Derivations & Evaluations. On the syntax of subjects and complementizers
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3. On the left-periphery of the relative clause

0. Introduction

We have seen in the previous chapter that according to Pesetsky (1997, 1998), pronunciation patterns in the left-periphery of relative clauses follow from the interaction of a small number of violable constraints. In the 1970s, these facts were analyzed in terms of surface filters. Both approaches are output-oriented: some device (a collection of surface filters, an OT evaluator) filters out the ungrammatical outputs produced by an overgenerating transformational component.

In section 1, Pesetsky’s OT analysis will be compared to Chomsky & Lasnik’s (1977, henceforth C&L) approach based on surface filters. It turns out that although C&L successfully describe deletion phenomena in the English relative clause, their analysis cannot be carried over to French in a straightforward manner. Since this problem does not arise for Pesetsky, the OT approach seems more powerful than an approach in terms of surface filters.

Section 2 deals with some problematic properties of Pesetsky’s proposal originally noted by Broekhuis & Dekkers (to appear). On the basis of observations about relative clauses in (varieties of) Dutch, the relation between semantic content and deletion, and the non-universality of the doubly filled Comp phenomenon will be accounted for.

Finally, in section 3, the analysis is reformulated in accordance with the spirit of Extended X-bar Theory. Particular attention will be paid to the subject-object asymmetry found in relative clauses. An approach in terms of clause size will be proposed, along the lines of the analysis of do-support given in chapter 1. Also, prepositional relatives will be examined in more detail. We will argue that in cases of preposition stranding, clause size plays again a central role.

1. Filters versus constraint interaction

1.1. Filters

In C&L’s analysis of deletion in the complementizer domain, the Doubly Filled Comp Filter (henceforth DFCF), given in (1), plays a central role. This filter eliminates structures in which the Comp position is filled with two elements.

(1) *Comp[wh-phrase \( \psi \)], \( \psi \neq e \)

French examples of doubly filled Comps are given in (2). In these examples, (avec) qui corresponds to the wh-phrase in (1), and que to \( \psi \). Hence, the DFCF filters them out.
C&L argue that violation of the DFCF can be circumvented by applying the rule of Free Deletion in Comp (FDC) given in (3). FDC deletes elements in the Comp domain.

(3) In the domain of Comp, delete $[a \varphi]$ where $a$ is an arbitrary category and $\varphi$ an arbitrary structure.

French uses this rule to delete the relative pronoun in (2a), and the complementizer in (2b). This leads to the grammatical examples in (4).

(4) a. l'homme qui que je connais
    b. la femme avec qui que j'ai dansé

Let us consider the effect of (1) and (3) on the examples in (2) and (4) in more detail. In the 1970s, it was assumed that both operators and complementizers occupied the Comp position. This means that the general structure of relative clauses is as given in (5). Random application of FDC produces the four structures in (6). Only (6a) is ruled out by the DFCF.

(5) $[s'_{\text{Comp}} [(P) \text{ pronoun}], \text{ complementizer}] ... t_i ...$

(6) a. $[s'_{\text{Comp}} [(P) \text{ pronoun}], \text{ complementizer}] ... t_i ...$
b. $[s'_{\text{Comp}} [(P) \text{ pronoun}], \text{ complementizer}] ... t_i ...$
c. $[s'_{\text{Comp}} [(P) \text{ pronoun}], \text{ complementizer}] ... t_i ...$
d. $[s'_{\text{Comp}} [(P) \text{ pronoun}], \text{ complementizer}] ... t_i ...$

In French, prepositional relatives have the structure in (6b), whereas their non-prepositional counterparts correspond to (6c). This raises two crucial questions. First, why do prepositional relatives have a different surface structure than their non-prepositional counterparts? And second, why is option (6d) excluded altogether in French?

C&L answer the first question by postulating a recoverability principle for deletion. According to this principle, only elements that do not have semantic content may be deleted. C&L assume that relative pronouns and complementizers lack semantic content, whereas for instance nouns, interrogative pronouns, and prepositions do not. As a result, relative pronouns and complementizers can freely be deleted, whereas nouns, interrogative pronouns, and prepositions must be pronounced. Hence, the recoverability principle makes a distinction between prepositional and non-prepositional relatives. If the relative pronoun is embedded in a PP, deletion is forbidden because the preposition is not recoverable after deletion.
If, on the other hand, the relative pronoun appears without a preposition, deletion is allowed:

(7)  
\[ \text{a. } \text{l'homme qui que je connais} \]
\[ \text{b. } \ast \text{la femme avec qui que j'ai dansé} \]

The joint action of FDC, the DFCF, and the recoverability principle makes correct predictions for prepositional relatives, as we can see in (8). The recoverability principle forces the overt realization of *avec qui*. This excludes (8c-d). The remaining ungrammatical option (8a) is excluded by the DFCF. Hence, (8b) is the only correct surface form.

(8)  
\[ \text{a. } \ast \text{la femme avec qui que j'ai dansé} \]
\[ \text{b. } \text{la femme avec qui que j'ai dansé} \]
\[ \text{c. } \ast \text{la femme avec qui que j'ai dansé} \]
\[ \text{d. } \ast \text{la femme avec qui que j'ai dansé} \]

Notice that this provides us with a partial answer to the question of why (6d) is not available in French: in prepositional relatives, this leads to a violation of recoverability. However, this question should still be answered for non-prepositional relatives, since the recoverability principle allows all four options in (9), whereas the DFCF only filters out (9a).

(9)  
\[ \text{a. } \ast \text{l'homme qui que je connais} \]
\[ \text{b. } \ast \text{l'homme qui que je connais} \]
\[ \text{c. } \text{l'homme qui que je connais} \]
\[ \text{d. } \ast \text{l'homme qui que je connais} \]

When we turn to English, the DFCF, FDC, and the recoverability principle together correctly predict the surface form of non-prepositional relatives. In (10), it is shown that only the doubly filled Comp option is ungrammatical, which is exactly what we predict if both the relative pronoun and the complementizer can freely be deleted.

(10)  
\[ \text{a. } \ast \text{the book which that he read yesterday} \]
\[ \text{b. } \text{the book which that he read yesterday} \]
\[ \text{c. } \text{the book which that he read yesterday} \]
\[ \text{d. } \text{the book which that he read yesterday} \]

Also the prepositional construction behaves as expected: the DFCF filters out (11a) and recoverability eliminates (11c-d).

(11)  
\[ \text{a. } \ast \text{the book about which that he talked yesterday} \]
\[ \text{b. } \text{the book about which that he talked yesterday} \]
\[ \text{c. } \ast \text{the book about which that he talked yesterday} \]
\[ \text{d. } \ast \text{the book about which that he talked yesterday} \]
It seems plausible that the contrast between the ungrammaticality of the French (9d) and the grammaticality of its English counterpart in (10d) is related to the fact that in clausal complements of epistemic verbs, the complementizer is obligatorily pronounced in French, but not in English:

(12)  

a. Je pense *(que) le Président de la République a déguisé la vérité.  
I think (that) the President of the Republic has covered-up the truth  
‘I think the President of France has covered up the truth.’  
b. I think (that) the President has covered up the truth.

However, the relation between (9) and (12a) cannot straightforwardly be captured in terms of an additional filter. The obligatory pronunciation of the complementizer in (12a) could be attributed to (13), a language-specific filter banning complementizer-less clauses. In combination with the DFCF, FDC, and the recoverability principle, it would correctly rule out all options in (9) except for (9c). However, it would also rule out the acceptable (8b).

(13) *\[\text{comp complementizer} \]

As an alternative to (13), we could postulate a filter that bans empty Comp positions, which, again, would have to be active in French and inactive in English. This filter would allow (8b). However, it would also allow the unacceptable (9b).\(^1\)

In sum, the filter-based approach to deletion patterns in relative clauses proposed by C&L correctly describes English, but cannot straightforwardly be carried over to French. Pesetsky’s analysis, on the other hand, is more successful.

### 1.2. Constraint interaction

In chapter 2, we saw that Pesetsky reduces deletion in the French relative clause to the interaction of the three violable constraints given in (14). LE(CP) requires that CPs start with a function word related to the main verb, TEL forbids the pronunciation of function words, and REC, like C&L’s recoverability principle, prohibits the deletion of meaningful elements.\(^2\)

(14)  

a. LEFTEDGE(CP) (LE(CP)): The first pronounced word in CP is a function word related to the main verb of the CP.

b. TELEGRAPH (TEL): Do not pronounce function words.

c. RECOVERABILITY (REC): A syntactic unit with semantic content must be pronounced.

In French, these constraints are ranked as in (15).

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1 The DFCF can be reformulated in accordance with an endocentric view on phrase structure, as in (i). The condition in (i) causes the same problems as the original DFCF does.

(i) Do not pronounce both the head and the specifier of CP.

2 In section 2, we will examine the notion *semantic content* in detail. In the same section, TEL is reformulated.
Let us first briefly recapitulate the evaluation of French relative clauses. In tableau (16), the relative pronoun is not embedded in a PP. Consequently, it is recoverable after deletion, and REC is irrelevant. Option (16c) is the only candidate that does not incur a violation of LE(CP), and is therefore optimal.3

In tableau (17), deletion of the PP containing the relative pronoun leads to a violation of REC. Consequently, candidates (17c-d) are eliminated. The remaining two candidates each incur a violation of LE(CP). As a consequence, TEL plays a decisive role and eliminates the marked (17a).

Tableau (18) shows that the obligatory pronunciation of the French complementizer in clausal complements (example (12a)) follows directly from the ranking in (15). Deletion of the complementizer leads to a violation of LE(CP), while pronunciation is marked because of TEL. Since LE(CP) outranks TEL in French, the complementizer must be pronounced.

In OT, constraint rankings define grammars. This means that Pesetsky’s analysis makes typological predictions. Whereas grammars in which LE(CP) outranks TEL are characterized by obligatory complementizers (if no other constraints interfere), grammars defined by the opposite ranking lack complementizers. Rint Sybesma (p.c.) informs us that Chinese is such a language:

3 All tableaux in sections 1 and 2 are revised in section 3.
Paul thinks the president has lied.

The evaluation of Chinese complement clauses is given in (20).

(20)

<table>
<thead>
<tr>
<th>Chinese</th>
<th>Tel</th>
<th>LE(CP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Comp zongtong sahuang-le</td>
<td></td>
<td>*!</td>
</tr>
<tr>
<td>b. Comp zongtong sahuang-le</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

In English, both options are available, as shown in (12b) above. This follows if LE(CP) and Tel are in a tie in English. If two constraints are in a tie, both possible rankings are available (see chapter 1). Hence, English is a hybrid language, which disposes of both the French and the Chinese strategy for complementizer pronunciation:

(21)

<table>
<thead>
<tr>
<th>English</th>
<th>LE(CP)</th>
<th>Tel</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. that the President has covered up the truth</td>
<td>&gt;</td>
<td>*</td>
</tr>
<tr>
<td>b. that the President has covered up the truth</td>
<td>&gt;</td>
<td>*</td>
</tr>
</tbody>
</table>

In order to evaluate English relative clauses, we now only have to rank Rec with respect to the tie between LE(CP) and Tel. The fact that in prepositional relatives, the PP containing the relative pronoun may not be deleted, just like in French, suggests that Rec outranks LE(CP):

(22)

a. the book about which that I talked
b. *the book about which that I talked

c. the book which that he read

d. the book which that he read

Tableaux (23) and (24) show that this ranking makes the correct predications for relative clauses. In the non-prepositional construction (tableau (23)), Rec plays no role again. Since LE(CP) and Tel are in a tie, only candidate (23a) is eliminated because it violates both constraints, while the three alternative structures violate only one of them.

(23)

<table>
<thead>
<tr>
<th>English</th>
<th>Rec</th>
<th>LE(CP)</th>
<th>Tel</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. the book which that he read</td>
<td>&gt;</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. the book which that he read</td>
<td>&gt;</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. the book which that he read</td>
<td>&gt;</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>d. the book which that he read</td>
<td>&gt;</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

In tableau (24), only candidates (a) and (b) satisfy Rec; the other two candidates contain a deleted preposition. The tied constraints LE(CP) and Tel decide
in favor of candidate (24b) because it only violates LE(CP), whereas the alternative (24a) also violates TEL.

We may conclude that Pesetsky, unlike C&L, successfully accounts for the French facts because he substitutes the more general LE(CP) for the more specific DFCF. Due to its general formulation, this constraint can play a crucial role in excluding doubly filled Comp structures, as well as any other structure that does not start with a complementizer. As a consequence, LE(CP) enables us to exclude (9b) and (9d), the two illicit French structures that were problematic for C&L's analysis in the previous subsection. Moreover, LE(CP) plays a central role in explaining pronunciation patterns in the left-periphery of complement clauses, again unlike the DFCF. This will be further examined in chapters 4 and 5.

Another empirical domain in which LE(CP) seems relevant is the left-periphery of infinitival relative clauses. Pesetsky argues that next to that, elements like for and to found in infinitival relative clauses count as function words with respect to LE(CP). In this book, however, we will restrict ourselves to tensed clauses. Some particularly intricate problems that arise in infinitival relative clauses are discussed in Broekhuis & Dekkers (to appear). A few of these will be briefly mentioned in footnote 9.

2. Recoverability

Although Pesetsky's constraint-based approach seems to have a greater empirical power than C&L's theory of filters, it cannot immediately be carried over to a language like Dutch, in which relative pronouns must also be pronounced when they are not embedded in a PP. In this section, we will reconsider the notion semantic content, which plays a central role in Pesetsky definition of REC. This allows us to capture the Dutch facts, and, at the same time, forces us to revise our analysis of English and French.

2.1. Relative clauses in Dutch

In Dutch, nouns can be distinguished on the basis of the article they appear with: non-neuter singular nouns take the article de, while their neuter counterparts take the article het. In the plural, this gender distinction is neutralized; the article de is used in all cases. The two groups also take different demonstratives: de-nouns can be combined with the demonstratives deze and die, while het-nouns take the demonstrative pronouns dit and dat. This is demonstrated in (25).
Relative pronouns are homophonous with the demonstrative pronouns *die* and *dat*. The distribution of these two elements (illustrated in (26)) is again determined by gender and number. A remarkable property of Dutch relative pronouns is that they cannot be deleted. As such, they are problematic for Pesetsky's analysis.

(26) a. de man die ik gisteren zag
   the man *die* I yesterday saw
   ‘the man I saw yesterday’

   a'. de mannen die ik gisteren zag
   the men *die* I yesterday saw

   b. het boek dat ik gisteren las
   the book *dat* I yesterday read

   b'. de boeken die ik gisteren las
   the books *die* I yesterday read

Since the Dutch complementizer is obligatorily pronounced in examples like (27), LE(CP) must outrank TEL. Let us assume that like in French and English, REC outranks LE(CP) and TEL, which will be motivated below. This leads to the prediction that Dutch relative clauses behave fully on a par with their French counterparts, since the two languages are characterized by an identical ranking of the relevant constraints.

(27) Paul denkt *(dat)* de President heeft gelogen.
   Paul thinks that the President has lied
   ‘Paul thinks the President has lied.’

The evaluation of direct object relatives is given in tableau (28). Like in French, candidate (28c), in which the relative pronoun is deleted and the complementizer is pronounced, is predicted to be grammatical. This is incorrect (illicit optimal candidates are marked with the sign ◊), at least for the pronoun *die*.

---

4 The assumption that *dat* in (29b) is a relative pronoun will be rejected in section 2.3.
It seems that bare relative pronouns behave on a par with their prepositional counterparts in English and French, which cannot be deleted either. If we assume that Dutch relative pronouns are not recoverable after deletion, the correct candidate turns out to be optimal. This is shown in tableau (29). Candidates (29c-d) incur fatal violations of the high-ranked REC. The remaining two candidates both violate LE(CP). Since only (29a) violates TEL, (29b) is optimal. Notice that a lower rank of REC would have resulted in the optimality of the (29c).

Of course, we should wonder why deletion of Dutch relative pronouns violates REC. Broekhuis & Dekkers argue that the possibility of deletion depends on the presence or absence of φ-features on the element in question. An indication that this is indeed the case comes from the Aarschot dialect.

2.2. The Aarschot dialect

In the standard varieties of English, French, and Dutch, the Doubly Filled Comp Filter is surface-true in relative clauses.\(^5\) This is not necessarily true for non-standard varieties of these languages. We saw in chapter 1 that Canadian French allows doubly filled Comps; the examples in (30) and (31) show that the same holds for several varieties of Dutch. Doubly filled Comps are common in interrogative clauses in colloquial Dutch. The examples in (i) show that a wh-phrase can be followed by either of, dat or ofdat. Geographic considerations seem to play a more prominent role in the distribution of doubly filled Comps in relatives than they do in the distribution of doubly filled Comps in interrogatives. We leave this for further research.

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instance the Aarschot dialect, spoken in the Belgian part of Brabant. In this variety of Dutch, a relative clause introduced by a relative pronoun may contain the complementizer *da*. This doubly filled Comp structure is always available, except with the singular neuter relative pronoun *da*, as the ungrammaticality of (30b) shows.6

(30) **Aarschot dialect (Pauwels, 1958):**
   a. de stoelen di (da) kapot zijn
      the chairs *di* that broken are
      ‘the chairs which are broken’
   b. *’t kind da da valt
      the child *da* that falls
      ‘the child who is falling’
   b’. *’t kind da valt
   c. *’t kind van wie (da) ’k spreek
      the child of whom that I talk
      ‘the child I am talking about’

The same seems to hold for Middle Dutch (see Verwijs & Verdam, 1889). Examples are given in (31).7

(31) **Middle Dutch:**
   a. den brief, den dat dat karspel darup gegeven hefft
      the letter *den* that the parish then given has
      ‘the letter the parish gave then’
   b. die wile, in dewelke dat alle ... sullen horen de stemme
      the time in which that all will hear the voice
      ‘the time when everyone will hear the voice’

The existence of doubly filled Comp structures is remarkable because Pesetsky’s constraint inventory rules them out: any ranking of REC, LE(CP) and TEL bans doubly filled Comp configurations. The problem is that the (a)-candidates in (32) and (33) will not surface under any ranking of the constraints in question because they are harmonically bound (see chapter 1) by the (b)-candidates.

---

6 The situation in the Aarschot dialect is in fact more complicated than suggested in the main text. The dialect disposes of the three relative rf-pronouns given in (i).

(i) a. *di* [di]: [feminine] or [-singular]
   b. *die* [dia]: [masculine, +singular]
   c. *da* [da]: [neuter, +singular]

7 More precisely: among the many examples of doubly filled Comps in Middle Dutch relative clauses given in Verwijs & Verdam (1889), no examples of the sequence *dat dat* are found. Of course, this means that it is only plausible that Middle Dutch lacks these examples, since it could be that Verwijs & Verdam overlooked them.
ON THE LEFT-PERIPHERY OF THE RELATIVE CLAUSE

The fact that there are languages in which the \( (a) \)-candidates surface suggests that a fourth constraint must be in play. Let us take this constraint to be Grimshaw's (1997) OB-HD, introduced in chapter 1, and repeated in (34).

(34) OBLIGATORY HEADS (OB-HD): A projection has a head.

If, like in Standard Dutch, deletion of both \( di(e) \) and \( van \) \( wie \) violates REC, the evaluation of the candidate sets related to the examples in (30a) and (30c) takes place as in tableau (35), in which OB-HD and TEL are in a tie. In languages such as Standard English, Standard Dutch, and Standard French, in which doubly filled Comps do not appear in the relative clause, TEL outranks OB-HD.

(35) Aarschot dialect

<table>
<thead>
<tr>
<th></th>
<th>REC</th>
<th>LE(CP)</th>
<th>OB-HD</th>
<th>TEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ( CP ) ( [P ) pronoun] ( [C ) complementizer] ( ... ) ( ] )</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. ( CP ) ( [P ) pronoun] ( [C ) complementizer] ( ... ) ( ] )</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. ( CP ) ( [P ) pronoun] ( [C ) complementizer] ( ... ) ( ] )</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. ( CP ) ( [P ) pronoun] ( [C ) complementizer] ( ... ) ( ] )</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The unacceptability of (30b) is still a problem. Clearly, the low-ranked constraints in tableau (35) are not responsible for this. However, if we assume that deletion of the relative pronoun \( da \) does not violate REC, the desired result follows. This is illustrated in tableau (36). The stars in parentheses will be discussed in section 2.3.

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8 Alternatively, the impossibility of the sequence \( da(t) \) \( da(t) \) might be the result of a constraint disallowing the occurrence of two adjacent phonetically identical elements. However, such an expansion of the constraint inventory is not necessary, since \( da \) \( da \) is ruled out on independent grounds in section 2.3 below.
Aarschot dialect | REC | LE(CP) | OB-HD | TEL
---|---|---|---|---
a. [CP da [C da][IP ...]] | *! | | |
b. [CP da [C da][IP ...]] | *! | * | (*)
c. [CP da [C da][IP ...]] | *! | * | |
d. [CP da [C da][IP ...]] | *! | |

The next step is to account for the fact that not all relative pronouns are recoverable after deletion. This forces us to reconsider the notion of semantic content, which plays a key role in Pesetsky definition of REC.

2.3. Semantic content

In the Dutch determiner system, three $q$-features play a role, viz. [±singular], [±neuter] and [±definite]. In Kester (1996: 94ff.), it is argued that [+singular], [+neuter], and [-definite] are unmarked in Dutch on the basis of the distribution of the attributive suffix -e, among other things. Attributively used adjectives appear with this suffix, unless the DP has the aforementioned unmarked features, as illustrated in figure 1.

| singular | plural |
|---|---|---|---|---|---|
| non-neuter | neuter | non-neuter | neuter |
| definite | de oude man | het oude boek | de oude mannen | de oude boeken |
| indefinite | een oude man | een oud boek | oude mannen | oude boeken |

Let us assume that only marked features are syntactically present. If so, the presence of at least one of the pertinent features can be taken to be a necessary condition for licensing the attributive suffix. The assumption that only the marked features are assigned to lexical elements (unmarked features being inferred by default) allows us to reconsider the notion semantic content. It seems that $q$-features qualify as semantic content. This is in line with Chomsky’s (1995: ch. 4) assumption that a subset of formal features, including $q$-features, are +Interpretable.

(37) If a syntactic unit is marked with one or more $q$-features, it has semantic content.

In the domain of relative pronouns, only number and gender features seem to be relevant. Since the relative pronoun dat does not contain the marked features [-singular] and [-neuter], it can only have a singular, neuter noun as its antecedent. This is illustrated in (38). The relative pronoun die, on the other hand, is specified
for at least one of these features. In (39a), it takes a non-neuter (singular) noun as its antecedent, and in (39b) a (neuter) plural one.

(38) a. het boek dat ik las
    the book dat I read
    ‘the book I read’

b. *de man dat ik zag
    the man dat I saw
    ‘the man I saw’

c. *de boeken dat ik las
    the books dat I read
    ‘the books I read’

(39) a. de man die ik zag
    the man die I saw
    ‘the man I saw’

b. de boeken die ik las
    the books die I read
    ‘the books I read’

Provided that no other features are involved, we may conclude that the relative pronoun die is a meaningful element, whereas dat is not. This means that only the deletion of die violates REC, which, for the Aarschot dialect, leads to the correct evaluations in tableaux (35) and (36).

Let us now turn to the question of the stars in parentheses in tableau (36). Broekhuis & Dekkers argue that also TEL should be formulated in terms of semantic content. This would mean that pronunciation of meaningless relative pronouns such as da in the Aarschot dialect violates TEL, and that the stars in question must be added to tableau (36). Although this reformulation has no influence on our analysis, let us assume that it is essentially correct.

(40) TEL (revised): A syntactic unit without semantic content must be deleted.

In tableau (41), Standard Dutch relative clauses containing die are evaluated. In accordance with (37), candidates (41c-d) violate REC because die is not recoverable after deletion. The two alternative options both violate LE(CP). Since only (41a) violates TEL, (41b) is optimal. OB-HD is irrelevant.

(41)

<table>
<thead>
<tr>
<th>Standard Dutch</th>
<th>REC</th>
<th>LE(CP)</th>
<th>TEL</th>
<th>OB-HD</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. de man die dat ik zag</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. de man die dat ik zag</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. de man die dat ik zag</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. de man die dat ik zag</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
So far, this matches the evaluation in tableau (29). However, the evaluation of relative clauses containing *dat* proceeds in a different way, since this element, being the unmarked relative pronoun, is freely deletable. The correct evaluation is given in tableau (42). All candidates satisfy REC, whereas only candidate (42c) satisfies LE(CP). As a result, (42c) is optimal.

(42)

<table>
<thead>
<tr>
<th></th>
<th>REC</th>
<th>LE(CP)</th>
<th>TEL</th>
<th>OB-HD</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. het boek dat dat ik las</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b. het boek dat dat ik las</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>c. het boek dat dat ik las</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

This means that the element *dat* should be analyzed as a complementizer, and not as a relative pronoun, contrary to what was implied in tableau (29).

2.4. The English relative clause revisited

Our reformulation of the definition of REC has implications for the analysis of English relative clauses because the pronouns *who* and *which* contain features. The former refers to humans only, whereas the latter must be combined with a noun that refers to non-human entities. In other words, these pronouns are associated with the features [+human] and [-human], respectively (cf. C&L: fn. 46). It is likely that these features qualify as semantic content on a par with γ-features. If so, deletion of *who* and *which* violates REC, contrary to what is suggested in tableau (23). The revised evaluation is given in tableau (43).

(43)

<table>
<thead>
<tr>
<th></th>
<th>REC</th>
<th>LE(CP)</th>
<th>TEL</th>
<th>OB-HD</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. the man who that he saw the book which that he read</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b. the man who that he saw the book which that he read</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>c. the man who that he saw the book which that he read</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>d. the man who that he saw the book which that he read</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Tableau (43) differs from tableau (23) in that only the (b)-candidate is acceptable; the candidates (c) and (d) (optimal in tableau (23)) are now excluded because they violate REC. This leads us to the question of why *the man/book (that) he saw/read* is acceptable in English. It seems as if English, like Dutch (and French, see section 2.5 below), disposes of an unmarked relative pronoun. A likely candidate would be *that*, based on the homophonous demonstrative pronoun. Since gender and number do not play a role in the English determiner system, this pronoun, like the article *the*, would not be marked for these features (in accordance with this claim,
English does not exhibit attributive inflection, cf. the discussion of Dutch in section 2.3 above). Hence, it would be unmarked, on a par with Dutch dat. As a result, deletion would not violate REC. It will be argued in section 3.2 that pronominal that surfaces in subject relatives.

In tableau (44), relative clauses containing that are evaluated. Candidates (44c) and (44d) are optimal because (i) all candidates satisfy REC, (ii) (44c) is the only candidate that does not violate LE(CP), (iii) (44d) is the only candidate that does not violate TEL, and (iv) LE(CP) and TEL are in a tie. OB-HD is irrelevant.

(44)  

<table>
<thead>
<tr>
<th>English</th>
<th>REC</th>
<th>LE(CP)</th>
<th>TEL</th>
<th>OB-HD</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. the man/book that that he saw/read</td>
<td><em>≤</em></td>
<td><em>&lt;≤</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. the man/book that that he saw/read</td>
<td><em>≤</em></td>
<td>&lt;≤</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. the man/book that he saw/read</td>
<td>≤</td>
<td>&lt;≤</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. the man/book that he saw/read</td>
<td>≤</td>
<td>&lt;≤</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We should wonder whether structures containing wh-based relative pronouns are in the same candidate set as those containing that. This depends on whether both types of pronouns are composed of the same formal features. Let us assume that they are not. Besides the fact that that is not marked for ϕ-features, while wh-pronouns are, the observation that wh-pronouns appear in a wider range of relatives than that (which can only be used in restrictive relatives) increases the likelihood of featural distinctness. This goes against Broekhuis & Dekkers, who assume that, in accordance with their semantic identity requirement on candidate sets, who/which and that are contained in one candidate set. However, in the present version of D&E, identity of formal features rather than semantic identity defines candidate sets. Empirical evidence in favor of two candidate sets will be given in section 3.3.

9 Broekhuis & Dekkers argue that infinitival relative clauses provide empirical evidence in favor of this assumption. Example (i) illustrates that the relative pronoun which is excluded from English direct object relatives. This follows if (ia) is blocked by (ib). Because which is not deletable, (ib) must contain the relative pronoun that. Hence, the corresponding structures in (ii) must be in one candidate set.

(i)  

a. *a nice novel which to read in the train
b. a nice novel to read in the train

(ii)  

a. a nice novel [CP which, [IP, to read t, in the train]]
   b. a nice novel [CP that, [IP, to read t, in the train]]

Broekhuis & Dekkers remark that Dutch infinitival relative clauses do not contain pronounced relative pronouns either. This is illustrated in (iii). It is unlikely that (iiib) contains the deleted pronoun dat (as in (ivb)) because roman is marked with the feature [-neuter]. Broekhuis & Dekkers argue, however, that it is not evident that (iiib) should be analyzed as a relative clause to begin with. If, indeed, it should not, this might throw new light on the status of the English examples in (i). We leave this for further research.

(iii)  

a. *een leuke roman die om in de trein te lezen.
 b. een leuke roman om in de trein te lezen.
   a. nice novel COMP in the train to read
      'a nice novel to read in the train'
   b. nice novel COMP in the train to read
      'a nice novel to read in the train'

(iv)  

a. een leuke roman [CP die, [IP, om [IP, t, in de trein te lezen]]]
 b. een leuke roman [CP dat, [IP, om [IP, t, in de trein te lezen]]]
2.5. The French relative clause revisited

Until now, we have followed Pesetsky and analyzed the French (45a) as in (45b). However, there are two questions that should be answered now that we have reformulated REC. First, why are bare relative pronouns recoverable after deletion in French? And second, is there any evidence that the deleted element should be identified with *qui*?

(45)  

a. l'homme que je connais  

b. l'homme [[CP qui, que [IP je connais]]]

In order to answer these questions, let us turn to the prepositional construction, in which relative pronouns are generally pronounced (see section 3 below for an account of this fact). Two types of relative pronouns are used as the complement of prepositions, both of which are homophonous with interrogative pronouns. First, there is the class of *lequel*-based pronouns: *lequel* [+singular, +masculine], *laquelle* [+singular, -masculine] *lesquels*, [-singular, +masculine], *lesquelles* [-singular, -masculine]. These pronouns are almost exclusively used in the prepositional construction.\(^\text{10}\)

(46)  

Grevisse (1980):  
a. l'homme sous lequel la marine française s'était relevée  
the-man under whom the navy French REFL-was pulled-through  
contre l'Angleterre  
against England  
'the man under whom the French navy pulled through against England'

b. une retraite après laquelle je soupire  
a retreat after which I long  
'a retreat I am longing for'

Clearly, the *lequel*-based relative pronouns are marked for gender and number. Consequently, they do not qualify as deletable relative pronouns when they are not embedded in a PP. Even if one of them should be considered unmarked, it would be unclear why the others hardly ever surface in the non-prepositional construction.

The second type of relative pronoun used in the prepositional construction is *qui*, where it can only be used if its antecedent is human.\(^\text{11}\)

---

\(^{10}\) The use of *lequel*-based pronouns in subject relatives, as in (i), is rare. Their use in direct object relatives is even rarer.

(i)  

Grevisse (1980):  
Il y a une édition de ce livre laquelle se vend fort bon marché.  
there is an edition of this book which REFL sells very cheap  
'There is an edition of this book which is sold cheap.'

\(^{11}\) *Qui* is sometimes used with personified non-human or with animal antecedents. Furthermore, *qui* does have a [-human] counterpart *quoi*. However, relative *quoi* can only be used with a very limited inventory of antecedents. Therefore, we will ignore it here. See Grevisse (1980) for particulars.
(47) Grevisse (1980):

l'homme à qui je parle
the man to whom I talk
‘the man I talk to’

This gives the following paradigm of relative pronouns which can be embedded in PPs:

<table>
<thead>
<tr>
<th>Feature</th>
<th>+singular</th>
<th>-singular</th>
</tr>
</thead>
<tbody>
<tr>
<td>+human</td>
<td>qui</td>
<td>qui</td>
</tr>
<tr>
<td>±human</td>
<td>laquel</td>
<td>lesquels</td>
</tr>
</tbody>
</table>

Figure 2 indicates that *qui* is only marked for the feature [+human]. This feature distinguishes *qui* from the *lequel*-based pronouns. However, if the relative pronoun is not contained in a PP, this opposition disappears, since *lequel*-based relative pronouns are almost exclusively restricted to the prepositional construction (cf. footnote 10). Thus, *qui* is the only remaining form in the paradigm. Hence, it is unmarked, and freely deletable. In section 3.2, we will argue that this unmarked *qui* in fact surfaces in subject relatives, and show that it can also be used with non-human antecedents.

2.6. Recoverability as an inviolable principle

We suggested in chapter 2 that REC might not be a violable constraint. Unlike LE(CP) and TEL, it always seems to be the highest-ranked constraint, and is therefore never violated by an optimal candidate. In chapter 2, we formulated the following condition on the operation Delete in Gen/C_{HL}:

(48) Do not remove the phonological matrix of syntactic units with semantic content.

Let us assume that the absolute recoverability condition in (48) should indeed replace Pesetsky’s REC. In line with this, REC will be excluded from the tableaux from now on, and so will any candidate that violates it.

3. Relative clauses in D&E

Pesetsky assumes that relative clauses are always CPs, even if this leads to empty projections. So far, we have implicitly followed him on this point. However, in D&E, like in any other OT syntax which incorporates Extended X-bar Theory, empty projections are suspect, since they are more likely to cause constraint violation than constraint satisfaction. In this section, we will examine the possibilities Extended X-bar Theory offers us in the study of relative clauses.
In section 3.1, complementizer placement in complements of epistemic verbs will be reduced to the presence or absence of CP. The general point in subsequent sections is that several properties of relative clauses can be reduced to variable clause size in a similar fashion. Section 3.2 focuses on subject relatives, which will be analyzed as IPs, along the lines of Broekhuis & Dekkers. Prepositional relatives are examined in section 3.3. We will argue that in English, preposition stranding sometimes reduces the size of the relative clause. Section 3.4 is devoted to direct object relatives.

3.1. A note on clausal complements

We saw in section 1.2 that parametrization in the left-periphery of complements of epistemic verbs can be reduced to the mutual ranking of LE(CP) and TEL. If LE(CP) outranks TEL, complementizers are obligatory (French). Complementizers are optional if the two constraints are in a tie (English). The ranking TEL >> LE(CP) defines languages that lack complementizers (Chinese):

(49) a. **Obligatory complementizers (French):**
   
   Je pense *(que)* le Président de la République a déguisé la vérité.
   
   'I think (that) the President of the Republic has covered-up the truth.'

b. **Optional complementizers (English):**
   
   I think (that) the President has covered up the truth.

c. **No complementizers (Chinese):**
   
   Paul juede zongtong sahuang-le.
   
   'Paul thinks the President has lied.'

According to Pesetsky, the complement clauses in (49) are CPs, irrespective of whether the complementizer is pronounced or not:

(50) a. \[CP \text{ que } [IP \text{ le Président de la République a déguisé la vérité}]\]

b. \[CP \text{ that } [IP \text{ the President has covered up the truth}]\]

b'. \[CP \text{ that } [IP \text{ the President has covered up the truth}]\]

c. \[CP \text{ Comp } [IP \text{ zongtong sahuang-le}]\]

However, as soon as we accept Extended X-bar Theory, it is possible to analyze complementizer-less clauses as IPs. We will claim, following Grimshaw (1997) and Doherty (1997), among others, that CP is indeed absent in many cases in which a clause is not introduced by a complementizer.

In (51a), NOSTRUC is defined, an economy constraint prohibiting the presence of maximal projections.12 Here, we are interested in the fact that this

---

12 See Bresnan (to appear), and Costa (1998), among others, who postulate similar constraints. We will see in subsequent subsections that TEL still plays a role, and assume that in the languages under scrutiny, it is lower-ranked than in the analyses by Pesetsky and Broekhuis & Dekkers.
constraint prefers IPs to CPs. Pesetsky's LE(CP) is adapted to Extended X-bar Theory in (51b).

\[(51)\]
\begin{align*}
a. & \text{ NOSTRUCTURE (NOSTRUC): Maximal projections are prohibited.} \\
b. & \text{ LEFTEDGE(VEP) (LE(VEP)): The first pronounced word in a full verbal extended projection is one of its functional extended heads.}
\end{align*}

The typology in (49) follows from the possible rankings of NOSTRUC and LE(VEP). Under the ranking LE(VEP) \(\gg\) NOSTRUC, complementizers are obligatory, as in French. In tableau (52), candidate (a) is the only structure that does not violate the high-ranked LE(VEP).

\[(52)\]
\begin{table}[h]
<table>
<thead>
<tr>
<th>French</th>
<th>LE (VEP)</th>
<th>NOSTRUC</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ([\text{CP que [IP le P. de la R. a déguisé la vérité]]})</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. ([\text{CP que [IP le P. de la R. a déguisé la vérité]}])</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>c. ([\text{IP le P. de la R. a déguisé la vérité]})</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>
\end{table}

If NOSTRUC outranks LE(VEP), on the other hand, complementizers do not occur. The evaluation of Chinese is given in tableau (53). Candidate (53c) is optimal, because it satisfies NOSTRUC, while the two CP candidates do not.

\[(53)\]
\begin{table}[h]
<table>
<thead>
<tr>
<th>Chinese</th>
<th>NOSTRUC</th>
<th>LE (VEP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ([\text{CP Comp [IP zongtong sahuang-le]}])</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. ([\text{CP Comp [IP zongtong sahuang-le]}])</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>c. ([\text{IP zongtong sahuang-le]})</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>
\end{table}

Finally, complementizers are optional if the two constraints are in a tie. English is evaluated in tableau (54), where candidate (b) is eliminated because it violates both constraints, contrary to candidates (a) and (c).

\[(54)\]
\begin{table}[h]
<table>
<thead>
<tr>
<th>English</th>
<th>LE(VEP)</th>
<th>NOSTRUC</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ([\text{CP that [IP the President has ...]}])</td>
<td>*&gt;</td>
<td>&lt;*</td>
</tr>
<tr>
<td>b. ([\text{CP that [IP the President has ...]}])</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. ([\text{IP the President has ...]})</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>
\end{table}

Notice that the (b)-candidates in (52)-(54), in which CP is projected and the complementizer is deleted, are harmonically bound by the (c)-candidates, in which

---

13 Unless mentioned otherwise, violations of NOSTRUC are only marked with a star if the candidate in question contains a CP. This is done for expository reasons only.
CP is absent. This means that empty CPs are banned under all rankings if no other constraints interfere.

In chapter 4, we will give empirical evidence for the IP analysis of complementizer-less clausal complements. But first, let us examine the consequences of this re-analysis of complementizer placement for the relative clause.

3.2. Subject relatives

Consider the examples in (55), and compare them to those in (56). When the subject is relativized in English, only two of the three options available in direct object relativization are grammatical. The ungrammaticality of (55c-c') illustrates that subject relatives must be introduced by either who/which or that. Pesetsky does not account for this asymmetry.

(55)  
a. the man who saw Bill 
a'. the book which caused a scandal  
b. the man that saw Bill  
b'. the book that caused a scandal  
c. *the man saw Bill  
c'. *the book caused a scandal  
     (ungrammatical as an NP)

(56)  
a. the man who Bill saw  
a'. the book which Bill read  
b. the man that Bill saw  
b'. the book that Bill read  
c. the man Bill saw  
c'. the book Bill read

The ungrammaticality of (55c-c') is sometimes referred to as the anti-that-trace effect. The (seemingly) reverse phenomenon (the that-trace effect) is found in the context of long movement (see chapter 4, which is entirely devoted to this type of subject-object asymmetry). Whenever a subject is extracted from the complement of an epistemic verb, the otherwise optional complementizer that is left unpronounced:

(57)  
a. Who do you think (*that) saw Bill?  
b. Who do you think (that) Bill saw?

The problematic nature of this contrast between relative clauses and long movement leads C&L to adding the descriptive unless-clause to the definition of the That-Trace Filter in (58) (see chapter 4). Note that (58) does not rule out the examples in (55c-c'). It only implies that the examples in (55b-b') are grammatical.

(58)  
*[S that [NP e] ...], unless S' or its trace is in the context: [NP NP ___]

In the P&P framework, subject-object asymmetries are reduced to the Empty Category Principle (ECP, see chapter 4). This principle states that traces have to be locally governed. On the traditional assumption that both the relative clauses in (55)
and the complement clause in (57a) are CPs, and that relative clauses without an overt relative pronoun have the operator \( Op \) in SpecCP, the relevant structures are as given in (59) and (60).

(59) \( \text{Subject relatives:} \)
   a. \([\text{CP } Op_t \text{ [c that]} [\text{IP } t_i \text{ saw Bill}]]\)
   b. \(\ast[\text{CP } Op_t \text{ [c } \emptyset [\text{IP } t_i \text{ saw Bill}]]\)

(60) \( \text{Long subject movement:} \)
   a. \([\text{CP } t_i \text{ [c } \emptyset [\text{IP } t_i \text{ saw Bill}]]\)
   b. \(\ast[\text{CP } t_i \text{ [c that]} [\text{IP } t_i \text{ saw Bill}]]\)

In both cases, SpecIP contains a movement trace. Paradoxically, this trace is licensed (governed, in ECP-terminology) in the relative clause when the complementizer is pronounced, and in the complement clause when it is deleted.

3.2.1. The pronunciation of unmarked relative pronouns

In D&E, however, a uniform CP analysis of subject relatives is not very likely. Relative pronouns move to their clause-initial position if the constraint PARSE-rel, given in (61), outranks STAY.

(61) PARSE-rel: Pronounce constituents in the same position as their [+rel] feature.

Recall that formal features either move in isolation and adjoin to a head with a matching feature, or they carry along the whole category to the specifier of this head (see chapter 2). Only in the latter case is the corresponding PARSE-F constraint satisfied. In chapter 2, we located the [+rel] feature as well as the [+wh] feature in I, following essentially Rizzi (1991). Hence, in order to satisfy PARSE-rel, the relative pronoun must be pronounced in the minimal domain of I, i.e. in SpecIP or any higher specifier within the functional domain in question. In English, French, and Dutch, pronounced relative pronouns always appear in clause-initial position, which indicates that PARSE-rel outranks STAY.

Because the [+rel] feature is located in I, relative subject pronouns need not move to SpecCP to satisfy PARSE-rel. Movement to SpecIP suffices. In this position, the relative subject pronoun can check both its [+rel] feature and its Case and q-features. In other words, the IPs in (62e-f) are competition with the CPs in (62a-d). Clearly, the IP options will be preferred by STAY and NOSTRUC, since they are composed of fewer traces and less structure.\(^{14}\)

\(^{14}\) PARSE-rel is omitted from the tableaux in this section for expository reasons, since only candidates that satisfy this constraint are serious competitors. This is related to the fact that relative subject pronouns can check their [+rel] feature in their case position. Unlike relative subject pronouns, relative object pronouns cannot check their [+rel] feature in their case position. Therefore, PARSE-rel will be included in the tableaux in sections 3.3 and 3.4.
STAY outranks LE(VEP) and NOSTRUC in English, a ranking that will be motivated in chapter 4. Relative clauses containing *who* are evaluated in tableau (63). Since *who* is marked for the feature [+human], only options in which the relative pronoun is pronounced are given; structures in which *who* is deleted violate the inviolable recoverability condition in Gen/C\(_{HL}\). STAY eliminates candidates (63a-b), since they contain one more trace than (63c) does. Hence, (63c) is optimal and correctly predicted to be grammatical.

Relative clauses containing pronominal *that* are evaluated in tableau (64). The candidate set in (64) is larger than the one in (63), since it also contains structures in which the unmarked relative pronoun *that* is deleted. Like in (63), the CP candidates incur fatal violations of STAY. This leaves us with (64e-f). Both candidates are predicted to be optimal because they only incur a violation of LE(VEP). This outcome is incorrect because of the unacceptability of (64f).
Broekhuis & Dekkers propose, however, that (64f) is not in the candidate set to begin with because it violates the recoverability principle in (48) and therefore cannot be produced by Gen/C_{HL}. They argue that A-chains qualify as meaningful elements because they carry a θ-role, and that consequently, elements in Case and thematic positions (e.g. *that* in (64e-f)) cannot be deleted, irrespective of whether the moved element itself has semantic content.

Let us formulate this in more general terms. Any θ-marked chain must contain one phonetically realized link. This can happen in three ways. First, if no movement takes place, the head of the trivial θ-marked chain must be pronounced in its base position. Second, if Case movement has applied, the head of the chain must be pronounced in its Case position. And third, recoverability can be satisfied by creating a chain containing (i) a trace in the thematic position in question, and (ii) a Case-marked trace. Case-marked traces count as phonetically visible material. The paradigm in (65) shows that a Case-marked trace intervening between want and to prevents wanna-contraction. PRO, on the other hand, does not give rise to such an effect (see Chomsky, 1981).

(65) a. Who do you wanna see?
   a'. Who do you want PRO to see?
   b. *Who do you wanna see Bill?
   b'. Who do you want to see Bill?

In tableau (64), candidate (f) violates recoverability because *that* is deleted although it is in a θ-marked chain. All other candidates do satisfy recoverability because *that* is pronounced (candidates (a), (b), (e)) or in an A'-chain (candidates (a-d)).

Hence, the evaluation of clauses containing relative *that* as a subject proceeds as in tableau (66). The candidate set lacks (64f). As a result, only candidate (66e) is optimal, which accounts for the ungrammaticality of (55c-c'). Notice that accordingly, *that* in (55b-b') is analyzed as a relative pronoun, rather than as a complementizer, which strengthens the claim made in section 2.4 above that English disposes of the unmarked relative pronoun *that*. 
Furthermore, if \textit{STAY} again outranks \textit{LE(VEP)} and \textit{NOSTRUC}, we predict a similar pattern for French. Like English, French shows a subject-object asymmetry in relative clauses. Subject relatives are introduced by \textit{qui}, whereas direct object relatives are introduced by \textit{que}.

(67) a. l'homme qui a vu Bill.
    the-man \textit{qui} has seen Bill
    ‘the man who has seen Bill’

b. l'homme que Bill a vu.
    the-man \textit{que} Bill has seen
    ‘the man Bill has seen’

Subject relatives are evaluated in tableau (68). The CP candidates (68a-d) are ruled out because they violate the high-ranked \textit{STAY}. The only remaining candidate is the IP option in (68e).\footnote{If \textit{STAY} had been ranked lower, candidate (68c) would have been optimal. This would have led to the incorrect prediction that \textit{l'homme qu'a vu Bill} (‘the man who saw Bill’) is grammatical. Notice that \textit{l'homme qu'a vu Bill} is grammatical in French if it is interpreted as a direct object relative clause (‘the man who Bill saw’). We will return to this point in detail in chapter 5.} Like in English, the counterpart of (68e) in which the relative pronoun \textit{qui} in SpecIP is deleted cannot be produced by Gen because this leads to a violation of the recoverability condition given in (48).

(68) French

<table>
<thead>
<tr>
<th>English</th>
<th>STAY</th>
<th>LE (VEP)</th>
<th>NOSTRUC</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. l’homme [CP qui, que [IP t, a vu Bill]]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b. l’homme [CP qui, que [IP t, a vu Bill]]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>c. l’homme [CP qui, que [IP t, a vu Bill]]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>d. l’homme [CP qui, que [IP t, a vu Bill]]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>e. l’homme [IP qui a vu Bill]</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

In other words, we correctly predict that the relative pronoun \textit{qui} is pronounced if it is a subject. Moreover, the examples in (69) provide evidence for the claim made in section 2.5 above that in non-prepositional contexts, \textit{qui} is an unmarked relative pronoun. In these examples, \textit{qui} is clearly indifferent to number and gender features, and it is compatible with both human and non-human antecedents. As such, it does not contain any features that qualify as semantic
ON THE LEFT-PERIPHERY OF THE RELATIVE CLAUSE

content. Consequently, it should be freely deletable after A'-movement has applied. However, since economy prefers relative subject pronouns to be parsed in their Case position, this A'-movement does not take place. Consequently, deletion of qui, like deletion of that in English subject relatives, violates recoverability.

(69)

a. le livre qui a fait scandale
   the book qui has made scandal
   'the book which caused a scandal'
b. la femme qui travaille
   the woman qui works
   'the woman who is working'  
c. les discours qui charment
   the words qui charm
   'the words which charm'  
d. les hommes qui dorment
   the men qui sleep
   'the men who are sleeping'

In sum, the peculiar behavior of relative subject pronouns can be related to reduced clause size, along the lines of the analysis of do-support presented in chapter 1. This leads to a uniform analysis of subject relatives in English and French. The subject-object asymmetries in (55)-(56) and (67) follow from the fact that relative direct object pronouns must undergo A'-movement. Consequently, as we will see in section 3.4, they are deleted.

3.2.2. Purity of extended projection

We now predict that doubly filled Comps are universally unacceptable in subject relatives. Recall that we related the grammaticality of doubly filled Comp structures to the relatively high rank of OB-HD. However, OB-HD prefers pronunciation of C only if the presence of C is required to satisfy other constraints. In tableau (70), the grammar-independent evaluation of subject relatives containing a non-deletable pronoun is given. Since (70c) harmonically binds the other two candidates (among which the doubly filled Comp structure (70a)), this candidate will win under any ranking.

(70)

<table>
<thead>
<tr>
<th></th>
<th>LE</th>
<th>NO STRUC</th>
<th>TEL</th>
<th>OB-HD</th>
<th>STAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b.</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>c.</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This clearly does not correspond to the facts. Example (30a), repeated in (71), shows that the Aarschot dialect allows doubly filled Comps in subject relatives. Since doubly filled Comps presuppose the presence of CP, candidate (70c) must be ruled out on independent grounds in this variety of Dutch.
It is argued by Vikner (1997) that the presence or absence of CP depends on the rank of Grimshaw’s PURE-EP, which prohibits movement to the perfect head of this node (see also Broekhuis, 1998; Grimshaw, 1997).\(^{18}\)

**PURITY OF EXTENDED PROJECTION (PURE-EP):**

No movement into the highest head of a subordinate extended projection.

Among other things, this means that whenever V-to-I movement takes place, and I is the highest head in the subordinate clause, PURE-EP is violated. Violation of PURE-EP can be circumvented by the presence of a CP on top of the IP, provided that no movement takes place to the head of this protective CP:

(73) a. \([\text{IP} \ldots [\text{I} V_j] \text{[VP} \ldots t_i \ldots ]]\) ⇒ violation of PURE-EP

b. \([\text{IP} \ldots [\text{I} V_j] \text{[VP} \ldots V \ldots ]]\) ⇒ satisfaction of PURE-EP

d. \([\text{CP IP} \ldots [\text{I} V_j] \text{[VP} \ldots t_i \ldots ]]\) ⇒ satisfaction of PURE-EP

This means that if PURE-EP is high-ranked, V-to-I movement will force the presence of CP. Traditionally, Dutch is analyzed as a language in which IP is head-final. The tensed verb moves to the head of this IP. Accordingly, the embedded clause in (74a) has the structure in (74b).\(^{19}\)

(74) a. \(\text{Ik hoorde dat Herman Brood op een nieuwe brommer rijdt.}\)
I heard that Herman Brood on a new moped rides

'\(\text{I heard that Herman Brood rides a new moped.}\)'

b. \([\text{CP dat [IP Herman Brood [VP op een nieuwe brommer [V \ldots t_i]] [I rijdt_i]]]}\]

If this analysis carries over to the Aarschot dialect, the occurrence of doubly filled Comps in subject relatives suggests that PURE-EP is dominant in the Aarschot dialect. This is shown in tableau (75). The high-ranked PURE-EP eliminates candidate (75c). The remaining two options have an equal score on

---

\(^{18}\) According to Grimshaw, PURE-EP also prohibits adjunction to the highest node of the extended projection. See chapter 4 for more detailed study of the effects of this constraint.

\(^{19}\) See Zwart (1997) for an alternative analysis which is in accordance with Kayne’s (1994) universal base hypothesis. Zwart argues that the Dutch IP is head-medial and that only the formal features of V move to I (and subsequently to C). This is incompatible with the analysis presented here because PURE-EP is not sensitive to movement of formal features. We argued in chapter 2 that in both main and subordinate clauses in English, only the formal features of V move to I. In chapter 4, we will argue that PURE-EP outranks LE(VEP) and NOSTRUC. If this is correct, movement of isolated formal features to I should not violate PURE-EP when I is the highest head in the extended projection, since this would lead to the prediction that CPs are obligatorily present in English, which is inconsistent with the analysis presented in this chapter and chapter 4. Consequently, if the obligatoriness of CP in Dutch is due to the high rank of PURE-EP, overt V-to-I movement must take place in Dutch. See also Broekhuis (1998), who follows Zwart’s assumption that the Dutch IP is head-medial, and argues that PURE-EP forces the presence of CP because a light verb moves to I.
ON THE LEFT-PERIPHERY OF THE RELATIVE CLAUSE

LE(VEP), NOSTRUC, STAY, as well as on the tie between TEL and OB-HD. Consequently, they are both correctly predicted to surface.20

(75)

Aarschot dialect

<table>
<thead>
<tr>
<th>P-EP</th>
<th>LE (VEP)</th>
<th>NOSTR</th>
<th>STAY</th>
<th>TEL</th>
<th>OB-HD</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [CP di₃ [IP₄ t₅] kapot t₆ [i zienj₃]]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>* &gt;</td>
<td></td>
</tr>
<tr>
<td>b. [CP di₅ da [IP₄ t₅] kapot t₆ [i zienj₃]]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>&lt;*</td>
<td></td>
</tr>
<tr>
<td>c. [IP₃ di kapot t₅ [i zienj₃]]</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The evaluation of subject relatives containing the deletable pronoun da (see example (30b-b') above) is given in tableau (76). Candidate (76c) is optimal because it is the only candidate that does not violate the high-ranked PURE-EP or LE(VEP). Notice that the IP option in (76e) violates both these constraints.

(76)

Aarschot dialect

<table>
<thead>
<tr>
<th>P-EP</th>
<th>LE (VEP)</th>
<th>NOSTR</th>
<th>STAY</th>
<th>TEL</th>
<th>OB-HD</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [CP da₃ , da [IP₄ t₅, t₆ ] valt₆ [i ]]</td>
<td>*</td>
<td>!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. [CP da₃ , da [IP₄ t₅, t₆ ] valt₆ [i ]]</td>
<td>*</td>
<td>!</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| c. [CP da₅ , da [IP₄ t₅, t₆ ] valt₆ [i ]] | * | * | * | * | *
| d. [CP da₅ , da [IP₄ t₅, t₆ ] valt₆ [i ]] | * | * | * | * | *
| e. [IP₃ da₅ , da [IP₄ t₅, t₆ ] valt₆ [i ]] | * | ! | | | |

Let us assume that Standard Dutch and the Aarschot dialect differ only with respect to the mutual ranking of TEL and OB-HD (TEL outranks OB-HD in Standard Dutch, whereas these constraints are in a tie in the Aarschot dialect). Hence, PURE-EP is in the same stratum in both varieties of Dutch. This means that Standard Dutch should lack any sign of subject-object asymmetries in relative clauses. The examples in (77) and (78) show that this is correct.

20 Note that the mutual ranking of LE(VEP), NOSTRUC, and STAY is immaterial in tableaux (75)-(76) and (79)-(80). PURE-EP must outrank NOSTRUC, STAY, TEL, and OB-HD. The tie between TEL and OB-HD is responsible for the fact that doubly filled Comps are optional in the Aarschot dialect (see section 2.2 above). Note further that the violations of STAY caused by verb movement are ignored in tableau (75) and subsequent tableaux. This is done for expository reasons only.
Subject relatives:

a. de vrouw die werkt
   the woman die works
   'the woman who is working'

b. de kinderen die spelen
   the children die play
   'the children who are playing'

c. het kind dat speelt
   the child dat speelt
   'the child who is playing'

Object relatives:

a. de vrouw die ik gisteren zag
   the woman die I yesterday saw
   'the woman I saw yesterday'

b. de kinderen die ik gisteren zag
   the children die I yesterday saw
   'the children I saw yesterday'

c. het boek dat ik gisteren las
   the book dat I yesterday read
   'the book I read yesterday'

The evaluation of subject relatives containing die is given in tableaux (79).

PURE-EP eliminates candidate (79c). Both remaining options violate LE(VEP), NOSTRUC, and STAY. Since (79a) violates TEL, whereas (79b) does not, the latter candidate is optimal.

Object relatives based on the relative pronoun dat are evaluated in tableau (80). Candidate (80c) is optimal because no other candidate satisfies both LE(VEP) and PURE-EP. In other words, dat in (77b) should be analyzed as a complementizer.
Standard Dutch

<table>
<thead>
<tr>
<th></th>
<th>P-EP</th>
<th>LE (VEP)</th>
<th>NO STR</th>
<th>STAY</th>
<th>TEL</th>
<th>OB-HD</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [CP dat₁ dat [IP t₁ t₂ [j speelt₁]]]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>**</td>
<td>*</td>
</tr>
<tr>
<td>b. [CP dat₁ dat [IP t₁ t₂ [j speelt₁]]]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>c. [CP dat₁ dat [IP t₁ t₂ [j speelt₁]]]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>d. [IP dat t₁ [j speelt₁]]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>e. [IP dat t₁ [j speelt₁]]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

PURE-EP has no effect on the outcome of the evaluation of English subject relatives in (63) and (64). We established in chapters 1 and 2 that English lacks V-to-I movement. As a result, subordinate IPs will not violate PURE-EP. French, on the other hand, is traditionally analyzed as a V-to-I language (see again chapters 1 and 2). This means that in this language, subordinate IPs do violate PURE-EP. If PURE-EP outranks STAY, as in tableau (81), the l'homme qui travaille, rather than l'homme que travaille, is predicted to be grammatical, which is incorrect.²¹

French

<table>
<thead>
<tr>
<th></th>
<th>P-EP</th>
<th>STAY</th>
<th>LE (VEP)</th>
<th>NO STR</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. la femme [CP qui₁ que [IP t₁ travaille]]</td>
<td>*</td>
<td>*!</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b. la femme [CP qui₁ que [IP t₁ travaille]]</td>
<td>*</td>
<td>*!</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>c. la femme [CP qui₁ que [IP t₁ travaille]]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>d. la femme [CP qui₁ que [IP t₁ travaille]]</td>
<td>*</td>
<td>*!</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>e. la femme [IP qui travaille]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Hence, PURE-EP must be lower-ranked in French. Tableau (82) shows that if this constraint is dominated by at least STAY, its effect is annulled. In chapters 4 and 5, we will give further evidence for the violability of PURE-EP in (Old and Modern) French.

French

<table>
<thead>
<tr>
<th></th>
<th>STAY</th>
<th>P-EP</th>
<th>LE (VEP)</th>
<th>NO STR</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. la femme [CP qui₁ que [IP t₁ travaille]]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b. la femme [CP qui₁ que [IP t₁ travaille]]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>c. la femme [CP qui₁ que [IP t₁ travaille]]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>d. la femme [CP qui₁ que [IP t₁ travaille]]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>e. la femme [IP qui travaille]</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

²¹ TEL and OB-HD are omitted from tableau (81) because they play no role in the evaluation because of their low ranking.
In sum, subject-object asymmetries arise in relative clauses whenever STAY outranks LE(VEP) in languages which lack V-to-I movement (English) or rank PURE-EP in a relatively low stratum (French).

### 3.3. Prepositional relatives

In English, there are two types of prepositional relatives. One option is to pied-pipe the preposition with the relative pronoun, as in (83). This option is only possible with wh-pronouns; relative that cannot be pied-piped.

(83)

a. the book about which I talked yesterday  
b. *the book about that I talked yesterday

Alternatively, the preposition is stranded in its base position. The examples in (84) show that in this case, the relative clause is introduced by either which, that, or by none of these two elements. The grammaticality of (84c) is particularly interesting. On the assumption that all relative clauses without an overt relative pronoun result from the deletion of that, that seems to be a legitimate complement of a preposition. This means that we should wonder, among other things, why that is always deleted in the prepositional construction. This is not a trivial question, since complements of prepositions which do not A'-move out of the PP cannot be deleted. Because they are not in a chain with a Case-marked trace, deletion would lead to a violation of condition (48).

(84)

a. the book which I talked about yesterday  
b. the book that I talked about yesterday  
c. the book I talked about yesterday.

In section 3.2, we argued that relative pronouns move to clause-initial position to satisfy PARSE-rel. In this respect, relative pronouns behave on a par with wh-phrases: both move to a specifier in the minimal domain of I to satisfy a PARSE-F constraint. However, contrary to wh-phrases, relative pronouns are often deleted. Whenever they are, there can be no mismatch between the position of the formal and the phonological features of the relative pronoun. Since the rationale of PARSE-F constraints is the prevention of such mismatches, they will be silent about the position of deleted elements. In other words, PARSE-rel is irrelevant whenever the relative pronoun is deleted.

So far, we have established that in English, STAY outranks LE(VEP), LE(VEP) and NOSTRUC are in a tie, and PARSE-rel outranks STAY. If TEL is lower-ranked than originally proposed by Pesetsky, this leads to the ranking in (85).

(85)  

\[
\text{English: } \text{PARSE-rel} \gg \text{STAY} \gg \text{LE(VEP)} \sim \text{NOSTRUC} \gg \text{TEL}.
\]
Let us start with the evaluation of \textit{wh}-relatives. Since \textit{which} and \textit{who} cannot be deleted, \textsc{parse-rel} will always be violated whenever they do not move to a clause-initial specifier. This is what eliminates candidate (e) in tableau (86). The other four candidates have an equal score on \textsc{stay} as well as on \textsc{le(vep)} $\leftrightarrow$ \textsc{n ostruc}. However, the low-ranked \textsc{tel} prefers deletion of the complementizer, with the result that candidates (86b) and (86d) are correctly evaluated as optimal.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|}
\hline
 & \textsc{p-rel} & \textsc{stay} & \textsc{le(vep)} & \textsc{tel} \\
\hline
\textbf{a.} [CP about which [C that] [IP I talked \textit{t}]] & * & * & * & *! \\
\hline
\textbf{b.} [CP about which [C that] [IP I talked \textit{t}]] & * & * & * \\
\hline
\textbf{c.} [CP which [C that] [IP I talked about \textit{t}]] & * & * & * & *! \\
\hline
\textbf{d.} [CP which [C that] [IP I talked about \textit{t}]] & * & * & * \\
\hline
\textbf{e.} [IP I talked about which] & *! & * & * & *! \\
\hline
\end{tabular}
\caption{(86) \textit{English}}
\end{table}

Let us now turn to \textit{that}-relatives. The structures in (87) cannot be generated, and are, therefore, not members of the candidate set. In all three cases, deletion of the relative pronoun would not be recoverable because it is not in a chain with a Case-marked trace.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|}
\hline
 & \textsc{p-rel} & \textsc{stay} & \textsc{le(vep)} \\
\hline
\textbf{a.} [CP about that [C that] [IP I talked \textit{t}]] & * & * & * \\
\hline
\textbf{b.} [CP about that [C that] [IP I talked \textit{t}]] & * & * & * \\
\hline
\textbf{c.} [IP I talked about that] & * & * & * \\
\hline
\end{tabular}
\caption{(87)}
\end{table}

The structures in (88), on the other hand, are contained in the candidate set, since there is no principle of \textsc{gen/cs} that excludes them. In these structures, the relative pronoun has adjoined to the PP. This movement leaves a Case-marked trace. Consequently, \textit{that} can be deleted without violating recoverability.

\textsuperscript{23} In tableau (86), \textsc{stay} outranks \textsc{tel}. Since English lacks doubly filled Comps in relative clauses, \textsc{tel} outranks \textsc{ob-hd} (see section 2.2 above). Consequently, \textsc{stay} outranks \textsc{ob-hd}. In chapter 1, however, we have established that \textsc{ob-hd} outranks \textsc{stay}. This contradiction in the English constraint ranking disappears if we are prepared to assume that the higher-ranked \textsc{stay} prohibits traces of head-movement, while the lower-ranked \textsc{stay} takes XP traces into consideration. In future research, it should be investigated if this distinction has a firm empirical basis. Notice that the unification of economy proposed in chapter 2 is a fully independent issue because it concerns the opposition economy of movement versus economy of overt movement.

\textsuperscript{24} This point should be underlined with force, since the representations in (88) might be considered controversial from a traditional perspective. Recall that in the present version of \textsc{d&e}, movement need not result in feature checking (cf. Broekhuis, 1998; Broekhuis \& Dekkers, to appear). As long as the structures in (88) do not violate any principle of \textsc{gen/cs}, and converge at \textsc{lf}, they must be taken into consideration.

\textsuperscript{25} Recall that features can be checked in a sisterhood configuration (see chapter 2). Consequently, \textit{that} in (88) can check its Case feature in its base position.
(88) a. \[IP {I talked [pp about \_t_i]}] \\
b. \[IP [C that] [IP {I talked [pp about \_t_i]}] \\
c. \[IP [C that] [IP {I talked [pp about \_t_i]}]

The evaluation is given in tableau (89). Candidates (89i-j) are excluded by PARSE-rel, since they contain a relative pronoun that is pronounced outside the minimal domain of I. Notice that candidates (89g-h) and (89k) do not violate PARSE-rel because this constraint is insensitive to deleted elements. STAY does not decide between any of the remaining candidates. However, LE(VEP) $\nleq$ NOSTRUC does. Candidates (89d), (89g), and (89k) are optimal because they violate only one of the two tied constraints, whereas the others violate both of them. TEL is irrelevant.

(89)

<table>
<thead>
<tr>
<th>English</th>
<th>P-rel</th>
<th>STAY</th>
<th>LE (VEP)</th>
<th>NO STR</th>
<th>TEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [CP about that [C that] [IP {I talked _t_i}]]</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. [CP about that [C that] [IP {I talked _t_i}]]</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>c. [CP that [C that] [IP {I talked about _t_i}]]</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>d. [CP that [C that] [IP {I talked about _t_i}]]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. [CP that [C that] [IP {I talked about _t_i}]]</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>f. [CP that [C that] [IP {I talked about _t_i}]]</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>g. [CP that [IP {I talked [pp about _t_i]}]]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. [CP [C that] [IP {I talked [pp about _t_i]}]]</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>i. [IP {I talked about that}]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>j. [IP [I talked [pp about _t_i]}]</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>k. [IP [I talked [pp about _t_i]}]</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

In sum, the examples in (90) correspond to the structures in (91). The fact that (90a) is compatible with both (90a) and (90a') should be considered the result of the fact that the position of deleted relative pronouns is irrelevant, rather than an instance of structural ambiguity. In fact, both examples in (90) are compatible with other structures than the ones given in (91), such as those in which the deleted relative pronoun is adjoined to VP.26

(90) a. the book that I talked about \\
b. the book I talked about

26 For this reason, structures corresponding to candidates (89g-h), as well as those in which deleted relative pronouns have moved to other adjunction sites will be omitted from subsequent tableaux in this chapter (the relevant tableaux are: (92), (105), (107), and (108)).
Prepositional relatives in English provide an argument in favor of the hypothesis that relative clauses containing *wh*-pronouns and those containing *that* belong to separate candidate sets (see section 2.4 above). In tableau (92), the structures in (86) and (89) are evaluated as one candidate set. This leads to the incorrect prediction that only candidates (92i) and (92n) are optimal because there are no other structures that satisfy PARSE-*rel* and incur only one mark on the tie between LE(VEP) and NOSTRUC. In other words, we would incorrectly predict the *book about which I talked* and the *book which I talked about* to be ungrammatical.\(^{27}\)

<table>
<thead>
<tr>
<th>(\text{English} )</th>
<th>(\text{P-rel} )</th>
<th>(\text{STAY} )</th>
<th>(\text{LE(VEP)} )</th>
<th>(\text{NO STR} )</th>
<th>(\text{TEL} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ([\text{CP about which}, [\text{C that}] [\text{IP I talked about } t]])</td>
<td>*</td>
<td>*</td>
<td>&gt;</td>
<td>&lt;</td>
<td>*</td>
</tr>
<tr>
<td>b. ([\text{CP about which}, [\text{C that}] [\text{IP I talked about } t]])</td>
<td>*</td>
<td>*</td>
<td>&gt;</td>
<td>&lt;</td>
<td>*</td>
</tr>
<tr>
<td>c. ([\text{CP which}, [\text{C that}] [\text{IP I talked about } t]])</td>
<td>*</td>
<td>*</td>
<td>&gt;</td>
<td>&lt;</td>
<td>*</td>
</tr>
<tr>
<td>d. ([\text{CP which}, [\text{C that}] [\text{IP I talked about } t]])</td>
<td>*</td>
<td>*</td>
<td>&gt;</td>
<td>&lt;</td>
<td>*</td>
</tr>
<tr>
<td>e. ([\text{IP I talked about which}])</td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. ([\text{CP about that}, [\text{C that}] [\text{IP I talked about } t]])</td>
<td>*</td>
<td>*</td>
<td>&gt;</td>
<td>&lt;</td>
<td>*</td>
</tr>
<tr>
<td>g. ([\text{CP about that}, [\text{C that}] [\text{IP I talked about } t]])</td>
<td>*</td>
<td>*</td>
<td>&gt;</td>
<td>&lt;</td>
<td>*</td>
</tr>
<tr>
<td>h. ([\text{CP that}, [\text{C that}] [\text{IP I talked about } t]])</td>
<td>*</td>
<td>*</td>
<td>&gt;</td>
<td>&lt;</td>
<td>*</td>
</tr>
<tr>
<td>i. ([\text{CP that}, [\text{C that}] [\text{IP I talked about } t]])</td>
<td>*</td>
<td>*</td>
<td>&gt;</td>
<td>&lt;</td>
<td>*</td>
</tr>
<tr>
<td>j. ([\text{CP that}, [\text{C that}] [\text{IP I talked about } t]])</td>
<td>*</td>
<td>*</td>
<td>&gt;</td>
<td>&lt;</td>
<td>*</td>
</tr>
<tr>
<td>k. ([\text{CP that}, [\text{C that}] [\text{IP I talked about } t]])</td>
<td>*</td>
<td>*</td>
<td>&gt;</td>
<td>&lt;</td>
<td>*</td>
</tr>
<tr>
<td>l. ([\text{IP I talked about that}])</td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>m. ([\text{IP I talked [PP that], [PP about } t]])</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>n. ([\text{IP I talked [PP that], [PP about } t]])</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

Another advantage of the present analysis is the fact that (89b) (= (92g)) is eliminated in a principled way. Broekhuis & Dekkers have to postulate the ad-hoc constraint in (93) to prevent that pronounced pronominal *that* is pied-piped.

\[(93) \quad *[\text{CP [PP P that] C [IP ...]}]\]

\(^{27}\) In retrospect, (ia) should have been included in tableau (86). However, since this structure violates the high-ranked PARSE-*rel*, the omission is innocent. Notice that (ib) is excluded from the candidate set because it violates recoverability.

(ia)  a. \([\text{IP I spoke [PP which], [PP about } t]]\)
    b. \([\text{IP I spoke [PP which], [PP about } t]]\)
The core of Broekhuis & Dekkers' problem is that they follow Pesetsky and assume a tie between LE(VEP) and TEL. This tie does not distinguish between candidate (89b) and (89d), as tableau (94) shows.

(94)

<table>
<thead>
<tr>
<th>English</th>
<th>LE (VEP)</th>
<th>TEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [CP about that, [C that [IP I talked t]]]</td>
<td>LE</td>
<td>TEL</td>
</tr>
<tr>
<td>b. [CP that, [C that [IP I talked about t]]]</td>
<td>LE</td>
<td>TEL</td>
</tr>
</tbody>
</table>

This situation does not arise in an analysis based on economy of representation. Both candidates violate NOSTRUC. This is shown in tableau (95). The violation of LE(VEP) incurred by candidate (95a) is fatal.

(95)

<table>
<thead>
<tr>
<th>English</th>
<th>LE (VEP)</th>
<th>NOSTRUC</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [CP about that, [C that [IP I talked t]]]</td>
<td>LE</td>
<td>NOSTRUC</td>
</tr>
<tr>
<td>b. [CP that, [C that [IP I talked about t]]]</td>
<td>LE</td>
<td>NOSTRUC</td>
</tr>
</tbody>
</table>

Broekhuis & Dekkers propose a similar ad-hoc constraint for Dutch, which is given in (96). This constraint rules out the examples (97a-b), which show that d-pronouns cannot be pied-piped. However, the status of (96) is different from that of (93). Dutch d-pronouns, unlike English that, cannot be merged in the complement position of prepositions, irrespective of whether the preposition is subsequently stranded or pied-piped; also the examples in (97c-d) are ungrammatical. This illustrates that Dutch prepositions are not subcategorized for these pronouns.

(96) *ICP [PP die/dat] C [IP ]

(97) a. *het boek over dat ik sprak
the book about dat I talked
‘the book I talked about’
b. *de man over die ik sprak
the man about die I talked
‘the man I talked about’
c. *het boek dat ik over sprak
the book dat I about talked
‘the book I talked about’
d. *de man die ik over sprak
the man die I about talked
‘the man I talked about’

Instead of d-pronouns, Dutch invariably merges w-pronouns in the prepositional construction. If the antecedent is human, wie is used. Wat, the non-human counterpart of wie in interrogatives and free relatives, is illicit in the prepositional construction. Instead, the R-pronoun waar is used:
The same observation can be made for other types of pronouns. Prepositions can be combined with, for instance, the accusative personal pronouns *hem, haar* and *hen* whenever these refer to humans. Accusative pronouns which do not refer to human entities (the personal pronoun *het*, or, for instance, the demonstrative pronouns *die* en *dat*), on the other hand, are not found in the complement of a preposition. Instead, R-pronouns are used. Compare (98) with (99).

(99) a. Ik heb over hem/haar/hen gesproken.
I have about him/her/them talked
‘I have talked about him/her/them.’

b. *Ik heb over het/dat/die gesproken.
I have about it/those talked
‘I have talked about it/those.’

b’. Ik heb daarover gesproken.
I have there-about talked
‘I have talked about it/those.’

Since the relative pronouns *die* and *dat*, like the personal and demonstrative pronouns in (99b), are not marked with the feature [+human], Broekhuis & Dekkers’ (96) should be reduced to the more general condition that only [+human] pronouns and R-pronouns combine with prepositions. In English, such a selection restriction does not exist: the relative pronouns *which* and *that* (as well as, for instance, the personal pronoun *it*), see the grammatical English translation of (99b), may appear in the complement of a preposition.

*Wie* obligatorily pied-pipes the preposition. Preposition stranding is only allowed with R-pronouns like *waar*:

(100) a. *de man wie ik over sprak
the man who I about talked
‘the man I talked about’

b. het boek waar ik over sprak.
the book where I about talked
‘the book I talked about’

Notice that *waar* cannot be deleted in (100b), although it is in a chain with a Case-marked trace, as shown in (101). This must be due to its featural content.
(101) a. het boek waar dat ik [over i] sprak.
    b. *het boek waar dat ik [over i] sprak.

Whereas *wie is clearly [+human], *waar is found in combination with both human and non-human antecedents. Broekhuis & Dekkers note, however, that not all speakers accept [+human] *waar:

(102) a. %de man waarover ik sprak
    the man where-about I talked
    ‘the man I talked about’
    b. %de man waar ik over sprak.
    the man where I about talked
    ‘the man I talked about’

It seems that this is sufficient to qualify *waar as a marked pronoun. As a result, the deletion of *waar violates recoverability, irrespective of whether it is in a chain with a Case-marked trace or not.

Finally, in French, preposition stranding is disallowed in general, which means that the relative pronoun does not appear in a chain with a Case-marked trace. Consequently, it is obligatorily pronounced, irrespective of its featural content. The relevant examples in (46) and (47) are repeated in (103):

(103) a. l’homme sous lequel la marine française s’était relevée contre l’Angleterre
    b. une retraite après laquelle je soupire
    c. l’homme à qui je parle

In conclusion: preposition stranding is a necessary condition for deleting the relative pronoun in the prepositional construction. If the preposition is pied-piped, the relative pronoun heads a trivial θ-marked chain. Consequently, it must be pronounced to avoid a violation of the recoverability condition. A further effect of this condition is that the deleted relative pronoun itself is not allowed to be marked with θ-features or other semantic features.

3.4. Direct object relatives

In this final section, we will examine whether the analysis of subject and prepositional relatives presented in sections 3.2 and 3.3 is compatible with the properties of direct object relatives observed earlier in this chapter.

Let us start with English. The evaluation of relative clauses containing a wh-pronoun is given in tableau (104). PARSE-*el eliminates (104c-d) because which is not parsed in the minimal domain of I (notice that (104d) illustrates that movement of a pronounced relative pronoun to a position outside the minimal domain leads to suboptimality). The other two candidates have an equal score on STAY, LE(VEP), and NOSTRUC. However, (104b) does not violate TEL, whereas (104a) does, with the result that the former structure is optimal.
Tableau (105), which evaluates relative clauses containing pronominal that, mentions more candidates than tableau (104) because that is recoverable after deletion if it has moved out of its base position. Like (104c-d), candidates (105e-f) violate PARSE-rel. The remaining candidates violate STAY. The tie between LE(VEP) and NOSTRUC eliminates (105a-b) and (105d) because they violate both constraints, contrary to (105c) and (105g). Due to the irrelevance of TEL, (105c) and (105g) are optimal. As in tableau (92), an IP structure in which silent that has moved to a position outside the minimal domain of I, i.e. (105g), is among the optimal candidates. 

Dutch direct object relatives containing the non-recoverable pronoun die are evaluated in tableaux (106). Candidate (106c) is ungrammatical because it violates the high-ranked PARSE-rel. Options (106a-b) have an equal score on all constraints except for the low-ranked TEL. This constraint prefers (106b) over (106a). Hence, (106b) is optimal.

---

28 The remarks made in footnote 24 with respect to (88) also apply to (105g).

29 The ranking of PURE-EP and PARSE-rel is irrelevant in tableau (106). See section 3.2.2 above for further comments on the Dutch ranking. PURE-EP is left unmentioned in the English tableaux because this constraint has no effect in languages lacking V-to-I movement.
When we evaluate structures containing the unmarked pronoun *dat*, we have to consider candidates in which the pronoun is deleted and those in which it is not, like we did in tableau (105) for English. In tableau (107), candidates (e-g) violate the high-ranked PURE-EP. PARSE-rel is irrelevant. Among the four surviving candidates, only (107c) does not violate LE(VEP). Hence, this candidate is optimal.

In French, direct object relative clauses always contain the unmarked pronoun *qui*. As a result, the evaluation proceeds more or less on a par with that of *dat*-based relative clauses in Dutch. In tableau (108), candidates (e-f) incur a fatal violation of Parse-rel. The other five candidates all violate STAY once. PURE-EP eliminates (108g). This leaves us with (108a-d). Structure (108c) is the only candidate that does not violate LE(VEP). As a result, this candidate is optimal, and correctly predicted to be grammatical.
In sum, we correctly predict that direct object relative clauses in English, Dutch, and French are realized as in (109), (110), and (111), respectively.30

(109) a. the book [CP which [C that] [IP he read t]]
    b. the book [CP that [C that] [IP he read t]]
    c. the book [IP he [VP that [VP read t]]]

(110) a. de man [CP die [C dat] [IP ik t zag]]
    b. het boek [CP dat [C dat] [IP ik t las]]

(111) la femme [CP qui [C que] [IP je connais t]]

This outcome matches the analysis of object relatives as proposed in sections 1 and 2 above, the only exception being that the relative clause contained in the English the book he read is now analyzed as an IP rather than as a CP.

4. Conclusion

In this chapter, we have examined Pesetsky’s analysis of the left-periphery of relative clauses. More than a filter-based approach to left-periphery phenomena does, it allows us to account for pronunciation patterns in the complementizer domain and their crosslinguistic distribution.

We have proposed several modifications to increase the empirical scope of the analysis. They concern the contexts in which pronouns are recoverable after deletion, the motivation for movement of the relative pronoun, and the size of the relative clause. We have argued that θ-roles, φ-features, and semantic features such as [+human] count as semantic content and, therefore, play a central role in matters of deletion. Furthermore, we have proposed that pronounced relative pronouns move to clause-initial position to satisfy PARSE-re/. The position of deleted relative pronouns is not determined by this constraint. And finally, we have argued, in line with Extended X-bar Theory, that relative clauses are not always CPs. Depending on constraint ranking and syntactic context, some of them should be analyzed as IPs.

These revisions lead to an analysis which subsumes the fundamental insights of Pesetsky’s original proposal. At the same time, they explain why subject-object asymmetries arise in relative clauses, why the choice between preposition stranding and pied-piping has an influence on deletion in the left-periphery, why Dutch relative pronouns do not behave on a par with their English and French counterparts, and why doubly filled Comp structures are not universally ungrammatical.

In chapters 4 and 5, it will be illustrated how the present analysis of relative clauses can be used as a foundation on which a general account of left-periphery phenomena can be built.

30 Note that the position of the deleted relative pronouns in (109b-c), (110b) and (111) is immaterial (see section 3.3 and footnote 26 above).
When we evaluate sentences [s] and [t] we first have to consider candidates in which the pronoun is deleted and cases in which it is not, like we did in table (105). (For these cases it is vital to distinguish high-ranked TP-RB-EP, PTP-stem, and other cases.) Among these, some are anchored (the NP-island hypothesis), while others are not. Here we distinguish between these two hypotheses and focus on the former case.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>a. [he said that by the late]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. [he said that by late]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. [he said that late]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the table above, we see how the pronoun deletion affects the ranking of the sentences. The table shows that the pronoun deletion has a significant impact on the ranking, with some sentences being ranked higher than others. This is evident in the high-ranked TP-RB-EP, PTP-stem, and other cases. The table also shows that some sentences are anchored, while others are not, which is crucial in determining the ranking.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>a. [he said that by the late]</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>b. [he said that by late]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. [he said that late]</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

In conclusion, the pronoun deletion affects the ranking of sentences significantly. The table above shows how the deletion impacts the ranking, with some sentences being ranked higher than others. The table also shows that some sentences are anchored, while others are not, which is crucial in determining the ranking. The importance of the pronoun deletion in the ranking cannot be overstated, as it plays a significant role in the overall ranking of the sentences.