oromo	SOV		-	pre	Df_s		$(RC_{SR,f})$ +R

Table 18 contains a list of languages from the sample that have circumnominal relatives and a regularly overt determiner. Only one of the two logically possible positions surfaces: a clause-final determiner. Culy (1990) reports that there are several languages with circumnominal relatives where the normal ordering of nouns and determiners is D N. These are Japanese, Navaho, all Quechua languages and ASL. One would expect to find [D1 cir] in these languages, but notably, in neither of those is the determiner overt.

Table 18. *The position of the determiner in circumnominal relative constructions.*

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Crow	VSO		- ?	cir	Df ?	N	
Dagbani	SVO		-	cir	Df+	N	RC_{SR}
Diegueño	SOV	acc	s+	cir	Df_s+	N	$(RA(Agr)_p)$
Dogon (Donno So)	SOV	acc	s	cir	$Df_{(s)}$+	N	-
Dogon (Togo Kã)	SOV		-	cir	Df+	N	-
Lakota	SOV		-	cir	Df+	N	-
Mohave	SOV	acc	s+	cir	Df_s	N	$(RA(Agr)_p)$
Moore	SVO		-	cir	Df+	N	-
Tibetan	SOV	erg	s	cir	Df	N	
Yavapai	SOV	acc	s+	cir	Df_s	N_1	$(RA(add)_p)$

Table 19 contains some instances of split determiners found in the sample.

Table 19. *Split determiners.*

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Farsi	SOV	acc	s	post	Dm_s (+D1)	(GD)	RC_{SR}
Godié	SVO		-	post	Dm_s+f	(GD)	R
Mbum			-	post	Dm+f ?	-	-
Yucatecan	VSO		-	post	D1+f_s	-	-

Table 20 contains all patterns where the determiner is separated from the noun by an intervening relative clause.[50] There are three sections: post N RC D; ib. with a split determiner; pre D RC N.

Table 20. *Determiners non-adjacent to N.*

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Batak Toba	VOS		-	post	Df	$(GD)_{prep}$	RC_{SR}
Éwé	SVO		-	post	Df	-	RM
Indonesian	SVO		-	post	Df	-	RC_{sp}
Lakota	SOV		-	post	Df	-	-
Lushai	SOV	erg	s	post	(Df)	-	$RA(add)_s$
Malay	SVO		-	post	Df	-	RC_{sp}
Moore	SVO		-	post	Df	-	- ?
Ponapean	SVO		(s)	post	Df_s	-	RC_{sp}
Wolof	SVO		-	post	Df ?	- ?	RM_{CL}
Yoruba	SVO		-	post	Df	-	RC_{sp}
Godié	SVO		-	post	Dm_s+f	(GD)	R
Mbum			-	post	Dm+f ?	-	-
Yucatecan	VSO		-	post	D1+f_s	-	-
Chinese (Mandarin)	SVO / (SOV)		-	pre	-	(GD)	$RC_{NR,f}$
Tigré	SOV			pre	D1	-	RA_p
Yurok			-	pre	D1	-	-

[50] Circumnominal constructions can be seen as special instances of this property; they are listed in table 18.

The following four tables list relative clause main types 'unexpectedly' found in languages with a certain basic word order.

Table 21 is on circumnominal relatives. They are normally found in SOV languages, but there are some exceptions:

Table 21. *Circumnominal relatives in non-SOV languages.*

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
American Sign Language	SVO			cir	-	N	
Dagbani	SVO		-	cir	Df+	N	RC_{SR}
Greek (ancient)	SVO	acc	s	cir		N	
Latin	SVO ?	acc	s	cir		N	
Moore	SVO		-	cir	Df+	N	-
Crow	VSO		- ?	cir	Df ?	N	

Table 22 is on correlatives. They are normally found in SOV languages, but there are some exceptions:

Table 22. *Correlatives in non-SOV languages.*

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Greek (ancient)	SVO	acc	s	cor	cD	RP_{wh} +…N	-
Russian (Medieval)	SVO ?	acc	s	cor	cD	RP_{wh} +N	

Table 23 is on prenominal relatives. They are normally found in SOV languages, but there are some exceptions:

Table 23. *Prenominal relatives in non-SOV languages.*

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Chinese (Mandarin)	SVO / (SOV)		-	pre	-	(GD)	$RC_{NR,f}$
Finnish	SVO	acc ?	s ?	pre_{par}	-	-	-
Palauan	SVO			pre			
Tagalog	SVO ?		s/f ?	pre		-	$R_{SR,s,f}$

Table 24 is on postnominal relatives. They are expected to be found in SVO languages, but there are many examples deviating from this expectation:

Table 24. *Postnominal relatives in non-SVO languages.*

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Djirbal	OSV	erg	s+	$post_{par}$	D1	-	$RA(T)_s$
Akkadian	SOV	acc	s	post	- ?	(GA_s)	RC_{AT}
Ancash Quechua	SOV	acc	$s_{(+)}$	post			
Avestic	SOV ?	acc	s	post		RP	
Bambara	SOV		-	post	-	RP_{wh}	-
Bengali	SOV	acc	s	post	D1	RP_{sp}	-
Bora	SOV	acc	s	post	-	-	$RA(CL_{add})_s$
Cahuilla	SOV	acc	s	post			$RA(NR_T)_s$
				$post_{par}$			$RA(NR_T)_s$
Diegueño	SOV	acc	s	post		GD	-
Dutch	SOV	(acc)	-	post	D1	$RP_{d/wh}$	-
Farsi	SOV	acc	s	post	Dm_s (+D1)	(GD)	RC_{SR}
Frisian (Northern)	SOV	(acc)	-	post	D1	-	RC_{SR}
German	SOV	acc	s	post	D1	$RP_{d/wh}$	-
Greenlandic	SOV ?	erg	s	$post_{par}$	-	-	$RA(T)_s$
Hindi	SOV	acc / (erg)	s	post	D1	RP_{sp}	-
Hopi	SOV	acc	s	post		-	$RA(add)_s$
Huichol	SOV			post	D1	-	$RA(add_{SR})_p$
Hurric	SOV / OSV	erg	s+	post		-	$RA(add)_s$
Komso	SOV			post		-	-
Lakota	SOV		-	post	Df	-	-
Lushai	SOV	erg	s	post	(Df)	-	$RA(add)_s$
				$post_{par}$		-	$RA(T)_s$?
Marathi	SOV	acc / (erg)	s	post	D1	RP_{sp}	-
Oromo	SOV		-	post	Dm_s	(GD)	$(RC_{SR,f})$ + (R)
Sanskrit (Vedic)	SOV	acc	s	post			
Schwyzer-dütsch (Zurich)	SOV	acc	s	post	D1	(GD)	RC_{SR}
Shoshoni	SOV	acc	s+	post	- ?	-	$RA(NR_{add})_s$
				$post_{par}$		-	$RA(T)_s$
Sumerian	SOV	erg	s	post	-	-	$RA(NR_{add})_s$
Tibetan	SOV	erg	s	post			
Turkish	SOV	acc	$s_{(+)}$	post			

language	S,O,V	acc / erg	Case	RC type	Det	gap	C/REL
Urhobo	SOV ?		-	post	Dm	GD	$RC_{SR,p}$
Yaqui	SOV	acc	$s_{(+)}$	post	D1	- ?	$RA(add)_s$
Batak Toba	VOS		-	post	Df	$(GD)_{prep}$	RC_{SR}
Kiribati	VOS			post		(GD) ?	
Malagasy	VOS	(acc)	- ?	post	D1	-	(RC_{sp})
Tzeltal	VOS		-	post	D1	RP_{wh}	-
Arabic (classical)	VSO	acc	s	post	$D1_p$	(GA_s)	RM
Arabic (Tunisian)	VSO	acc	s	post		(RP)	(RC)
Ashéninca	VSO		-	post	-	-	$RA(add)_s$
Bicolano	VSO	acc	p	post	- ?	-	RC_{sp}
Crow	VSO		- ?	post	Df	-	RM ?
Egyptian (ancient)	VSO			post		-	(RM)
Gaelic	VSO			post		-	RC_{SR}
Geez	VSO	acc	s	post	-	(GA_s)	RM_p
Hungana	VSO / SVO ?		-	post	- ?	$(GA_s)_{prep}$	RM_{CL}
Jacaltec	VSO	erg	s	post		$(GA_s)_{prep}$	$(RA(add)_s)$
Kalagan	VSO	acc	1	post		-	RC_{sp}
Kekchí	VSO / SVO ?	erg	s	post	D1	-	RC_{SR}
Kupsabiny	VSO		- ?	post		-	RM_{CL}
Maori	VSO		- ?	post			
Roviana	VSO		-	post	D1	-	RC_{SR}
Tongan	VSO	erg	f	post	D1	$(GA_s)_{prep}$	-
Ute / Paiute	VSO ?	acc	s	post	Dm ?	-	$RA(NR_{add})_s$
Welsh	VSO		-	post	D1	(GA_s)	(RC_{SR})
Yucatecan	VSO		-	post	$D1+f_s$	-	-
Zapoteco	VSO			post		RP ?	

Table 25 lists relative clauses in ergative languages.

Table 25. *Relative clauses in ergative languages.*

language	S,O,V	acc/ erg	case	RC type	Det	gap	C/REL
Abkhaz	SOV	erg	-	pre	Dm_p	-	$RA(Agr)_p$
Alekano		erg	s	pre	-	-	-
Arrernte (Eastern)	SOV	erg ?	s+	cir	- ?	N	RA_s
Basque	SOV / (SVO)	erg	$s_{(+)}$	pre	Df_s	-	$RA(NR)_s$
Djirbal	OSV	erg	s+	$post_{par}$	D1	-	$RA(T)_s$
Greenlandic	SOV ?	erg	s	$post_{par}$	-	-	$RA(T)_s$
Hurric	SOV / OSV	erg	s+	post		-	$RA(add)_s$
				pre		-	
				cir		N	
				cor	cD	RP_{wh} +N	$(RA(add)_s)$
Jacaltec	VSO	erg	s	post		$(GA_s)_{prep}$	$(RA(add)_s)$
Kekchí	VSO / SVO ?	erg	s	post	D1	-	RC_{SR}
Lushai	SOV	erg	s	post	(Df)	-	$RA(add)_s$
				$post_{par}$		-	$RA(T)_s$?
Sumerian	SOV	erg	s	post	-	-	$RA(NR_{add})_s$
Tibetan	SOV	erg	s	pre_{par}	- ?	-	$RA(NR_T)_{s,f}$
				cir	Df	N	
				post			
Tongan	VSO	erg	f	post	D1	$(GA_s)_{prep}$	-
Warlpiri	SOV	erg	s	cor	cD	N	$RC_{SR,p}$

Finally, table 26 lists all languages in the sample with more than one relative strategy.

Table 26. *Languages with more than one relative strategy.*

Language	*Relative strategies*			
Diegueño	post	pre ?	cir	cor
Hurric	post	pre	cir	cor
Sanskrit (Vedic)	post	pre	cir	cor
Ancash Quechua	post	pre	cir	
Hopi	post	pre	cir	
Tibetan	post	pre_{par}	cir	
Finnish	post	pre_{par}		
Turkish	post	pre_{par}		
Oromo	post	pre		
Palauan	post	pre		
Papago-Pima	post	pre		
Tagalog	post	pre		
Yurok	post	pre		
American Sign Language	post		cir	
Crow	post		cir	
Dagbani	post		cir	
Lakota	post		cir	
Latin	post		cir	
Moore	post		cir	
Greek (ancient)	post		cir	cor
Avestic	post			cor
Bambara	post			cor
Bengali	post			cor
Farsi	post			cor
Hindi	post			cor
Marathi	post			cor
Cahuilla	post, $post_{par}$			
Lushai	post, $post_{par}$			
Shoshoni	post, $post_{par}$			
Ayacucho Quechua		pre	cir	
Cuzco Quechua		pre	cir	
Huánuco Huallaga Quechua		pre	cir	
Imbabura Quechua		pre	cir	
Japanese		pre	cir	
Navaho		pre	cir	
Kannada		pre_{par}		cor
Tamil		pre_{par}		cor
Telugu		pre_{par}		cor
Gaididj			cir	cor
Mohave			cir	cor
Wappo			cir	cor

Appendix III Compendium of syntactic analyses of relative clauses

This appendix contains a list of previous syntactic analyses of relative clauses. It is divided into three sections: (A) for restrictive and appositive adnominal relatives, (B) for circumnominal relatives, and (C) for correlatives. As far as I can see, a line of theory concerning prenominal relatives seems to fail.

Some important analyses concerning free relatives are included in section A. With some exceptions, the list does not contain the literature concerning relative elements or cleft constructions, since these do often not concern the structure of the relative construction as such.

In each section the analyses are presented in historical order. I will not consider analyses older than Smith (1964). The list cannot be complete, but I have tried to capture all important developments. I have added some explanatory comment, but a thorough review of all the analyses below is not possible here. The essential ideas underlying these proposals are discussed more coherently in the main text; see especially Chapters 3, 4 and 6.

A. Restrictive and appositive adnominal relatives

Smith (1964):

Structure:

$[_{NP}\ [_{Det}\ \ldots\ R\ A]\ N] \rightarrow [_{NP}\ [_{Det}\ \ldots]\ N\ R\ A] \rightarrow [_{NP}\ [_{Det}\ \ldots]\ N\ RC_{restr}\ RC_{app}]$

Here $R_{(estrictive)}$ and $A_{(ppositive)}$ are relative markers that are replaced by actual relative clauses in the last step of the derivation. The first step involves obligatory extraposition of the relative within the NP.

Ross (1967):

Structure: $[_{NP}\ NP\ [_{S'}\ RC_{restr}]]$

Restrictive relatives are right-adjoined to NP. (This is known as the NP-S theory of relatives.) Appositives, however, are derived from conjoined sentences; see Emonds (1979) for details.

Thompson (1971):

Appositives *and* restrictives are derived from coordinated sentences. Thompson does not formalize the idea, but cf. Emonds (1979) on appositives.

Schachter (1973):

Schachter discusses cleft constructions and suggests a raising analysis of relative clauses; the restrictive relative is a complement of Nom:

$[_S\ [_{NP}$ the $[_{Nom}\ [_{Nom}$ e] $[_S \ldots$ NP $\ldots]]]$ Aux VP] $\rightarrow$
$[_S\ [_{NP}$ the $[_{Nom}\ [_{Nom}\ N_i]\ [_S \ldots\ [_{NP}\ t_i] \ldots]]]$ Aux VP]

Vergnaud (1974/1985):

Vergnaud presents a raising analysis for restrictive relatives:

$[_{S'}\ [_{comp}\ [_{NPi}$ wh-det N]] $[_S \ldots t_i \ldots]]$ $\rightarrow$
$[_{NPi}\ NP_i\ [_{S'}\ [_{comp}$ *D-rel*$_i$] $[_S \ldots t_i \ldots]]\ ]$

Here S' is a restrictive relative. Within the subordinate clause an NP containing a *wh*-determiner is moved to COMP. Subsequently this NP is raised, stranding a relative pronoun in COMP. The raised NP projects, thus giving rise to an adjunction structure.

Partee (1975): [as described in Bach & Cooper 1978]

Structure: $[_{NP}$ Det $[_{Nom}$ Nom $S_{rel}]$

Partee defends the Nom-S theory of restrictive relatives on a semantic basis, and attacks the NP-S theory as described in Ross (1967).

Jackendoff (1977):

Structure: $[_{N'''}\ [_{Art'''}\ D]\ [_{N''}\ [_{N'}\ N]\ [_{S'}\ RC_{restr}]]\ [_{S'}\ RC_{app}]\ ]$

Restrictives are daughters of N'', appositives of N''' (=NP) in Jackendoff's system. (This is not Chomsky-adjunction to the highest NP projection.)

Chomsky (1977):

Chomsky is concerned with the similarities of *wh*-movement in relative clauses and other constructions.

Carlson (1977):

Carlson discusses the syntax and semantics of amount relatives (also called degree relatives by other authors), which he argues to be a separate class of relatives. The analysis involves raising, the D-complement hypothesis and NP-internal extraposition:

$[_{NP1}\ [_{QP}\ [_{Det}$ D $[_{S'} \ldots\ [_{NP2}\ [_{QP}$ Det Q] $[_{Nom}$ N]]]]] $[_{Nom}$ e]] $\rightarrow$
$[_{NP1}\ [_{QP}\ [_{Det}$ D t_s]] $[_{Nom}\ N_i]\ [_{S'} \ldots\ [_{NP2}\ [_{QP}$ ~~THAT AMOUNT~~] $[_{Nom}\ t_i]]]_s\ ]$

The Quantifier Phrase contains an abstract quantification that is deleted.

Bach & Cooper (1978):

Bach & Cooper show (*contra* Partee 1975) that the NP-S theory of restrictive relatives – $[_{NP}\ [_{NP}$ Det N] $S_{rel}]$ – can be accounted for with a compositional semantics. The same technique is necessary to establish the meaning of circumnominal relatives such as in Hittite; see section C.

Bresnan & Grimshaw (1978):

Bresnan and Grimshaw propose the 'head hypothesis' for free relatives:

$[_{NP}\ [_{NP}\ wh]_i\ [_S\ \ldots\ \sout{pro}_i\ \ldots]]$ *or more generally:* $[_{XP}\ [_{XP}\ \ldots wh \ldots]_i\ [_S\ \ldots\ \sout{pro}_i\ \ldots]]$

The *wh*-word is base-generated as the head of the relative construction, hence there is no *wh*-movement. The relative S – not S' (!) – is right-adjoined to NP, as in Ross (1967). The gap in the relative is filled by a pronoun which is deleted by a rule of Controlled Pro Deletion. (Other authors have proposed variants of the head hypothesis using *wh*-movement instead.)

Emonds (1979):

Emonds discusses appositive relatives. They are derived from conjoined main clauses, hence the term Main Clause Hypothesis:

$[_E\ [_E\ [_{S'}\ \ldots\ XP]]\ [_E\ (and)\ [_{S'}\ \ldots]]\ ]$ →
$[_E\ [_E\ [_{S'}\ \ldots\ t_{xp}\ ]]\ [_E\ (and)\ [_{S'}\ \ldots]]\ XP]$ →
$[_E\ [_E\ [_{S'}\ \ldots\ t_{xp}\ ]\ [_{S'}\ RC_{app}]]\ XP]$

(Here E is "the initial symbol of the base which cannot be subordinated".) Appositives arise by Parenthetical Formation, S'-attachment and Appositive Wh Interpretation. A conjoined main clause is enclosed within the first main clause by extraposing an XP from the first clause. Then relative clause formation applies to the parenthetical. The original conjunction may involve *and* or a zero coordinator. (Emonds's analysis is based on unformalized ideas in Ross 1967.)

Perzanowski (1980):

Perzanowski attacks the Main Clause Hypothesis for appositive relatives as described in Emonds (1979), and argues in favour of the Subordinate Clause Hypothesis as in Jackendoff (1977).

Groos & Van Riemsdijk (1981):

Groos & Van Riemsdijk defend the COMP hypothesis for free relatives:

$[_{NP}\ [_{NP}\ e]\ [_S\ wh_i\ \ldots t_i\ \ldots]\ ]$ *or more generally:*
$[_{XP}\ [_{XP}\ e]\ [_{S'}\ [_{Comp}\ [\ldots\ wh\ \ldots]_i]\ [_S\ \ldots\ t_i\ \ldots]]$

The overall structure is like the NP-S theory (cf. Ross 1967). There is *wh*-movement to COMP within the relative. The empty category is largely ignored: it seems to have no properties. Van Riemsdijk (2000) notes that it is arguably *pro* or PRO_{arb} from a more recent perspective.

Kaisse (1981):

Kaisse discusses cliticization of the pronoun *who* in English. If *who* is phonologically reduced to [hə], it must be cliticized on the preceding word – often followed by a reduced auxiliary verb which is in turn enclitic on [hə]. This process is subject to the Head Condition: "*who* may cliticize to the head of the X^{max} whose complement it introduces." Since reduction is possible in restrictive relative constructions (and embedded questions), but not in appositive relatives, Kaisse argues that Jackendoff's (1977) theory is correct for restrictives, but not for appositives. Therefore Kaisse

supports Emonds's (1979) MCH, in which an appositive relative is not a complement of (a projection of) the antecedent.

Cinque (1982):

Cinque discusses the relative pronoun system in Italian, French and English. He argues that relative pronouns in general can be used anaphorically or non-anaphorically (which is more marked). The marked option is not always available for a particular pronoun. The structure of both restrictives and appositives can be [$_{NP}$ NP S'], or NP … S' (where the relative is a parenthetical). The latter option is marked, at least for restrictives, and in some languages for appositives, too. The anaphoric use of a relative pronoun is excluded in the parenthetical structure. The parameter setting of a language decides which options are available.

McCawley (1982):

McCawley claims that dominance and precedence are independent relations. This gives the possibility of a discontinuous constituent structure. As in Emonds (1979), an appositive relative is generated as right-adjoined to the matrix. By an order-changing transformation it is pronounced adjacent to the antecedent:

$$[_S\,[_{S\text{-matr}} \ldots \text{NP} \ldots]\,[_S\,\text{ARC}]] \rightarrow [[_{S\text{-matr}} \ldots \text{NP} \uparrow \ldots]\,[_S\,]]$$
$$\text{ARC} \leftarrow\!-\!\lrcorner$$

The hierarchy is not changed, just the position where the ARC is pronounced. Hence a tree structure would show crossing branches.

Extraposed restrictive relatives show the opposite pattern: the relative is hierarchically part of the antecedent NP, and an order changing transformation puts the relative at the end of the matrix.

Stuurman (1983):

Stuurman defends the MCH of appositive relatives as described in Emonds (1979) and counter-attacks Perzanowski's (1980) defence of Jackendoff (1977).

Givón (1984):

Givón discusses the strategies that languages use to recover the role of the relative gap from a typological point of view. The structure of an English type relative he assumes is simply [$_S$ Det N S_{rel}]. (There seems to be no *wh*-movement.)

Lehmann (1984):

Lehmann's book describes the typology and functions of the relative construction. The syntactic structures that he assumes are the following:

Postnominal restrictive:	[$_{S\text{-matr}}$ … [$_{NP}$ Det [$_{Nom}$ Nom S_{rel}]] …]
Postnominal appositive:	[$_{S\text{-matr}}$ … [$_{NP}$ [$_{NP}$ Det Nom] S_{rel}] …]
Prenominal restrictive:	[$_{S\text{-matr}}$ … [$_{Nom}$ [$_{Nom}$ S_{rel} Nom]] …]
Extraposed:	[$_{S\text{-matr}}$ [$_{S\text{-matr}}$ … Nom+Dem …] [$_{S\text{-rel}}$ … rel …]]

Here Nom is N or N', Dem a demonstrative, Det a determiner. The linear order of Det/Dem and Nom can be interchanged.

Link (1984):

Link discusses the semantics of relative clauses with a multiple head (e.g. a complex plural antecedent), which he calls *hydras*.

Vergnaud (1985): see Vergnaud (1974).

Sells (1985):

Sells discusses the semantics of the anaphoric link between appositive relatives and the antecedent within the framework of Discourse Representation Theory. He claims that it can be captured in terms of *cospecification*, which operates on the DRT discourse level.

Safir (1986):

Appositive relatives (and other parenthetical phrases) are attached at a level LF' beyond LF. Restrictives are simply $[_{NP}$ NP S']. Safir distinguishes A'-binding (operator binding) from R-binding, which is binding of the relative operator by the antecedent. The Locality Condition on R-Binding states that "if X is locally R-bound, then X is the structurally highest element in COMP." This forces LF-movement of a relative pronoun to the highest position in SpecCP in case there is a pied piped constituent. Furthermore, A'-binding is subject to the Parallelism Constraint on Operator Binding: "If one local A'-bindee of O is [α lexical] and [β pronominal], then all local bindees of O must be [α lexical] and [β pronominal]." The PCOB is operative on LF (not LF'). It follows from all this that appositives are islands for bound readings and parasitic gaps (given that parasitic gaps must be licenced by A'-binding), and that weak cross-over is absent in appositives.

Sturm (1986):

Sturm claims that appositive relative clauses (like appositions) are coordinated to the antecedent, contrary to restrictives.

Smits (1988):

Restrictive: $[_{NP}$ Det $[_{N'}$ $[_{N'}$ N] RRC]]
Appositive: $[_{NP}$ $[_{NP}$ Det $[_{N'}$ N]] ARC] *or, if extraposed:* NP … ARC

Fabb (1990):

Fabb argues that appositive relatives are not syntactically part of the sentence. The structure for restrictives is:

$[_{NP}$ Det $[_{N'}$ N_i $[_{CPi\,=\,RRC}$ NP_i $[_{C'i}$ C_i $[_{IP}$ … $t_{np\text{-}i}$ …]]]]]

Here the second NP_i is a relative pronoun. There is a predication relation between the head noun N_i and the relative CP_i (which is its complement) hence co-indexing. The index percolates down from CP to C. At the same time the relative pronoun NP and the antecedent N share a referential index, say *j*. Subsequently, spec-head agreement between the relative pronoun NP and C makes all indices equal.

In pied piping structures the relative pronoun is adjoined to the *wh*-fronted NP. Then there is adjunct-head agreement with C, instead of spec-head agreement (which would lead to a crash because of conflicting indices). Possessives are grammatical, because movement from a specifier is allowed:

$[_{NP}$ Det $[_{N'}$ N_i $[_{CPi}$ $[_{NP}$ $[_{NPi}$ *whose]* $[_{NP}$ *t* $[_{N'}$ $[_{N}$ *mother]]]* $]_k$ $[_{C'i}$ C_i $[_{IP}$ …t_k …]]]]]

However, heavy pied piping is out, since a complement of N cannot move to an adjoined position.

Demirdache (1991):

Appositive relatives are adjoined to the maximal projection of the antecedent (often a DP), and are moved to a right-adjoined position of the matrix clause at LF:

S-structure: $[_{CP\text{-}matr}$ … $[_{DP}$ DP $[_{CP\text{-}ARC}$ *wh* … t_{wh} …]] …] →
LF-structure: $[_{CP}$ $[_{CP\text{-}matr}$ … $[_{DP}$ DP $t_k]$ …] $[_{CP\text{-}ARC}$ *wh* … t_{wh} … $]_k$]

Toribio (1992):

Restrictive: $[_{DP}$ D $[_{NP}$ NP $CP_{RRC}]]$
Appositive: $[_{DP}$ $[_{DP}$ D NP] $CP_{ARC}]$

Borsley (1992):

Borsley argues that Fabb's (1990) approach to restrictives and appositives is incorrect.

Kayne (1994):

Restrictive (*that*): $[_{DP}$ D $[_{CP}$ NP_i $[_{CP}$ C $[_{IP}$ … t_i …]]]]
Restrictive (*wh*): $[_{DP}$ D $[_{CP}$ $[_{DP\text{-}rel}$ NP $[D_{rel}$ $t_{np}]]_i$ $[_{CP}$ (C) $[_{IP}$ … t_i …]]]]

Appositive: (LF-structure) $[_{DP}$ $[_{IP}$ … t_i …] D $[_{CP}$ $[_{DP\text{-}rel}$ NP $[D_{rel}$ $t_{np}]]_i$ $[_{CP}$ C t_{ip}]]]

Prenominal: (S-structure) $[_{DP}$ $[_{IP}$ … t_i …] D $[_{CP}$ NP_i $[_{CP}$ (C) t_{ip}]]]

Relative CPs are the complement of D. The head noun raises to SpecCP within the relative clause. If there is a relative pronoun, the whole DP_{rel} raises (and NP moves to $SpecDP_{rel}$). In appositive relatives, there is additional movement of the relative IP to SpecDP at LF, in order to get it out of the scope of the main determiner. In prenominal relatives there is overt movement of IP to SpecDP. (Note that specifiers are 'adjuncts' in Kayne's phrase structure.)

Rooryck (1994):

Rooryck claims that free relatives are bare CPs on the basis of similarities with embedded questions.

Åfarli (1994):

Åfarli discusses restrictive relatives in Norwegian. (Note that a clause is a TP, here.)

Som-relative: $[_{TP}$ NP_i $[_{T'}$ $[_{T}$ *som*] $[_{VP}$ … t_i …]]]
Der-relative: NP $[_{TP}$ der_i $[_{T'}$ T $[_{VP}$ … t_i …]]]
Free relative: $[_{TP}$ wh_i $[_{T'}$ T $[_{VP}$ … t_i …]]]

In *som*-relatives (equivalent to *that*-relatives in English) there is raising of the head NP. These relatives are bare TPs, comparable to free relatives and embedded questions. (The difference is that T is *+wh* in free relatives and questions, but *–wh* in headed *som*-relatives.) There is no head raising in relatives with a relative pronoun (*der*-relatives).

Bianchi (1995,1999,2000a):

Restrictive relatives:
that: $[_{DP}\ D_{rel}{+}D\ [_{CP}\ [_{DP\text{-}rel}\ t_{rel}\ NP]_i\ [_{CP}\ C\ [_{IP}\ \ldots\ t_i\ \ldots]]]]$
wh: $[_{DP}\ D\ [_{CP}\ NP_n\ [_{CP}\ C\ [_{XP}\ [_{DP\text{-}rel}\ D_{rel}\ t_n]_i\ [_{XP}\ X\ [_{IP}\ \ldots\ t_i\ \ldots]]]]]]$

(The complete functional projection line is Force – Top – Focus/wh – Top – Fin. As in Kayne (1994) specifiers are 'adjuncts'.) There is head raising, and the relative is the complement of D. In appositive relatives there is additional LF-movement to SpecDP, as in Kayne (1994). Bianchi acknowledges that there is a subset of appositives that cannot be derived in this way (e.g. those with a non-DP antecedent). She assumes that these are parenthetical clauses that are generated separately from the antecedent.

De Vries (1996):

Restrictive: $[_{DP}\ D\ [_{CP}\ [_{DP\text{-}rel}\ NP\ [_{DP\text{-}rel}\ D_{rel}\ t_{np}]]_i\ [_{CP}\ C\ [_{IP}\ \ldots\ t_i\ \ldots]]]]$

The analysis is an elaboration of Kayne (1994). The derivation is similar for all postnominal restrictive relatives. The relative CP is the complement of D, and there is raising of DP_{rel} within the relative CP. Depending on the language, D_{rel} and/or C are pronounced.

Canac-Marquis & Tremblay (1997):

An appositive is a free relative in apposition: DP_i , $[_{DP}\ pro_i\ CP_{rel}]$. Therefore restrictives are the only (independent) type of relative. Appositive DPs are "unmerged objects", i.e. inserted at a discourse level, and not visible for structure-dependent relations. As for binding, Canac-Marquis & Tremblay refer to Safir (1986). Finally, English relatives are [+wh] – hence involve *wh*-movement – whereas French relatives are [-wh] and have a base-generated operator in $SpecCP_{rel}$ (except if there is pied piped material).

Borsley (1997):

Borsley argues that Kayne's (1994) promotion theory of relatives is incorrect.

Platzack (1997,2000):

Restrictive: $[_{DP}\ spec\ [_{D'}\ D\ \ldots\ [_{NP}\ spec\ [_{N'}\ N\ [_{CP}\ OP_i\ [_{C'}\ C\ [_{AgrSP}\ \ldots\ t_i\ \ldots]]]]]]]$
Appositive: $[_{DP}\ spec\ [_{D'}\ D\ \ldots\ [_{NP}\ DP\ \ [_{N'}\ \emptyset\ \ [_{CP}\ OP_i\ [_{C'}\ C\ [_{AgrSP}\ \ldots\ t_i\ \ldots]]]]]]]$

In Swedish
Restrictive: $[_{DP}\ spec\ [_{D'}\ N{+}D\ \ldots\ [_{NP}\ spec\ [_{N'}\ t_N\ [_{CP}\ OP_i\ [_{C'}\ C\ [_{AgrSP}\ \ldots\ t_i\ \ldots]]]]]]]$
Appositive: $[_{DP}\ DP\ \ [_{D'}\ C{+}D\ \ldots\ [_{NP}\ t_{DP}\ \ \ [_{N'}\ t_C\ [_{CP}\ OP_i\ [_{C'}\ t_C\ [_{AgrSP}\ \ldots\ t_i\ \ldots]]]]]]]$

An appositive is the complement of an empty N, the specifier of which is the antecedent DP. In Swedish C contains the relative particle *som*, which is equivalent to English 'that' in this respect. D has a strong δ-feature. It attracts N overtly, also in restrictive relatives. In appositives there is no lexical N head below D, hence C (that has both ϕ-features and δ-features due to spec-head agreement with the operator) raises to D via the empty N. (DP in SpecNP is a closed domain in which N-to-D raising takes place.) Finally, DP in SpecNP must move to the main SpecDP because of word order. This creates a structure similar to possessives.

Wilder (1998):

Wilder discusses Transparent Free Relatives. A true FR is structured as follows:

Free relative: $[_{DP}\ [_{D}\ e]\ [_{CP}\ wh_i\ [\ (C)\ [_{IP}\ \ldots\ t_i\ \ldots]]]]$

A transparent FR involves parenthetical placement and backward deletion at PF. In the syntax there are two independent phrase markers: one of the matrix and one of a normal free relative. The following example shows what this means:

TFR: (syntax) [he bought $[_{DP}$ a guitar]] ; [what he took to be $[_{DP}$ a guitar]]
(phonology) John bought < what he took to be ~~a guitar~~ > a guitar

Lipták (1998):

Restrictive: $[_{DP}\ D\ [_{NP}\ N\ [_{CP}\ \text{rel-pro}_i\ [_{C'}\ C\ [_{IP}\ \ldots\ t_i\ \ldots\ ]]]]]$
Appositive: $[_{SC}\ XP\ [_{CP}\ \text{rel-pro}_i\ C\ [_{IP}\ \ldots\ t_i\ \ldots]]]$

A restrictive relative CP is the complement of N. An appositive is a small clause predicate. The antecedent XP can be of any category.

Grosu & Landman (1998):

Grosu & Landman discuss the semantics of relative constructions. They also propose a syntactic analysis for degree relatives, which involves the promotion theory:

$[_{DP}\ D\ [_{NumP}\ Num\ [_{NP}\ NP\ [_{CP}\ NP_i\ [_{CP}\ C\ [_{S}\ \ldots\ \ldots\ t_i\ \ldots\ \ldots\ ]]]]]]$
the three books {~~d many books~~} (that) there were {~~d many books~~} on the table

The degree phrase is raised to SpecCP. From there the head noun is moved out of the relative to the external head position in the dominating NP. The lower two copies are phonologically null.

Bianchi (1999,2000a): see Bianchi (1995).

Koster (2000c):

Restrictive: $[_{DP}\ D\ [_{:P}\ NP\ [_{:'}\ :\ CP_{RRC}]]]$
Appositive: $[_{:P}\ [_{DP}\ D\ NP]\ [_{:'}\ :\ CP_{ARC}]]$

A relative clause is a specifying conjunct to the antecedent. Specifying coordination is represented by a "colon phrase" (*:P*), where the colon is the head. The relative is a CP in which there is *wh*-movement. Koster suggests that restrictives are coordinated to NP, and appositives to DP.

Van Riemsdijk (2000):

Free relatives are argued to have a multidimensional tree structure with a shared part. This is an instance of "grafting":

$[_{CP\text{-}matr}\ \ldots\ \ldots \downarrow\ \ldots]$
DP_i
$[_{CP\text{-}rel}\ [\uparrow]\ (C)\ [_{IP}\ \ldots\ t_i\ ]]$

The relative CP is in another dimension. The two sentences share a DP. In a true FR this is a *wh*-pronoun in SpecCP (or the pied piped constituent containing it); in a transparent FR, it is not the 'dummy' *wh*, but the pivotal element (the small clause predicate).

Zwart (2000):

Zwart discusses restrictive relatives in (dialects of) Dutch. He assumes a 3-layer CP, based on work by Eric Hoekstra. $C_{1,2,3}$ correspond to *als* 'if', *of* 'whether' and *dat* 'that', respectively. The analysis follows Bianchi (1999) closely:

$[_{DP}\ D\ [_{CP1}\ NP_k\ [_{CP1}\ C_1\ [_{CP2/3}\ [_{DP\text{-}rel}\ t_k\ [_{DP\text{-}rel}\ D\ t_k\ ]]_i\ [_{CP2/3}\ C_{2/3}\ [_{IP}\ \ldots\ t_i\ \ldots]]]]]]$

DP_{rel} originates within the relative CP, which is a complement of the matrix D. In a *wh*-relative there is raising to $SpecCP_2$, in a *d*-relative to $SpecCP_3$. The Head NP is moved to $SpecDP_{rel}$ and subsequently to $SpecCP_1$.

Platzack (2000): see Platzack (1997).

Murasugi (2000):

Restrictive relative clauses in Japanese are prenominal. The proposed analysis is antisymmetric and at the same time traditional:

$[_{DP}\ IP_i\ [_{D'}\ D\ [_{NP}\ [_{N'}\ N\ t_i\ ]]]]$

Here the relative IP originates as the complement of the head N, and moves to SpecDP. Murasugi claims that Japanese does not have circumnominal relatives (contra work by Kuno and e.g. Itô 1986); rather, apparent circumnominal relatives are adverbial adjuncts. Moreover, Murasugi argues that Japanese prenominal relatives are IPs in which there are no further movements. (This may be viewed as an indication that Japanese does not have true relatives at all.)

Schmitt (2000):

Schmitt discusses some consequences of the D-complement analysis, especially with respect to definiteness/indefiniteness. For restrictive relatives she proposes the following structure in order to explain the hybrid behaviour concerning definiteness:

$[_{DP}\ D\ [_{AgrP}\ [NumP]_i\ [_{Agr'}\ Agr\ [_{CP}\ OP_i\ [_{C'}\ C\ [_{IP}\ \ldots\ t_i\ \ldots]]]]]]$

There is operator movement within the relative. The antecedent is base-generated as a NumP in SpecAgrP; it is co-indexed with OP. The D-complement analysis is extended to "*wrong*-type adjectives" and demonstratives.

B. Circumnominal relatives

Wilson (1963): [as described in Culy (1990)]

Two sentences are combined to form an adnominal relative construction. Consequently, the external head moves to a position inside the relative clause.

Hale & Platero (1974) and Gorbet (1976): [as described in Culy (1990)]

Structure: $[_{NPi}\ [_S\ \_\ NP_i\ \_\ ]]$

There is no movement. The inner and outer NP are co-indexed.

Platero (1974) and Weber (1983): [as described in Culy (1990)]

Structure: $[_{NP}\ [_{S}\ \_\ NP_i\ \_\ ]\ \sout{NP}_i]$

There is both an internal and an external (right-hand) head. These are co-indexed. The external head is deleted.

Peterson (1974): [as described in Culy (1990)]

Structure: $[_{NP}\ [_{NOM}\ \sout{NP}_i\ [_{S}\ \_\ NP_i\ \_\ ]]\ Det]$

There are a co-indexed external and internal (left-hand) head. The external head is deleted. In addition, there is an external (right-hand) determiner.

Gorbet (1976): see Hale & Platero (1974).

Weber (1983): see Platero (1974).

Lehmann (1984): [induced from the text]

Structure: $[_{S\text{-main}}\ \ldots\ [_{NP}\ [_{S\text{-rel}}\ \ldots\ head\ \ldots]\ Det]\ \ldots]$

Broadwell (1985): [as described in Basilico (1996)]

S-structure: $[_{S'}\ \ldots\ [NP_i\ (lexical)]\ \ldots]$
LF-structure: $[_{NP}\ [_{S'}\ \ldots\ t_i\ \ldots]\ [_{NPi}\ (lexical)\ ]]$

Itô (1986):

S-structure: $[_{NP}\ [_{S'}\ \ldots\ NP_i\ \ldots(no)]\ e\ ]$
LF- *s*tructure: $[_{NP}\ [_{S'}\ \ldots\ t_i\ \ldots\ (no)]\ NP_i\ ]$
PF- *s*tructure: $[_{NP}\ [_{S'}\ \ldots\ NP_i\ \ldots t_c]\ (no_c)]$

At LF there is head raising to an empty N position (cf. Cole 1987). For Japanese, Itô assumes PF raising of the particle *no* from the complementizer position to the empty position. The reason is that *no* cannot be present in prenominal relatives, where the N position is not empty (at S-structure) because it is filled with the head.

Cole (1987), Lefebvre & Muysken (1988), Cole & Hermon (1994):

S-structure: $[_{NP}\ [_{S'}\ \ldots\ [NP_i\ (lexical)]\ \ldots]\ [_{NP}\ e_i\ ]]$
LF-structure: $[_{NP}\ [_{S'}\ \ldots\ t_i\ \ldots]\ [_{NPi}\ (lexical)\ ]]$

At S-structure there is an empty head noun: a phonologically null pronoun *e*. At LF the actual head noun N raises to this position. An important condition Cole uses is: "An anaphor cannot both precede and command its antecedent."

Williamson (1987):

S-structure: $[_{NPi}\ [_{S\text{-rel}}\ldots\ NP_i\ \ldots]\ Det]$
LF-structure: $[_{NPi}\ [_{S\text{-rel}}\ [_{S'\text{-rel}}\ldots\ t_i\ \ldots]\ NP_i\ ]\ Det]$

There is co-indexing at S-structure. At LF the internal head is raised to a position adjoined to the relative clause.

Lefebvre & Muysken (1988): see Cole (1987).

Fontana (1989): [as described in Culy (1990)]

Structure: $[_{S'}\ [_{NP(topic)}\ [_{S\text{-}rel}\ldots\ NP_i\ \ldots]]\ [_{S}\ \ldots\ pro_i/Dem_i\ \ldots]]$

The structure is like a correlative: there is left-dislocation of the relative construction in the matrix, and a null pronoun or resumptive pronoun at the argument position.

Barss et al. (1990): [as described in Basilico (1996)]

S-structure: $[_{CP}\ [_{C'}\ C\ [_{IP}\ \ldots\ NP\ \ldots]]]$
LF-structure: $[_{CP}\ NP_i\ [_{C'}\ C\ [_{IP}\ \ldots\ t_i\ \ldots]]]$

There is raising of the head noun at LF. They do not take a determiner position into account.

Culy (1990):

Culy represents his theory in three frameworks: GB, HPSG and LFG. I refer to his GB account only.

D/S-structure: $[_{NPi}\ \_\ [_{N'}\ [_{S'}\ \ COMP\ \ [_{S}\ \_\ [_{NPi}\ \_\ N_i{+}wh_i\ \_\ ]\ \_\ ]]]\ \_\ ]$
LF-structure: $[_{NPi}\ \_\ [_{N'}\ [_{S'}\ [_{comp}\ wh_i\ X]\ [_{S}\ \_\ [_{NPi}\ \_\ N_i\ \ \_\ \ ]\ \_\ ]]]\ \_\ ]$

The head noun is generated in situ, i.e. RC-internally. At LF the *wh*-operator moves to COMP. Culy states the Relative Coindexing Constraint (RCC), which generalizes over adnominal and circumnominal relatives:

RCC: (Culy 1990:98)
In a structure of the form $[N^n{}_m\ X\ [_{S'}\ [_{Comp}\ wh_p\ Y]\ S]\ Z]$ it must be the case that m=p.

The outer determiner is external to N' (at one of the outer _ positions). Culy notes that the DP analysis solves the potential problem of exocentricity. Therefore the above structure may be reanalysed as $[_{DP}\ \_\ [_{D'}\ S'\ D]\ \_\ ]$.

Bonneau (1992): [as described in Basilico (1996)]

Bonneau's analysis is a mix of Cole (1987) and Barss et al. (1990): there is an element external to the relative clause *and* there is an empty operator in SpecCP or NP movement to SpecCP (at LF).

Cole & Hermon (1994): see Cole (1987).

Kayne (1994) and *Bianchi (1999):*

Movements as in prenominal RCs: $[_{DP}\ [_{IP}\ \ldots\ \ t_i\ \ \ldots]\ [\ D\ [_{CP}\ NP_i\ [\ C\ \ t_{ip}\ ]]]]$
Copy theory of movement for NP: $[_{DP}\ [_{IP}\ \ldots\ NP_i\ \ldots]\ [\ D\ [_{CP}\ NP_i\ [\ C\ \ldots$
PF deletion: $[_{DP}\ [_{IP}\ \ldots\ NP_i\ \ldots]\ [\ D\ [_{CP}\ \ e_i\ \ \ [\ C\ \ldots$

One of the two copies is deleted. The deleted copy may not c-command the surviving copy (Kayne 1994:96). In this configuration there are two options. Deletion of the upper copy leads to a prenominal relative, deletion of the lower copy to a circumnominal one.

Basilico (1996):

S-structure: $[_{DP}\ [_{D'}\ \ [_{IP}\ [_{I'}\ \ [_{VP}\ \ldots\ [_{NP}$ lexical] …] I]] D]]
S or LF: $[_{DPi}\ [_{Di'}\ [_{IP}\ NP_i\ [_{IP}\ [_{I'}\ \ [_{VP}\ \ldots\ \ e_i\ \ \ldots\ ]\ I\ ]]]\ D_i\ ]]$ *or*
$[_{DPi}\ [_{Di'}\ \ [_{IPi}\ [_{Ii'}\ [_{VP}\ NP_i\ [_{VP}\ \ldots\ \ e_i\ \ \ldots\ ]]\ I_i\ ]]\ D_i\ ]]$

In order to escape existential closure, the head noun moves to AdjIP or AdjVP, overtly or at LF. In the first case NP's index is transferred to the governing head (D) and it percolates up to the maximal projection. D is the operator that binds the indefinite variable. In the last case, I governs NP in AdjVP and gets the index, which percolates to IP. Then, since D governs IP, D (and subsequently DP) receives the index. The procedure is based on three assumptions: the idea that circumnominal relatives involve quantification (see also Williamson 1987; Culy 1990; Srivastav 1991; Jelinek 1995), the prohibition against vacuous quantification (cf. Kratzer 1989), and Diesing's (1992) mapping hypothesis; all built on work by Heim (1982).

Bianchi (1999): see Kayne (1994).

C. Correlative constructions

Verma (1966), Junghare (1973), Kachru (1973/78), Wali (1982), Subbarao (1984); (generalized over different frameworks): [as described in Srivastav (1991)]

D-structure: $[_{IP}\ \ldots\ [_{NP}\ \text{Det}\ [_{N''}\ [_{N'}\ \text{N}]\ [_{CP\text{-rel}}\ \text{REL N}\ldots]]]\ \ldots]$
S-structure: $[_{IP}\ [_{CP\text{-rel}}\ \text{REL N}\ \ldots]_i\ [_{IP}\ \ldots[_{NP}\ \text{Dem ø}\ [\ t_i]]\ \ldots]]$

All relative clause types are derived from the adnominal construction. The correlative sentence is moved to a left-adjoined position. Pronominalization rules replace the second instance of the head N with a demonstrative. REL is a relative pronoun.

Donaldson (1971), Downing (1973), Dasgupta (1980), Andrews (1985); (generalized over different frameworks): [as described in Srivastav (1991)]

Structure (D and S): $[_{IP}\ [_{IP\text{-rel}}\ \text{REL N}\ \ldots]\ [_{IP\text{-main}}\ \ldots\ \text{Dem (ø)}\ldots]]$

Correlatives differ from adnominal relative constructions syntactically. They are base-generated as sentences left-adjoined to the main clause. Semantically, all relative constructions are similar.

Junghare (1973): see Verma (1966).

Downing (1973): see Donaldson (1971).

Kachru (1973, 1978): see Verma (1966).

Bach & Cooper (1978):

Structure (D and S): $[_{S'}\ [_{S\text{-rel}}\ [_{NP}\ \text{Det}_{wh}\ \text{Nom}]\ \ldots]\ [_{S\text{-main}}\ \ldots\ [_{NP}\ \ldots]\ \ldots]]$

The NP in the main clause contains a referring expression.

Dasgupta (1980): see Donaldson (1971).

Wali (1982): see Verma (1966).

Subbarao (1984): see Verma (1966).

Lehmann (1984):

Structure: $[_{S\text{-main}}\ [_{S\text{-rel}}\ \ldots$ head+rel $\ldots]\ [_{S\text{-main}}\ \ldots$ Dem $\ldots]$

Andrews (1985): see Donaldson (1971).

Keenan (1985):

Structure: $[_{S}\ [_{S\text{-rel}}\ \ldots$ (COREL)+NP_{rel} $\ldots]\ [_{S\text{-main}}\ \ldots\ NP_{ana}\ \ldots]]$

Srivastav (1991):

Structure: $[_{IP}\ [_{CP}$ *wh* N $\ldots]_i\ [_{IP}\ \ldots\ Dem_i\ \ldots]]$

The relative CP is left-adjoined to the matrix IP. This CP is a quantifier that binds the demonstrative variable in the matrix clause.

Grosu & Landman (1998):

syntax: $[_{IP}\ [_{CP}$ *wh* (N) $\ldots]\ [_{IP}\ \ldots$ Dem (N)$\ldots]]$
semantics: $[_{IP}\ [_{DP}\ [_{DP}$ Dem N$]\ [_{CP}$ *wh* N $\ldots]]\ \lambda x[_{IP}\ \ldots$ x $\ldots]]$

Appendix IV Relative terminology

The terminology regarding relative constructions is summarized in figures 1 through 10 and tables 1 through 3, as treated in Ch2, sections 2.5, 3, 6.3-6.6, 7.1, and 7.3-7.6.

In figures 1 and 7 the extraposed group is shaded grey because it does not form a natural class with correlatives in any analytical way (cf. Chapter 7 and Srivastav 1991).

Figure 1. *Relative terminology I: syntactic main types of relatives.*

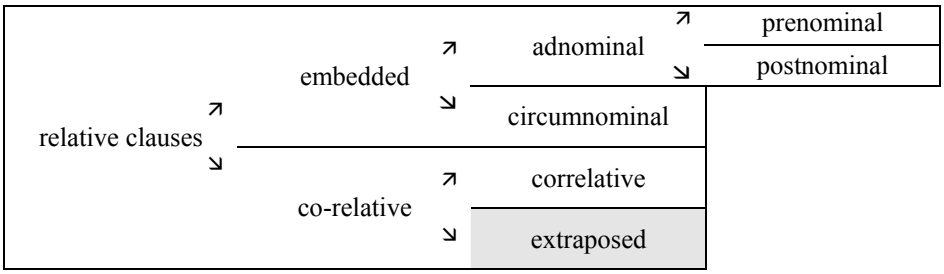


Figure 2. *Relative terminology II: internally and externally headed relatives.*

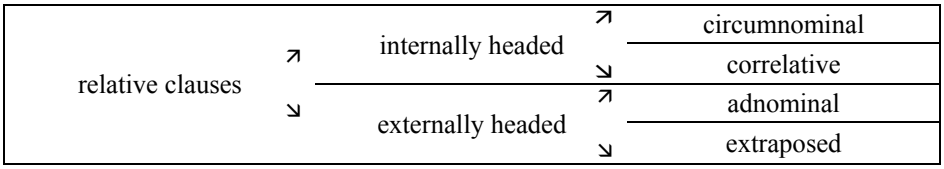
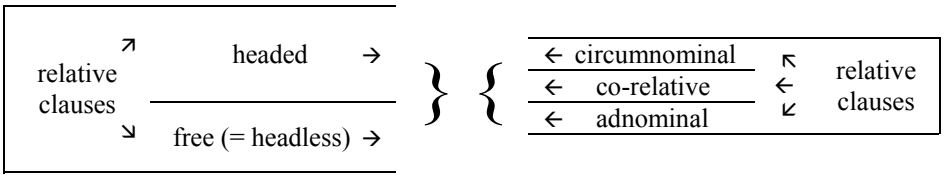


Figure 3. *Relative terminology IIIa: headed and free relatives.*



In figure 4 false free relatives are shaded grey, since it may be argued that they are not free relatives, but 'degraded' headed relatives.

Figure 4. *Relative terminology IIIb: (free) relatives.*

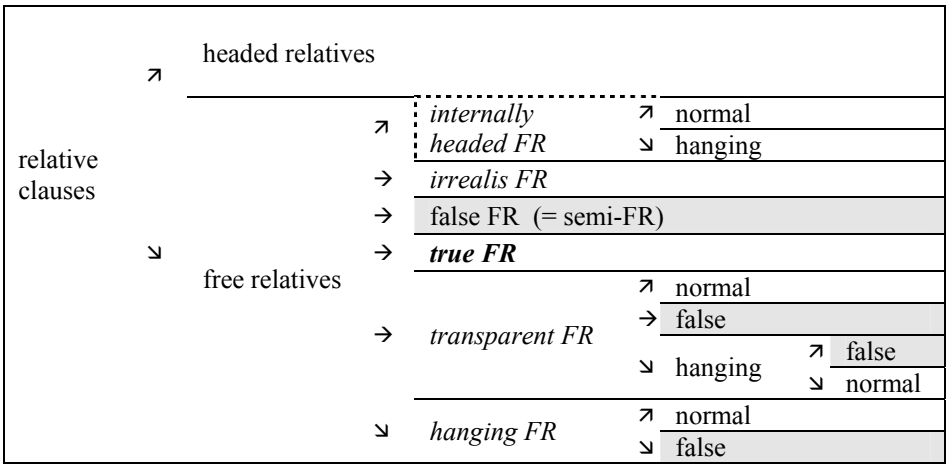
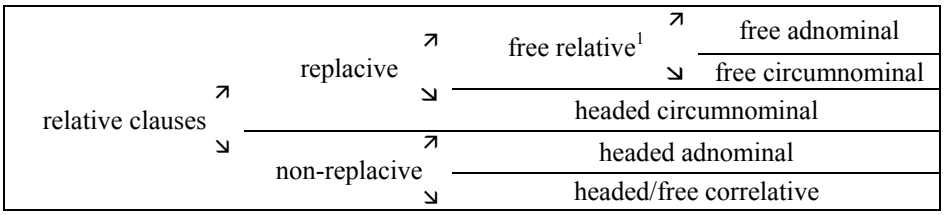
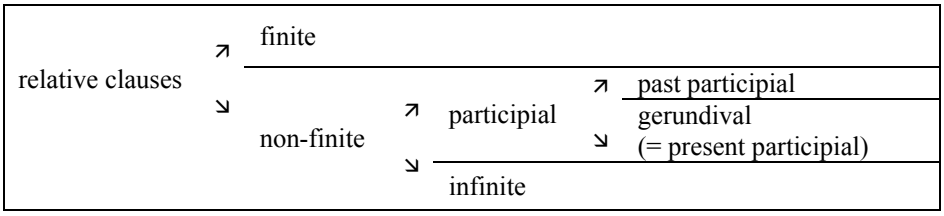


Figure 5. *Relative terminology IV: replacive and non-replacive relatives.*



[1] Free correlatives are also free relatives, but not replacive, strictly speaking.

Figure 6. *Relative terminology V: finite and non-finite relatives.*



In figure 7, *tpp* is 'toto pro pars', *tc* 'terminological confusion', and *wt* 'wrong term'.

Figure 7. *Relative terminology VI: admissible and dispraised synonyms.*

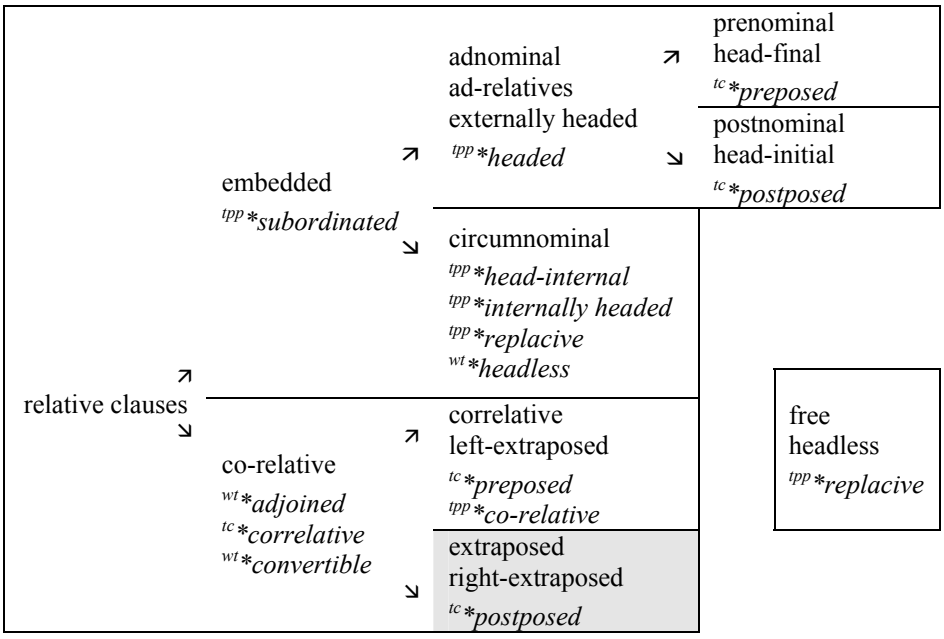


Table 1. *Relative terminology VII: multiple relativization.*

type	*syntactic characterization*				*terminology*				
	in matrix		**in relative**		multiple head	multiple antecedent	multiple *wh*	split antecedent	hydra
	(external) antecedent	(correlative) pronoun or determiner	*wh* or gap	internal head (& *wh*)					
0	1 complex		1 plural		+?	+?	–	–	+
		1 complex		1 plural	–	–	–	–	+
A	2		1 plural		+	+	–	+	+
		2		1 plural	–	–	–	–	+?
B	1 plural		2		–	–	+	–	–
		1 plural		2	+	–	(+)	–	–
C	2		2		+	+	+	+?	+?
		2		2	+	–	(+)	–	+?

Here a question mark means that the use of the term is a little odd; a plus between brackets means that it may not be visible.

Figure 8. *Relative terminology VIII: relative elements.*

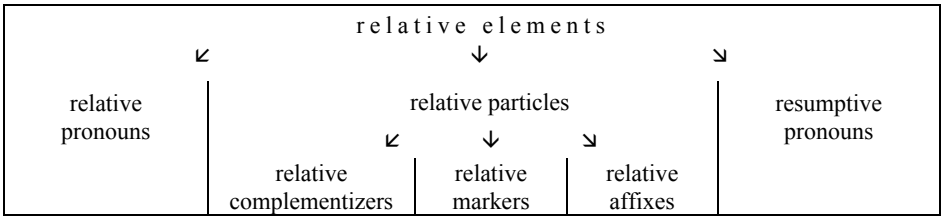


Table 2. *Relative terminology IX: the nature of the internal role.*

relative clause type
subject relative
object relative
adverbial relative
possessive relative

Figure 9. *Relative terminology X: multiple embedding.*

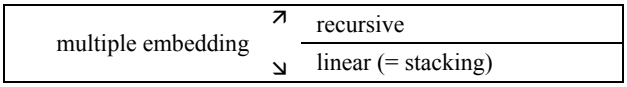
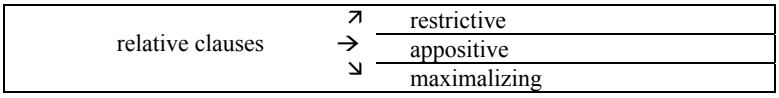


Table 3. *Relative terminology XII: constructions related to relative constructions*

constructions related to relative constructions
cleft
pseudo-cleft
pseudo-relatives

Figure 10. *Relative terminology XIII: semantic types of relatives.*



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Sells (1985)

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Grosu & Landman (1998)
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Lehmann (1984)
Srivastav (1991)
Subbarao (1984)
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Karlsson (1972)
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Klooster (1995)
Koster (1995a/b, 1999a/b, 2000a/b/c)
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Müller (1997)
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Veld (1993)
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Possession:

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Delsing (1988, 1993)
Everaert (1992)
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