Derivations & Evaluations. On the syntax of subjects and complementizers
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4. Subject-object asymmetries
From surface filters to economy

0. Introduction

In chapters 1 and 3, we examined subject-object asymmetries in interrogative main clauses and in relative clauses, and analyzed them in terms of clause size. This chapter will be entirely devoted to another type of subject-object asymmetry: the so-called Comp-Trace Phenomenon (CTP), found in contexts of long movement.¹

In some languages, special strategies are used when wh-subjects are extracted from clausal complements. In English, for instance, the otherwise optional complementizer that is deleted, whereas in French the complementizer que is replaced by the element qui.

(1) English:
   a. *Who do you think that will read the letter?
   a'. Who do you think will read the letter?
   b. What do you think (that) John will do?

(2) French:
   a. *Qui crois-tu que lira la lettre?
      who think-you that read-FUT the letter
      ‘Who do you think will read the letter?’
   a'. Qui crois-tu qui lira la lettre?
      who think-you qui read-FUT the letter
      ‘Who do you think will read the letter?’
   b. Que crois-tu que Jean fera?
      what think-you that Jean do-FUT
      ‘What do you think that Jean will do?’

In languages such as Dutch and Spanish, on the other hand, no such asymmetry is attested. Examples are given in (3) and (4).

(3) Dutch:
   a. Wie denk je dat de brief zal lezen?
      who think you that the letter will read
      ‘Who do you think will read the letter?’
   b. Wat denk je dat Frits zal doen?
      what think you that Frits will do
      ‘What do you think that Frits will do?’

¹ The choice of terminology will become transparent in subsequent sections. That-trace effect is the more commonly used, but less accurate term.
This chapter consists of three sections. In section 1, we will give an overview of the literature on the CTP of the last three decades. This overview illustrates how subject-object asymmetries are analyzed in syntactic frameworks based on a static view on phrase structure (Perlmutter’s, 1971, analysis, reviewed in section 1.1, is exceptional in this respect). At the same time, it allows us to present some of the general problems which arise in the analysis of the CTP. In section 2, we will introduce Grimshaw’s (1997) OT approach to the CTP. Grimshaw relates the CTP to a violable government constraint. If this constraint is sufficiently high-ranked, CP is not projected in the context of long subject movement. Thus, she reduces the CTP to a matter of clause size. In section 3, Grimshaw’s government-based approach will be reformulated in terms of economy in accordance with the analyses of subject-object asymmetries presented in earlier chapters. Particular attention will be paid to long movement in weak island contexts.

1. From surface filters to the Empty Category Principle

In the 1970s, the CTP was analyzed in terms of surface filters. Section 1.1 focuses on analyses by Perlmutter (1971) and Chomsky & Lasnik (1977). Subsequently, in section 1.2, we will review a proposal by Pesetsky (1982) which could be characterized as a precursor of the analyses in terms of the Empty Category Principle (ECP) proposed in the 1980s. Two types of ECP approaches are examined in section 1.3.

1.1. Surface filters

Perlmutter (1971) assumes that English exhibits the CTP because the surface filter in (5) bans tensed clauses without a subject:

(5) Any sentence other than an Imperative in which there is an S that does not contain a subject in surface structure is ungrammatical.

(Perlmutter, 1971)

He further argues that if the complementizer is dropped in English, the embedded clause loses its clausal status. This is due to the Ross’ (1967: 26) rule of S-Pruning given in (6). S-Pruning deletes the embedded node S whenever it does not branch. Thus, it bleeds the filter in (5).

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1 A manuscript version of Pesetsky (1982) circulated in 1978 (see the bibliography in Chomsky, 1981), and should therefore be considered pre-ECP.
S-Pruning: Delete any embedded node S which does not branch (i.e., which does not immediately dominate at least two nodes).

The structure in (7a) shows that when the complementizer is present, S is branching. Consequently, no pruning takes place. When the complementizer is absent, on the other hand, S only dominates VP, and is therefore deleted:

The ungrammaticality of (2a) indicates that the filter in (5) is also active in French. However, Perlmutter does not indicate why French chooses to replace que by qui as an alternative to the English pruning strategy.

Perlmutter concludes from the grammaticality of (4a) that Spanish lacks the filter in (5). He relates this to the fact that Spanish is a pro-drop language, i.e. a language in which subject pronouns may be deleted, as in (8).

French and English, on the other hand, in which (5) is active, do not allow deletion of subject pronouns, as shown in (9)-(10).

The picture Perlmutter sketches is disturbed by the ungrammaticality of the Dutch example in (11a). If (5) does not distinguish between subject extraction and pronoun deletion, we would expect (11a) to be grammatical on a par with (3a), which is incorrect. Perlmutter argues that these Dutch facts are accidental, and underlines that the implication goes only one way: if a language has the CTP, it does not allow pronoun drop, but not vice versa (henceforth Perlmutter’s Generalization).
Dutch:

a. *De hele dag hebben gewerkt.
the whole day have worked

b. De hele dag hebben we gewerkt.
the whole day have we worked
‘We have worked all day.’

Chomsky & Lasnik (1977, henceforth C&L) re-analyze the CTP in terms of the more specific filter in (12). This filter (the Comp-Trace Filter, henceforth CTF) prohibits complementizers that are immediately followed by a trace.

(12) *[s that [NP e] ..], unless S’ or its trace is in the context: [NP NP ___].}

On the assumption that the canonical subject position is situated immediately to the right of the complementizer, and that subject extraction leaves a gap in this position, subject extraction leads to (13a) in English. This structure is filtered out by the CTF. As a consequence, (1a) is correctly predicted to be ungrammatical. Since English allows complementizer deletion, the alternative (13b) is available to circumvent the CTF.

(13) *{s that [NP e] ..]

The French (14a) is filtered out on a par with (13a). Since complementizers are obligatory in clausal complements in French, C&L argue that a rule other than that of complementizer deletion is used to escape the effects of the CTF. In French, que is changed into qui, and again the CTF does not apply. Hence, (2a') is grammatical.

(14) *{s que [NP e] ..]

C&L argue that contrary to Perlmutter’s (5), the CTF in (12) is universal. In their view, it is unlikely that (12) is not universal because “[i]t is difficult to see how it could be learned as an otherwise unmotivated complication of the grammar”. C&L are able to assume that the CTF is not violated in pro-drop languages because it refers to traces. In Spanish, for instance, the CTF rules out (15a). At first sight, this seems to predict that this language exhibits the CTP. However, according to C&L, pro-drop languages such as Spanish dispose of the rule of Subject Deletion. By assumption, this rule deletes not only subject pronouns as in (8), but also subject traces. Consequently, Spanish also disposes of a strategy to bleed the CTF. The rule of Subject Deletion creates the structure in (15b), which is not filtered out by the CTF.

We will ignore the unless-clause here because it is only relevant in relative clauses (see chapter 3).
The Dutch facts are a more serious problem for the claim that (12) is universal. C&L’s approach can be considered a reformulation of Perlmutter’s in the sense that both approaches relate the CTP to the impossibility of pro-drop. As a consequence, the fact that Dutch is a non-pro-drop language which does not exhibit the CTP is as problematic for C&L as it is for Perlmutter. C&L (in their footnote 55) allude to the possibility that the Dutch facts do fit into their approach. They do not specify, however, how this should be done.

Maling & Zaenen (1978) remark that Dutch does not entirely lack empty subjects. They argue that a distinction should be made between two (non-regional) varieties. In one of these (Dutch A), the examples in (16) without the dummy subject *er* are accepted, while in the other (Dutch B), they are not.

They further report that speakers of Dutch B reject sentences like (17a) (taken from Perlmutter, 1971, and corrected for spelling mistakes). In other words, Dutch A allows Comp-trace configurations, whereas Dutch B does not.\(^4\)

This leads Maling & Zaenen to propose the generalization given in (18). They argue that (18) does not follow from trace theory, and conclude that, as a consequence, C&L’s CTF cannot be universal.

This conclusion seems correct, as we will see below, although the Dutch facts are more complex than they suggest. As Bennis (1986) points out, there are in fact sentences, such as (19), in which *er*-drop is accepted by all speakers.

\[^4\] Some speakers who do not accept (17a) find (16) without *er* more or less acceptable. It seems that in general, (17a) is considered less acceptable than (16) without *er*. This is a first indication that matters are not as clear-cut as Maling & Zaenen suggest.
of Dutch. If the correlation in (18) were correct, Bennis' observation would entail that the CTF is not active in Dutch at all.

(19) In Amsterdam wordt (er) vaak gevochten.
    'In Amsterdam, there are a lot of fights.'

This is in line with the examples in (20), which illustrate that subjects are freely extractable in Dutch, provided that er is inserted whenever this is required.

(20) a. Wie denk je dat (*er) het zal opmerken.
    'Who do you think will notice it?'

b. Wie denk je dat *(er) komt.
    'Who do you think will come?'

When we compare (20) to the examples in (21) and (22), the possibility of er-drop turns out to be a separate issue. The presence or absence of er depends on the presence or absence of material such as the direct object pronoun het. Bennis argues that the distribution of expletive er is narrowly related to the degree of known information conveyed by the clause. Due to the presence of het, the embedded clauses in the (a)-examples in (20)-(22) are more presuppositional than the (b)-examples. Consequently, er will be absent, irrespective of whether wh-movement has applied or not.\(^5\)

(21) a. Wie zal (*er) het opmerken?
    'Who will notice it?'

b. Wie komt *(er)?
    'Who will come?'

(22) a. Ik hoop dat (*er) niemand het zal opmerken.
    'I hope that nobody will notice it.'

b. Ik hoop dat *(er) iemand komt.
    'I hope that someone will come.'

C&L correctly predict that (20b), when containing er, is grammatical. This example corresponds to the structure in (23). Since the subject trace is not adjacent to the complementizer dat, the CTF does not rule out this structure.

\(^5\) (In)transitivity as such does not play a role here, since er occurs in the context of both classes of verbs:

(i) a. Ik hoop dat er iemand komt. (= (22a))
    'I hope that someone comes.'

b. Ik hoop dat er iemand een opmerking maakt.
    'I hope that someone makes a remark.'
Problems arise in the case of (20a), where *er* must be absent. The three structures that could underlie this sentence are given in (24). The two structures in (24a) and (24c) are ruled out because they involve deletion of the subject trace; Dutch, contrary to Spanish, does not dispose of a rule of Subject Deletion, witness the ungrammaticality of (11a). The structure in (24b), on the other hand, is filtered out by the CTF, since the trace is adjacent to the complementizer because *er* has been deleted.

(24)  
\begin{align*}
\text{a. } & \text{[}_S \text{ dat [e] ..]} \\
\text{b. } & \text{[}_S \text{ dat er [e] ..]} \\
\text{c. } & \text{[}_S \text{ dat er [e] ..]}
\end{align*}

In other words, the grammaticality of (20a) without *er* seems to falsify the claim that the CTF is universal. The assumption that the subject trace follows the expletive is crucial here. If we assume instead that the expletive can be substituted for the subject trace, and that this expletive may subsequently be deleted, the universality of CTF can be maintained. The derivation would be as given in (25). First, the subject moves to the main clause. Subsequently, the resulting subject trace is replaced by *er*. And finally, *er* is deleted. This leaves us with a representation which is not filtered out by the CTF, as predicted.

(25)  
\begin{align*}
\text{a. Step I (movement of the wh-phrase):} & \quad \text{[}_S \text{ dat [wie] ..]} \Rightarrow \text{[}_S \text{ dat [e] ..]} \\
\text{b. Step II (the subject trace is replaced by *er*):} & \quad \text{[}_S \text{ dat [e] ..]} \Rightarrow \text{[}_S \text{ dat [er] ..]} \\
\text{c. Step III (deletion of *er*):} & \quad \text{[}_S \text{ dat [er] ..]} \Rightarrow \text{[}_S \text{ dat [er] ..]}
\end{align*}

However, Maling & Zaenen point out that if *er* contributes to the interpretation of the sentence (which seems to be true for reasons given above), semantic interpretation must precede deletion. C&L arrive at the same conclusion: "deleted elements must undergo semantic interpretation" (C&L: 431). If so, the derivation in (25) is illicit. Hence, the grammaticality of (3a) and (20a) indeed falsifies the universality of the CTF.

As a consequence, C&L’s analysis of the CTP has no real advantages over Perlmutter’s from a conceptual point of view. Both Perlmutter’s (5) and C&L’s CTF are language-specific. In fact, C&L’s approach is less economic than Perlmutter’s: whereas Perlmutter postulates only one filter, and thus establishes a direct link between the paradigms in (1)-(4) and (8)-(11), C&L connect the CTP and pro-drop only indirectly. They explain the ungrammaticality of (1a) and (2a) on the one hand, and (9a) and (10a) on the other, by referring to distinct properties of grammar, viz. the CTF and the rule of Subject Deletion. However, this complication allows them, in principle, to account for Dutch by stating that in this language, the CTF is inactive. Furthermore, in section 1.3.2, we will present a set of English facts which C&L’s CTF, contrary to Perlmutter’s filter in (5) and most
other notions which have been proposed to account for the CTP, explains in a straightforward manner.

1.2. The Nominative Island Condition

Pesetsky (1982) argues that C&L's CTF is not an irreducible property of language. It should rather be seen as the result of the combined action of C&L's Doubly Filled Comp Filter (DFCF) and Chomsky's (1980) Nominative Island Condition (NIC). These are defined in (26).

(26)  
   a. DFCF:  *_{Comp \alpha \beta} (\alpha \text{ and } \beta \text{ immediately dominated by } Comp)  
   b. NIC: A nominative anaphor cannot be free in S'

We saw in chapters 2 and 3 that the DFCF rules out sentences like (27a). The NIC, on the other hand, bans (27b). This condition implies that nominative anaphors must be in the same clause as their antecedent. Since the anaphor herself is in the lower clause, while its antecedent Ethel is part of the higher clause, (27b) violates the NIC.

(27)  
   a. *I wonder [comp now that] Billy will fix this.  
   b. *Ethel says [S' that herself hates Billy].

In languages that do not allow doubly filled Comps, one of the elements in Comp must be deleted by the rule of Free Deletion in Comp (see chapter 3). In the case of long wh-movement, this means that either the intermediate trace or the complementizer in Comp must be deleted, as in (28). Pesetsky argues that nominative variables are anaphors in English. If so, they must be bound within their S'. The only potential binder is the intermediate trace in Comp. As a consequence, this element cannot be deleted. Thus, (28b) violates the NIC. The structure in (28a), on the other hand, does not violate this condition. Because the complementizer that is optional, (28a) is the only grammatical structure in English.

(28)  
   a. [.. [S' [Comp t] [S t_{[+nom]} ..]]]  
   b. [.. [S' [Comp that] [S t_{[+nom]} ..]]]

The NIC is only relevant for nominative elements. As a consequence, Pesetsky predicts that deletion of the intermediate trace in the context of long wh-movement of non-subjects is possible. This means that both options in (29) are available: non-subjects can be extracted whether or not the complementizer is pronounced. In other words, English is correctly predicted to be a CTP language.

(29)  
   a. [.. [S' [Comp t] [S .. t_{[-nom]} ..]]]  
   b. [.. [S' [Comp that] [S .. t_{[-nom]} ..]]]

Pesetsky's account of the ungrammaticality of the English CTP carries over to French, if in this language, nominative variables are also anaphors. According to Pesetsky, ungrammaticality can be circumvented in French by applying the rule in
This rule transforms a Comp containing a trace and *que* into *qui* in the context of an S containing a nominative trace. Since (30) produces a Comp which only contains *qui*, it bleeds the DFCF. Hence, *qui* must be substituted for *que* in the context of long subject movement, which means that (2a'), unlike (2a), is predicted to be grammatical.

\[(30) \quad [\text{Comp WH}_{/t_i} \text{que}] \rightarrow [\text{Comp qui}_{i} \text{ / } /_S \times [t_i+\text{nom}]] y ]\]

Pesetsky accounts for Perlmutter’s Generalization by claiming that both nominative traces and dropped pronouns are null NPs and that the NIC treats both types of null NPs on a par. In languages in which pronouns cannot be dropped, null NPs are anaphoric, whereas in pro-drop languages, they are not. The fact that Spanish is a pro-drop language suggests that null NPs in this language are not anaphoric. Because nominative traces are null NPs, and null NPs are not anaphoric in Spanish, Spanish should not exhibit the CTP. This is correct.

Of course, this raises the by now familiar problem with respect to Dutch. Its non-pro-drop character forces us to claim that nominative null NPs, and therefore nominative traces, are anaphoric. As a consequence, we predict that the CTP is found throughout Dutch, which is incorrect. This leads Pesetsky to propose that the fact that null NPs are not subject to the NIC is a necessary but not a sufficient condition for (referential) pronoun drop. They should also be interpretable. Pesetsky argues that verbal morphology in Dutch is not rich enough to identify empty pronouns. Thus, Pesetsky underlines that pro-drop presupposes the absence of the CTP, but not vice versa, in line with Perlmutter’s Generalization.

Although Pesetsky reduces the CTP to the independently needed NIC and DFCF, he has to stipulate for each language if null NPs are subject to the NIC, just like Perlmutter has to specify for each language if the filter in (5) is operative. Unlike Perlmutter, however, Pesetsky predicts that if a language does not allow pro-drop, but does allow doubly filled Comps, it does not exhibit the CTP. Although Pesetsky reports that he has not found any languages of this type, the doubly filled Comp varieties of Dutch (see chapter 3) seem to fit the description.

### 1.3. The Empty Category Principle

The idea that anaphors and *wh*-traces should be treated on a par is incompatible with the theory of binding developed in Chomsky’s influential *Lectures on Government and Binding* (1981). This leads Chomsky to introduce the Empty Category Principle (ECP), a licensing condition restricting the occurrence of (in principle) all traces.

#### 1.3.1. A disjunctive approach

According to the Binding Theory presented in Chomsky (1981), the examples (31a) and (31b) should be treated on a par. In both cases, the anaphor *herself* is in the lower clause, while its only potential antecedent is in the higher clause. The ungrammaticality of both examples follows if all anaphors (nominative or not) must be locally bound. Elements are bound if they are coindexed with a c-commanding element. In Chomsky’s Binding Theory, only elements in A-positions qualify as potential binders.
(31) a. *Ethel thinks that herself hates Billy.
b. *Ethel thinks that Billy hates herself.

The examples in (32) illustrate that anaphors contrast with referential expressions and non-anaphoric pronouns, which must be free (cannot be bound) in their local domain. Hence, these elements fall under different principles of the Binding Theory than anaphors do.

(32) a. Ethel thinks that he hates himself;
b. *Ethel thinks that he, hates him;
c. *Ethel thinks that he, hates Billy;

Like referential expressions and non-anaphoric pronouns, and unlike anaphors, wh-traces must be free in their local domain, as the Strong Cross Over example in (33) illustrates.

(33) *Who, does Ethel think (that) he, hates ti?

More particularly, wh-traces behave like referential expressions. Unlike non-anaphoric pronouns, these must be free everywhere, i.e., they cannot be coindexed and c-commanded by any element:

(34) a. He, thinks that Ethel hates him;
b. *He, thinks that Ethel hates Billy;

Binding Theory subsumes most of the NIC. However, Chomsky remarks that it does not explain the ungrammaticality of the general structure in (35), and the specific structures in (36), although these are reminiscent of the NIC. In (35)-(36), elements are intervening between who (or rather: its trace in the embedded Comp) and the variable in subject position: β in (35), how in (36a), that in (36b), and if in (36c).

(35) *[s α β [s t INF] VP], where β ≠ Ξ.

(36) a. *who, do you wonder [s how [s ti solved the problem]]
b. *who, do you think [s that [s ti saw Bill]]
c. *who, do you wonder [s if [s ti solved the problem]]

Chomsky argues that this residue of the NIC follows from the more general Empty Category Principle (ECP). This principle requires that traces be properly governed. Proper government is a disjunctive notion in Chomsky (1981): a trace must be governed by a lexical head or by its antecedent. Head-government and antecedent-government receive distinct definitions. If the governor is a head, all maximal projections that dominate this head dominate the governee, and vice versa. In the case of antecedent-government, on the other hand, the node that immediately

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6 In other words, the governor and the governee m-command each other. M-command is defined in footnote 9.
dominates the governor dominates the governee, and all maximal projections that dominate the governee dominate the governor. Chomsky's definition of the ECP as well as the relevant auxiliary notions are given in (37)-(41).

(37) ECP: [\( \beta e \)] must be properly governed

(38) \( \alpha \) properly governs \( \beta \) if and only if \( \alpha \) governs \( \beta \) and \( \alpha \) is lexical.

(39) Consider the structure in (i):

(i) \([\gamma .. \beta .. \alpha .. \beta ..]\), where

a. \( \alpha = X^0 \) or is coindexed with \( \beta \)

b. where \( \phi \) is a maximal projection, if \( \phi \) dominates \( \beta \) then \( \phi \) dominates \( \alpha \)

c. \( \alpha \) c-commands \( \beta \)

In this case, \( \alpha \) governs \( \beta \)

(40) \( \alpha \) c-commands \( \beta \) if and only if

(i) \( \alpha \) does not contain \( \beta \)

(ii) Suppose that \( \gamma_1, ..., \gamma_n \) is the maximal sequence such that

(a) \( \gamma_0 = \alpha \)

(b) \( \gamma_i = \omega^j \)

(c) \( \gamma_i \) immediately dominates \( \gamma_{i+1} \)

Then if \( \delta \) [immediately] dominates \( \alpha \), then either (I) \( \delta \) dominates \( \beta \), or (II) \( \delta = \gamma_i \) and \( \gamma_i \) dominates \( \beta \)

(41) \( S', NP, AP, PP, \) and VP are maximal projections

Chomsky (1981) suggests that subject traces in English are never properly head-governed. In structure (36b), for instance, the subject trace is not governed by saw because this verb is dominated by the lower VP, a maximal projection that does not dominate the subject trace. The subject trace is not governed by think either because the lower S' is intervening. Consequently, subject traces must be properly antecedent-governed in grammatical English sentences. In the context of long movement, only intermediate traces in Comp could qualify because according to (37)-(41), no maximal projections may intervene between the governor and the trace. Chomsky assumes that the examples in (36) correspond to the structure in (42a). In this structure, the intermediate trace is adjoined to Comp. On the assumption that the intermediate trace is dominated by Comp, it does not c-command the trace in subject position. Consequently, the examples in (36) violate the ECP. Chomsky further assumes that when that is absent, as in (42b), the Comp node is deleted or invisible. As a result, the intermediate trace c-commands the trace in subject position.

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7 In other words, the governor c-commands the governee, and the governee m-commands the governor. See footnote 9 for definitions.

8 In Chomsky's definition, the relation between \( \delta \) and \( \alpha \) is assumed to be one of domination, as in (i), instead of immediate domination, assumed in (40). However, this would entail that \( \alpha \) always governs \( \beta \) if the latter does not contain the former, which is not in line with Chomsky's intentions.

(i) Then if \( \delta \) dominates \( \alpha \), then either (I) \( \delta \) dominates \( \beta \), or (II) \( \delta = \gamma_i \) and \( \gamma_i \) dominates \( \beta \)
Thus, the subject trace is only properly governed if no overt material occupies Comp.

\[(42)\]  

\[
\begin{aligned}
&\begin{array}{c}
S' \\
\text{Comp} \\
\text{Comp} \\
\text{how} \\
\text{that} \\
\text{if}
\end{array} \\
&\begin{array}{c}
S \\
\text{Comp}
\end{array} \\
\end{aligned}
\]

Chomsky proposes a similar explanation for the French paradigm in (2). The structure in (43a) is excluded along the same lines as (42a). The structure in (43b), on the other hand, is saved because Pesetsky's *que/qui* rule given in (30) has applied. This rule turns Comp into a proper governor because, by assumption, *qui* is coindexed with the subject trace. Hence, (43b) is in accordance with the ECP. Notice that this still does not provide us with a genuine explanation for the *que-qui* alternation, since it remains unclear why a rule like Pesetsky's (30) would apply in French.

\[(43)\]  

\[
\begin{aligned}
&\begin{array}{c}
S' \\
\text{Comp} \\
\text{Comp} \\
\text{que} \\
\text{t}_i \\
\end{array} \\
&\begin{array}{c}
S \\
\text{t}_i \\
\end{array} \\
\end{aligned}
\]

Chomsky accounts for Perlmutter's Generalization by arguing that in languages like Spanish, long subject movement applies from postverbal position (see also Rizzi, 1982, among many others). The examples in (44) show that the Spanish subject may appear in postverbal position, contrary to its English counterpart. Chomsky assumes that the subject in the Spanish (44a) is adjoined to the VP, as in (45). The subject is governed by V in this position, since both elements are dominated by the same set of maximal projections (VP and S' in the case of a simple sentence). Hence, the subject may be extracted from this position.

\[(44)\]  

\[
\begin{aligned}
a. & \text{Contesta la pregunta Juan.} \\
& \text{answered the question Juan} \\
& \text{‘Juan answered the question.’} \\
& \text{(Torrego, 1984)} \\
\end{aligned}
\]

\[
\begin{aligned}
b. & \text{*Answered the question John.}
\end{aligned}
\]

\[(45)\]  

\[\text{[VP [VP V .] t]}\]
The ECP treats intervention effects in the Comp domain as one general phenomenon. In retrospect, the same is true for earlier approaches to the CTP. Also Perlmutter’s (5) filters out the general structure in (42a) because it contains an empty subject position. The same holds for C&L’s CTF, if it is generalized as in (46). Similarly, Pesetsky (1982) would rule out (42a) because it violates the DFCF, irrespective of whether how, that, or if occupy Comp.

\[
{[^{S'} \ [_{\text{Comp}} \alpha] \ [_{\text{NP}} \ e] \ldots \ (\alpha \neq \emptyset)}
\]

Chomsky argues that the ECP also accounts for the ungrammaticality of the examples in (47). These examples are ungrammatical because they result from illicit A-movement.

(47)  
\begin{enumerate}
\item *Johnj was asked how \( t \_1 \) to solve the problem
\item *Johnj was known how \( t \_1 \) to solve the problem
\item *Johnj was preferred \( t \_1 \) to win
\item *Johnj is illegal \( t \_1 \) to participate
\end{enumerate}

If the embedded clauses in (47) are analyzed as \( S' \), the possible corresponding structures are as given in (48) and (49). In (48), the subject of the infinitival clause moves directly to the subject position of the matrix clause to be Case-marked. As a result, there is no intermediate trace that can govern the trace in the subject position of the lower clause, and the ECP is violated. In (49), on the other hand, intermediate traces are present. Nevertheless, besides the fact that (49a-b) violate the ECP because a \( wh \)-phrase intervenes (which leads to the illicit structure in (42a)), all four structures are ungrammatical because they are result of improper movement since \( John \) is moved to an A-position via an A'-position.

(48)  
\begin{enumerate}
\item Violation of the ECP:
\item Johnj was asked \([_{S'} \ [S \ t_1] \ how \ [S \ t_1] \ to \ solve \ the \ problem] \]
\item Johnj was known \([_{S'} \ [S \ t_1] \ how \ [S \ t_1] \ to \ solve \ the \ problem] \]
\item Johnj was preferred \([_{S'} \ [S \ t_1] \ to \ win] \]
\item Johnj is illegal \([_{S'} \ [S \ t_1] \ to \ participate] \]
\end{enumerate}

(49)  
\begin{enumerate}
\item Improper movement:
\item Johnj was asked \([_{S'} \ [S \ t_1] \ how \ [S \ t_1] \ to \ solve \ the \ problem] \]
\item Johnj was known \([_{S'} \ [S \ t_1] \ how \ [S \ t_1] \ to \ solve \ the \ problem] \]
\item Johnj was preferred \([_{S'} \ [S \ t_1] \ to \ win] \]
\item Johnj is illegal \([_{S'} \ [S \ t_1] \ to \ participate] \]
\end{enumerate}

The generalized CTF in (46), on the other hand, only filters out (47a-b). The same is true for Perlmutter’s filter in (5). In (50), the examples in (47) are analyzed in accordance with Perlmutter’s assumptions about phrase structure. The first two structures, (50a-b), are filtered out by (5) because the embedded S does not contain a subject. The rule of S-Pruning given in (6) cannot be applied in these examples, since the clause contains overt material outside VP. Such material is absent in (50c-d). Consequently, S is deleted in these examples, and (5) is respected.
(50)  a. John was asked \([S_s \text{ how } \text{VP}_s \text{ to solve the problem}]\]
    b. John was known \([S_s \text{ how } \text{VP}_s \text{ to solve the problem}]\]
    c. John was preferred \([\text{VP}_s \text{ to win}]\]
    d. John is illegal \([\text{VP}_s \text{ to participate}]\]

Finally, the combination of the DFCF and the NIC (Pesetsky, 1982) would not rule out any of the examples in (47) because the trace in the embedded clause does not occupy a nominative Case position.

However, the conclusion that the ECP transcends the domain of A'-movement is premature. It is not evident that (47) should be treated on a par with the cases of illicit A'-movement in (36). One of the characteristics of the examples in (36) is that their counterparts involving object movement are (more) acceptable.

(51)  a. ??What do you wonder \([S_s \text{ how } \text{Bill solved } t_i]\)]?
    b. What do you think \([S_s \text{ that } \text{Bill solved } t_i]\)]?
    c. ??What do you wonder \([S_s \text{ if } \text{Bill solved } t_i]\)]?

No such effect occurs in the case of NP movement. This is illustrated by the ungrammaticality of the examples in (52), in which the internal argument of solved moves to the subject position of the higher verb to be assigned nominative Case. It cannot stay in its base-position because passive morphology prevents solved from assigning accusative Case.

(52)  a. *The problem, was wondered how to be solved \(t_i\).
    b. *The problem, was known how to be solved \(t_i\).
    c. *The problem, was preferred to be solved \(t_i\).
    d. *The problem, is illegal to be solved \(t_i\).

Unlike their counterparts in (47), these examples are not excluded by the ECP in conjunction with the ban on improper movement. Although the ban on improper movement again prevents the presence of an intermediate trace in the Comp position of the intermediate clause, the ECP is respected when these intermediate traces are absent. In all four structures in (53), the trace is governed by solved, which qualifies as a proper governor because it is a lexical head.

(53)  No violation of the ECP, no improper movement:
    a. The problem, was asked \([S_s \text{ how } \text{to be solved } t_i]\]
    b. The problem, was known \([S_s \text{ how } \text{to be solved } t_i]\]
    c. The problem, was preferred \([S_s \text{ to be solved } t_i]\]
    d. The problem, is illegal \([S_s \text{ to be solved } t_i]\]

On the assumption that traces of NP-movement are anaphors, the ungrammaticality of the examples in both (47) and (52) might be due to the Binding Theory. Clearly, S' is a barrier for NP-movement and always seems to close off the binding domain for anaphors. If the Binding Theory is formulated in such a way that it acknowledges CP as the largest possible binding domain for anaphors, then the ungrammaticality of the two sets of examples follows.
Finally, let us return to the Dutch facts (which are not discussed by Chomsky, 1981). One might argue, following Broekhuis (1992), that just like their Spanish counterparts, Dutch subjects may be extracted from a position other than SpecIP, which would be head-governed by V. Even if one accepts Broekhuis’ arguments, the observation that there are languages in which subjects can be extracted from SpecIP across an overt complementizer still stands. Maling & Zaenen’s (1978) examples in (54) show that Icelandic does not exhibit the CTP. Kosmeijer (1993) notes that in the absence of a preverbal topic or expletive, the Icelandic subject appears between the complementizer and the finite verb. On the assumption that the finite verb is in I, and given that the examples in (54) do not contain a preverbal topic or expletive, the subject must have been extracted from SpecIP.

(54) a. Hver sagðir þú að hefði borðað þetta epli?
   ‘Who did you say had eaten this apple?’
b. þetta er maðurinn, sem þeir segja að hafi framið glæpinn.
   ‘This is the man the that they say that has committed the crime.’

In conclusion, the ECP as formulated in this section makes the same predictions and leads to the same problems as its precursors. At the same time, it relies on more intricate definitions, and is of a disjunctive nature. Since it is not clear if the ECP can be generalized so that it also holds for traces of A-movement, we should be careful about considering Chomsky’s (1981) ECP an improvement of the theory.

1.3.2. A conjunctive approach

We have seen in the previous subsection that Chomsky (1981) reduces the CTP to a lack of antecedent-government in the presence of an overtly realized complementizer. Crucially, Chomsky (1981) has to assume that overtly realized complementizers reduce the c-command domain of wh-phrases (or their traces). Rizzi (1990) remarks that in the endocentric approach to phrase structure developed in the course of the eighties, the question of whether the complementizer is overtly realized does not influence the c-command domain of other elements. In (55), the trace in SpecCP c-commands the trace in SpecIP, irrespective of whether the complementizer is present or not.

(55) a. 

\[
\begin{array}{c}
\text{CP} \\
/ \!
/ \!
/ \\
\text{IP} \\
/ \\
\text{that} \\
/ \\
t_i \\
\end{array}
\]

b. 

\[
\begin{array}{c}
\text{CP} \\
/ \!
/ \!
/ \\
\text{IP} \\
/ \\
\emptyset \\
/ \\
t_i \\
\end{array}
\]
This is acknowledged by Chomsky (1986), who attributes the ungrammaticality of (55a) to the Minimality Condition given in (56), rather than to a violation of the c-command requirement.

(56) \( \alpha \) does not govern \( \beta \) in \([L(57)]\) if \( \gamma \) is a projection of \( \delta \) excluding \( \alpha \).

(57) \( \ldots \alpha \ldots [\gamma \ldots \delta \ldots \beta \ldots] \)

The diagrams in (55) correspond to the structures in (58), which, being instances of the general structure in (57), are excluded by the ECP because the Minimality Condition in (56) blocks antecedent-government. Consequently, we would expect both (55a) and (55b) to be ungrammatical, contrary to fact. Chomsky (1986) therefore proposes that the null complementizer in (58b) does not count as an intervening element because it is feature-less (by assumption), contrary to its overt counterpart in (58a). Thus, \( \varnothing \), contrary to *that*, is not a possible \( \delta \) in the sense of (56). Hence, (58a) violates the ECP, whereas (58b) does not.

(58)  

a. \( \ldots t_i \ldots [\varnothing \text{ that} \ldots t_i \ldots] \)  
b. \( \ldots t_i \ldots [\varnothing \varnothing \ldots t_i \ldots] \)

Chomsky (1986) thus adopts a rigid view on Minimality, whereby both types of government can be blocked by a potential head-governor. One of the objections against this Rigid Minimality formulated by Rizzi (1990) pertains to the relation between the CTP and \( wh \)-island phenomena established in the previous subsection. Rizzi notes that in \( wh \)-island contexts, adjuncts pattern with subjects, while in the standard CTP context, adjuncts behave like objects. This is shown in (59)-(60).

(59) a. *Which problem, do you wonder how, John could solve \( t_i \)?  
b. *Which student, do you wonder how, John could solve the problem \( t_i \)?  
c. *How, do you wonder which problem, John could solve \( t_i \)?

(60) a. Which problem, do you think (that) John could solve \( t_i \)?  
b. Which student, do you think (*that) John could solve this problem?  
c. How, do you think (that) John could solve this problem \( t_i \)?

If (60b) containing overt *that* is ruled out because the trace in SpecIP is not properly governed (neither head-governed, nor antecedent-governed), one would a priori expect that the unacceptability of (59b) follows in the same way, i.e., that overt elements in the complementizer domain also block proper government of adjunct traces. Clearly, this is incorrect, since it would lead to the prediction that (60c) is only grammatical without overt *that*.

Therefore, Rizzi (1990) argues for a conjunctive approach: traces must be both formally licensed (properly head-governed) and identified (governed or bound by their antecedent). According to Rizzi, the ECP only consists of the formal licensing requirement given in (61). According to (61), traces must be properly head-governed, i.e., they must be c-commanded by an appropriate head (A, N, P, V, Agr, or T). Head-government respects Relativized Minimality defined in (63). Accordingly, no
other element of the same type (a head-governor in the case of head-government) may intervene between the governor and the governee.

(61) ECP: A nonpronominal empty category must be properly head-governed.

(62) X head-governs Y iff
(i) $X \in \{A, N, P, V, \text{Agr, T}\}$
(ii) $X$ c-commands $Y$
(iii) no barrier intervenes\(^9\)
(iv) Relativized Minimality is respected

(63) Relativized Minimality: $X \alpha$-governs $Y$ only if there is no $Z$ such that
(i) $Z$ is a typical $\alpha$-governor for $Y$,
(ii) $Z$ c-commands $Y$ and does not c-command $X$

The identification requirement, on the other hand, is defined as in (64). It requires that traces be associated with their antecedent through binding or antecedent-government.

(64) Identification: A non-pronominal empty category must be bound or antecedent-governed.

Only if the moved element carries a referential $\theta$-role can it be associated with its trace through binding. This follows from the definition of binding in (65) in combination with the requirement given in (66). Arguments carry referential $\theta$-roles, which means that they can identify their movement traces by c-commanding them, in accordance with (64)-(66).

(65) X binds Y iff
(i) $X$ c-commands $Y$
(ii) $X$ and $Y$ have the same referential index

(66) A referential index must be licensed by a referential $\theta$-role.

Adjuncts, on the other hand, do not carry a referential $\theta$-role. Hence, they cannot bind their traces. Instead, they must govern them. Antecedent-government is defined in (67). Like binding, antecedent-government presupposes a c-command relation between the antecedent and the trace. Unlike binding, however, it also requires that Relativized Minimality (given in (63)) be respected. In the case of $\text{wh}$-movement, this means that no other $\text{wh}$-element may intervene between the antecedent and the

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\(^9\) See Rizzi (1990: 32), where it is argued that the governor c-commands, rather than $m$-commands the governee. The relevant definitions are given in (i).

(i) a. $\alpha$ c-commands $\beta$ iff $\alpha$ does not dominate $\beta$ and there exists a $\gamma$ that immediately dominates $\alpha$ and dominates $\beta$.
   b. $\alpha$ m-commands $\beta$ iff $\alpha$ does not dominate $\beta$ and every maximal projection that dominates $\alpha$ also dominates $\beta$.

\(^{10}\) Since this condition is irrelevant in the present discussion, we will not define the notion barrier here.
trace it should govern. Accordingly, adjunct movement is sensitive to intervening operators. Argument movement, on the other hand, is not, because identification can take place through binding.

\[(67) \quad \text{X antecedent-governs Y iff}
\]

(i) \(X\) and \(Y\) are nondistinct

(ii) \(X\) c-commands \(Y\)

(iii) no barrier intervenes

(iv) Relativized Minimality is respected

Thus, Rizzi separates the two asymmetries in (59) and (60). Subject-object asymmetries are reduced to the ECP because objects (and adjuncts), contrary to subjects, are always properly head-governed. Adjunct-argument asymmetries follow from the identification requirement because arguments only have to c-command their trace, whereas adjuncts also have to respect Relativized Minimality.

Let us focus on subject-object asymmetries.\(^{11}\) According to Rizzi, these are due to the ECP. Object and adjunct traces are properly governed by \(V\) or \(T.\)\(^{12}\) Like Chomsky (1981), Rizzi argues that pro-drop languages lack the CTP because they allow subject extraction from a head-governed position in the postverbal domain. Subject traces in SpecIP, on the other hand, violate the ECP because, by assumption, \(C\) is not a proper governor. This rules out subject traces in SpecIP. However, subject traces in SpecIP are not categorically excluded. In English, for instance, subject traces are allowed to appear in this position if the complementizer is left unpronounced.

Rizzi assumes, therefore, that the overt complementizer \(\text{that}\) is not a proper governor, whereas its empty counterpart is. He argues that \(C\) is only able to properly govern the trace in SpecIP, if \(C\) is in its agreeing form. A complementizer is agreeing if it is coindexed with \(I\) as a result of subject movement from SpecIP to SpecCP. The subject is coindexed with \(I\) through spec-head agreement. Subsequently, it moves to SpecCP, where it is coindexed with the complementizer, again through spec-head agreement. Finally, the complementizer is coindexed with \(I\) by transitivity. This is shown in (68). Rizzi stipulates that the agreeing complementizer has no phonetic matrix in English.

\[(68) \quad \text{[cp t'i [c ] [ip t'i [i ] ...]]}\]

This also accounts for the ungrammaticality of (59b). The ECP forces the subject to move through the lower SpecCP because this establishes a spec-head relation with \(C\), which is necessary to turn \(C\) into a proper governor. However, since this specifier is already occupied by \(\textit{how, who}\) has to skip this position, with the result that there is no agreeing complementizer available to properly head-govern the trace in SpecIP.

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\(^{11}\) Adjunct-argument asymmetries are briefly examined in section 3.3.1 below.

\(^{12}\) This only holds for VP adverbs. Rizzi (1990: 46) argues that “sentential adverbs [e.g. \textit{why}], in order to be properly interpreted, simply require to have the clause they modify in their immediate c-command domain”. In other words, they can be base-generated in SpecCP. Thus, the ECP is vacuously satisfied because no trace is present. See chapter 5 for a discussion of the syntactic behavior of the French \textit{pourquoi} ("why").
This account of the ungrammaticality of the CTP depends on the stipulation that only $\emptyset$ qualifies as an agreeing complementizer in (60b). At the same time, it has to be stipulated that the reverse is true in English relatives. As we saw in chapter 3, the empty complementizer cannot be used in subject relatives:

(69) the man that/$\emptyset$ killed his neighbor (relative clause)

Rizzi argues that also in languages other than English, a distinction is made between agreeing and non-agreeing complementizers. In French, for example, the que/qui alternation (see (2)) would be an instance of the same phenomenon: Rizzi analyzes qui as the agreeing counterpart of que. However, the English empty complementizer and French qui have a different distribution. The examples in (70) and (71) show that French qui, unlike the English null complementizer, can only be used in the presence of a subject gap.

(70) a. Who do you think that/$\emptyset$ Paul has seen?
   b. Qui crois-tu que/*qui Paul a vu?
      who think-you that/qui Paul has seen
      'Who do you think Paul has seen?'

(71) a. I think that/$\emptyset$ Paul has seen Mary.
   b. Je crois que/*qui Paul a vu Marie.
      I think that/qui Paul has seen Marie
      'I think Paul has seen Mary.'

Even worse, qui appears in subject relatives, again unlike the English null complementizer. Compare (72) with (69).

(72) la femme *que/qui a tué son voisin
    the woman that/qui has killed her neighbor
    'the woman who has killed her neighbor'

Dutch displays yet another pattern. The overt complementizer dat behaves on a par with the English null complementizer. The examples in (73) show that although dat licenses subject traces, it also appears in clauses from which no subject has been extracted.

(73) a. Wie denk je dat de brief zal lezen?
   who think you that the letter will read
   'Who do you think will read the letter?'
   b. Ik denk dat Hans de brief zal lezen.
      I think that Hans the letter will read
      'I think Hans will read the letter.'

Another problem for Rizzi's ECP account is raised by Culicover (1993). Culicover remarks that subject movement across the overt complementizer that does not give rise to unacceptability when adverbials intervene, as shown in (74) and (75).
(74) a. This is the tree that I said that just yesterday had resisted my shovel.
b. *This is the tree that I said that had resisted my shovel.

(75) a. Leslie is the person who I said that under no circumstances would run for President.
b. *Leslie is the person who I said that would run for President.

Notice, first, that these facts are straightforwardly explained by C&L. Their CTF only filters out structures in which complementizers are adjacent to the subject trace, which means that intervening adverbial expressions save the construction. The accounts of the CTP proposed in Perlmutter (1971) and Pesetsky (1982) are not immediately successful because these do not focus on the linear position of the complementizer and the subject gap. Culicover argues that the sentential adverbials in question license a Polarity Phrase (PolP) dominating IP (see also Culicover, 1991). Furthermore, negative adverbials trigger I-to-Pol movement, both in main and subordinate clauses (see also section 2.2.1 below):

(76) a. (I said that) just yesterday the tree had resisted my shovel.
b. (I said that) under no circumstances would Leslie run for President.

The examples in (74)-(75) force us to assume that the presence of a sentential adverbial somehow licenses a proper head-governor. The closest head-governor in the structure proposed by Culicover is Pol. If Rizzi’s ECP analysis of the CTP is correct, Pol should be a proper head-governor. Culicover argues that especially the grammaticality of the negative example in (75a) constitutes a problem for Rizzi’s analysis. Since negative adverbials trigger auxiliary movement to Pol, the grammaticality of (75a) is unexpected because English usually does not allow structures involving both auxiliary raising and subject movement, as shown in (78).

(77) a. \([CP [c that] [PolP just yesterday [Pol \_]] [IP the tree \_ had] [VP resisted my shovel]]\)
b. \([CP [c that] [PolP under no circumstances [Pol would\_]] [IP Leslie \_ t\_] [VP run for President]]\)

The ungrammaticality of sentences like (78) leads Rizzi to argue against the proper head-governor status of auxiliaries in C in English. More generally: C only qualifies as an agreeing head (and, therefore, as a proper governor) if it is not associated with a phonological matrix. In (79b), the wh-subject has moved to SpecCP. This movement licenses coindexation of I and C, just like in (68). By assumption, if C is left unpronounced (i.e., if no I-to-C movement or that-insertion takes place), C is an agreeing complementizer. Thus, C properly governs the subject trace in (79b). Hence, this structure is well-formed.
Culicover argues that the contrast between (75a) and (78) leads to a paradox: in the former example, the auxiliary should be able to function as a proper governor, while in the latter, it should not. However, Culicover does not consider the full paradigm. When we compare the examples in (80) to those in (81), it turns out that long subject movement from an embedded clause containing a negative adverb is not compatible with do-support (see Rizzi, 1991), just like clause-internal subject movement.

In Rizzi's analysis of subject-auxiliary inversion as well as our own (see chapter 1), the impossibility of do-support in the presence of an interrogative subject signals the absence of I-to-C movement. In other words, the ungrammaticality of (80a) (and the grammaticality of (80b)) suggests that no I-to-C movement takes place in (80c). It is likely that this carries over to Culicover's I-to-Pol movement, i.e., that the ungrammaticality of (81a) (and the grammaticality of (81b)) signals the absence of auxiliary movement to Pol in (81c).

This implies that if the presence of the adverbials in (74a) and (75a) licenses a PolP, the head of this phrase is empty in both cases. Let us assume that empty Pol, like empty C, qualifies as a proper governor (provided, of course, that the subject moves through its specifier to ensure the necessary coindexation with I (AGR)). If so, the subject trace in SpecIP does not violate the ECP. However, this still leaves us with the intermediate trace in SpecPolP. The only potential governor for this trace is C, which is not a proper governor in (74)-(75) because it hosts the complementizer that. Consequently, the intermediate trace in SpecPolP violates the ECP. Possibly, this violation of the ECP is innocent; it could be that intermediate traces are deleted at LF.

Be this as it may, it remains unclear how we can exclude the presence of PolP in cases where the adverbial is absent, as in (74b) and (75b). We are forced to assume that the adverbials in (74a) and (75a) are adjoined to PolP, since SpecPolP must remain available for the subject. Since adjuncts do not agree with the head of the phrase to which they are adjoined, it is unlikely that the adverbials in (74)-(75) license the presence of PolP. However, if PolP is freely available, we predict that English does not exhibit the CTP. If we assume, on the other hand, that PolP is absent in the presence of the adverbials in question (i.e., that these adverbials do no

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13 We have no explanation for the fact that negative inversion is not compatible with long subject movement. In subsequent sections, we will return to the pattern in (74)-(75), and assume that both the negative and the positive adverbial are adjoined to IP. The analysis we will eventually propose accounts for the observation that subjects can move across that only if a sentential adverbial is present, irrespective of whether this adverbial triggers inversion or not.
license this projection), the ECP would rule out the (a)-examples in (74)-(75) on a par with the (b)-examples.

In sum, a major advantage of Rizzi conjunctive approach to the ECP is that it enables us to make a distinction between two types of asymmetries. The identification requirement singles out adjuncts in certain contexts, whereas the formal licensing requirement (the head-government requirement) distinguishes between subjects and other constituents. Let us assume that this distinction is essentially correct. The empirical success of Rizzi's formal licensing condition itself is due to the fact that it does not categorically exclude Comp-trace configurations. However, this is at the expense of the explanatory adequacy of the theory, since it forces us to stipulate for each individual complementizer if it is a proper governor, and it does not explain why intervening adverbials obliterate the CTP.

2. The CTP reduced to constraint interaction

In the previous section, we have given an overview of the ways in which the CTP has been analyzed since the early 1970s. In C&L and subsequent work, Comp-trace configurations are banned by a filter or principle which does not apply whenever the complementizer or the preverbal subject trace is absent. The absence of complementizers is directly observable. Evidence for the absence of preverbal subject traces, on the other hand, is circumstantial, and related to the question of whether the language allows null subjects.

Analyses along these lines raise problems on two levels. First, problems arise on an empirical level. The CTP is not universal: there are languages which allow the sequence of an overt complementizer and a trace, such as Icelandic and Dutch. Furthermore, French shows that there are other, more intricate, mechanisms than simple complementizer deletion to which non-pro-drop languages can resort in order to prevent the CTP from occurring. Second, C&L do not explain why the sequence Comp-trace leads to ungrammaticality. In subsequent ECP-based approaches, this question remains unanswered. Chomsky (1981, 1986) argues that the subject trace cannot be properly linked to its antecedent because the complementizer intervenes. However, it is not evident that chains resulting from movement of maximal projections are sensitive to intervening heads in general. Rizzi (1990), on the other hand, claims that the sequence Comp-trace is illicit whenever a specific complementizer does not qualify as a proper governor. Of course, this does not answer our question either, since it is determined in the lexicon whether a complementizer qualifies as a proper governor or not.

We will start this section with a review of Grimshaw’s analysis of the CTP in terms of constraint interaction. Like Rizzi (1990), Grimshaw uses head-government as a central notion. However, in contrast with Rizzi, Grimshaw does not make a distinction between complementizers that qualify as proper governors, and complementizers that do not. Rather, Extended X-bar Theory allows her to blame the CTP on a difference in structure between clauses in which the complementizer is pronounced and those in which they are not. This is reminiscent of the original approach by Perlmutter (1971). Because Grimshaw formulates her formal licensing condition as a violable constraint, she predicts that Comp-trace configurations are not universally excluded. In sections 2.2 and 2.3, it will be
shown that the ranking of constraints determining complementizer pronunciation plays again a crucial role.

2.1. The violability of head-government

Grimshaw’s view on projection and selection makes phrase structure more flexible than is often assumed (see chapters 1-3). This makes it possible that clauses lacking an overt complementizer are analyzed IPs. Thus, (82a) could correspond to either of the two structures given in (83a-b).

(82) a. I think Billy will see them.
   b. I think that Billy will see them.

(83) a. I think [IP Billy will meet them]
   a'. I think [CP Ø [IP Billy will meet them]]
   b. I think [CP that [IP Billy will meet them]]

Structure (83a') violates OB-HD (which bans empty heads, see chapters 1 and 3), whereas (83a) and (83b) do not. Since it is not obvious that there are other constraints which prefer (83a') over either (83a) or (83c) (see also section 2.2 below), the latter two structures harmonically bind the former structure. As a result, the embedded clause in (82a) should be analyzed as an IP. To put it in more general terms: CP is projected iff the complementizer is pronounced in the present syntactic context. The evaluation is given in tableau (84).

(84)

<table>
<thead>
<tr>
<th>English</th>
<th>OB-HD</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. I think [IP Billy will meet them]</td>
<td>✔️</td>
</tr>
<tr>
<td>a'. I think [CP Ø [IP Billy will meet them]]</td>
<td>✗</td>
</tr>
<tr>
<td>b. I think [CP that [IP Billy will meet them]]</td>
<td>✗</td>
</tr>
</tbody>
</table>

This view on complementizer-less clauses plays a central role in Grimshaw’s analysis of the CTP. She points out that in (85a), the trace in SpecIP is governed by the matrix verb. This is not the case in (85b) because CP intervenes.

(85) a. who do you think [IP t will see them]
   b. who do you think [CP that [IP t will see them]]

This leads her to postulate T-LEX-GOV, given in (86). This constraint is violated whenever a trace is not governed by a lexical head (the head of the lowest perfect projection in an extended projection, see chapter 1). Grimshaw assumes that heads only govern their complement and the specifier of this complement, which means that T-LEX-GOV makes a distinction between (85a) and (85b). If CP

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14 Grimshaw does not consider the structure in (i), containing a deleted complementizer. Since (i) is equivalent to (83a') in D&E, these two structures are interchangeable.

(i) I think [CP that [IP Billy will meet them]]
intervenes, the matrix verb does not govern the trace in SpecIP. If, on the other hand, CP is absent, no such intervention effect occurs, and SpecIP is governed. Thus, (85b) violates T-LEX-GOV, whereas (85a) does not. Grimshaw also introduces the more general T-GOV, which requires that traces be governed by a head, irrespective of the nature of this head. The ranking of T-GOV with respect to T-LEX-GOV is irrelevant in the present discussion.

(86)  

a. T-LEX-GOV: Trace is lexically governed.  
b. T-GOV: Trace is governed.

Let us start with the evaluation of subject extraction. In tableau (87), both candidates respect T-GOV because either the matrix verb or the complementizer governs the trace in SpecIP. It is T-LEX-GOV that decides between the two candidates, since only in (87a) is the trace governed by a lexical head, i.e. the matrix verb.

(87)  

Let us start with the evaluation of subject extraction. In tableau (87), both candidates respect T-GOV because either the matrix verb or the complementizer governs the trace in SpecIP. It is T-LEX-GOV that decides between the two candidates, since only in (87a) is the trace governed by a lexical head, i.e. the matrix verb.

(88)  

However, when objects or adjuncts are extracted, the presence or absence of the CP-layer has no repercussions. Object extraction violates neither T-GOV nor T-LEX-GOV, since the trace left behind is governed by the lower verb, which qualifies as a lexical head.

(89)  

By definition, adjuncts are adjoined, rather than in a specifier or complement position. Consequently, if, as Grimshaw assumes, heads only govern their complement and the specifier of this complement, traces of adjunct movement are not governed. Consequently, they violate both T-GOV and T-LEX-GOV. This means that again, the presence or absence of CP is of no influence:

(90)  

Notice that if Grimshaw had assumed that adjuncts are governed by the lower V (see the review of Rizzi, 1990, in section 1.3.2 above), the outcome would have been the same. Adjuncts would have behaved on a par with objects, i.e. they would have
satisfied both government constraints, so that the evaluation of adjunct extraction would have been as given in tableau (90).

(90) \[\text{English (Option II)}\]

<table>
<thead>
<tr>
<th>Option</th>
<th>T-G</th>
<th>T-L-G</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. when do you think [IP they will see them]</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b. when do you think [CP that [IP they will see them]]</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

In sum, whenever an element originates from a position other than SpecIP, the absence of CP will not be of any influence, which is exactly what we want to express.

So far, T-GOV has not played a decisive role. It seems that the only context in which this constraint does play a role is in subject relatives. We have seen in the previous chapter that if the subject is relativized in English, that cannot be omitted (unless, of course, a relative wh-pronoun is present).

(91) a. *the man killed his neighbor (ungrammatical as an NP)
   a'. the man that killed his neighbor
   b. the man (that) his neighbor killed

On the assumption that relative clauses are adjuncts, and that adjuncts are not governed, SpecIP cannot be governed by an external head, so T-LEX-GOV will always be violated. As a result, the otherwise second-best option of government by the complementizer leads to optimality, since this prevents a violation of T-GOV. Although the intuition behind this account of the anti-that-trace effect is clear, its exact implementation is not trivial. To keep her theory consistent, Grimshaw has to assume that candidate (92a) is available. This representation contains a trace, but no operator. Because she does not present any detailed analysis of relative clauses, it is hard to see if this type of structure should be allowed. If it should, the evaluation of English subject relatives proceeds as in tableau (92), where candidate (b) is optimal because it violates only one of the two government constraints.

(92) \[\text{English} \]

<table>
<thead>
<tr>
<th>Option</th>
<th>T-G</th>
<th>T-L-G</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. the man [IP t killed his neighbor]</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b. the man [CP that [IP t killed his neighbor]]</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

The evaluation of object relatives is given in tableau (93). Like in tableau (88), the object trace is governed by the verb, with the result that the two government constraints are satisfied by both candidates.

(93) \[\text{English} \]

<table>
<thead>
<tr>
<th>Option</th>
<th>T-G</th>
<th>T-L-G</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. the man [IP his neighbor killed t]</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. the man [CP that [IP his neighbor killed t]]</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>
Grimshaw’s analysis of the anti-that-trace effect is not without problems. Besides the problem of the operator in (92a) and (93a), T-GOV is a constraint with a doubtful status because any candidate that violates this constraint will also violate T-LEX-GOV. It seems reasonable to assume that entailment relations between constraints should be prohibited in a restrictive theory of possible constraints. Furthermore, T-GOV seems construction-specific; Grimshaw only uses T-GOV to account for English subject relativization. It is not clear if this constraint can be put to use elsewhere. The subject-object asymmetry in French relatives (see (94)), for instance, is not a candidate, since T-GOV could not possibly distinguish between *que and *qui in favor of the latter element.

(94) a. *l’homme qu’a tué son voisin
the-man that-has killed his neighbor
‘the man who killed his neighbor’

a’. l’homme qui a tué son voisin
the-man qui has killed his neighbor
‘the man who killed his neighbor’

b. l’homme que son voisin a tué
the-man that his neighbor has killed
‘the man his neighbor killed’

b’. *l’homme qui son voisin a tué
the-man qui his neighbor has killed
‘the man his neighbor killed’

At best, T-LEX-GOV could do so, if one assumes that *qui, contrary to *que, is a lexical complementizer. This is shown in tableau (95), where only candidate (c) satisfies both government constraints:

(95)

<table>
<thead>
<tr>
<th>French</th>
<th>T-G</th>
<th>T-L-G</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. l’homme [IP t a tué son voisin]</td>
<td>*!</td>
<td>*</td>
</tr>
<tr>
<td>b. l’homme [CP que [IP t a tué son voisin]]</td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>c. l’homme [CP qui [IP t a tué son voisin]]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

However, in addition to the fact that we now have to stipulate which complementizers qualify as proper governors, this makes incorrect predictions for object relativization. Object traces are governed by the lexical head of the extended projection in which they are contained. Tableau (95) demonstrates that as a result, the choice for a specific complementizer (or no complementizer at all) is irrelevant.

15 This example is acceptable if son voisin is interpreted as a postverbal subject (‘the man his neighbor killed’). These cases are analyzed chapter 5.
In chapter 3, we argued that the obligatoriness of the French complementizer is due to the interaction of the constraints LE(VEP) and NOSTRUC. LE(VEP) requires that verbal extended projections start with a complementizer, while NOSTRUC bans syntactic structure. If LE(VEP) outranks NOSTRUC, CP will be projected to host a left-peripheral complementizer. Tableau (97) shows that this ranking excludes candidate (a). However, it does not explain why the (c)-candidate in (96) and (97) is ungrammatical.

The problem is that qui can only occur in the context of a subject gap (see section 1.3.2 above). The examples in (2), repeated in (98) ((98b’) has been added), show that a pattern similar to that in (94) is found in the case of long wh-movement.

Once more, wrong predictions are made. The candidates (a) and (c) in tableau (99) violate neither of the two government constraints. The trace in candidate (99a) is lexically governed by the matrix verb, while its counterpart in candidate (99c) is governed by qui, which, by assumption, also qualifies as a proper governor. As a result, both structures should be grammatical, contrary to fact.
One could argue that (99a) is eliminated by LE(VEP), as in tableau (100):

(100) French

<table>
<thead>
<tr>
<th></th>
<th>LE(VEP)</th>
<th>NOSTRUC</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. V [IP t lira la lettre]</td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>b. V [CP que [IP t lira la lettre]]</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>c. V [CP qui [IP t lira la lettre]]</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

However, this would lead to the prediction that qui, like que, should be able to appear in clausal complements, which is incorrect:

(101) a. Je pense que le Président de la Republique a déguisé la vérité.
     'I think that the president of the republic has covered-up the truth'

b. *Je pense qui le Président de la Republique a déguisé la vérité.
     'I think qui the president of the republic has covered up the truth'

According to tableau (102), candidate (d) should be grammatical on a par with candidate (b), since both candidates only violate the low-ranked NOSTRUC.

(102) French

<table>
<thead>
<tr>
<th></th>
<th>LE(VEP)</th>
<th>NOSTRUC</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. V [IP le P. de la R. a déguisé la vérité]</td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>b. V [CP que [IP le P. de la R. a déguisé la vérité]]</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>c. V [CP que [IP le P. de la R. a déguisé la vérité]]</td>
<td>*!</td>
<td>*</td>
</tr>
<tr>
<td>d. V [CP qui [IP le P. de la R. a déguisé la vérité]]</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

The only way to save this analysis is to state that qui can only be used in conjunction with subject movement. However, this would be a mere restatement of the problem.

In chapter 3, we argued that the remarkable behavior of French and English subject relatives is due to their IP-status. For reasons of economy, the relative pronouns that and qui occupy SpecIP instead of SpecCP whenever they function as a subject. Because these in principle deletable pronouns are not in a chain with a Case-marked trace when they appear in SpecIP, they are not recoverable. Hence, they
must be pronounced. In other words, (91a') and (94a') correspond to the structures in (103).

(103) a. the man [IP that [VP killed his neighbor]]  
    b. l'homme [IP qui [a] [VP tué son voisin]]

If this analysis is correct, no additional constraints are needed, the construction-specific T-GOV can be dispensed with, and the remarkable behavior of subject relatives in French and English are treated on a par.

In conclusion, although Grimshaw’s account of subject-object asymmetries in relative clauses is far from unproblematic, she does provide us with a simple analysis of the CTP. In this analysis, SpecIP is a privileged position because it is potentially governed by the lexical head of a higher extended projection. Thus, the CTP has a clear, structural cause, and no stipulations with respect to proper head-governors (Rizzi, 1990) or intervening elements (Chomsky, 1981, 1986) have to be made.

2.2. Complementizer pronunciation

An explanation of the CTP in terms of the left-peripheral position of the subject trace in IP complements raises the question of how Grimshaw’s T-LEX-GOV interacts with other constraints which determine the shape of the left edge of complement clauses. In the following two subsections, we will examine Grimshaw’s analysis of complementizer pronunciation in more detail and conclude that it should not replace the D&E analysis of left-periphery phenomena presented in chapter 3.

2.2.1. Purity of extended projection revisited

In Grimshaw’s analysis of complementizer placement in complements of epistemic verbs, CP is present if the complementizer that is pronounced, and vice versa (see section 2.1 above). This enables her to explain the paradigm in (104)-(105) (see section 1.3.2 above). If a sentential adverbial precedes the subject in a subordinate clause, the complementizer is obligatory pronounced:

(104) a. *She thought never in her life would she accept this solution.  
    b. She thought that never in her life would she accept this solution.

(105) a. *She believes yesterday John went to see the doctor.  
    b. She believes that yesterday John went to see the doctor.

Grimshaw analyzes this phenomenon in terms of the constraint PURE-EP. We saw in chapter 3 that this constraint prohibits movement into the perfect head of a

---

16 SpecIP is only an A-position if the nominative Case feature is checked there. If SpecIP is used to check other features, deletion is possible, as we will see in chapter 5.

17 The more intricate problem of why qui is substituted for que in the context of long subject movement will be addressed in chapter 5 (appendix).
subordinate extended projection. Grimshaw argues that in addition, \textit{PURE-EP} bans
adjunction to the highest node of a subordinate extended projection.

\textbf{(106) \textit{Purity of Extended Projection (PURE-EP):}}
\begin{itemize}
  \item a. No adjunction to the highest node in a subordinate extended projection;
  \item b. No movement into the highest head of a subordinate extended projection.
\end{itemize}

\textit{PURE-EP} is violated by the complementizer-less examples in (104)-(105) if
these are analyzed as in (107a)-(108a) given below. In (107), negative inversion has
applied, which Grimshaw analyzes as movement of the inflectional head to a higher
head $X$ in the extended projection. If, as in (107a), $XP$ is the highest node in
the extended projection, \textit{PURE-EP} is violated. In (107b), on the other hand, $C$ is the
highest head of the extended projection. Since complementizers do not move into
this position, \textit{PURE-EP} is not violated.

\textbf{(107) a.} She thought [$XP$ never in her life [$X$ would,] [$IP$ she [$t_i$] accept this
solution]]
\textbf{b.} She thought [$CP$ [$c$ that] [$XP$ never in her life [$X$ would,] [$IP$ she [$t_i$] accept
this solution]]]

The presence or absence of CP has a similar influence on structures in which
adverbials that do not trigger negative inversion precede the subject, for which
Grimshaw assumes that they are adjoined to IP. In the absence of CP, this
adjunction leads to a violation of \textit{PURE-EP}. In (108a), IP is the highest node in
the subordinate projection. Since the adverbial is adjoined to this node, \textit{PURE-EP} is
violated. In (108b), on the other hand, this adjunction structure is protected by CP,
which prevents a violation of \textit{PURE-EP}, just like in (107b).

\textbf{(108) a.} She believes [$IP$ yesterday [$IP$ John went to see the doctor]]
\textbf{b.} She believes [$CP$ [$c$ that] [$IP$ yesterday [$IP$ John went to see the doctor]]]

The evaluation of the two constructions is given in tableau (109). Candidates
(109a-a') violate \textit{PURE-EP}, since these involve movement into the head of a
complement, or adjunction to a complement. This still leaves us with the
possibility that CP is present and its head is left unpronounced (candidates (109c-
c')). However, this possibility is excluded because it violates OB-HD. Candidates
(109b-b') are optimal. In sum, in order to be able explain (104)-(105) in terms of
\textit{PURE-EP}, it is crucial that, as Grimshaw claims, the complementizer is pronounced
in complements of epistemic verbs if CP is present.
(109) English

<table>
<thead>
<tr>
<th></th>
<th>PURE-EP</th>
<th>OB-HD</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. V [XP ADV [x V_i] [IP .. t_i ..]]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a'. V [IP ADV [IP ..]]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. V [CP that [XP ADV [x V_i] [IP .. t_i ..]]]</td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>b'. V [CP that [IP ADV [IP ..]]]</td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>c. V [CP that [XP ADV [x V_i] [IP .. t_i ..]]]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c'. V [CP that [IP ADV [IP ..]]]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Grimshaw suggests that PURE-EP might be responsible for complementizer placement in general. Vikner (1997) argues that in V-to-I languages, PURE-EP is violated whenever CP is absent in the subordinate clause. In languages lacking such movement, on the other hand, PURE-EP is irrelevant.\(^{18}\) This led us to assume in chapter 3 that Dutch subordinate clauses are invariably CPs because Dutch is an I-final V-to-I language in which PURE-EP has a high rank.

According to Vikner, complementizers are obligatory in languages such as French and Icelandic because V moves to I. Hence, CP must be projected to avoid a violation of PURE-EP, and the complementizer must be pronounced to satisfy OB-HD. In English and Danish, on the other hand, no V-to-I movement takes place. As a result, CP need not be projected (if PURE-EP is not otherwise violated, as in (104)-(105)), and complementizers may remain silent (henceforth Vikner’s Generalization).

(110) \(V\)-to-I:

a. V [IP [i V_i] .. t_i ..] \(\Rightarrow\) violation of PURE-EP

b. V [CP [i_1 V_i] [IP [i V_i] .. t_i ..]] \(\Rightarrow\) satisfaction of PURE-EP

(111) \(\text{No } V\)-to-I:

a. V [IP [i_1 .. V ..]] \(\Rightarrow\) satisfaction of PURE-EP

b. V [CP [i_1 .. V ..]] \(\Rightarrow\) satisfaction of PURE-EP

\(V\)-to-I languages are evaluated in the otherwise language-independent tableau (112). In this tableau, candidate (112a) violates PURE-EP, while candidate (112c) without overt complementizer violates OB-HD. These two candidates are harmonically bound by candidate (112b) because this candidate does not violate these two constraints. Consequently, candidate (112b) is predicted to be optimal irrespective of the ranking of PURE-EP and OB-HD if no other constraint interferes.

(112) \(V\)-to-I

<table>
<thead>
<tr>
<th></th>
<th>PURE-EP</th>
<th>OB-HD</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [IP [i_1 V_i] .. t_i ..]</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. [CP Comp [IP [i_1 V_i] .. t_i ..]]</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>c. [CP Comp [i_1 V_i] .. t_i ..]]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^{18}\) Whether or not \(V\)-to-I movement takes place depends on the rank of PARSE-T (see chapter 1). We will ignore Parse-T to keep the tableaux as simple as possible.
If no V-to-I movement takes place, the (again otherwise language-independent) evaluation proceeds as in tableau (113). All candidates satisfy PURE-EP. Candidate (113c) violates OB-HD. Again, the ranking of these two constraints is irrelevant, but this time both the IP option and the CP option in which the complementizer is pronounced are grammatical unless some other constraint interferes (see below).

(113)

<table>
<thead>
<tr>
<th>No V-to-I</th>
<th>PURE-EP</th>
<th>OB-HD</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. $[[\text{IP} [t]] .. V ..]$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. $[[\text{CP} \text{Comp} [\text{IP} [t]] .. V ..]]$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. $[[\text{CP} \text{Comp} [\text{IP} [t]] .. V ..]]$</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

However, we should not rush into the conclusion that Vikner’s PURE-EP account could replace the analysis of complementizer placement in terms of NOSTRUC and LE(VEP) presented in chapter 3. PURE-EP (in combination with OB-HD) allows complementizer-less clauses in certain contexts, but does not prefer them. An additional constraint such as NOSTRUC is needed to explain the lack of complementizers in a language like Chinese (see chapter 3). Furthermore, there are languages with optional complementizers in which V raises to I. Scorretti (1991) observes that in medieval varieties of Romance languages, complementizers are often optional. Two Old French examples are given in (114). On the basis of Vikner’s Generalization, we would predict that in Old French, V does not raise to I. However, this goes against standard assumptions about Old French clause structure, according to which this head movement does take place (see De Bakker, 1997, and references therein). Again, this would mean that a constraint such as NOSTRUC should outrank (or be in a tie with) PURE-EP. A similar point can be made for Ottawa-Hull French, in which complementizers can also be omitted (Martineau, 1988).

(114)  

Old French (Scorretti, 1991):

a. Ele set bien — so est la voie.
   she knows well this is the way
   ‘She knows very well that this is the way.’

b. Or veit li patriarches — deus i fait vertuz.
   now sees the patriarch God there makes miracle
   ‘The patriarch sees now that God performs a miracle there.’
SUBJECT-OBJECT ASYMMETRIES

(115) Ottawa-Hull French (Martineau, 1988):
   a. Je pense c'est ça.
      I think it-is that
      'I think that’s it.'
   b. Me semble il aime ça.
      to-me seems he likes it
      'It seems to me that he likes it.'
   c. Faut tu penses à ton avenir.
      must you think about your future
      'You have to think about your future.'

The alignment constraint LE(VEP), on the other hand, is needed to account for the fact that complementizers need not be pronounced if CP is projected. We have seen in previous chapters that in cases in which SpecCP is filled with overt syntactic material, complementizers are often deleted. Furthermore, in the next chapter, we will present evidence in favor of the claim that even in Modern Standard French, tensed subordinate clauses should be analyzed as IPs in some contexts. This means that in both Old and Modern French, PURE-EP is violable.

In sum, Vikner’s Generalization is not surface-true. This is precisely what we expect if it is attributed to the violable PURE-EP. The rank of PURE-EP with respect to constraints such as LE(VEP) and NOSTRUC will determine the extent to which its effect is observable.

2.2.2. Obligatory complementizers in D&E

We argued in chapter 3 that complementizers must be pronounced in clausal complements if CP is projected and its specifier is empty. In the language-independent tableau (116), candidate (c), in which CP is projected and that is deleted, is harmonically bound by the other two candidates. Hence, this structure will not be optimal under any ranking.

(116)

<table>
<thead>
<tr>
<th></th>
<th>LE(VEP)</th>
<th>NOSTRUC</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. V [IP ..]</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. V [CP Comp [IP ..]]</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>c. V [CP Comp [IP ..]]</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Just like in Grimhaw’s analysis, this leads to the prediction that in contexts in which CP is projected for independent reasons while its specifier is empty, the complementizer is obligatorily pronounced. One such context is created by the presence of left-peripheral adverbials in English, as in (104)-(105) above. These adverbials lead to a violation of PURE-EP in the absence of a protective CP. Tableau (117) illustrates that the obligatoriness of the complementizer indicates that PURE-EP outranks NOSTRUC. Candidates (117a-a’) violate PURE-EP. The tie between LE(VEP) and NOSTRUC prefers candidates (117b-b’), since these only violate NOSTRUC, while (117c-c’) also violate LE(VEP).
Table (118) shows that if we had assumed that NOSTRUC (and LE(VEP), by transitivity) outranks PURE-EP, also candidates (a-a’) would have been optimal.

Note that if we substitute TEL for NOSTRUC in (117), in accordance with the analyses by Pesetsky (1997, 1998) and Broekhuis & Dekkers (to appear), incorrect predictions are made. This is illustrated in tableau (119). Again, candidates (a-a’) violate PURE-EP. However, the tie between LE(VEP) and TEL does not decide between the two remaining candidates, since they each violate only one of the two constraints:

2.2.3. Complementizers and wh-extraction

Let us consider the interaction between T-LEX-GOV, LE(VEP), and NOSTRUC. Since English is a CTP language, T-LEX-GOV must outrank LE(VEP) \(\ll\) NOSTRUC. In tableau (120), T-LEX-GOV eliminates candidates (b) and (c). Consequently, candidate (120a) is optimal.
If LE(VEP) and NOSTRUC outrank T-LEX-GOV, the result is as given in tableau (121). Candidates (121a-b) both survive the tie between LE(VEP) and NOSTRUC, and T-LEX-GOV is irrelevant. This ranking defines the class of languages with optional complementizers lacking the CTP.

It seems that such languages exist. Sobin (1987) notes that not all speakers of English exclude Comp-trace configurations. The variety of English in which Comp-trace configurations are allowed (henceforth English') is characterized by the ranking in tableau (121). This means that the optionality of the complementizer is not a sufficient condition for the CTP to occur, which is predicted in the present analysis.

Let us return to the CTP-variety of English. The ranking we have established so far is given in (122). Only the mutual ranking of T-LEX-GOV and PURE-EP is not determined.

In order to establish whether T-LEX-GOV dominates PURE-EP or not, we should look at the influence of the presence of sentential adverbials on complementizer pronunciation in clauses from which a subject has been extracted. The extraction facts raised by Culicover (1991, 1993) which we examined in section 1.3.2 seem to qualify. The relevant examples are repeated in (123)-(124). Despite the fact that the subject has been extracted, the complementizer is obligatorily pronounced, which is clearly due to the presence of the adverbial.

(123) a. This is the tree that I said that just yesterday had resisted my shovel.
   b. *This is the tree that I said that had resisted my shovel.

(124) a. Leslie is the person who I said that under no circumstances would run for President.
   b. *Leslie is the person who I said that would run for President.
If T-LEX-GOV outranks PURE-EP, the evaluation proceeds as in tableau (125), in which T-LEX-GOV eliminates candidates (b) and (c).\textsuperscript{19} As a result, candidate (a) is incorrectly predicted to be grammatical.\textsuperscript{20}

(125)

\begin{center}
\begin{tabular}{|l|c|c|c|c|}
\hline

 & T-L-G & P-EP & LE(VEP) & NOSTR \\
\hline
a. V \[IP \text{ ADV} [IP \ldots] \] & & * & * & * \\
b. V \[CP \text{ that} [IP \text{ ADV} [IP \ldots]] \] & *! & & * & * \\
c. V \[CP \text{ that} [IP \text{ ADV} [IP \ldots]] \] & *! & & * & * \\
\hline
\end{tabular}
\end{center}

However, under the alternative ranking given in tableau (126), candidate (a) incurs a fatal violation of PURE-EP. The other two candidates have an equal score on T-LEX-GOV. The tie between LE(VEP) and NOSTRUC prefers (126b) over (126c), which leads to the correct prediction that the (a)-examples in (123)-(124), contrary to the (b)-examples, are grammatical.

(126)

\begin{center}
\begin{tabular}{|l|c|c|c|c|}
\hline

 & P-EP & T-L-G & LE(VEP) & NOSTR \\
\hline
a. V \[IP \text{ ADV} [IP \ldots] \] & *! & & * & * \\
b. V \[CP \text{ that} [IP \text{ ADV} [IP \ldots]] \] & * & * & * & * \\
c. V \[CP \text{ that} [IP \text{ ADV} [IP \ldots]] \] & * & * & * & * \\
\hline
\end{tabular}
\end{center}

In sum, PURE-EP outranks T-LEX-GOV in English. This ranking allows us to reduce the absence of subject-object asymmetries in the context of \textit{wh}-extraction from embedded clauses containing a sentential adverbial to the fact that they contain a complementizer which is obligatorily pronounced for independent reasons.

2.3. The non-universality of the CTP

If the interaction between the constraints LE(VEP), NOSTRUC, and T-LEX-GOV are rightfully held responsible for the CTP in English, we predict there to exist languages that do not exhibit the CTP. Whenever a language ranks LE(VEP) higher than NOSTRUC and T-LEX-GOV, subjects should be able to move across a complementizer. This is shown in tableaux (127), in which candidates (a) and (c) are eliminated by the high-ranked LE(VEP), and candidate (b) is optimal. Thus, the ranking LE(VEP) >> \{NOSTRUC, T-LEX-GOV\} defines the class of languages in which complementizers are obligatory and the CTP is absent. Icelandic and Dutch are such languages.\textsuperscript{21}

\textsuperscript{19} Notice that both types of adverbials given in (123)-(124) are adjoined to IP. See section 1.3.2 and footnote 13 above for particulars.

\textsuperscript{20} Candidate (125a) satisfies T-LEX-GOV provided that the adverb adjoined to IP does not block head-government. If it does block government, the desired result follows: (125a) would incur a fatal violation of PURE-EP, and (125c) would be eliminated by the tie between LE(VEP) and NOSTRUC.

\textsuperscript{21} Dutch and Icelandic are V-to-I languages. Consequently, subordinate IPs violate PURE-EP. We have argued in chapter 3 that in Dutch, PURE-EP outranks LE(VEP) and NOSTRUC. This suggests
A further prediction is that languages with optional complementizers do not necessarily show the CTP. If LE(VEP) and NOSTRUC are in a tie, the ranking of T-LEX-GOV with respect to this tie determines whether or not the language exhibits the CTP. In the previous subsection, we have noted that the two rankings in tableaux (128)-(129) correspond to two distinct varieties of English.

If T-LEX-GOV >> LE(VEP) is responsible for the CTP, and LE(VEP) >> NOSTRUC for obligatory complementizers, we would expect that a language such as French, in which complementizers are obligatory and subject movement is marked, is characterized by the ranking T-LEX-GOV >> LE(VEP) >> NOSTRUC. Tableau (130) shows, however, that this expectation is not borne out. The only candidate that satisfies T-LEX-GOV is (130a), which is therefore optimal. We now incorrectly predict that French simply drops the otherwise optional complementizer in the context of subject movement. Rather, French replaces *que* by *qui*. We leave this problem aside for the moment, and return to it in the next chapter. There, it will be argued that non-subjects can also be moved to and extracted from SpecIP, which leads to IP-complementation.
Languages lacking complementizers are characterized by the ranking NOSTRUC >> LE(VEP). Tableaux (131)-(133) show that no matter how T-LEX-GOV is ranked with respect to these two constraints, candidate (a) will always be optimal. This leads to the prediction that complementizers do not show up in long subject movement if they are otherwise absent. We leave this prediction for possible falsification in the future, since Chinese, the only language in our sample which lacks complementizers, is a wh-in-situ language, which makes our predictions difficult to test.

Let us return to Perlmutter's generalization. We saw above that there is consensus in the literature about the idea that in pro-drop languages, subject extraction does not leave a trace in the canonical subject position (SpecIP): it is possible in these languages to extract subjects from a postverbal position governed by the verb. So far, we have only been considering the three candidates in (134a-c). If indeed subjects can be extracted from postverbal construction, also the structures in (134d-f) will be serious competitors.22
It can be proven that if T-LEX-GOV, LE(VEP) and NOSTRUC have to decide between (134a-f), the ranking of T-LEX-GOV is irrelevant, and the CTP will always be absent. The only two structures that violate T-LEX-GOV are (135b-c). However, these two candidates, like (135f), are harmonically bound by structure (135e), which means that they will not be optimal under any ranking of the three constraints. Since (135a), (135d), and (135e) are the only three candidates that are not harmonically bound, and T-LEX-GOV does not decide between them, the ranking of this constraint does not play a role in determining the optimal member of the candidate set given in (134).

This is exactly what we want to express: whatever is otherwise responsible for the CTP (the ranking of T-LEX-GOV in the present analysis) is irrelevant in languages in which the subject may be extracted from postverbal position.

3. Toward a unified account of subject-object asymmetries

In previous chapters, we have seen that subject-object asymmetries in matrix interrogatives, as well as in relatives can be captured in terms of economy. The constraint STAY prefers wh-subjects to remain in their Case position, where they can check their Case as well as their operator features. An important advantage of an postverbal position only if they receive a focus interpretation. SVO, on the other hand, seems to correspond to the pragmatically unmarked order. It may be that the inherent focus interpretation of wh-elements is somehow responsible for the possibility of subject extraction from postverbal position. Since there are many more or less subtle differences between the individual Romance languages concerning the syntax and interpretation of postverbal subjects and we want to focus on the general picture, we will simply assume, following Chomsky (1981), Rizzi (1982, 1990) and many others, that in pro-drop languages, subject extraction from postverbal position is not excluded by independent principles or constraints. Hence, unlike in non-pro-drop languages, (134d-f) are in crucial competition with (134a-c).

The question of whether the postverbal trace violates T-LEX-GOV or not is irrelevant because each candidate in (135) contains it.
analysis along these lines is that STAY, unlike T-LEX-GOV, is an independently motivated notion in the D&E framework. Furthermore, this constraint is formulated in such general terms that a simpler condition on the occurrence of traces is inconceivable. Unlike the ECP or any other government-based formal licensing condition on traces, STAY simply prohibits traces in any syntactic context. In this light, it seems worthwhile to investigate whether an economy account of the CTP holds water.\textsuperscript{24}

3.1. Long subject movement

In section 2, we did not go into the question of whether movement chains contain intermediate traces. Only candidates such as the ones in (136) were mentioned.

(136) a. who do you think [IP $t_i$ will see them]
b. who do you think [CP that [IP $t_i$ will see them]]
c. who do you think [CP that [IP $t_i$ will see them]]

However, the subjacency condition proposed in chapter 2 requires that movement apply successive cyclically, i.e., that movement from one extended projection to another involve movement through the specifier of the highest node of the lower extended projection. Accordingly, (136b-c) cannot be produced. Let us, therefore, replace them by structures that do contain an intermediate trace:

(137) a. who do you think [IP $t_i$ will see them]
b. who do you think [CP $t_i$ that [IP $t_i$ will see them]]
c. who do you think [CP $t_i$ that [IP $t_i$ will see them]]

Option (137a) distinguishes itself in two ways from its competitors in (137b-c): both T-LEX-GOV and STAY prefer the former representation over the latter two. Due to the fact that in the absence of CP, SpecIP is a position from which wh-phrase can directly be moved into a higher clause without violating successive cyclicity, IP-complementation is preferred for reasons of economy. If, like we have been assuming for T-LEX-GOV, STAY outranks the tie between LE(VEP) and NOSTRUC, subject extraction in English is evaluated as in tableau (138). This tableau shows that candidates (138b-c) incur one more violation of the high-ranked STAY than (138a), with the result that the latter option is correctly predicted to be grammatical (cf. tableau (120)).

(138)

<table>
<thead>
<tr>
<th>English</th>
<th>STAY</th>
<th>LE(VEP)</th>
<th>NOSTR</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. V [IP $t_i$ will see them]</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. V [CP $t_i$ that [IP $t_i$ will see them]]</td>
<td>**!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. V [CP $t_i$ that [IP $t_i$ will see them]]</td>
<td>**!</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

\textsuperscript{24} Earlier economy analyses of the CTP (developed independently of each other) can be found in Dekkers (1995) and Deprez (1994).
The Culicover facts in (123)-(124) show that PURE-EP annihilates the effect of STAY. If an adverbial is adjoined to IP, CP must be present to prevent a violation of PURE-EP. Consequently, if PURE-EP outranks STAY, IP-complementation will not be an option. In tableau (139), the high-ranked PURE-EP correctly rules out candidate (a). Whereas STAY does not decide between the two remaining candidates, the tie between LE(VEP) and NOSTRUC does: candidate (139b) is optimal because it only incurs a violation of NOSTRUC, while (139c) also violates LE(VEP) (cf. tableau (126)).

(139)

<table>
<thead>
<tr>
<th>English</th>
<th>P-EP</th>
<th>STAY</th>
<th>LE(VEP)</th>
<th>NO STR</th>
</tr>
</thead>
</table>
| a. V [IP ADV [IP t_1 ...]] | */! | * | * | *
| b. V [CP t_i that [IP ADV [IP t_1 ...]]] | * | */! | * | *
| c. V [CP t_i that [IP ADV [IP t_1 ...]]] | * | * | */! | *

The ranking LE(VEP) >> NOSTRUC >> STAY defines the class of languages in which complementizers are optional, and the CTP is absent. We noted in section 2.2.3 that this characterizes the variety of English in which long subject movement can occur in the presence of that. In tableau (140), the tie between LE(VEP) and NOSTRUC eliminates candidate (c), and STAY does not decide between the two remaining candidates.

(140)

<table>
<thead>
<tr>
<th>English</th>
<th>LE(VEP)</th>
<th>NOSTR</th>
<th>STAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. V [IP t_i will see them]</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b. V [CP t_i that [IP t_i will see them]]</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>c. V [CP t_i that [IP t_i will see them]]</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Tableaux (140) shows that when STAY is low-ranked, it has no influence on complementizer pronunciation, with the result that the CTP will be absent. In tableaux (141), the same is illustrated for languages with obligatory complementizers, such as Dutch and Icelandic. The high-ranked LE(VEP) is violated by candidates (141a) and (141c). Consequently, (141b), in which CP is present, and the complementizer is pronounced, is optimal (cf. tableaux (127)). The mutual ranking of NOSTRUC and STAY is irrelevant.

(141)

<table>
<thead>
<tr>
<th>Obligatory Comp, no CTP</th>
<th>LE(VEP)</th>
<th>NOSTR</th>
<th>STAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. V [IP t_i ..]</td>
<td>*/!</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b. V [CP t_i Comp [IP t_i ..]]</td>
<td>*</td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>c. V [CP t_i Comp [IP t_i ..]]</td>
<td>*/!</td>
<td>*</td>
<td>**</td>
</tr>
</tbody>
</table>
Finally, we predict that languages which lack complementizers do not exhibit the CTP. Like in (131)-(133), the IP candidate is optimal in the following three tableaux:

(142)

<table>
<thead>
<tr>
<th>No Comp, no CTP</th>
<th>STAY</th>
<th>NOSTR</th>
<th>LE(VEP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. V [IP t ..]</td>
<td>*</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. V [CP t; Comp [IP t ..]]</td>
<td>**!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. V [CP t; Comp [IP t ..]]</td>
<td>**!</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

(143)

<table>
<thead>
<tr>
<th>No Comp, no CTP</th>
<th>NOSTR</th>
<th>LE(VEP)</th>
<th>STAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. V [IP t ..]</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. V [CP t; Comp [IP t ..]]</td>
<td>*!</td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>c. V [CP t; Comp [IP t ..]]</td>
<td>*!</td>
<td>*</td>
<td>**</td>
</tr>
</tbody>
</table>

(144)

<table>
<thead>
<tr>
<th>No Comp, no CTP</th>
<th>NOSTR</th>
<th>STAY</th>
<th>LE(VEP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. V [IP t ..]</td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b. V [CP t; Comp [IP t ..]]</td>
<td>*!</td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>c. V [CP t; Comp [IP t ..]]</td>
<td>*!</td>
<td>**</td>
<td>*</td>
</tr>
</tbody>
</table>

When we compare the tableaux (138)-(144) to their counterparts in the previous two subsections, it turns out that for each candidate, the number of violations of STAY equals the number of violations of T-LEX-GOV plus one (or plus two, if VP-internal traces are taken into consideration). Since all candidates incur this additional violation of STAY, it will not have any affect on the outcome of the evaluation. In other words: in the absence of CP, long wh-movement from SpecIP can occur in one step (which leads to fewer violations of STAY), while its trace is governed by the matrix verb (which prevents a violation of T-LEX-GOV). Hence, STAY can be substituted for T-LEX-GOV without changing the predictions made. This move is attractive because STAY is an independently needed constraint, whereas T-LEX-GOV is specifically designed to account for the CTP. In previous chapters, STAY played a central role in the reduction of other subject-object asymmetries to clause size. If T-LEX-GOV is replaced by STAY, this leads to a generalized economy approach to subject-object asymmetries.

Let us conclude this section by returning to the pro-drop languages. Unlike tableau (135), tableau (145) mentions only one IP candidate (notice that like in tableau (135), no ranking is specified). This is because candidate (135d) is identical to (135a) if the intermediate trace necessary to satisfy successive cyclicity is added in SpecIP. In tableau (145), candidates (b-c) are harmonically bound by candidate (d), which means that they will not be optimal under any ranking. Since these two candidates violate STAY three times, whereas the other three do so twice, the ranking of this constraint, just like the ranking of T-LEX-GOV in tableau (135), is irrelevant.
SUBJECT-OBJECT ASYMMETRIES

Consequently, we still predict that all pro-drop languages lack the CTP, irrespective of the ranking of STAY.

3.2. Long object and adjunct movement

Both T-LEX-GOV and STAY can be held responsible for the difference between wh-movement from SpecIP and that from any other position in the clause. Only in the former case will IP complements be preferred by these two constraints. Whenever wh-elements originate from a position other than SpecIP, the presence or absence of CP does not have an influence on the question of whether the trace that is left behind is governed. The same holds for the number of traces, provided that we are prepared to assume that even in absence of a CP-layer, wh-movement should be able to apply in a successive cyclic fashion.

If successive cyclic movement were impossible in the absence of CP, the IP-option would not compete in the evaluation of long wh-movement of non-subjects. Tableau (146) shows that this would lead to the incorrect prediction that complementizers are always pronounced in this syntactic context. The core of the problem is that candidate (146b), in which the complementizer is deleted, is harmonically bound by candidate (146a), which contains a pronounced complementizer.

Therefore, it is necessary to assume that an escape hatch for non-subjects is also available in IP complements. Let us suppose that non-subjects may land in a second specifier of the complement. If so, the evaluation of English object
extraction proceeds as in tableau (147). In this tableau, STAY is violated by all three candidates, and the tie between LE(VEP) and NOSTRUC eliminates candidate (c). Hence, candidates (147b-c) are optimal, which is correct. More particularly, since all three candidates incur two violations of STAY, this constraint will be irrelevant under any ranking.

(147)

<table>
<thead>
<tr>
<th>English</th>
<th>STAY</th>
<th>LE(VEP)</th>
<th>NOSTR</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. V [IP t, they will see t]</td>
<td>**&gt;</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. V [CP t, that [IP they will see t]]</td>
<td>**</td>
<td>*</td>
<td>&lt;*</td>
</tr>
<tr>
<td>c. V [CP t, that [IP they will see t]]</td>
<td>**</td>
<td>*</td>
<td>&lt;*</td>
</tr>
</tbody>
</table>

Note that if TEL is substituted for NOSTRUC (as proposed by Broekhuis & Dekkers, to appear; Pesetsky, 1997, 1998; see also chapter 3), we do not have to assume a second specifier of IP. This is demonstrated in tableau (148). Since (148b) is not harmonically bound by (148a), both candidates will be optimal. However, since both the obligatoriness of complementizers in the context of sentential adverbials and the impossibility of pronouncing the relative pronoun that in prepositional relatives (see chapter 3) do not follow from a tie between LE(VEP) and TEL, we reject an analysis along these lines.

(148)

<table>
<thead>
<tr>
<th>English</th>
<th>STAY</th>
<th>LE(VEP)</th>
<th>TEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. V [CP t, that [IP they will see t]]</td>
<td>**</td>
<td>*</td>
<td>&lt;*</td>
</tr>
<tr>
<td>b. V [CP t, that [IP they will see t]]</td>
<td>**</td>
<td>*</td>
<td>&gt;*</td>
</tr>
</tbody>
</table>

Like Grimshaw’s analysis in terms of T-LEX-GOV, an economy-based analysis predicts that adjunct extraction behaves on a par with object extraction:

(149)

<table>
<thead>
<tr>
<th>English</th>
<th>STAY</th>
<th>LE(VEP)</th>
<th>NOSTR</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. When, do you think [IP t, they will see them t]</td>
<td>**&gt;</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. When, do you think [CP t, that [IP t, they will see them t]]</td>
<td>**</td>
<td>*</td>
<td>&lt;*</td>
</tr>
<tr>
<td>c. When, do you think [CP t, that [IP t, they will see them t]]</td>
<td>**</td>
<td>*</td>
<td>&lt;*</td>
</tr>
</tbody>
</table>

Since both types of extraction involve movement from positions that are not potentially left-peripheral, all structures produced by Gen/ChL will involve the additional movement step necessary to avoid a violation of successive cyclicity. As a result, STAY does not influence the question of whether or not CP should be projected. Therefore, object and adjunct extraction do not affect complementizer pronunciation.
3.3. Subject-object asymmetries in weak island contexts

So far, we have focused on subject-object asymmetries occurring in the context of wh-extraction from complements of epistemic verbs. However, similar asymmetries occur in the context of wh-islands, as we have seen in section 1. The examples in (150) show that the elements how and if, which create wh-islands, block long subject movement, just like that:

(150) a. *Which student do you wonder how could solve the problem? (Rizzi, 1990)
b. *Who do you think that saw Bill?
c. *Which student did John ask if knew Bill? (Vos, 1994)

The examples in (150) contrast with those in (151). Although object movement across how and if is degraded, it does not lead to full unacceptability as in the case of long subject movement.

(151) a. ??Which problem do you wonder how John could solve? (Rizzi, 1990)
b. Who do you think that Bill saw?
c. ?What did John ask if Bill knew? (Vos, 1994)

In this section, we will examine if our economy approach can also capture subject-object asymmetries in the context of these and other weak islands. Section 3.3.2 focuses on subject-object asymmetries caused by intervening complementizers, while section 3.3.3 is devoted to intervening wh-phrases. But first, let us first briefly go into the general phenomenon of weak islands.

3.3.1. Weak islands

Weak islands are characterized by the fact that they cause adjunct-argument asymmetries. In (152)-(154), it is shown that although wh-movement across a negative expression or from an interrogative or factive clause is in principle permitted, it leads to ungrammaticality if the moved element is an adjunct. The examples in (153)-(154) are taken from Cinque (1990).

(152) Wh-Island:
a. ??Which problem do you wonder how John could solve?
b. *How do you wonder which problem John could solve?

(153) Inner (negative) island:
a. To whom didn’t you speak?
b. *How didn’t you behave?

(154) Factive island:
a. To whom do you regret that you could not speak?
b. *How do you regret that you behaved?
Weak islands should be distinguished from strong islands such as subject and adjunct islands, which are not sensitive to the nature of the moved elements: they block both adjunct and argument movement. The examples in (155)-(156) are again taken from Cinque (1990). The ungrammaticality of these examples follows from the subjacency condition on movement we introduced in chapter 2. We will ignore strong islands here.

(155)  
Subject island:
  a. *Which books, did [talking about $t_1$] become difficult?
  b. *How, would [to behave $t_1$] be inappropriate?

(156)  
Adjunct island:
  a. *To whom, did you leave without speaking $t_1$?
  b. *How, was he fired after behaving $t_1$?

At first sight, subjects seem to pattern with adjuncts in weak island contexts. The examples of subject extraction in (150a) and (157), for instance, are ungrammatical on a par with the examples of adjunct extraction in (152b) and (154b), respectively.

(157)  *Who do you regret (that) punished the children? \hfill (Zubizarreta, 1982)

Recall that Rizzi (1990) argues, however, that these two asymmetries should not be treated on a par (see section 1.3.2 above). In his view, adjunct-argument asymmetries are caused by the requirement that traces be identified by their antecedent, while subject-object asymmetries are due to a formal licensing requirement. Among the indications that such a distinction is on the right track is the observation that adjunct extraction is not sensitive to the presence of *that*, while subject extraction is. Compare (158) with (150b).

(158)  How do you think (that) John could solve this problem?

Subjects, on the other hand, are not sensitive to inner islands, while adjuncts are. Examples are given in (159).

(159)  a.  Who, don't you think John met $t_1$?
  b.  Who, don't you think met John $t_1$?
  c.  *How, don't you think John fixed his car $t_1$?

Furthermore, in a null-subject language such as Italian, subjects pattern with objects rather than with adjuncts in weak island contexts. Examples of *wh*-islands are given in (160).
Rizzi (1990):

a. ?Che studente non sai come potrà risolvere il problema?
   Which student don’t you know how could solve the problem
   ‘Which student don’t you know how could solve the problem?’

b. ?Che problema non sai come potremo risolvere?
   Which problem don’t you know how we could solve
   ‘Which problem don’t you know how we could solve?’

c. *Come non sai che problema potremo risolvere?
   how not know-2SG which problem could-1PL solve
   ‘How don’t you know which problem you could solve?’

Rizzi’s identification requirement is partially semantic, since it makes a

Rizzi’s identification requirement is partially semantic, since it makes a
distinction between moved elements that are associated with a referential 0-role and

This is acknowledged in Szabolcsi & Zwarts’ (1993) semantic approach to

This is acknowledged in Szabolcsi & Zwarts’ (1993) semantic approach to
weak islands, in which island sensitivity of wh-phrases is reduced to the
impossibility to perform the necessary operations in the denotation domain of these
phrases. Let us assume that an analysis of “adjunct-argument” asymmetries along
these lines is essentially correct, and continue our investigation of the other class of
asymmetries, which is syntactic in nature.

3.3.2. Intervening complementizers

Whereas object movement from complements of factive verbs only leads to a
slightly degraded result, subject movement is fully ungrammatical in this context.
Irrespective of whether the complementizer is pronounced in (162a), the example is
unacceptable. A similar observation can be made for wh-extraction from embedded
interrogative clauses headed by if.

(160)

(161) a. Which man, do you regret that I saw ti?
   b. *Who, do you regret that I saw ti?
   c. ??What, do you regret that I saw ti?
   d. ??How many books, do you regret that I saw ti?
   e. *How much pain, do you regret that I saw ti?
   f. *Who the hell, do you regret that I saw ti?

A wh-phrase is D-linked if it is replaced by a member of a pre-established set in the answer to the
question that contains this wh-phrase (see Pesetsky, 1987).
Zubizarreta (1982):

a. *Who do you regret (that) punished the children?

b. ?Who do you regret that Mary punished?

Vos (1994):

a. *Which student did John ask if knew Bill?

b. ?What did John ask if Bill knew?

Before we go and analyze these asymmetries, let us first consider the distribution of complementizers in clauses of different semantic types.

3.3.2.1. Semantic type

A remarkable property of clausal complements of factive verbs is that the complementizer is obligatorily pronounced. The example in (164a), taken from Melvold (1991), shows that in complements of factive verbs, *that* is obligatorily present. The same holds for embedded yes-no interrogatives, in which *if* cannot be omitted.


It seems that the impossibility of embedding IP should be blamed on the failure to meet the selectional requirements of the main verb. However, this cannot be a matter of *c*-selection, since *c*-selection does not distinguish between possible realizations of an extended projection of the verbal category. In other words, the ungrammaticality of the examples in (164) without complementizer must be due to *s*-selection.\(^{27}\)

Complements of factive verbs receive a semantic interpretation different from those of, for instance, epistemic verbs (see Kiparsky & Kiparsky, 1971). The most striking difference in semantic interpretation between the two examples in (165) is that the truth of the embedded clause in (165a) is presupposed, whereas that of its counterpart in (165b) is not.


b. John thinks (that) Jane voted for Reagan.

Let us therefore assume that factive verbs take CP complements because the complementizer contributes to the meaning of the clause in such a way that the embedded verbal extended projection as a whole can be interpreted as a fact.

This is in line with Grimshaw’s (1991) views on *s*-selection, according to which heads like *C* and *D* can be type-changing. The presence of the complementizer *if* leads to an interrogative interpretation of the clause. Verbs like *wonder* *s*-select clauses of this type. Consequently, whenever a clause contains a complementizer other than *if* (in the absence of a clause-initial *wh*-phrase), it will not be a legitimate complement of *wonder*:

\(^{27}\) Notice that the hypothesis that *c*-selection can be reduced to *s*-selection is not contradicted in this book.
I wonder if Billy will make it as a rock singer.

*I wonder that Billy will make it as a rock singer.

Along the same lines, epistemic verbs s-select a proposition. Since clauses containing if are interrogative, they will not be s-selected by a verb like think:

*I think if Billy will make it as a rock singer.

I think that Billy will make it as a rock singer.

The examples in (168) show that in the absence of a complementizer, a clause is interpreted as a proposition, rather than as a fact or a question.

Bill revealed Jane voted for Reagan.

*Bill wondered Jane voted for Reagan.

Bill thought Jane voted for Reagan.

Because the complementizer that can be used in complements of both factive and epistemic verbs, it is ambiguous between being a type-preserving and a type-changing head. Type-preserving that contributes nothing to the semantics of the clause. As a result, it is optional if the syntax does not require otherwise. Type-changing that (henceforth that'), on the other hand, leads to a factive interpretation of the clause, and can therefore not be omitted even if the syntax would allow this. In chapter 5, we will propose that the distinction between type-changing and type-preserving that is a structural, rather than a lexical matter.

The three structures in (169) are equivalent from a c-selectional point of view. In English, two of these structures, viz. (169a-b), actually surface, which is due to the ranking LE(VEP) <= NOSTRUC.

(169) a. V [IP ...]

b. V [CP Comp [IP ...]]

c. V [CP Comp [IP ...]]

Particular instantiations of these two grammatical structures are given in (170). Since (169a) does not contain a complementizer, it can only be interpreted as a proposition. The type of the embedded clause in (169b), on the other hand, depends on the choice of complementizer. If type-preserving that is inserted, the clause is again interpreted as a proposition. If, on the other hand, the actual structure contains the type-changing complementizers that' or if, it will be interpreted as a fact or a question, respectively. The structure in (169c) necessarily involves deletion of type-preserving that because its type-changing counterparts contain semantic features:

(170) a. V [IP ...] (proposition)

b. V [CP that [IP ...]] (proposition)

b'. V [CP that' [IP ...]] (fact)

b''. V [CP if [IP ...]] (Q)

c. V [CP that [IP ...]] (proposition)
The choice between these complementizers is irrelevant from a syntactic point of view. All four structures in (170) are composed of the same formal features. Only features involved in feature checking qualify as formal (see chapter 2). Although the three complementizers in (170b-b") are undoubtedly composed of distinct semantic features, these features are not involved in feature checking and are, therefore, irrelevant for candidate set membership.

This is illustrated in tableau (171), where the candidate set to which (166a) belongs is evaluated. Only candidate (171e) violates both tied constraints, and is therefore eliminated. The other four candidates violate only one of these constraints. Hence, they are all optimal, and therefore syntactically well-formed. Nevertheless, only (171d) actually surfaces, due to the s-selectional properties of the verb wonder. This verb s-selects clauses of the Q (interrogative) type, which disqualifies (171a-c).

(171)

It must be underlined that verbs do not s-select CPs. Rather, they s-select clauses of a specific semantic type. If the required interpretation of the complement clause depends on the presence of a complementizer, CP must be projected. In the case of the wonder-type verbs, for instance, the complement clause must contain some element which gives rise to an interrogative interpretation. There are two ways to achieve this. First, the interrogative complementizer /can be pronounced. Since /must head a CP for syntactic reasons, this strategy will lead to CP-complementation. Second, the interrogative interpretation can be brought about by the presence of a wh-phrase. Since wh-phrases can be licensed in SpecIP, the necessary interpretation can be obtained without projecting CP.

3.3.2.2. Evaluation precedes s-selection

We have implicitly assumed that evaluation precedes s-selection. Structures are first evaluated. Subsequently, it is verified whether or not the optimal candidates violate s-selectional requirements. However, it is possible that although the five structures in (171) are equivalent in the sense that they are composed of identical formal features, they will not compete. It could be that candidate sets only contain structures that do not violate s-selectional requirements. If so, all candidates in tableau (171), with the exception of candidate (d), would be excluded from competition.

The question is therefore: does evaluation really precede s-selection? To find the answer, we should examine situations in which s-selection and syntax have conflicting needs. A good example is subject extraction from a clause containing a complementizer which must be pronounced for s-selectional reasons. Let us return to the sentences in (162) and (163), and begin with example (163a), repeated in
(172d). The question is whether this sentence competes with the other four options given in (172), which are all composed of identical formal features, and therefore in principle in competition with each other. If s-selection precedes evaluation, (172a-c) and (172e) will not enter any candidate set because they violate the s-selectional requirements of the verb *ask*. Whereas *ask* s-selects complements of the type Q, the embedded clauses in (172) are interpreted as propositions or facts. However, if these structures do not compete, (172d) is predicted to be grammatical for lack of competition, which is incorrect.

(172)  
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>a.</td>
<td>Which student did John ask knew Bill?</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>Which student did John ask that knew Bill?</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>Which student did John ask that' knew Bill?</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>Which student did John ask if knew Bill?</td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td>Which student did John ask that knew Bill?</td>
<td></td>
</tr>
</tbody>
</table>

If we assume instead that evaluation precedes s-selection, the sentences in (172) will be in one candidate set. The evaluation is given in tableau (173). Like in tableau (138), the high-ranked STAY rules out the CP options (173b-e) because these violate STAY twice, whereas the IP candidate (173a) violates this constraint only once. This means that the ungrammaticality of (173d) is due to the fact that this structure is blocked by the optimal (173a). However, although (173a) is optimal, it is uninterpretable because the complement clause it contains is not of the type Q, and therefore violates the s-selectional requirements of the verb *ask*.

<table>
<thead>
<tr>
<th></th>
<th>STAY</th>
<th>LE (VEP)</th>
<th>NOSTR</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. wh₁ ... ask ³IP t₁ ..]</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. wh₁ ... ask ³CP t₁ that ³IP t₁ ..]</td>
<td>**!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. wh₁ ... ask ³CP t₁ that' ³IP t₁ ..]</td>
<td>**!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>d. wh₁ ... ask ³CP t₁ if ³IP t₁ ..]</td>
<td>**!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>e. wh₁ ... ask ³CP t₁ that ³IP t₁ ..]</td>
<td>**!</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

In sum, if s-selection has no influence on candidate set membership, this accounts for the ineffability of structures in which a subject moves across an interrogative complementizer. Tableau (174) shows that this effect is absent in the case of object movement. Like in tableau (147), STAY is violated twice by all candidates. Since (174a-d), contrary to (174e), violate only one of the two tied constraints LE(VEP) and NOSTRUC, these four candidates are optimal. However, (174a-c) violate the s-selectional requirements of the verb *ask*. Hence, it is correctly predicted that only candidate (174d) (= (163b)) surfaces.
The subject-object asymmetry witnessed in the context of long wh-movement from complements of factive verbs can be explained along the same lines. If the subject moves, the high-ranked STAY prefers (175a) over (175b). However, this structure cannot be interpreted, since IPs cannot get the factive interpretation required by the verb regret.

(175)  
a. who do you regret [IP ti punished the children]  
b. who do you regret [CP ti that [IP ti punished the children]]

If the object is moved on the other hand, both the IP and the CP option are optimal. From a semantic point of view, CPs containing that' are appropriate complements of factive verbs. Hence, (176b) is correctly predicted to surface.

(176)  
a. who do you regret [IP ti Mary punished ti]  
b. who do you regret [CP ti that [IP ti Mary punished ti]]

As long as a particular instance of wh-extraction does not exclude the presence of CP, this movement can cross complementizers of any type. In cases in which the presence of CP is excluded, on the other hand, the movement in question can only occur if the presence of the complementizer is not needed for s-selectional reasons.

This makes an interesting crosslinguistic prediction. In languages lacking the CTP, subject extraction is compatible with the presence of a complementizer. If complementizers are licit, the s-selectional requirements of factive and wonder-type verbs can be satisfied. In other words, the presence of factive or interrogative complementizers are predicted only to create islands for subject movement in CTP languages. This prediction is borne out. Spanish, being a pro-drop language, lacks the CTP. The examples in (177) and (178) show that it also lacks subject-object asymmetries in factive and interrogative contexts.

(177)  
a. ¿Quién lamentas que no haya llamado?  
who regret-2SG that not has called  
‘Who do you regret (that) did not call?’  
b. ¿A quién lamentas que Juan haya llamado?  
who regret-2SG that Juan has called  
‘Who do you regret that Juan called?’
SUBJECT-OBJECT ASYMMETRIES

(178) Vos (1994):
   a. ¿Quién no sabes si alquiló la casa?
   who not know-2SG if rented the house
   'Who don’t you know if rented the house?'
   b. ¿Qué libro no sabes si compró Juan?
   which book not know-2SG if bought Juan
   'Which book don’t you know if Juan bought?'

A similar observation can be made for Dutch, which also lacks the CTP:\(^{28}\)

(179) a. ?Wie betreur je dat ons niet gebeld heeft?
   who regret you that us not called has
   'Who do you regret that did not call us'
   b. ?Wie betreur je dat hij niet gebeld heeft?
   who regret you that he not called has
   'Who do you regret that he did not call?'

(180) a. ?Wie weet je niet of ons zal waarschuwen?
   who know you not if us will warn
   'Who don’t you know if will warn us?'
   b. ?Wie weet je niet of hij zal waarschuwen?
   who know you not if he will warn
   'Who don’t you know if he will warn?'

French, on the other hand, being a CTP language, should behave like English. And indeed, subject extraction is disallowed in the contexts in question:

(181) Zubizarreta (1982):
   a. *Qui regrettes-tu qui châtie les enfants?
   who regret-you qui punishes the children
   'who do you regret (that) punishes the children?'
   b. ?Qui regrettes-tu que Marie châtie?
   who regret-you que Marie punishes
   'Who do you regret that Marie punishes?'

\(^{28}\) The degree of acceptability attributed to the examples in (179)-(180) are based on the author’s judgments, which are on the liberal side. For many speakers of Dutch, these examples will be more degraded than suggested here, although no subject-object asymmetries are attested. Maybe, the absence of subject-object asymmetries in these examples is (partially) responsible for the fact that object movement from weak islands is judged less acceptable in Dutch than in English or French. Notice in this context that (i), an example of object extraction from a strong island, is considerably more degraded than the examples in (179)-(180).

(i) *Wie ging hij huilen omdat hij moest zoenen?
   who went he cry because he had-to kiss?
   'Who did he start to cry because he had to kiss?'
(182) a. *Quel professeur ne sais-tu pas si aidera l'étudiant?
   Which professor NEG know-you NEG if help-FUT the-student
   "Which professor don't you know if will help the student?"
b. ?Quel étudiant ne sais-tu pas si le professeur aidera?
   Which student NEG know-you NEG if the professor help-FUT
   "Which student don't you know if the professor will help?"

Note, finally, that in an OT syntax in which members of a candidate set must be semantic equivalents (see chapter 2), violation of s-selectional requirements will not lead to absolute ungrammaticality because complementizers with semantic content will obligatorily be contained in all members of the candidate set. As long as alternative accounts of the phenomena under discussion compatible with a semantic identity requirement are not available, the view on candidate set membership we have adopted in chapter 2 is superior.

3.3.3. Intervening wh-phrases

Let us reconsider the examples in (152) repeated in (183). Although wh-movement from an interrogative clause introduced by some other wh-phrase is marginal to begin with, subject extraction leads to a worse result than object extraction.

(183) a. ??Which problem do you wonder how John could solve t₁ t₂?
b. *How do you wonder which problem John could solve t₂ t₁?

The examples in (183) contain two interrogative clauses, and two interrogative phrases. As a result, it should be determined during the evaluation of this construction which wh-phrase moves to the higher clause, and which one stays in the lower clause. For the example in (183a), the two options in (184) are available. Either the wh-object moves to the higher clause, while the adjunct occupies the SpecCP in the lower clause, as in (184a), or vice versa, as in (184b). In both cases, both which problem and how must undergo movement to reach their scope position, and STAY will be irrelevant.

(184) a. Which problem do you wonder [CP how John could solve t₁ t₂]
b. How do you wonder [CP which problem John could solve t₂ t₁]

For the example in (183b), the options are as given in (185). In addition to the structures in (185a-b), which parallel (184a-b), it is possible to leave the subject in SpecIP, where it can check the [+wh] feature of the lower interrogative clause, as in (185c). The absence of subject movement to SpecCP leads to one less violation of STAY. Hence, (185c) will be preferred over (185a-b).

29 Broekhuis & Dekkers (to appear) speculate that the gradual acceptability judgements in (183) and similar cases are the result of the linguist's ability to consciously ignore some principle otherwise operative in Gen/C₇₇. Suppose that the marginal status of examples involving wh-extraction from a clause introduced by a wh-phrase is caused by a principle in Gen/C₇₇ banning chains containing specifiers of two distinct [+wh] heads (e.g. the chain (wh₁, t₁, t₂) in (i)).

(i) [wh₁]c [+wh] ... wonder [xp t₁ wh₂ [x [+wh]] ... t₄ ... t₇ ...]]
(185) a. Which student do you wonder [CP how j [IP t i could solve the problem tj]]
b. How j do you wonder [CP which student [IP t i could solve the problem tj]]
c. How j do you wonder [IP which student could solve the problem t i]

The three structures in (184a-b) and (185c) are optimal. However, two of them involve movement of a wh-adjunct across another wh-element. We have argued in section 3.3.1, following Rizzi (1990) and in particular Szabolcsi & Zwarts (1993), that such movement leads to semantic uninterpretability. Consequently, although they are optimal, (184b) and (185c) do not surface because they are semantically ill-formed. Again, semantic ill-formedness leads to ineffability.

In pro-drop languages, in which subjects can be extracted from their thematic position inside VP, subjects are as sensitive to intervening wh-phrases as objects are. The Italian paradigm given in (160) is partially repeated in (186):

(186) a. ?Che studente non sai come potrà risolvere il problema?
    Which student not know-2SG how could solve the problem
    ‘Which student don’t you know how could solve the problem?’
b. ?Che problema non sai come potremo risolvere?
    Which problem not know-2SG how could-1PL solve
    ‘Which problem don’t you know how we could solve?’

In Italian, subjects can be extracted in a more economic way than in English because they do not have to move through SpecIP (see section 3.1 above). The relevant candidates are given in (187). In (187a-b), the adjunct stays in the lower clause, whereas the subject moves to the higher clause. The most economic way to move the subject is by skipping SpecIP, as in (187b). This representation incurs the same number of violations of STAY as (187c-d), and one less violation of this constraint than (187e). Hence, (187b-d) are optimal.30 However, (187c-d) (as well as (187e)) are semantically ill-formed, since the adjunct is extracted from an interrogative clause.

(187) a. Che studente, non sai [CP come t i potrò risolvere t i il problema t j]
b. Che studente, non sai [CP come t i potrò risolvere t i il problema t j]
c. Come, non sai [CP che studente t i potrò risolvere t i il problema t j]
d. Come, non sai [IP che studente t i potrò risolvere t i il problema t j]
e. Come, non sai [CP che studente t i potrò risolvere t i il problema t j]

Dutch also lacks a subject-object asymmetry in this context.

This means that both sentences in (183) crash in Gen/CIL. Let us imagine Gen/CIL', which is identical to Gen/CIL except for the fact that it does allow successive cyclic wh-extraction from a clause introduced by a wh-phrase. Gen/CIL' would accept examples like the ones in (183). If these structures are evaluated as indicated in the main text, (183a) will be optimal, contrary to (183b). In other words, (183a) only crashes in Gen/CIL, while (183b) is, in addition, evaluated as suboptimal.

Notice that in the structures in this subsection, we have omitted the intermediate traces in the second specifier of the complement clause. These omissions have no repercussions for the evaluations in question.

30 If PURE-EP outranks STAY in Italian, only (187b-c) will be optimal. Nothing depends on this.
(188) a. ??Wie vraagt Jan hoe ons gevonden heeft?
   `Who does Jan ask how have found us?'
b. ??Wie vraagt Jan hoe zij gevonden hebben?
   `Who does Jan ask how have found them?'

Given the high rank of PURE-EP, and our assumption that Dutch is a V-to-I language, IP-complementation, as in (189c), is no option in this language. The two alternative candidates in (189a-b) are equally economic, and therefore both optimal. Option (189b) is again semantically uninterpretable.

(189) a. wie vraagt Jan [CP hoe IP ons gevonden heeft]
b. hoe vraagt Jan [CP wie IP ons gevonden heeft]  
c. hoe vraagt Jan [IP wie ons gevonden heeft]

French, on the other hand, patterns with English:

(190) a. ??Quel problème as-tu demandé comment cet étudiant résoudrait?
   `Which problem have you asked how this student solve-PAST-FUT'
b. *Quel étudiant as-tu demandé comment résoudrait ce problème?
   `Which student have you asked how solve-PAST-FUT this problem?'

Although French is a V-to-I language, subordinate clauses can be IPs, due to the low rank of PURE-EP (see section 2.2.1 above, we will come back to this point in chapter 5). As a result, (191c) will be optimal but semantically uninterpretable, just like the English (185c).

(191) a. quel étudiant as-tu demandé [CP comment IP t résoudrait ce problème j]
b. comment as-tu demandé [CP quel étudiant IP t résoudrait ce problème j]  
c. comment as-tu demandé [IP quel étudiant résoudrait ce problème t]

In sum, subject-object asymmetries in the context of long movement across a wh-phrase can also be reduced to clause size. Subject extraction is blocked in this context by alternative structures in which the subject does not undergo long movement, but rather moves to the lower SpecIP. The latter option is less costly, and therefore preferred by STAY. Like in the previous subsection, this leads to absolute ungrammaticality if the candidate blocking long subject movement is semantically uninterpretable. The subject-object asymmetries in question are neutralized in pro-drop languages (because these allow subjects to be extracted from postverbal position) and in V-to-I languages in which PURE-EP is high-ranked (because these do not allow IP-complementation).
4. Conclusion

In this chapter, we have presented an economy analysis of subject-object asymmetries found in the context of *wh*-extraction from epistemic, factive, and interrogative complement clauses.

Subject extraction from clausal complements creates a tension between economy of movement (STAY) and the need to project CP (LE(VEP) and, if applicable, PURE-EP). This tension is caused by the fact that if CP is absent, subjects can be moved in one step from their Case position (SpecIP) to a higher clause without violating successive cyclicity. If CP is present, on the other hand, subject extraction leaves an additional trace in SpecCP to ensure that successive cyclicity is respected. If LE(VEP) (or, if applicable, PURE-EP) outranks STAY, CP is projected at the expense of an additional trace in SpecCP. If STAY outranks LE(VEP) (and, if applicable, PURE-EP), CP is not projected. Consequently, subject extraction takes place in one step. Thus, unlike the ECP and its predecessors, our OT analysis predicts that the CTP is not universal, and that subject-object asymmetries are neutralized if CP must be projected for independent reasons in a CTP language. Both predictions are borne out. Furthermore, we have argued that subject extraction from factive and interrogative complements leads to ineffability in CTP languages because this creates a mismatch between syntactic and semantic requirements.

Since objects and adjuncts are extracted from a lower position in the clause than subjects, long object/adjunct movement will always involve an intermediate step into a left-peripheral specifier. If not, successive cyclicity is violated. As a result, the presence or absence of CP is immaterial. In other words, object/adjunct movement has no influence on complementizer placement. In pro-drop languages, subjects behave like objects and adjuncts because subjects can be extracted from postverbal position. Consequently, the mutual ranking of LE(VEP), PURE-EP, and STAY does not influence long *wh*-movement at all in these languages.

Thus, the analysis proposed in this chapter, like the analyses of related phenomena in interrogative main clauses and relative clauses presented in chapters 1 and 3, fits into a generalized economy approach to subject-object asymmetries which relates the marked syntactic behavior of subjects in a variety of syntactic contexts to clause size.
Appendix: Intervening whether

Let us briefly examine the subject asymmetry in (192) caused by a whether-island. Larson (1985), among others, argues that whether should be analyzed as a maximal projection. As such, it resembles a wh-phrase, rather than the interrogative complementizer if.

(192) a. ??Which problem did you wonder whether John would solve?
   b. *Which student did you wonder whether would solve this problem?

Larson (1985) proposes that whether also resembles a wh-phrase in the sense that it moves from a clause-internal base-position to its scope position. In his view, whether is a scope indicator for disjunction. The example in (193) is ambiguous between the two semantic interpretations in (194). Both interpretations contain a disjunction. However, the disjunction in (194a) is associated with \( \beta \) in (193), while in (194b) the proposition denoted by \( \alpha \) and its negation are disjoined. Within a movement analysis, these two interpretations correspond to the two distinct syntactic structures in (195). In (195a), whether is moved from inside \( \beta \) to its scope position in \( \alpha \), which leads to the semantic interpretation in (194a). In the alternative structure in (195b), whether originates from the higher clause, which results in the interpretation given in (194b).

(193) I don’t know \([\alpha \text{ whether Bill claimed } [\beta \text{ that John resigned or went on leave}]]\)

(194) a. \{p: p = true & \ p = [Bill claimed that John resigned]] v [Bill claimed that John went on leave]\}
   b. \{p: p = true & \ p = [[Bill claimed that John resigned or went on leave] v [-Bill claimed that John resigned or went on leave]]\}

(195) a. I don’t know \([\alpha \text{ whether Bill claimed } [\beta \text{ that John retired or went on leave}]]\)
   b. I don’t know \([\alpha \text{ whether Bill claimed } [\beta \text{ that John resigned or went on leave}]]\)

If whether moves, it must be sensitive to weak islands. Consider the example in (196). If whether is extracted from \( \beta \), as in (197a), it will have to cross a wh-phrase, and a wh-island violation is the result. No such violation occurs if whether moves inside the higher clause, as we can see in (197b). This implies that interpretation (198a) should at best be marginally available, while (198b) should be fully acceptable. Larson notes that this prediction is borne out.

(196) I know \([\alpha \text{ whether Bill wonders } [\beta \text{ who resigned or retired}]]\)

(197) a. I know \([\alpha \text{ whether Bill wonders } [\beta \text{ who t_r resigned or retired}]]\)
   b. I know \([\alpha \text{ whether Bill t_r wonders } [\beta \text{ who resigned or retired}]]\)
(198) a. \( p: p = \text{true} \land p = ([\text{Bill wonders who resigned}] \lor [\text{Bill wonders who retired}]) \)

b. \( p: p = \text{true} \land p = ([\text{Bill wonders who resigned or retired}] \lor [\neg \text{Bill wonders who resigned or retired}]) \)

The marginal status of (199a) (= (197a)) contrasts with the full unacceptability of (199b). This is expected, since long movement of \textit{whether} is more economic due to the fact that it enables the interrogative subject to stay in SpecIP, as shown in (200). Hence, (200a) (= (199a)) is the optimal candidate.

(199) a. ??I know whether Bill wonders who t resigned or retired.

b. *I know who Bill wonders whether t resigned or retired.

(200) a. I know [CP1 \textit{whether} Bill wonders [IP who t resigned or retired]]

b. I know [CP1 \textit{who} Bill wonders [CP2 whether t t resigned or retired]]

In sum, the assumption that \textit{whether} moves leads us to the correct prediction that in wh-islands contexts, this element behaves like a wh-object. As a result, wh-subjects cannot be extracted from a clause introduced by whether.
whether Bill claimed that John resigned or went on leave.

(153) 1 don't know whether Bill claimed that John resigned or went on leave.

(154) a. \[\{ p: p = \text{true} \land p = \{\text{Bill claimed that John resigned}\}\} \land \{\text{Bill claimed that John went on leave}\}\]

b. \[\{ p: p = \text{true} \land p = \{\text{Bill claimed that John resigned or went on leave}\}\} \land \{\text{Bill claimed that John resigned or went on leave}\}\]

(155) a. 1 don't know whether Bill claimed that John resigned or went on leave.

b. 1 don't know whether Bill claimed that John resigned or went on leave.

If whether moves, it must be ambiguous to weak phrases. Consider the example in (156a). If whether is extracted from \(s\) as in (157a), it \(w\) and have to cross a weak phrase, and a set-based movement is the result. No such violation occurs if whether moves inside the higher clause, as we can see in (157b). Thus, this interpretation (156a) should at least be maximally available, while (156b) should be fully acceptable. Larocq notes that this prediction is borne out.

(156) a. I know whether Bill wandered whether John resigned or retired.

b. I know whether Bill wandered whether John resigned or retired.