

# 5 The Periphery of the Sentence

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## Discussion

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## 0 Introduction

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This final chapter completes the overview of the structure of the sentence. So far, we have mainly concentrated on sentences whose leftmost constituent is the subject. We did occasionally discuss examples in which the subject is preceded by some other constituent, but the discussion did not go into details. In this chapter, we explore how interrogative constituents and auxiliaries to the left of the canonical subject position are structurally integrated into the sentence. We will also examine how a fully formed sentence can be integrated into a larger structure as an embedded clause.

We continue to assume that structures are derived by means of the operations Merge ('assemble, put together') and Move. As before, we use the binary branching format for structure: a head merges with a complement, the resulting constituent merges with a specifier to complete the projection, and two fully formed projections can be combined by adjunction. The current chapter focuses on the importance of the operation Move. One of the issues that will be raised is how far a constituent can be moved and whether there are any obstacles to the Move operation, that is, whether there are factors that can stop a constituent from moving from one position to another.

The chapter returns to one of the empirical issues raised in Chapter 1, the derivation of questions. In English, question formation usually requires that there be some material to the left of the canonical position of the subject. So we will investigate how to integrate this area of the sentence into the structure we have been assuming. In addition, we briefly look at the derivation of relative clauses, which also implicate the area of the sentence to the left of the subject. The mechanisms elaborated for the derivation of questions will be extended to the derivation of relative clauses.

In the chapter we will put forward a number of constraints on the way a constituent is moved and this will lead to the prediction that sentences violating these constraints should be ungrammatical. That is to say, such sentences should not be generated by our grammar. The analysis of grammatical sentences exemplifying movement may confirm that their derivation obeys the constraints we have postulated. But the fact that all the sentences we come across obey the constraints is not sufficient to confirm the prediction that all sentences violating such constraints are ungrammatical. At various points in the chapter we will test the prediction made by our analysis by experiment: we will construct examples that contain precisely the patterns that violate the constraints. According to the prediction following from our hypothesis such sentences should be unacceptable.

The chapter is organized as follows. Section 1 recapitulates the main issues covered in the previous chapters. In section 2 we examine how finite interrogative sentences are derived in English. We will see that the operation Move can be used to account for the derivation of such sentences. In section 3 we examine some of the constraints

on the operation Move. In section 4 we briefly look at non-finite interrogative clauses. Section 5 deals with relative clauses. Section 6 is a summary of the chapter.

## 1 Recapitulation

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Throughout this book, we have elaborated a set of hypotheses for the structure of sentences. These hypotheses form a theory, a system of principles of syntax, which we take to be the instructions for the derivation of sentences. Ideally, the theory we elaborate must be powerful enough to allow us to derive all and only sentences that are acceptable. In other words, the theory should not be too powerful: it should not **overgenerate**, that is, it should not allow the derivation of unacceptable sentences.

At this point it may be important to underline that a scientific theory is not static, it is not like a painting, for instance, which is an entity that, once it is finished, is “fixed” and does not change any more though our perception of it may change. A scientific theory is dynamic. Confronted with new empirical data or with new theoretical hypotheses, scientists may well reconsider some of their earlier hypotheses. A scientific theory must continuously be evaluated and adapted. Evaluating a theory of syntax may be done with respect to two types of questions:

- (i) What is the internal organization of the theory? Are the principles that make up the theory internally consistent? Are there any redundant principles that we could eliminate, leading to a more economical theory?
- (ii) What is the empirical coverage of the theory? Does the theory generate the right type of sentence? Does the theory generate any unacceptable sentences?

Try to summarize the various components of the theory that we have elaborated and illustrate how they account for the derivation of sentence (1a). Does the current version of our theory allow us to derive sentences (1b), (1c), and (1d)?

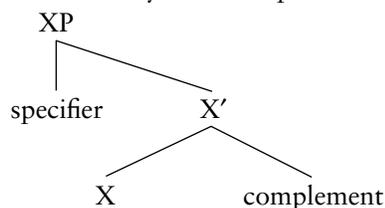
- (1) a The spy should destroy these instructions.
- b Obviously, the spy should destroy these instructions.
- c These instructions, the spy should destroy.
- d Should the spy destroy these instructions?

In the discussion we have adopted a general hypothesis about linguistic structure summarized schematically in (2).<sup>1</sup> Our hypothesis is that all constituents are derived by **merging** (= putting together) two constituents. We can read the derivation of representation (2a) from the bottom to the top in the following way. We first merge the head of the constituent, X, with its complement, forming X'; then we merge X'

<sup>1</sup> As mentioned in Chapter 4, note 8, the component of syntactic theory which sums up the format for syntactic structure is referred to as X-bar theory.

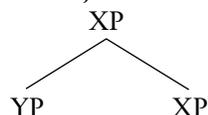
with another constituent, the specifier, to form XP. The complement and the specifier are closely related to the head X and together they form the core constituent.

(2) a X-bar theory: The blueprint for structure

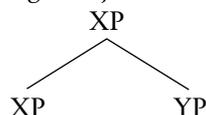


In addition, a fully formed constituent (which we could label YP, ZP, etc.) may be **adjoined** to another constituent. Adjunction is another application of Merge. Its specific property is that it merges constituents that are already complete in themselves. We assume that adjunction may apply both to the left and to the right. Adjunction is represented in (2b).

(2) b left-adjunction



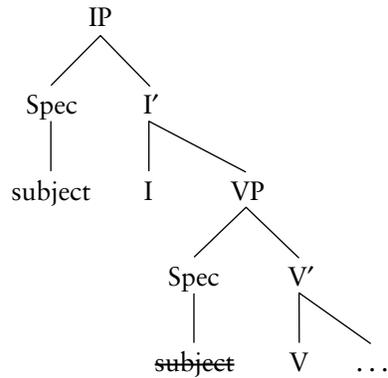
right-adjunction



In addition to assembling a structure by the operation Merge, that is by merging two constituents, we can modify the structure obtained at some point by the operation Move. This operation removes a constituent from one position, and merges it in another position in the same structure. Move allows us to represent the fact that one constituent “belongs” to two positions in the structure. Continuing to work our way upward in the sentence, we take a constituent from a lower position and move it into a higher position. For instance, to account for the fact that the subject of a sentence has a close semantic relationship with the verb, we proposed in Chapter 4 that the subject is first merged in a VP-internal position. To explain how the subject ends up in its canonical position, the specifier of IP, we propose that it moves to that position. In order to represent that the moved constituent also “belongs” in the lower position we use the device of copies: a copy of the moved constituent remains in the base position, while the moved constituent is merged in the higher position. It is the higher “moved” copy that eventually is spelt out (pronounced). We use the strikethrough representation (~~subject~~) to signal the position of the non-pronounced copy.<sup>2</sup> Using the format in (2), we have elaborated a representation of the basic structure of the sentence. In the first stage of the analysis, we had arrived at the structure in (3) below. A projection of the lexical head (V) is dominated by a projection of a functional head that encodes inflectional features (see Chapter 3, section 1.2.3). VP is a lexical projection; IP is a functional projection.

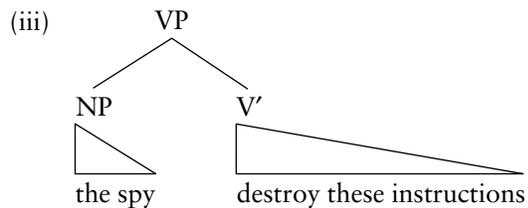
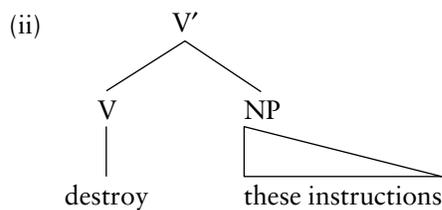
<sup>2</sup> We also saw in Chapter 4, section 4, that movement proceeds stepwise. We will come back to this point in detail in section 3.2 below.

(3) The structure of the sentence



The system allows us to derive (1a). The semantic nucleus of (1a) is the verb *destroy*. The verb denotes the situation we are dealing with and it determines which constituents are obligatory in the sentence.<sup>3</sup> So, in order to build a sentence, we start off with the verb *destroy* (i). We merge it with its complement, here the NP *these instructions*, which serves to narrow down the action, denoting the entity affected by the act of destroying (ii). The next step is to insert the subject *the spy*, which denotes the AGENT of *destroy* (iii). The completed VP will give us a complete picture of the activity expressed in the sentence: the VP tells us who did what.

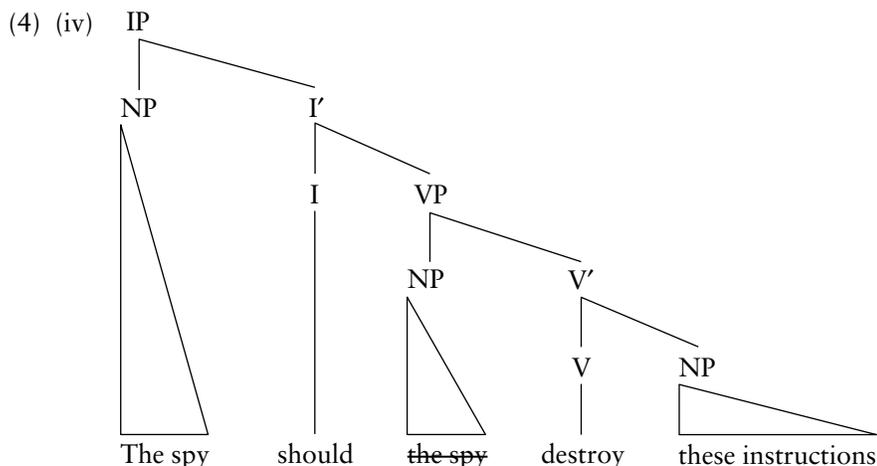
(4) (i) V = *destroy*



Next we build the dominating functional structure, the projection IP. I merges with VP. We insert the modal auxiliary *should* in I. *Should* locates the situation expressed in the sentence in the future and shows that the action expressed in the VP is

<sup>3</sup> See Chapter 3, sections 3.1, 3.2, 3.3.

desirable to the speaker. I also determines a perspective, an anchor for the information given in the sentence. I projects and we create its specifier. The subject moves up to the specifier of I (iv).

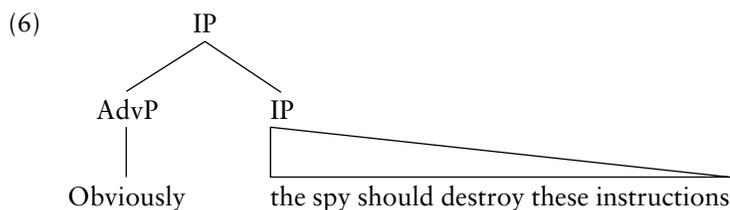


We build the structure starting from the semantic core, the verb, and by using the operation **Merge**, which combines two units, and the operation **Move**, which displaces units that are already part of the structure to a higher position.

Can we also derive the other examples in (1) using the above representations? With respect to (1b), the derivation can proceed as in (4), but there is an additional constituent in initial position, the adverbial phrase *obviously*.

- (5) a [IP the spy should destroy these instructions]
- b + [AdvP obviously]

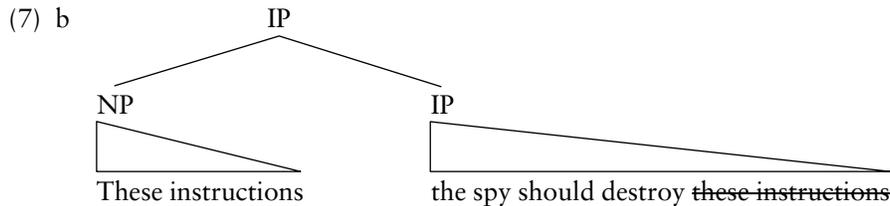
This additional constituent is optional; it does not receive a thematic role from the verb. The communicative function of *obviously* is to express the speaker's attitude to the content of the sentence. Recall that we can adjoin constituents to maximal projections. We could assemble (1b) by (left)-adjoining the AdvP to the projection IP.



Compare (1a) and (1c), repeated here as (7a), in terms of their form and their meaning.

(7) a These instructions, the spy should destroy.

(7a) has the same components as (1a) and the two sentences are very similar in interpretation. However, the order of the constituents is different. In (7a), the direct object NP, *these instructions*, does not occupy its canonical position to the immediate right of the verb. Rather, it occupies a sentence-initial position. The fronted NP *these instructions* signals what the information contained in the sentence is going to be about, it is the sentence **topic**.<sup>4</sup> But the NP *these instructions* also denotes the entity affected directly by the action denoted by the verb *destroy*. So, following the assembly procedure outlined above, we would expect the NP *these instructions* to be merged as the complement of the verb. Following the line of reasoning adopted, we could say that the NP *these instructions* first merges with V and that it is subsequently moved to the left-peripheral position.<sup>5</sup> Tentatively, we could say that the object moves out of VP and adjoins to IP:<sup>6</sup>



(1d) is familiar from the first chapter of the book; it illustrates a direct question. The subject NP *the spy* is preceded by the inverted modal auxiliary, *should*. Let us assume that, as before, the auxiliary *should* is first merged in I. The fronting of the auxiliary to the left of the subject signals the illocutionary force of the sentence, that is, it shows that the sentence is a question.<sup>7</sup> In Chapter 3<sup>8</sup> we concluded that in SAI the content of I inverts with the subject. In this chapter we will integrate the inverted constituent into the structure. We will do this using the format we have elaborated. As we will see, we will not need to invoke any novel mechanisms: we will be able to derive the word order of interrogative sentences by using a combination of the operations Merge and Move. As before, we elaborate a hypothesis and test it by examining its predictions.

<sup>4</sup> For an early discussion of the concept “topic” see Reinhart (1981).

<sup>5</sup> See also Chapter 3, section 1.2.3.4, and for more illustrations Exercise 15 in Chapter 2.

<sup>6</sup> One question that arises is whether a fronted object should really be presented as having the same relation with IP as the adverbial *obviously* in (1b). We will not address this issue here as it would lead us to a lengthy discussion beyond the scope of an introductory text. For some discussion of object fronting see Rizzi (1997), Haegeman (2003), and the references cited there.

<sup>7</sup> Recall from Chapter 1, section 2.3.2, that SAI does not always give rise to question interpretation.

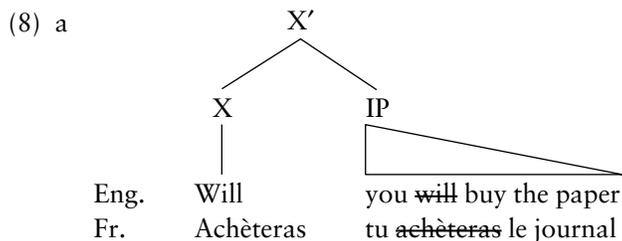
<sup>8</sup> Section 1.2.4.

## 2 Constructing the Periphery of the Sentence

### 2.1 Direct yes/no questions

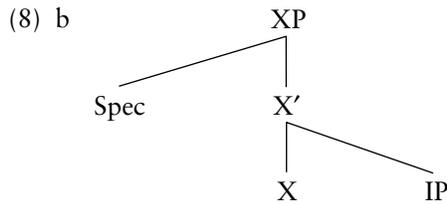
In Chapter 3 we observed that to form a direct question in English we move the finite auxiliary from I to a position to the left of the subject (SAI). When a finite sentence lacks an auxiliary we move the content of I and we insert the auxiliary *do* as a supporting element to allow the inverted inflectional morpheme to survive in the position to the left of the subject. In French direct questions, the verb itself is able to move to a position to the left of the subject (SVI). This is compatible with our hypothesis that it is the content of I that moves leftward: we had seen that in French the lexical verb can move to I.

Let us assume that the inverted auxiliary in English and the inverted verb in French end up in the same position to the left of the subject.<sup>9</sup> SAI (or SVI in French) means that the content of I moves to the left of the subject. I is a head, so SAI/SVI is movement of a head. So far, we have been assuming that a head moves to a head position. For instance, we proposed in Chapter 3, section 4.3, that English auxiliaries are merged in V and move to I; French auxiliaries as well as French lexical verbs merge in a head position and move to I. If SAI/SVI is head movement, the landing site of SAI/SVI must be a head position to the left of the subject position. Let us provisionally label this head “X.” The head X merges with IP. By the blueprint for structure outlined above, X and IP form a constituent X’.



Would it be possible to let the structure terminate here? Given the way we conceive the structure of constituents, is (8a) a legitimate representation? The answer is both “yes” and “no.” (8a) does correspond to our blueprint (2a). However, once we have postulated a head, which combines with a complement, we would expect there to be a completed projection (“XP”). This would also make a specifier position available. The complement of the head X in (8a) is IP, that is, the sentence. (8b) is what we would expect to generate following the system we have set up.

<sup>9</sup> Exercise 23 in Chapter 4 shows that we should not derive all sentences in which an auxiliary precedes the subject by means of SAI. Exercise 15 in the current chapter shows that not all postverbal subjects in French necessarily occupy the same position.



At this point, (8b) is only motivated on a theoretical basis. We have not provided any empirical support for projecting the XP level; nor have we discussed what kind of elements could fill the specifier position. A further question is to determine the nature of the head X. We turn to these issues immediately.

## 2.2 A filler for SpecXP?

What kinds of constituents could occupy specifier of X in (8b)? Or, putting it differently, is there any type of constituent that naturally tends to precede the inverted auxiliary in direct questions? We are looking for a constituent that “specifies” the question as expressed by the inversion of the auxiliary. The underlined examples in (9) suggest one answer. It is tempting to associate the interrogative constituent, or the *wh*-constituent, to the left of the auxiliary with the specifier position. Would this make sense in terms of the relation of this constituent to the question it introduces?

- (9) a “Which way are you going?” Shall we walk a bit?” he began, putting the second question before the first was answered. (Edith Wharton, *The House of Mirth*, 1998: 201)
- b How much can I afford? (*New York Times*, 28.4.2003, p. A22, advertisement Fleet)

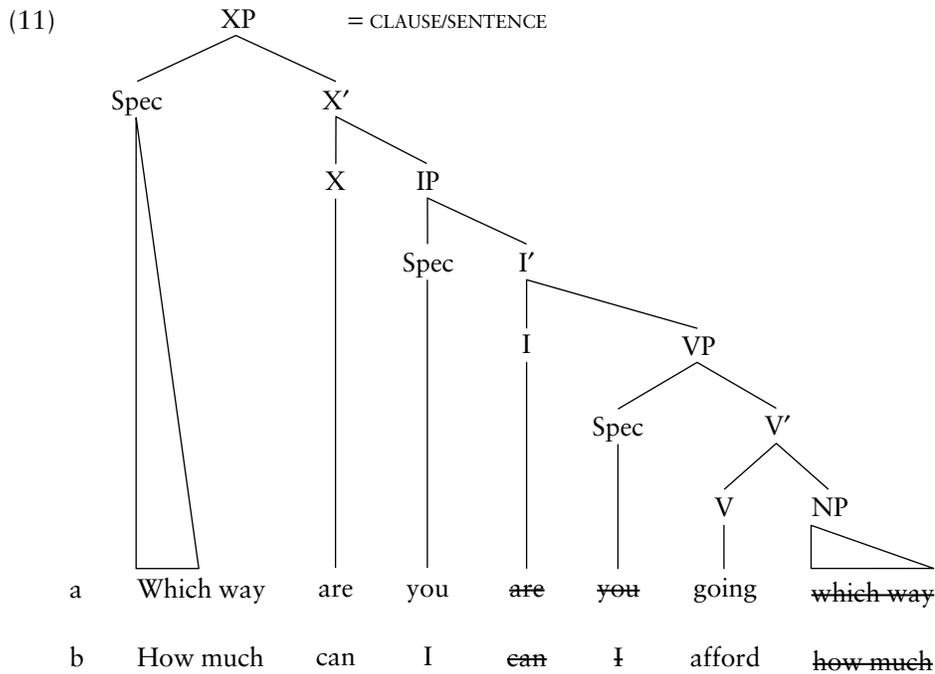
Compare the interpretations of the questions (10a) and (10b), which are both based on (9a).

- (10) a Are you going to the park?  
 b Which way are you going?

Question (10a) could be said to be general: it is about whether or not a certain activity (‘going to the park’) will take place. (10a) is called a **yes/no question**: the expected answer is *yes* or *no*. (10b) is different: when asking (10b), we take it for granted (or we **presuppose**) that the activity of going somewhere will take place, but we don’t yet know its **GOAL**. The initial *wh*-constituent *which way* specifies the **focus** or the **scope** of the question: it specifies the domain of application of the question, what the question is about. It is also an indication of the type of answer expected: as a reply to (10b) we expect to be provided with some constituent to match the interrogative constituent. Questions like (10b) are called **constituent**

**questions.** Because most interrogative constituents contain a word beginning with *wh-* such questions are also called *wh-questions*.

If we assume that the initial *wh-constituent* in a constituent question occupies the specifier position of XP in (8b), it has a specifier–head relation with the head X, which hosts the inverted auxiliary. The fronted *wh-constituent* interacts with the illocutionary force: its function is to specify the domain of the question. On the other hand, remember that the fronted *wh-constituent* also has a function within the IP domain. More precisely, the *wh-constituent* in our example has a semantic relationship with the verb. The NP *which way* indicates the GOAL argument of the verb *going*. So we also want to link the *wh-constituent* to a VP-internal thematic position. We can do this by first merging the NP *which way* VP-internally as a complement of the verb. *Which way* is merged with V to form V', and it then moves to the specifier position of XP, leaving a copy in the VP. As shown by (11), we can use the same analysis to derive example (9b).<sup>10</sup> The *wh-constituent* *how much* is both the complement of the verb *afford* and the element that marks the scope of the question. Again it first merges with V and then moves to SpecXP, leaving a copy.



What label shall we use to designate the head X? The fillers for X we have come across so far are auxiliaries which have moved from the position I to X. Would it make sense to re-label X as “Aux”? What would be the problems with this label?

<sup>10</sup> For subject movement see Chapter 4.

We will insert inflected auxiliaries under I to simplify the representations.

Though the label Aux might at first sight seem appropriate when we restrict the scope of our enquiry to English, it becomes less adequate once we take into consideration the fact that French lexical verbs can precede the subject as a result of inversion.<sup>11</sup> Recall that this was also possible in Old English.<sup>12</sup> Labeling the head position occupied by the inverted head Aux would mean that we only capture a subset of facts.<sup>13</sup>

To derive SAI/SVI the content of I moves to the left of the subject. Whether an auxiliary or a verb moves to the left of the subject depends on whether an auxiliary or a verb occupies I. However, the label I is also not suitable to designate the landing site X of the inverted head because I is already used as the label for the linking head that merges with VP and whose specifier is the subject. We do want to keep the two heads apart. For one thing, as can be seen in (11), the specifier of X need not be a subject.<sup>14</sup>

One problem for labeling X is due to the fact that so far, we have only been looking at heads that are moved to X but which themselves originate in another position. For the labeling of X it would be important to find out whether there are any elements that are merged directly in X. We turn to this point in the next section.

### 2.3 Conjunctions and SAI

Discuss the realization of the objects of the underlined verbs in the following examples.

- (12) a What do you like and hate about your job? I love that I am talking about skiing all day. (*Independent*, Traveller, 25.9.1999, p. 8, col. 7)  
 b Well, he said, I like that there are so many pretty girls. (*New York Times*, 2.1.2003, p. B2, col. 1, letter to the editor from Miles Fisher, 19, Dallas)  
 c Your first brush with the capital is incredibly disorienting. You don't know whether one Tube stop is going to be 100 yards or if it's going to be miles. (*The Times*, 25.11.2000, p. 12, col. 1)

For each of the examples the object of the verb is itself realized by a sentence. In (12c) the object of *know* consists of the co-ordination of two sentences:

- (12) a' I love [that I am talking about skiing all day].  
 b' I like [that there are so many pretty girls].  
 c' You don't know [[whether one Tube stop is going to be 100 yards] or [if it's going to be miles]].

<sup>11</sup> Chapter 1, section 3.1 and Chapter 3, section 1.2.4.

<sup>12</sup> Chapter 1, section 3.2 and Chapter 3, section 1.2.4.

<sup>13</sup> We will discover a further objection to using the label Aux for X in section 2.3.

<sup>14</sup> On whether the specifier of XP actually can be a subject see the discussion in section 2.8.

When a sentence functions as a constituent inside another sentence it is often referred to by means of the term **clause**; it is a **subordinate clause** or an **embedded clause**. The bracketed subordinate clauses in the primed examples above function as complements of the verbs and are therefore also called **complement clauses**. As these clauses realize the direct objects of the verbs, another term that is used is **object clauses**. The subordinate clauses are introduced by the words *that*, *whether*, and *if*.

- (13) a that I am talking about skiing all day  
 b that there are so many pretty girls  
 c whether one Tube stop is going to be 100 yards or  
 if it's going to be miles

Traditionally, words such as *that*, *if*, *whether*, which introduce embedded clauses, are labeled (subordinating) **conjunctions**. In this book, we will use the more recent term **complementizer**. Complementizers serve to introduce subordinate or embedded clauses; they enable a clause to function inside another clause, for instance as a complement of a verb. Complementizers are **functional elements**.<sup>15</sup> The class of words that function as complementizers is **closed**:<sup>16</sup> any given language has a restricted set of words that have this “complementizing” function. Complementizers serve to encode illocutionary force. The complementizers *if* and *whether* signal that the subordinate clause is interrogative, while *that* indicates that the clause is declarative.<sup>17</sup>

As shown by (12c), a subordinate interrogative clause can be introduced either by *if* or by *whether*. Could we combine both conjunctions in one and the same clause? Try inserting *if* in the first embedded clause in (12c) and try adding *whether* to the second. This gives us (12c''):

- (12) c'' You don't know \*whether if one Tube stop is going to be 100 yards or  
 \*if whether it's going to be miles.

<sup>15</sup> See Chapter 3, section 3.5 on the difference between lexical elements and functional elements.

<sup>16</sup> See Chapter 1, section 2.4, and Chapter 3, section 4.3 on “closed classes.”

<sup>17</sup> In Chapter 1, note 10, we signaled that a more careful semantic analysis should make a distinction between the concepts “interrogative clause” and “question.” For a good and accessible discussion see Huddleston (1994). For a more advanced semantic analysis see Ginzburg (1999). See McCloskey (forthcoming) for some syntactic consequences of the typology of interrogatives.

It is also not the case that all embedded clauses introduced by the complementizer *that* are assertions. Compare, for instance, (ia) and (ib):

- (i) a John explained [that we cannot afford this car].  
 b John regrets [that they cannot afford this car].

While in (ia) the content of the embedded clause is asserted (by John), in (ib) it is presupposed. See Kiparsky and Kiparsky (1971) and Hooper and Thompson (1973) for early discussion of the syntactic consequences of the typology. See Hegarty (2003) for a recent discussion.

Apparently, the conjunctions *if* and *whether* are in complementary distribution.<sup>18</sup> To account for the fact that we cannot insert both *if* and *whether* to the left of a subject, we could propose that *if* and *whether* occupy the same position.

Replace the two co-ordinated indirect questions in (12c) by two co-ordinated direct questions.

- (14) a Is one Tube stop going to be 100 yards  
 b or is it going to be miles?

In each of the co-ordinated direct *yes/no* questions in (14), the subject is preceded by the auxiliary; in indirect *yes/no* questions the subject is preceded by the interrogative complementizer *if* or *whether*. Can we combine SAI and the conjunction *if* or *whether*? To check whether this is possible, we could try to find relevant examples in which SAI coincides with the insertion of an interrogative complementizer. However, even if we do not find any examples, this would not ultimately prove that the combination of the conjunction *if/whether* with subject auxiliary inversion is impossible. We can also try to run an experiment in which we control the data, we construct the type of sentence we want to study, and we examine the result. We need a sentence in which subject-auxiliary inversion has taken place and which is at the same time introduced by a conjunction. Our experiment could consist of three stages. First we construct a direct question with SAI; then we turn that example into an embedded interrogative; finally, we insert a conjunction. Unfortunately, the second step of the experiment is not straightforward. We might start from the direct questions in (14), which display SAI. However, when we embed the sentences in (14) as complements of a verb the resulting sentences are unacceptable for most speakers of English:<sup>19</sup>

- (14) a' \*You don't know is one Tube stop going to be 100 yards.  
 b' \*You don't know is it going to be miles.

Inserting a complementizer does not improve the sentences (14a'', b''), but this does not mean that the combination of the complementizer and the inversion is the cause of the ungrammaticality. Even without the complementizer the examples were ungrammatical.

- (14) a'' \*You don't know if is one Tube stop going to be 100 yards.  
 b'' \*You don't know if is it going to be miles.

To test the compatibility of SAI with complementizers, we need to work with legitimate instances of embedded inversion and then we can check whether such

<sup>18</sup> See Chapter 2, section 3.1.2.2 for another illustration of complementary distribution.

<sup>19</sup> Hiberno English, the variant of English spoken in Ireland, does allow for this pattern. See Henry (1995). Exercise 5 illustrates this variant of English. The exercise can be tackled at the end of the present section.

examples allow insertion of the complementizers *if* or *whether*. Consider the following examples:<sup>20</sup>

- (15) a Had I known you were coming, I would have baked a cake.  
 b Had the money not been returned, the evidence would have pointed strongly to a conclusion that the NRCC “financed” the Forum. (*Washington Post*, 29.4.2003, p. A18, col. 3)

In (15a, b) SAI is found in conditional clauses. The examples can be paraphrased as in (16). The examples in (15) could be considered as the second step of the experiment: the sentences display embedded SAI. (16) shows that the conjunction *if* can also introduce a conditional clause.

- (16) a If I had known you were coming, I would have baked a cake.  
 b If the money had not been returned, the evidence would have pointed strongly to a conclusion that the NRCC “financed” the Forum.

We can now get on to the third step of the experiment, that is, we can insert the conjunction *if* in the conditional clauses in (15). Is the result acceptable?

- (16) a' \*If had I known you were coming, I would have baked a cake.  
 b' \*If had the money not been returned, the evidence would have pointed strongly to a conclusion that the NRCC “financed” the Forum.

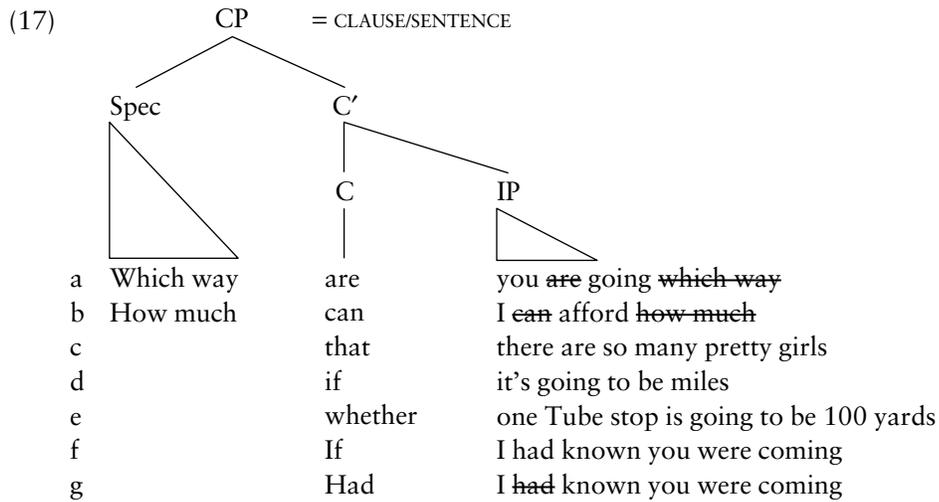
The ungrammaticality of (16a') and (16b') suggests that the inverted auxiliary and the complementizer are in complementary distribution. Why would this be? One plausible account could be that there is a single head position to the left of the subject and that this position hosts either the inverted auxiliary or the conjunction.

Recall that in the preceding section we had already identified the head position X in representation (8). This head was argued to host the inverted auxiliary. The complementary distribution of the inverted auxiliary and the complementizer leads us to the hypothesis that X also hosts the complementizer. Whereas the auxiliary moves to X from I, the complementizer does not originate in another position. Let us propose that the complementizer is directly merged in the position X. Let us therefore re-label the position X as “C.” C stands for complementizer. The position C is the position where complementizers are merged with the clause they introduce. The choice of C (*if, whether, that*) signals illocutionary force. In the absence of a conjunction, the position C may host the inverted auxiliary.<sup>21</sup>

If we re-label X in (8) as C, then we will also re-label X' as C', and XP as CP. The specifier of XP in (8b) becomes the specifier of CP (or **SpecCP**).

<sup>20</sup> We discussed them in Chapter 1, section 2.3.2, examples (32) and (33).

<sup>21</sup> Representation (17) is simplified in that we have not indicated the unpronounced copy of the subject in the specifier of VP. This is because the focus of the discussion is on the CP area.



## 2.4 Some terminology

Sentences are derived by means of two operations: Merge and Move.<sup>22</sup> Merge assembles a structure of hierarchically organized constituents. Move displaces a constituent from the position in which it has been merged and merges it at some higher position in the structure. Moved constituents leave a copy.<sup>23</sup> Merge is used to insert a novel element into a structure, and also to (re)insert a moved element into the structure.<sup>24</sup>

## 2.5 Evidence for copies

In interrogative sentences, the sentence-initial *wh*-constituent is moved from a position inside the sentence. Moved constituents leave copies to ensure that the relations they have with various constituents in the sentence can remain encoded. For instance, when a direct object NP is moved to the sentence-initial position, its copy in the VP allows us to establish the thematic relation with the verb, while the pronounced copy in the initial position specifies the scope of the question. This motivation for copies is theoretical or conceptual. It follows from the way we set up our theory. We assume that the syntactic structure of a sentence maps onto its interpretation, that there is a direct correlation with the form of the sentence and its interpretation.

<sup>22</sup> For a brief discussion of a system that only uses Merge (and “Multiple Merge”) see Chapter 4, section 3.1.

<sup>23</sup> Chapter 4, section 3.1.

<sup>24</sup> Exercises 1, 3.

In the discussion of the movement of the subject<sup>25</sup> we provided some empirical evidence for our movement hypothesis. One type of evidence was provided by sentences in which (part of) the subject had been stranded in a lower position, giving rise to a discontinuous constituent. Would there be any similar empirical support for the hypothesis that moved interrogative constituents leave copies? Consider the two formulations of Mrs Pettigrew's question in the following extract. Identify the object of the verb *mean* in both formulations. In what way could such an example be relevant for the theory of movement that we have been elaborating here?

- (18) “What do you mean by that exactly?”, said Mrs Pettigrew, “What exactly do you mean?” (Muriel Spark, *Memento Mori*, 1977: 81)

The two formulations of Mrs Pettigrew's question are very similar:

- (19) a What exactly do you mean?  
 b What do you mean exactly?

In (19a), the object of *mean* is *what exactly*, an interrogative constituent or a *wh*-constituent. This *wh*-constituent occupies an initial position. We analyze (19a) as an instantiation of leftward movement: we have displaced the *wh*-constituent *what exactly* from the complement position of the verb *mean* to the specifier position of the projection CP. The fact that the string can be moved suggests that *what exactly* is a constituent.

- (19) c [<sub>CP</sub> What exactly [<sub>C</sub> [<sub>C</sub> do] [<sub>IP</sub> you [<sub>PRESENT</sub>] [<sub>VP</sub> you mean ~~what exactly~~]]]]?<sup>26</sup>

In the alternative formulation of the question we find a discontinuous constituent *what . . . exactly*. The direct object NP of *mean* is split up: its interrogative component, *what*, is moved to SpecCP and is separated from *exactly*. The two variants of the sentence seem to have the same interpretation. We can relate the derivation of the two variants if we assume that in (19b) the moved interrogative pronoun *what* and the adverb *exactly* are first merged as one constituent and then movement of *what* strands the adverb *exactly*. In (19d) *exactly* is represented as a residue of the moved constituent.<sup>27</sup>

- (19) d [<sub>CP</sub> What [<sub>C</sub> [<sub>C</sub> do] [<sub>IP</sub> you [<sub>PRESENT</sub>] [<sub>VP</sub> you mean [~~what~~ exactly]]]]]?

<sup>25</sup> See Chapter 4, section 3.2.

<sup>26</sup> For present tense inflection we use the symbol *-s* for the third person singular morpheme. We use the symbol PRESENT for other person and number combinations, because they lack overt manifestations. In (19d) and similar examples, *do* in C spells out the moved present tense ending. For more careful discussion of the inflection of “bare verbs” in English see Pollock (1994).

<sup>27</sup> For more careful discussion of these patterns see also McCloskey (2000: 63–4, note 8 and the reference cited there).

McCloskey (2000) provides the West Ulster English examples in (20) (McCloskey, 2000: 58, his (2)). Identify the objects of the underlined verbs. How do we derive the word order in these questions? Represent the structure of the examples, using labeled bracketing and indicating non-pronounced copies of moved constituents by strikethrough:

- (20) a What all did you get for Christmas?  
 b Who all did you meet when you were in Derry?

Based on the discussion so far, we would provide the representations in (21):

- (21) a [<sub>CP</sub> [<sub>NP</sub> What all] [<sub>C</sub> [<sub>C</sub> did] [<sub>IP</sub> you [<sub>I</sub> -ed] [<sub>VP</sub> you get [<sub>NP</sub> ~~what all~~] for Christmas]]]]?  
 b [<sub>CP</sub> [<sub>NP</sub> Who all] [<sub>C</sub> [<sub>C</sub> did] [<sub>IP</sub> you [<sub>I</sub> -ed] [<sub>VP</sub> you meet [<sub>NP</sub> ~~who all~~] when you were in Derry]]]]?

McCloskey (2000: 58) reports that West Ulster English usage offers some interesting variants of the sentences above:

In addition to [20], though, West Ulster English allows [22]:

- [22] a What did you get all for Christmas?  
 b Who did you meet all when you were in Derry?

The quantifier *all* in [22ab] is construed with the interrogative pronoun . . . that is, the examples in [22] are synonymous (completely so, as far as I have been able to tell) with those in [20].

Using the examples in (20) as a starting point, how would you represent the alternative formulations for the questions as given in (22)? How do these examples bear on our current discussion?

Once again, it seems plausible that *what . . . all* in (22a) and *who . . . all* in (22b) are discontinuous constituents. While the interrogative pronouns *what* and *who* have moved to the specifier of CP, the associated quantifier *all* has been stranded in the base position. The floated quantifier would then signal the base position of the object.

- (23) a [<sub>CP</sub> What [<sub>C</sub> [<sub>C</sub> did] [<sub>IP</sub> you [<sub>I</sub> -ed] [<sub>VP</sub> you get [~~what~~ all] for Christmas]]]]?  
 b [<sub>CP</sub> Who [<sub>C</sub> [<sub>C</sub> did] [<sub>IP</sub> you [<sub>I</sub> -ed] [<sub>VP</sub> you meet [~~who~~ all] when you were in Derry]]]]?

## 2.6 Indirect constituent questions

We saw in our discussion of question formation<sup>28</sup> that indirect questions do not tend to give rise to SAI. Identify the indirect questions in (24):

<sup>28</sup> Chapter 1, especially section 2.3.

- (24) a David S. Chu, under-secretary of defense for personnel and readiness, said last week the Pentagon needs a freer hand in determining who is hired, how much they are paid and what types of jobs they do in order to shape a department that is more agile in carrying out its mission of national defense. (*Washington Post*, 29.4.2003, p. Q21, col. 5)
- b You could rehash the night before, talk about what adjustments you need to make, whether it was great or whether you caved and did something you probably shouldn't have. (*Washington Post*, 10.12.2002, p. F4, col. 2)
- c Mrs Smegma showed me to a room, then gave me a tour of the facilities and outlined the many complicated rules for residing there – when breakfast was served . . . which hours of the day I would have to vacate the premises and during which brief period a bath was permitted (these seemed, oddly, to coincide), how much notice I should give if I intended to receive a phone call or remain out after 10 p.m. (Adapted from Bill Bryson, *Notes from a Small Island*, 1996: 15–16)
- d She knew how many novels she would write and what they would be about. (*Guardian*, 2.8.2003, Review, p. 14, col. 4)

In the following examples, the embedded questions do display SAI, which is not the most usual order.<sup>29</sup> Rephrase the indirect questions in (25) to undo SAI:

- (25) a All he wants to know is which boxes have I ticked on the forms he keeps giving me to fill in. (*Guardian*, G2, 15.3.2001, p. 9, col. 8)
- b People ask why was I not at Coniston when Bluebird was raised. (*Guardian*, 15.3.2001, p. 5, col. 8)

In this section, we make the derivation of indirect questions more precise. We continue to adopt the hypotheses elaborated already. We will first experiment on the basis of an invented example. This is because in such an example we control the material and we ensure that we are not distracted by complications that are perhaps not relevant for the point at issue.

Let us look at the underlined string in (26a). Is this string a constituent? What is its grammatical function? Consider the internal structure of the underlined string. Identify the lexical verb. What is the direct object? Identify the subject. Do subject and object occupy their canonical positions?

- (26) a The students wondered which analysis they should adopt.

Among other things, the underlined string contains a lexical verb, *adopt*, and a subject NP, *they*. The subject occupies its canonical position: it precedes the modal auxiliary *should*, which occupies I. The NP *which analysis*, which functions as the

<sup>29</sup> For an (accessible) discussion of inversion in embedded questions in Hiberno English see Henry (1995).

object of *adopt*, does not occupy its canonical position in the VP headed by *adopt*, but it has moved leftward to a peripheral position. Could the object have remained in its canonical position to the right of the verb? If we simply return the interrogative object NP to its base position the result is not acceptable:

(26) b \*The students wondered they should adopt which analysis.

Why should this be? What could be the reason why the NP *which analysis* has to move leftward? And where does it move? Replace the object in (26b) by a non-interrogative object. Is the resulting string acceptable?

(26) c \*The students wondered they should adopt this analysis.

Can we now make (26c) grammatical by moving the object NP *this analysis* leftward?

(26) d \*The students wondered this analysis they should adopt.

How can we rephrase (26c) to make it acceptable? One strategy is to insert the conjunction *if* or *whether* to the immediate left of the subject of the embedded clause:

(26) e The students wondered if they should adopt this analysis.

f The students wondered whether they should adopt this analysis.

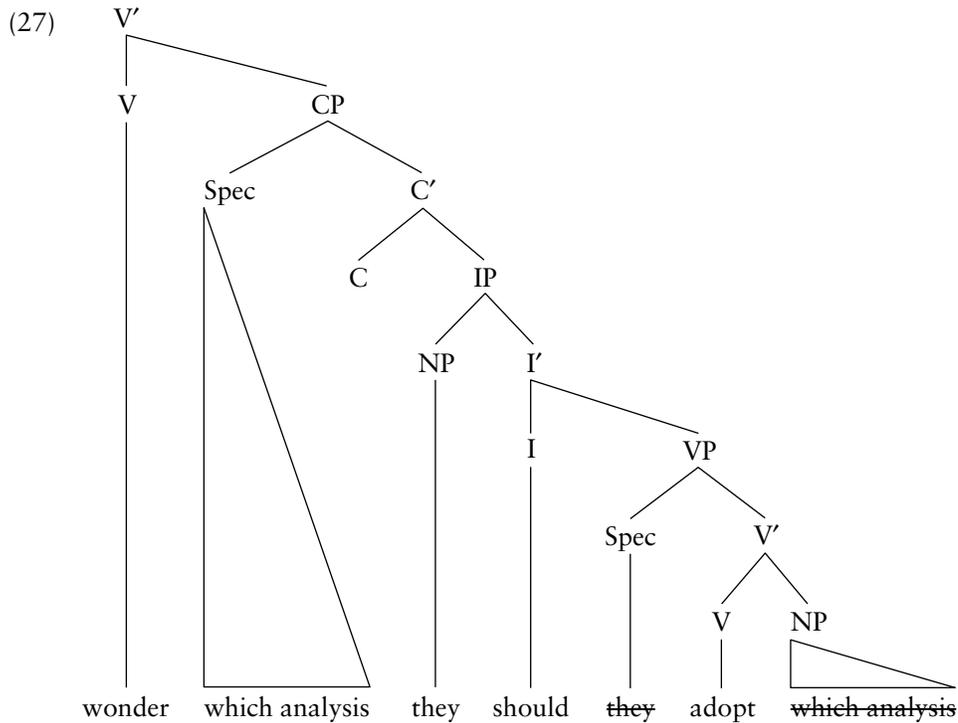
An alternative strategy is to replace the verb *wonder* by *believe*:

(26) g The students believed they should adopt this analysis.

The data suggest that there is a correlation between the presence of the verb *wonder* in the main clause and the internal make-up of the embedded clause. With *wonder* as a main verb, we either introduce the embedded clause by means of the conjunction *if/whether* or we move a *wh*-constituent to the left of the subject. These two manipulations are related: the verb *wonder* selects an interrogative clause as its complement. The conjunctions *if* and *whether* are one way of encoding illocutionary force, they signal that the embedded clause they introduce is interrogative. An alternative way of encoding interrogative illocutionary force is to shift a *wh*-constituent to the left in the embedded clause. In the latter case, the shifted *wh*-constituent will specify the scope of the question.

For direct interrogatives, we have already proposed that interrogative force is encoded in the part of the structure labeled CP. In keeping with this hypothesis, it would be simplest (and therefore it would be preferable) to use the structures that we have in place to account for the position of the fronted *wh*-constituent in indirect questions. The function of the fronted *wh*-constituent is to specify the scope of the question. We can propose that, as was the case in direct questions, the *wh*-constituent in indirect questions is moved to the specifier of the embedded CP.

In indirect questions in which we front a *wh*-constituent, the position C remains obligatorily empty in Modern English. However, we have to postulate a head C because, in the absence of the head C, we would no longer be able to project a constituent and create the relevant specifier position. In (27) below we give a schematic representation.<sup>30</sup>



### 2.7 Uniqueness of specifiers and multiple questions

The canonical position of the subject is SpecIP: among other things, the subject specifies the domain of application of the VP, the subject says what the sentence is about. For instance in (28a), the property “run an Indian restaurant” is applied to the referent of the subject NP *John*:

(28) a John runs an Indian restaurant.

We know that IP has only one specifier (28b). If we want two NPs to function as subjects of a sentence, we co-ordinate them, thus turning them into one constituent (28c).

- (28) b \*<sub>[NP Mary]</sub> <sub>[NP John]</sub> will run an Indian restaurant.
- c <sub>[NP <sub>[NP Mary] and <sub>[NP John]</sub>]</sub> will run an Indian restaurant.</sub>

<sup>30</sup> Exercises 4, 5, 6, 7, 8.

Similarly, the specifier of CP encodes the scope of the question, the domain to which the question is applied. Identify the fronted interrogative constituents in embedded questions in the following examples.

- (29) a It has become a matter of dispute what John said to George.  
 b It has become a matter of dispute to whom John said that he had to leave.  
 c It has become a matter of dispute who said to George that he had to leave.

Consider (30). What is wrong with these examples?

- (30) a \*It has become a matter of dispute what to whom John said.  
 b \*It has become a matter of dispute to whom who said these things.  
 c \*It has become a matter of dispute what who said to John.

The examples in (30) all contain two sentence-initial *wh*-constituents in the embedded clause. Apparently this is not possible. How could we account for this? Observe that we cannot claim that a question cannot bear on more than one constituent. (31) contains attested examples of questions with more than one interrogative constituent:

- (31) a I don't know who spotted who first, but within a couple of days The Bruiser was Jeffrey's minder and confidante. (*Guardian*, G2, 7.4.2003, p. 2, col. 2)  
 b For the past few months, KidsPost has had articles about who does what at a newspaper. (*Washington Post*, 29.4.2003, p. C13, col. 2)  
 c The chronological structure seems sensible in theory, but in fact is dull. As she marches doggedly forward from Praxitiles' *Aphrodite of Knidos* to Madonna, we can predict which names will occur in which order. (*Guardian*, 29.3.2003, p. 14, col. 5)  
 d There was still much confusion, and many yawns, about exactly who had said what when, and sent which emails to whom when. (*Guardian*, 2.3.2002, *The Editor*, p. 5, col. 2)  
 e I will be letting people know more about exactly who knew what and when. (*Independent*, 27.2.2000, p. 8, col. 4)  
 f The question of who gives how much is of intense interest to non-profit groups as they search for sources to make up for falling government, foundation and corporate funding. (*Washington Post*, 29.4.2003, p. A7, col. 3)

Using (31) as a model, let us try to rephrase the questions in (30) to make them acceptable while retaining the two interrogative constituents. One way of "repairing" the examples in (30) is illustrated in (32). Compare the two sets of examples.

- (32) a It has become a matter of dispute what John said to whom.  
 b It has become a matter of dispute who said these things to whom.  
 c It has become a matter of dispute who said what to John.

Both (30) and (32) contain sentences with more than one interrogative constituent. The difference between them is that in the acceptable examples in (32) there is only one sentence-initial interrogative constituent, while in the unacceptable examples in (30) there are two. One way of accounting for the unacceptability of the examples in (30) is to assume that each projection has a unique specifier position. If more than one constituent moves to the specifier of CP there will be a “collision” and, to use a term used in recent Minimalist approaches to syntax,<sup>31</sup> the derivation will **crash**. In the acceptable examples in (31) and (32), there is one such sentence-initial *wh*-constituent, *who*, and the other *wh*-constituents occupy their base position.

## 2.8 Subject interrogatives

### 2.8.1 INDIRECT QUESTIONS

In fact, on closer inspection (32b) and (32c) and the attested examples in (31) raise a question. In these examples, the sentence-initial interrogative constituent is the subject. We may wonder which position the sentence-initial subject *wh*-constituent occupies. Two hypotheses for the representation of (31a) are given in (33). Discuss the difference between the two representations in (33).

- (33) a I don't know [<sub>CP</sub> [<sub>IP</sub> who spotted who first]].  
 b I don't know [<sub>CP</sub> who [<sub>IP</sub> ~~who~~ spotted who first]].

Does a sentence-initial interrogative subject occupy its canonical position, SpecIP, as in (33a)? Or is it in SpecCP, as in (33b)? The same question arises in a sentence in which the only interrogative constituent is a subject. For (34a) too, we could propose either representation (34b) or (34c):

- (34) a I don't know who spotted the thief first.  
 b I don't know [<sub>CP</sub> [<sub>IP</sub> who spotted the thief first]].  
 c I don't know [<sub>CP</sub> who [<sub>IP</sub> ~~who~~ spotted the thief first]].

There is no direct evidence in the examples to help us decide. For instance, we cannot simply determine the structure by inspecting the word order derived by the representations above: both representations lead to a correct spell-out. There may be some theoretical arguments in favor of the hypothesis that the interrogative subject has moved to SpecCP (i.e. in favor of representations (33b) and (34c)). First, recall that we propose that illocutionary force is encoded in the CP domain. In a sentence that contains just an interrogative object NP, that NP has to be moved to the left periphery to signal illocutionary force in SpecCP (cf. (26a)). If we fail to move the interrogative constituent, the sentence is unacceptable (cf. (26b)). So,

<sup>31</sup> See Chomsky (1995).

on the assumption that interrogative force has to be signaled in the CP domain, representations (33b) or (34c) are preferable.

We proposed that each constituent has one specifier. This hypothesis ties in with the idea that the function of the specifier is to specify a unique domain of application. If the subject *who* has been fronted to SpecCP in (33b) or in (34c), we predict that no other interrogative constituents can move there; hence we correctly rule out (33c) in which the interrogative object is also fronted. Assuming representation (33b) there would be no room to front the object interrogative.

(33) c \*I don't know who who spotted first.

If we adopt (33a) or (34b), we have two problems: (i) we do not encode interrogative force in the CP domain, and (ii) we fail to explain why the object interrogative *who* cannot move to the periphery of the clause (33c). (33d) would be the representation based on (33a) with fronting of a second *wh*-constituent in (33a):

(33) d \*I don't know [<sub>CP</sub> who [<sub>IP</sub> who spotted ~~who~~ first]].

In (33b)/(34c) movement of *who* to SpecCP does not lead to any reorderings in the sentence. This type of movement is sometimes referred to as **string-vacuous** movement.

## 2.8.2 DIRECT SUBJECT INTERROGATIVES AND INVERSION

In the preceding section we discussed the question whether a subject *wh*-constituent undergoes movement to SpecCP. The examples discussed there were embedded interrogatives. The same question arises with respect to direct subject questions.

Consider direct question (35a) and compare the three (partial)<sup>32</sup> representations, (35b), (35c), and (35d). Each of the three representations makes a different claim. Discuss and compare these claims.

- (35) a Which candidate will finish first?  
 b [<sub>CP</sub> Which candidate [<sub>IP</sub> ~~which candidate~~ will finish first]]?  
 c [<sub>CP</sub> Which candidate will [<sub>IP</sub> ~~which candidate~~ will finish first]]?  
 d [<sub>CP</sub> [<sub>IP</sub> Which candidate will finish first]]?

In (35b) the claim is that the interrogative subject *which candidate* has moved to the specifier of CP. In that position it specifies the scope of the question. The auxiliary *will* remains under I. According to (35c), the interrogative subject *which candidate* has moved to SpecCP and the auxiliary *will* has also moved to C. The movement of the auxiliary from I to C would be a manifestation of a phenomenon that we have come across already: movement of an interrogative constituent to SpecCP coincides

<sup>32</sup> We do not represent the VP-internal copy of the subject as this is not relevant here.

with SAI, movement of the content of I to C. According to (35c), the auxiliary inverts with the (non-pronounced) copy of the subject in SpecIP, ~~which candidate~~. According to (35d), finally, neither subject interrogative nor auxiliary move.

Which of these representations is preferable? Again, there is no direct evidence in the examples to help us decide. All three representations lead to the same word order.

Let us first address the question whether the auxiliary remains in I (35b) or moves to C (35c). In our discussion of direct questions in Chapter 1<sup>33</sup> we introduced SAI. SAI is represented in (35c). Suppose we do opt for (35c) as our representation of a direct question about the subject. In this example the auxiliary is first merged in I and moves to C. We can ask ourselves what the analysis represented by (35c) leads us to predict for direct questions with an interrogative subject and without auxiliaries.

In order to assess the issue, let us turn to direct questions lacking an auxiliary. Consider the derivation of the questions in (36).

- (36) a Which candidate will they invite?  
       b Which candidate did they invite?     (unstressed *did*)  
       c Which candidate DID they invite?     (stressed *did*)

In (36a) the modal auxiliary *will* moves from I to C. In (36b), the content of I (here the past tense morpheme) inverts with the subject and in order to rescue the stranded past tense inflection we insert *do* as a “last resort.” Observe that the auxiliary *do* can but need not be stressed in this example. The stressed variant of *do* would occur when we want to contrast the content of the question with an assumption or expectation in the context (36c).<sup>34</sup>

(36b) shows that when a direct question lacks an aspectual or a modal auxiliary, SAI gives rise to *do* insertion. This is because movement of I to C will lead to a stranded inflection. Because I-to-C movement in sentences without auxiliaries leads to *do* insertion, we can deduce that in direct questions where *do*-support is required I-to-C movement has taken place. Specifically, if sentences with interrogative subjects and without auxiliaries require *do* insertion we conclude that there has been I-to-C movement. Conversely, if sentences with interrogative subjects and without auxiliaries do not require *do* insertion we conclude that there has not been I-to-C movement.

Let us see what happens in the interrogative sentences introduced by a subject interrogative constituent and lacking an auxiliary. Based on (36) we create (37a). The acceptable version of (37a) lacks *do*; if we insert unstressed *do*, the sentence becomes unacceptable. Stressing *do* renders the sentence acceptable.

- (37) a Which candidate invited them?  
       b \*Which candidate did invite them?     (with unstressed *did*)  
       c Which candidate DID invite them?     (with stressed *did*)

<sup>33</sup> Section 2.3.

<sup>34</sup> Cf. Chapter 1, Exercise 7, and Chapter 3, section 1.2.3.2.

Suppose there were indeed movement of the content of I to C in direct questions such as (35a). In (37), an example lacking an auxiliary, the application of I-to-C movement would move just the inflectional ending of the verb (here the past tense morpheme *-ed*). This should lead to *do* insertion, where *do* can be unstressed. This prediction is not borne out: unstressed *do* is not present in (37b). Only stressed *do* is available (37c), but as we have seen, stressed *do* is inserted for emphasis and is not a reflex of the movement of I to C. In other words, the absence of *do*-insertion in subject interrogatives suggests that they are not affected by I-to-C movement. This means in turn that there is no SAI. We conclude that in (35) the auxiliary *will* does not move to C and that representation (35b) is preferable to (35c) because the former does not display movement of I to C while the latter does. Apparently then, if we assume that interrogative subjects move to SpecCP we have to admit that this movement does not trigger movement of the content of I to C.<sup>35</sup>

(35b) is preferred to (35c). What about (35d)? The difference between (35b) and (35d) is like that between (34c) and (34b) discussed in the preceding section. In (35d), which matches (34b), neither the subject nor the auxiliary undergo movement. What would be the predictions of this representation for a sentence without an auxiliary? Are there any drawbacks to this analysis?

If we assume that the interrogative subject does not move, then the absence of inversion and of *do*-insertion is as expected. But this alternative analysis also presents a number of drawbacks, as we saw in the preceding section. First, there are some theoretical questions. If the interrogative subject does not move to SpecCP, we would have to explain (i) why it need not move there, unlike non-subject interrogative constituents, and (ii) how an interrogative subject *wh*-constituent in SpecIP can specify the scope of the question. Normally, the scope of a constituent question is encoded in the specifier position of C. Furthermore, assuming that the SpecCP still remains available, we might expect that another interrogative constituent could actually move there. If this movement triggers SAI, the result is (35e). This example spells out as the ungrammatical (35f):

- (35) e \*<sub>[CP Which books [C will] [IP who [I will] [VP who buy which books]]]</sub>?  
 f \*Which books will who buy?

## 2.9 A note on that-omission in English

We saw that declarative subordinate clauses are introduced by the complementizer *that*. Often, the complementizer *that* can be absent:

<sup>35</sup> The question arises why subject interrogatives do not trigger movement of I to C. See Rizzi (1996) and for a recent account see Pesetsky and Torrego (2000).

- (38) a Boyle testified that she told Malvo four times that he could be silent or see an attorney. (Based on *Washington Post*, 29.4.2003, p. B1, cols 3–4)  
 b Boyle testified she told Malvo four times he could be silent or see an attorney.

Though there are no subordinating conjunctions in (38b), we will assume that the CP level of the subordinate clauses is projected. This is because the embedded clauses are declarative, and we assume that it is the CP layer that encodes illocutionary force.

- (38) c Boyle testified [<sub>CP</sub> [<sub>C</sub>] [she told Malvo four times [<sub>CP</sub> [<sub>C</sub>] [he could be silent or see an attorney]]]]].

When the C position of a finite embedded clause is not filled, it gets a “default” declarative reading.<sup>36</sup>

### 3 How Far Can You Move? And How Do You Get There?<sup>37</sup>

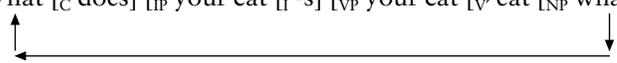
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#### 3.1 “Long” movement

Consider examples (39). Are they direct questions or indirect questions? How are the arguments of the verb *eat* realized in (39a)? Does the direct object of *eat* occupy its base position?

- (39) a What does your cat eat?  
 b What do you think your cat eats? (Based on *Observer Magazine*, 7.9.2003, p. 41, col. 1)

The object of *eat* in (39a) has been fronted because it is interrogative. The present tense inflection is also inverted with the subject (SAI) and *do* is inserted to allow the fronted inflection to survive. The resulting structure is as in (40a):

- (40) a [<sub>CP</sub> What [<sub>C</sub> does] [<sub>IP</sub> your cat [<sub>I</sub> -s] [<sub>VP</sub> ~~your cat~~ [<sub>V</sub> eat [<sub>NP</sub> what]]]]]?  


<sup>36</sup> See also section 3.2.3.1 and Exercise 14 for some constraints on the insertion of *that*. The exercise should be tackled after you’ve worked your way through the chapter.

<sup>37</sup> In this book we can tackle only a few of the many issues raised by movement of interrogative (and relative, see section 5 below) constituents. For a survey of a number of issues see Richards (2001) and the references cited there.



- f Where does the Chancellor think the party is going? (Based on *Guardian*, 27.9.2003, p. 4, headline)
- g Who does he think he is? (*Guardian*, 8.10.2003, p. 14, col. 4)
- h Some are born great, some achieve greatness and some have greatness thrust upon them . . . which do you think you were? (*Guardian*, G2, 27.10.2003, p. 6, col. 2)
- i Of Pam Teare . . . Lord Hutton asked: “From what source or sources did you think the name would leak?” (*Guardian*, 21.8.2003, p. 8, col. 3)
- j Why do you think the Daily Mail and others have invested so much effort in discrediting me personally? (*Guardian*, 30.9.2003, G2, p. 11, col. 5)
- k Given current reserves and consumption, when is it predicted that the world’s oil will run out? (*Guardian*, 14.1.2004, p. 15, col. 4, letter to the editor from Jeff Lewis, Exmouth, Devon)

The moved constituent is a subject in (41a–c); it is an object in (41d). In (41e) *what* is the object of the lower verb *eat*; *where* is the complement of the preposition *from* in the lower clause. In (41f) *where* is a directional complement of the verb *go*; in (41g) and (41h) an interrogative predicate is moved from the lower clause; in (41i–k) adjuncts undergo long movement. In the examples below we represent the position from which the underlined interrogative constituent has been moved by dashes:

- (42) a who Tony Blair imagines — will work in the universities of the future
- b Who do you think — is the more moderate politician?
- c What do you think — was the great appeal of the Tramp?
- d What did they think they were making — with those girls in there?
- e What do you think your cat or dog eats —?
- Where do you think that meat comes from —?
- Where do you think Pedigree Chum comes from —?
- f Where does he think the party is going —?
- g Who does he think he is —?
- h Which do you think you were —?
- i From what source or sources did you think the name would leak —?
- j Why do you think the Daily Mail and others have invested so much effort in discrediting me personally —?
- k when is it predicted that the world’s oil will run out —?

In the next section we will examine how long movement such as that illustrated above proceeds.<sup>40</sup>

<sup>40</sup> Exercise 2.

## 3.2 Intervention effects and step-by-step movement

### 3.2.1 BLOCKING MOVEMENT

#### 3.2.1.1 A hypothesis

An interrogative constituent undergoes leftward movement to the CP domain, where it determines the scope (i.e. the domain of application) of the question. As shown by the long movement examples (41), the interrogative constituent can cross clause boundaries on its way to its landing site, a SpecCP position. Recall also that we assume that the structure of the sentences is tripartite:

(43) CP > IP > VP

We assume that each projection of a head makes available a specifier position.

To account for the **derivation** of interrogative sentences with long movement, we must address the question of how the moved constituent proceeds. Consider our provisional representation (40b). The arrows in the representation suggest that the moved constituent *what* moves directly from its base position in the embedded clause, in which it is the object of the verb *eat*, to the specifier position of a CP of the main clause, whose verb is *think*.

However, this is not the only derivation possible. Remember that even in the absence of *that* the embedded CP is available.<sup>41</sup> So, rather than going directly to the specifier of the CP constructed on the verb *think*, we could also imagine that movement goes stepwise. In a first step, *what* moves to the specifier of the embedded CP built around the verb *eat*. Then, in the second step, *what* could move to the higher clause. The second application of movement would leave a copy which, being a lower copy than that in the main clause SpecCP, will not be pronounced. (44) is a representation of this alternative step-by-step derivation:

(44) [CP What [C do] [IP you [I PRESENT] [VP ~~you~~ think  
 [CP ~~what~~ [C] [IP your cat [I -s] [VP ~~your cat~~ [V eats [NP ~~what~~]]]]]]]]?]

What kind of data could be used as evidence that the interrogative constituent has transited through the intermediate SpecCP? Could we devise any experiments to help us decide? Recall that step-by-step movement leaves an unpronounced copy in the intermediate landing site. How could we determine if there is a copy of the moved constituent *what* in the lower SpecCP in (44)?

<sup>41</sup> See section 2.9.

We postulate that a projection of a head has only one specifier. In Chapter 4,<sup>42</sup> we examined subject movement and we proposed that the subject moves step by step, via the available intermediate specifiers. If these two assumptions are generalized, then (i) there is one specifier position per CP,<sup>43</sup> and (ii) movement of interrogative constituents applies stepwise. From these two assumptions, we deduce that long movement proceeds via the specifier positions of intermediate CPs. The analogy with step-by-step subject movement would be a theoretical argument in favor of step-by-step movement of the interrogative constituent. If step-by-step movement applies to interrogative constituents then, once one constituent occupies a SpecCP position, we predict that this should block long movement of additional interrogative constituents out of the relevant CP.

(45)  $[_{CP} \quad [_{CP} \textit{wh-} \quad [_{CP}$   
\*\*\*\* ←

### 3.2.1.2 Testing the hypothesis

Our hypothesis is that movement of interrogative constituents proceeds stepwise. In other words, no movement can skip an intervening SpecCP. The analysis predicts that the grammar will not generate sentences in which movement of an interrogative constituent has crossed an interrogative constituent in a SpecCP of an intermediate sentence. Examples formed in this way should be ungrammatical and should not occur. The attested examples of long movement in (41) are all compatible with the hypothesis: there is no intervening interrogative constituent between the fronted interrogative constituent and its base position. However, these and similar acceptable examples of long movement do not prove conclusively that movement could not have crossed an intervening interrogative constituent. The observation that we do not find any examples in which long movement crosses an interrogative constituent is not conclusive evidence either. Perhaps their non-occurrence is a mere side-effect of the kind of material we have examined. Perhaps the construction is stylistically highly marked and therefore extremely rare though not impossible.<sup>44</sup> We must be sure that moving an interrogative constituent across a filled SpecCP (45) really leads to an unacceptable output. What we can do is construct examples that use the derivation in (45) and see if they are ungrammatical, as our hypothesis predicts.

Consider the grammatical (41d) repeated here as (46a):

(46) a What did they think they were making — with those girls in there?

The interrogative constituent *what* has moved from the embedded clause to the main clause. In principle, it can transit via the embedded SpecCP, which is empty. In (46b) we provide only the labeled brackets relevant to our discussion.

<sup>42</sup> Sections 3 and 4.

<sup>43</sup> See also section 2.7 for motivation.

<sup>44</sup> Recall the discussion of the generalization “all swans are white” in Chapter 1, section 2.3.

- (46) b  $[_{CP} \text{What did } [_{IP} \text{ they think } [_{CP} \text{ what } [_{IP} \text{ they were making what with those girls in there}]]]]?$
- 

(46b) is compatible with the hypothesis that movement cannot skip an intervening SpecCP but it does not confirm its general validity. What we need to show is that if the constraint on stepwise movement is NOT respected the sentence is ungrammatical. In order to test the prediction implied by (45) we modify (46b). We fill the embedded SpecCP with an interrogative constituent. For instance, we can turn the place adjunct *in there* into the interrogative variant, *where*, and front it to the embedded SpecCP. This will turn the embedded clause into an interrogative complement clause. In (46b) the main verb, *think*, selects a declarative complement. To allow for an interrogative complement clause, we have to change the verb of the main clause. We replace *think* by *wonder*.

- (46) c  $*[_{CP} \text{What did } [_{IP} \text{ they wonder } [_{CP} \text{ where } [_{IP} \text{ they were making what with those girls where}]]]]?$

Though we can figure out what (46c) is intended to mean, it is not a grammatical sentence.

Suppose that there is a “shortest step” constraint on movement: preferentially movement must apply step by step, landing the moved constituent in intermediate potential landing sites between its base position and its ultimate landing site. A moved constituent will first go to the nearest landing site and then move on to the next one. If a moved constituent is forced to cross a potential landing site, then it cannot proceed through the shortest steps possible and hence it is in violation of the shortest step constraint (cf. (45)). In (46c), the specifier of the CP in the embedded clause is filled by the interrogative constituent *where*. It will therefore be impossible for the interrogative object NP *what* to move from the embedded clause to the specifier of the CP of the main clause, because this movement would have to take a big leap and cross the intermediate position. In (46d) we label the lower clause CP2 and the higher clause CP1. This is to make it easier to read the representation.

- (46) d  
 $*[_{CP1} \text{What did } [_{IP} \text{ they wonder } [_{CP2} \text{ where } [_{IP} \text{ they were making what with those girls where}]]]]?$
- 

On the assumption that there is just one specifier per CP, we account for the degradation in (46c/d) by means of the hypothesis that *wh*-movement proceeds stepwise. If an intermediate specifier position is already filled, this will block movement of another constituent. In other words, the degraded status of (46c/d) offers indirect support for the hypothesis that all movement, including the long movement of interrogative constituents, proceeds step by step.

The hypothesis that movement is done step by step can be seen as one implementation of a more general property of the language system. Recall that in Chapter 4

we proposed that the subject has its base position in the specifier of VP. This hypothesis enabled us to define thematic relations in terms of local relations: a head (here the verb) assigns its thematic roles in the domain that it controls, the VP. We could say that the **constraint** that all movement must go step by step is another instantiation of a general **locality** requirement on syntactic relations. Thematic role assignment is local: that is, a head assigns a thematic role “locally,” within its projection. Movement is “local”: that is, a constituent moves into a “local” SpecCP before moving into a remote SpecCP.

Assuming step-by-step movement for the fronting of *wh*-constituents allows us to account for the degradation of examples in which we try to extract an interrogative constituent from an interrogative clause (46c/d). This evidence is indirect and hinges on a number of theoretical assumptions. We have not provided any direct overt evidence for the step-by-step movement hypothesis. Using indirect evidence is a legitimate strategy in scientific research and it is used in other sciences. For instance astronomers use it to pinpoint the existence of planets and planetary systems:

Until 1995, there was no evidence at all of planets orbiting other stars. Since the first dramatic discovery eight years ago, researchers have identified more than 100 planetary systems within 150 light years of Earth.

No one has seen any of these planets: researchers infer the presence of an orbiting planet from a kind of wobble in the light from the parent star. (*Guardian*, 4.7.2003, p. 7, col. 1, Tim Radford, Science Editor)

With respect to movement of interrogative constituents, the **intervention** effect that arises when an interrogative constituent occupies an intermediate SpecCP and hinders or blocks movement of another interrogative constituent (46c/d) could be compared to the “wobble” created by a planet in the light of its parent star.

### 3.2.2 EMPIRICAL EVIDENCE FOR STEP-BY-STEP MOVEMENT

In addition to the indirect evidence for stepwise movement, there is also some direct evidence. In section 2.5 of this chapter we discussed examples like those in (47), in which movement of an interrogative constituent had stranded an element. (47a) shows the stranding of *exactly*; (47b) and (47c) from West Ulster English illustrate the stranding of the quantifier *all*.

- (47) a What do you mean exactly? (cf. (18))  
 b What did you get all for Christmas? (cf. (22a))  
 c Who did you meet all when you were in Derry? (cf. (22b))

The stranded elements, *exactly* and *all*, were taken to remain in the base positions of the moved direct objects. In his article on *wh*-movement in West Ulster English, McCloskey also discusses the examples in (48) (McCloskey, 2000: 63, note 8). Try to provide the bracketed representations of these three examples. Can you see why these examples bear on the current discussion?

- (48) a What exactly did he say that he wanted?  
 b What did he say that he wanted exactly?  
 c What did he say exactly that he wanted?

The data in (48) can be interpreted as offering empirical support for the hypothesis of step-by-step movement of the interrogative constituent. In (48a) *what exactly* moves to SpecCP. In (48b) we might propose that *exactly* is stranded in the base position of the object, and in (48c) we might propose that *exactly* is stranded in the intermediate specifier position:<sup>45</sup>

- (49) a [<sub>CP</sub> [<sub>NP</sub> What exactly] [<sub>C</sub> did] [<sub>IP</sub> he [<sub>I</sub> -ed] [<sub>VP</sub> he say  
 [<sub>CP</sub> ~~what exactly~~ that [<sub>IP</sub> he [<sub>I</sub> -ed] [<sub>VP</sub> he want-ed ~~what exactly~~]]]]]]]?  
 b [<sub>CP</sub> [<sub>NP</sub> What] [<sub>C</sub> did] [<sub>IP</sub> he [<sub>I</sub> -ed] [<sub>VP</sub> he say  
 [<sub>CP</sub> ~~what~~ that [<sub>IP</sub> he [<sub>I</sub> -ed] [<sub>VP</sub> he want-ed [<sub>NP</sub> what exactly]]]]]]]]]?  
 c [<sub>CP</sub> [<sub>NP</sub> What] [<sub>C</sub> did] [<sub>IP</sub> he [<sub>I</sub> -ed] [<sub>VP</sub> he say  
 [<sub>CP</sub> [~~what~~ exactly] that [<sub>IP</sub> he [<sub>I</sub> -ed] [<sub>VP</sub> he want-ed [<sub>NP</sub> ~~what exactly~~]]]]]]]]]?

Discuss the relevance of the West Ulster English sentences in (50) for the hypothesis of step-by-step movement (data from McCloskey, 2000: 61, his (8)).

- (50) a What all did he say (that) he wanted?  
 b What did he say (that) he wanted all?  
 c What did he say all (that) he wanted?

We can again interpret the data in (50) in line with our hypothesis. If we assume that the quantifier *all* is stranded after the movement of *what* in (50b) and in (50c), then it is reasonable to say that in (50b) *all* occupies the object position. In (50c) *all* could then be said to be stranded in the specifier of the intermediate CP:

- (51) a [<sub>CP</sub> [<sub>NP</sub> What all] [<sub>C</sub> did] [<sub>IP</sub> he [<sub>I</sub> -ed] [<sub>VP</sub> he say [<sub>CP</sub> [<sub>NP</sub> ~~what all~~] (that) [<sub>IP</sub> he  
 [<sub>I</sub> -ed] [<sub>VP</sub> he want-ed [<sub>NP</sub> ~~what all~~]]]]]]]]]?  
 b [<sub>CP</sub> [<sub>NP</sub> What] [<sub>C</sub> did] [<sub>IP</sub> he [-ed] [<sub>VP</sub> he say [<sub>CP</sub> ~~what~~ (that) [<sub>IP</sub> he [<sub>I</sub> -ed] [<sub>VP</sub> he  
 want-ed [<sub>NP</sub> ~~what all~~]]]]]]]]]?  
 c [<sub>CP</sub> [<sub>NP</sub> What] [<sub>C</sub> did] [<sub>IP</sub> he [<sub>I</sub> -ed] [<sub>VP</sub> he say [<sub>CP</sub> [<sub>NP</sub> ~~what all~~] (that) [<sub>IP</sub> he  
 [<sub>I</sub> -ed] [<sub>VP</sub> he want-ed [<sub>NP</sub> ~~what all~~]]]]]]]]]]]?

### 3.2.3 SUBJECTS AND OBJECTS

#### 3.2.3.1 *The complementizer that*

We saw that subordinate declaratives are introduced by the complementizer *that*. Often, the complementizer *that* can be absent. We repeat the examples discussed in section 2.9 here.<sup>46</sup>

<sup>45</sup> There are complications, though, which are discussed in McCloskey (2000: 64, note 8).

<sup>46</sup> For an early discussion of the data dealt with here see Perlmutter (1971).

- (52) a Boyle testified that she told Malvo four times that he could be silent or see an attorney. (Based on *Washington Post*, 29.4.2003, p. B1, cols 3–4)  
 b Boyle testified she told Malvo four times he could be silent or see an attorney.

In our earlier example of long extraction, the complementizer *that* can sometimes be inserted in the embedded C:

- (53) a What do you think your cat eats? (= (39b))  
 b What do you think that your cat eats?  
 c [CP What [C do] [IP you [I PRESENT] [VP ~~you~~ think  
     ← [CP ~~what~~ [C that] [IP your cat [I -s] [VP ~~your cat~~ [V' eats [NP ~~what~~]]]]]]]]]?  
     ←

In the attested examples of long movement in (41), the embedded CP does not contain an overt complementizer. In some of the examples, though, the complementizer *that* can be inserted; in others, on the other hand, inserting *that* will lead to sharp ungrammaticality. Try inserting *that* in the examples in (41). Try to identify the factor that sets apart the examples in which inserting *that* leads to ungrammaticality.

- (54) a \*It baffles me as to who Tony Blair imagines that — will work in the universities of the future.  
 b \*Who do you think that — is the more moderate politician?  
 c \*What do you think that — was the great appeal of the Tramp?  
 d What did they think that they were making — with those girls in there?  
 e What do you think that your cat or dog eats —?  
    Where do you think that that meat comes from —?  
    Where do you think that Pedigree Chum comes from —?  
 f Where does he think that the party is going —?  
 g Who does he think that he is —?  
 h Which do you think that you were —?  
 i From what source or sources did you think that the name would leak —?  
 j Why do you think that the Daily Mail and others have invested so much effort in discrediting me personally —?

Inserting *that* leads to ungrammaticality in those sentences in which a subject has been extracted from the embedded clause. We have discovered a **subject/object asymmetry**: while subjects cannot be extracted across the complementizer *that* (54a, b, c), there is no problem for object extraction (54d, e). It would be important to explain this constraint on subject extraction. One possibility would be to relate the constraint on subject extraction to the fact that the subject is extracted from a position adjacent to the complementizer while the object is not extracted from such a position. Alternatively, we might wish to relate the observed asymmetry to the

fact that while the object is extracted from its VP-internal thematic position, the subject has first been moved from its base position, SpecVP, to SpecIP, a VP-external position. We will not pursue this issue here.<sup>47</sup>

### 3.2.3.2 Blocking subject movement

Recall that it is difficult to move an interrogative pronoun out of a CP whose specifier is already filled by a *wh*-constituent. Consider (55a), a constructed example. What is the function of the underlined interrogative constituent?

(55) a \*Which book did you wonder on which day they will publish?

Compare (55a) and (55b). Both examples in (55) are degraded, but (55b) is generally felt to be unacceptable, while some speakers may marginally tolerate (55a). Why should this be?

(55) b \*\*Which book did you wonder on which day will appear?

Let us represent the derivations of both examples, representing the unpronounced copies of the moved *wh*-constituents by strikethrough. In order not to overload the representation in (56), we do not represent the unpronounced copies of the subjects of *wonder* and of *publish* because these do not concern us here.

(56) a \*<sub>[CP Which book did [<sub>IP</sub> you wonder [<sub>CP</sub> on which day [<sub>IP</sub> they will publish ~~which book~~]]]]]?  
 b \*\*<sub>[CP Which book did [<sub>IP</sub> you wonder [<sub>CP</sub> on which day [<sub>IP</sub> ~~which book~~ will [<sub>VP</sub> ~~which book~~ appear]]]]]]]?</sub></sub>

We discover a further subject/object asymmetry: moving an object out of a clause whose SpecCP contains an interrogative constituent (56a) leads to some degradation, but moving a subject out of such a clause leads to a worse degradation. Obviously, it would be important to provide an account for this asymmetry, and preferably one that ties in with the subject/object asymmetry that we discovered in relation to *that* insertion. However, such an account would go well beyond the scope of this introduction.

## 4 The Periphery of Non-Finite Clauses

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So far we have only discussed the periphery of finite interrogative clauses. Let us look at the structure of non-finite interrogative clauses. We will examine to what

<sup>47</sup> Exercise 11. For a discussion of adjacency and anti-adjacency see Culicover (1991, 1993), Rizzi (1997), Pesetsky and Torrego (2000). For the role of the extraction site see Rizzi (1990) and Richards (2001) and the references cited there.

extent we can fit non-finite interrogative clauses into the structures that we have already elaborated for finite clauses.

#### 4.1 For as a conjunction for non-finite clauses

Provide arguments for considering the underlined strings in the following examples as constituents.

- (57) a You realise he hates for you to call him “Ollie”, don’t you? (Marcia Muller, *Edwin of the Iron Shoes*, 1993: 42)  
 b He did intend for Endrina to join him as a runner. (*Guardian*, G2, 15.2.2001, p. 4, col. 2)

The underlined strings function as the objects of the verbs *hate* and *intend*. We can paraphrase them by means of a finite sentence:

- (58) a He hates it that you call him “Ollie”.  
 b He did intend that Endrina should join him as a runner.

In the underlined strings in (57), the inflection of the clauses is non-finite, it is realized by *to*.<sup>48</sup> The subject is realized by an NP (*you*, *Endrina*). While the finite counterparts of these clauses would be introduced by the conjunction *that*, the non-finite variants are introduced by *for*: *for* fills the C position in a non-finite clause.

- (57) c [IP He [I ~~s~~] [VP ~~he~~ hate-s [CP [C for] [IP you [I to] [VP ~~you~~ call him “Ollie”]]]]].

#### 4.2 Non-finite interrogative clauses

##### 4.2.1 WHETHER

Consider (59a), a constructed example whose form is familiar from the preceding discussion. The underlined embedded clause is interrogative, it is introduced by *whether*. Using labeled bracketing, represent the structure of the example. (59b) is an attested example. Compare the underlined segment of (59b) with that in (59a). Identify similarities and differences between these two segments. Try to fit the underlined segment of (59b) into the structure you have devised for (59a).

- (59) a The politicians are deciding whether they should sever their ties with the arrested businessman.  
 b The convictions are likely to have far reaching consequences, with a number of senior British politicians, including Lord Steel, having to decide whether

<sup>48</sup> See Chapter 3, section 1.3.

to sever their ties with his extensive network of companies. (Based on *Guardian*, 15.11.2003, p. 8, col. 7)

(59a) and (59b) both contain an embedded interrogative clause. That in (59a) is finite, its lexical verb is *sever*, the subject is *they*, the inflection is realized by the modal auxiliary *should*, and the illocutionary force is signaled by *whether*. The verb *sever* assigns an AGENT thematic role to the subject *they*. We can represent the derivation of (59a) by (60a):

- (60) a  $[_{IP} \text{The politicians } [_I \text{are}] [_{VP} \text{the politicians be } [_{VP} \text{the politicians deciding } [_{CP} \text{whether } [_{IP} \text{they } [_I \text{should}] [_{VP} \text{they sever } [_{NP} \text{their ties with the arrested businessman}]]]]]]]]]$ .<sup>49</sup>

In (59b) the embedded interrogative clause is also introduced by *whether*, but the clause is non-finite: the lexical verb is *sever* and the inflectional marking is realized by *to*. The non-finite variant of the embedded clause lacks an overt subject, but we interpret the embedded clause as if there were an implicit subject. Specifically, the verb *sever* will assign its AGENT thematic role to a non-overt NP that is interpreted as coreferential with the main clause subject *a number of senior British politicians, including Lord Steel*. We represent this non-overt NP as  $[_{NP} \emptyset]$ . Let us assume that this subject,  $[_{NP} \emptyset]$ , also originates in the specifier of VP and moves to the specifier of the non-finite IP to allow I to fulfil its linking function.

- (60) b  $[_{CP} \text{whether } [_{IP} [_{NP} \emptyset] [_I \text{to}] [_{VP} [_{NP} \emptyset] \text{sever } [_{NP} \text{their ties with his extensive network of companies}]]]]]$ .

The attested examples below illustrate non-finite interrogative clauses introduced by *whether*.

- (61) a Each European country will be free to choose whether to include records of treatment received, photographs, and biometric data. (*Guardian*, 15.11.2003, p. 16, col. 4)  
 b The RMT executive is to meet on Monday to decide whether to call underground-wide strikes. (*Guardian*, 21.11.2003, p. 6, col. 2)  
 c Lieberman said he was already in the State Senate when he mused about whether to open the ice cream shop at a “perfect” site on the Yale campus

<sup>49</sup> We assume that *they* moves step by step from the SpecVP headed by *sever* to SpecIP. Similarly, the subject NP *the politicians* moves step by step from the SpecVP associated with *deciding* to the specifier of IP. There is an unpronounced copy of the moved subject in the specifier position associated with the projection of the auxiliary *be*. See Chapter 4, section 4 for discussion.

or continue to practice law. (*Atlanta Journal-Constitution*, 23.11.2003, p. A4, col. 5)

In non-finite interrogatives *whether* cannot be replaced by *if*.<sup>50</sup>

#### 4.2.2 FRONTED INTERROGATIVE CONSTITUENTS

Consider (62a). In this example the embedded clause is interrogative and is introduced by the fronted interrogative pronoun *who*. *Who* originates in the complement position of the preposition *on*. Using labeled bracketing, represent the structure of this example. Indicate non-pronounced copies of moved constituents by strikethrough.

(62) a They don't know who they should rely on.

(62b) is an attested example. How does it differ from (62a)? Try fitting the components of (62b) into your representation for (62a).

(62) b They are panicking because they don't know who to rely on. (*Washington Post*, 29.4.2003, p. A18, col. 5)

For (62a) the representation will be as in (63a):

(63) a [<sub>IP</sub> They [<sub>I</sub> don't] [<sub>VP</sub> ~~they~~ know [<sub>CP</sub> who [<sub>IP</sub> they [<sub>I</sub> should] [<sub>VP</sub> ~~they~~ rely [<sub>PP</sub> on [~~who~~]]]]]]].

If we try to fit (62b) into this structure we end up with the following partial representation:

(63) b (First approximation)  
[<sub>IP</sub> They [<sub>I</sub> don't] [<sub>VP</sub> ~~they~~ know [<sub>CP</sub> who [<sub>IP</sub> — [<sub>I</sub> to] [<sub>VP</sub> rely [<sub>PP</sub> on [~~who~~]]]]]]].

We can again fit the constituents of the non-finite clause in (62b) fairly easily into the representation designed for its finite counterpart (62a). The only problem is that the subject of the infinitival clause in (62b) is non-overt. Again, because the subject of the embedded clause in (62b) remains implicit, we represent it by the symbol [<sub>NP</sub> Ø]. Again, we assume that this non-overt subject starts out as the specifier of the verb and that it moves to the specifier of IP to provide a linking element for the I' constituent. The non-overt subject of the infinitive is interpreted as coreferential with the subject of the main clause, i.e. *they*.

(63) c [<sub>IP</sub> They [<sub>I</sub> don't] [<sub>VP</sub> ~~they~~ know [<sub>CP</sub> who [<sub>IP</sub> [<sub>NP</sub> Ø] [<sub>I</sub> to] [<sub>VP</sub> [<sub>NP</sub> Ø] rely [<sub>PP</sub> on [~~who~~]]]]]]].

<sup>50</sup> See also Exercise 3 for some problems with the syntax of *whether*.

## 5 Relative Clauses: An Introduction

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### 5.1 Movement of the relative pronoun

Section 3 dealt, among other things, with constituent questions or *wh*-questions such as those in (64).<sup>51</sup>

- (64) a Who had he met at the party?  
 b I wonder [<sub>CP</sub> who he had met at the party].

We postulated that these sentences are derived by moving an interrogative constituent to SpecCP in order to signal the scope of the question. In addition, the fronted *wh*-constituent has a grammatical function inside the clause. Both in the direct question (64a) and in the indirect question (64b), *who* is the direct object of *met*. Following the argumentation elaborated above the representation of the structure of the embedded interrogative clause in (64b) is as in (64c).

- (64) c [<sub>CP</sub> who [<sub>IP</sub> he [<sub>I</sub> had] [<sub>VP</sub> ~~he~~ have [<sub>VP</sub> he met ~~who~~ at the party]]]]<sup>52</sup>

Now consider (65a):

- (65) a I interviewed [<sub>NP</sub> the man who he had met at the party].

The direct object of the verb *interviewed* is the NP *the man who he had met at the party*. We can replace this string by the pronoun *him*; the constituent can be the focus of a cleft sentence.

- (65) b I interviewed him.  
 c It is the man who he had met at the party that I interviewed.

The head of the NP is a noun, *man*. This noun is preceded by a determiner (*the*) and it is followed by a string, *who he had met at the party*, whose function is to narrow down the reference of the noun phrase. The string *who he had met at the party* helps to identify which entity with the property ‘man’ we are talking about. The embedded clause tells us ‘which man I interviewed’.

<sup>51</sup> The aim of section 5 is to offer a first overview of the derivation of relative clauses. The section offers the “traditional” analysis. For a more comprehensive introductory discussion see Haegeman and Guéron (1999). For a more recent and very influential analysis see also Kayne (1994: chapter 8).

<sup>52</sup> Recall that we assume that there is an unpronounced copy of the moved subject in the specifier position associated with the projection of the auxiliary *have*. See Chapter 4, section 4, for discussion.



possessor of the entity that the NP refers to. If we want to question a possessor of the entity referred to by an NP, we apparently cannot just move an interrogative possessor on its own (68a), but we have to move the containing NP along. We say that we move along or we **pied-pipe** the NP.

(68) a \*I asked them [<sub>CP</sub> whose they had used ~~whose~~ car].

Analogously, when forming a relative clause for which the antecedent corresponds to a possessive pronoun, we must pied-pipe the NP:

(68) b \* [<sub>NP</sub> The woman [<sub>CP</sub> whose they had used ~~whose~~ car]] will be paid.

In the same way that an interrogative pronoun can be moved out of its own clause and function as the marker of interrogative force in a higher clause, a relative pronoun can move out of its own clause. (69a) is a constructed example, (69b) is an attested example.

(69) a I know the candidates [<sub>CP</sub> who [<sub>IP</sub> they said [<sub>CP</sub> that [<sub>IP</sub> they will nominate this year]]]]].

b A Pakistani jeweler said today that his picture is among those of five men [<sub>CP</sub> who the F.B.I. says [<sub>CP</sub> [<sub>IP</sub> may have entered the United States on doctored passports]]]. (*New York Times*, 2.1.2003, p. A9, col. 2)

## 5.2 Constraints on movement: Some predictions

Our hypothesis is that relative clauses are derived essentially along the lines of interrogative clauses. In particular, we assume that relative pronouns undergo movement similar to the movement of interrogative pronouns. This hypothesis leads us to a number of predictions. Given that movement of an interrogative pronoun is made difficult by certain factors, the same factors should also lead to a degradation for the movement of a relative pronoun. In section 3.2.1 we introduced the shortest step constraint on movement. Long movement of an interrogative pronoun was shown to lead to ungrammaticality if the specifier of an intervening CP was already occupied by a *wh*-constituent. We predict that, in the same way, the movement of a relative pronoun will degrade if it crosses a filled specifier of an intervening CP.

In section 3.2.3, we saw that the presence of the complementizer *that* in the position C blocks the movement of an adjacent interrogative subject. We predict that the presence of *that* should also block extraction of an adjacent relative subject. We will examine these two predictions here.

### 5.2.1 INTERVENTION EFFECTS ON THE MOVEMENT OF THE RELATIVE PRONOUN

When we apply long movement in interrogative clauses, the moved *wh*-constituent moves step by step via the intermediate specifiers of CP. Coupled with the assumption

that each CP has only one specifier, this allowed us to predict the degraded status of (55a) repeated here as (70):

(70) \*<sub>[CP</sub> Which book did <sub>[IP</sub> you wonder <sub>[CP</sub> on which day <sub>[IP</sub> they will publish]]]]?

If the derivation of relative clauses proceeds like that of interrogative clauses, a relative pronoun also moves stepwise. We predict that relative fronting out of an interrogative clause will lead to a degradation. Observe that once again attested examples which are compatible with a derivation using stepwise movement do not constitute conclusive evidence for our hypothesis. What we have to show is that examples in which movement cannot proceed stepwise are ungrammatical. For instance, relativization out of an interrogative clause should not be grammatical. Again, we cannot test our hypothesis by looking for examples to confirm this. By definition, being ungrammatical, the relevant examples should not occur. It is not because we don't find any examples of relativization out of an interrogative clause that we can conclude that such examples do not exist.<sup>54</sup>

To test our hypothesis we can run an experiment and create the very conditions that should lead to the degradation. We construct a relative clause in which the relative pronoun undergoes long movement. In other words, the pronoun starts from the embedded clause and moves up to a higher clause. If we then insert an interrogative constituent in the specifier of an intermediate CP, we should find a degradation. Starting from (69a) above, repeated here as (71a) let us test our prediction.

(71) a I know the candidates <sub>[CP</sub> who <sub>[IP</sub> they said <sub>[CP</sub> that <sub>[IP</sub> they will nominate ~~who~~ this year]]]]].

To construct the decisive kind of example, we have to modify the declarative embedded clause in (71a), and turn it into an interrogative clause. However, the verb *said* in (71a) does not select an interrogative complement clause. In order to allow for an interrogative complement clause, we have to replace the verb *said* by a verb selecting an interrogative clause. Let us replace *said* by *wondered*. Within the complement clause we replace the temporal specification *this year* by a *wh*-constituent, which we move to the specifier of the embedded CP. (71b) is a partial representation:

(71) b \*I know the candidates <sub>[CP</sub> who <sub>[IP</sub> they wondered <sub>[CP</sub> when <sub>[IP</sub> they will nominate ~~who~~]]]]].

As predicted, (71b) is not acceptable: the interrogative constituent *when* in the specifier of lower CP blocks the passage of *who* to the higher specifier position. These data support the hypothesis that both relative pronouns and interrogative pronouns move step by step.<sup>55</sup>

<sup>54</sup> See section 3.2.1.2.

<sup>55</sup> Exercise 10A. Exercises 12 and 13 introduce another pattern which blocks movement.

5.2.2 SUBJECT MOVEMENT AND THE COMPLEMENTIZER *THAT*

We discovered<sup>56</sup> a subject-object asymmetry with respect to the filler of the C position in embedded clauses from which a constituent is moved. When we move an interrogative subject out of an embedded clause, we cannot insert the conjunction *that* in the C position adjacent to the non-pronounced copy of the subject. This was illustrated by examples (54a, b, c) repeated here as (72).

- (72) a \*It baffles me as to who Tony Blair imagines that will work in the universities of the future.  
 b \*Who do you think that is the more moderate politician?  
 c \*What do you think that was the great appeal of the Tramp?

If relative pronouns move in a way similar to interrogative pronouns, then they ought to display a similar subject/object asymmetry. In (69a), repeated here for convenience as (73a) the object is extracted.

- (73) a I know the candidates [<sub>CP</sub> who [<sub>IP</sub> they said [<sub>CP</sub> that [<sub>IP</sub> they will nominate this year]]]].

The complementizer *that* is realized in the embedded clause, from which the direct object *who* has been extracted. The complementizer may also remain unexpressed:

- (73) b I know the candidates [who they said [they will nominate this year]].

(69b), repeated here for convenience as (74a), is an illustration of long movement of a subject relative pronoun. In the attested example, the complementizer *that* is not realized in the C position of the clause from which the subject *who* has been moved. Indeed, the complementizer *that* cannot be inserted in the lower clause (74b):

- (74) a A Pakistani jeweler said today that his picture is among those of five men [<sub>CP</sub> who the F.B.I. says [<sub>CP</sub> [<sub>IP</sub> may have entered the United States on doctored passports]]]. (*New York Times*, 2.1.2003, p. A9, col. 2)  
 b \*A Pakistani jeweler said today that his picture is among those of five men [who the F.B.I. says [that may have entered the United States on doctored passports]].

The contrast between object extraction in (73) and subject extraction in (74) can be analyzed as another effect of the subject-object asymmetry in moving *wh*-constituents.

<sup>56</sup> Section 3.2.3.1.

### 5.3 A non-overt relative pronoun

#### 5.3.1 THE DATA: RELATIVE CLAUSES WITHOUT A RELATIVE PRONOUN?

Consider once again the derivation of the relative clause in (74a). What is the subject of *says*? What is the subject of *may have entered . . . passports*? As you can see, the relative pronoun *who* has undergone long movement. In representation (74c) we indicate all the unpronounced copies of the relative pronoun by strikethrough (~~who~~):<sup>57</sup>

- (74) c five men [<sub>CP</sub> ~~who~~ [<sub>IP</sub> the F.B.I. says [<sub>CP</sub> ~~who~~ [<sub>IP</sub> ~~who~~ may [<sub>VP</sub> ~~who~~ have [<sub>VP</sub> ~~who~~ entered the United States on doctored passports]]]]]].

Compare the underlined string in (75a) with the relative clause in (74a). What is the subject of *believe*? What is the subject of *may have entered the United States illegally from Canada*?

- (75) a F.B.I. agents investigating falsified identity papers are expanding their dragnet for a growing list of foreign-born men they believe may have entered the United States illegally from Canada.

At first sight it looks as if the subject of *may have entered . . .* is missing. Using the constructed example (73a) as a model, we could insert a subject relative pronoun:

- (75) b F.B.I. agents investigating falsified identity papers are expanding their dragnet for a growing list of foreign-born men who they believe may have entered the United States illegally from Canada.

In (75c) we represent all the copies of the relative pronoun *who* in (75b):

- (75) c foreign-born men [<sub>CP</sub> who [<sub>IP</sub> they believe [<sub>CP</sub> ~~who~~ [<sub>IP</sub> ~~who~~ may [<sub>VP</sub> ~~who~~ have [<sub>VP</sub> ~~who~~ entered the United States illegally from Canada]]]]]].

If the verb *enter* assigns a thematic role to *who* in (75b), then in (75a) *enter* will also have to assign this thematic role. It is proposed that in (75a) a relative pronoun has also moved to SpecCP but that this pronoun is itself not pronounced. In other words (75a) would have the representation in (75d):

- (75) d foreign-born men [<sub>CP</sub> who [<sub>IP</sub> they believe [<sub>CP</sub> ~~who~~ [<sub>IP</sub> ~~who~~ may [<sub>VP</sub> ~~who~~ have [<sub>VP</sub> ~~who~~ entered the United States illegally from Canada]]]]]].

<sup>57</sup> Recall that we assume that there is an unpronounced copy of the moved subject in the specifier position associated with the projection of the auxiliary *have*. See Chapter 4, section 4, for discussion.

When a relative pronoun is left unpronounced, we can refer to it as a non-overt or null pronoun. In (75d) the non-overt pronoun undergoes movement in the same way as its overt counterpart in (74c).<sup>58</sup>

### 5.3.2 EVIDENCE FOR MOVEMENT OF A NON-OVERT PRONOUN

We proposed that in (75a) the relative clause which modifies *foreign-born men* is introduced by a non-overt relative pronoun (*wh<sub>θ</sub>*). As shown in (75d), we assume that the non-overt pronoun starts out as the subject of *entered* and undergoes step-by-step (long) movement to SpecCP. What kind of evidence could we provide to support this analysis?

Recall that movement of *wh*-constituents is subject to a number of constraints. In section 3.2.1 we introduced the shortest step constraint on movement: long movement of an interrogative pronoun is blocked if a specifier of an intervening CP is already occupied by a *wh*-constituent. In section 3.2.3, we saw that long movement of a subject *wh*-constituent is blocked if the adjacent C position is filled by *that*. If (75a) is derived by long movement of a non-overt relative pronoun, then we predict that both the effect of shortest step constraint on movement and that of the constraint on the extraction of the subject should be manifested here. Let us examine each of these points in turn.

#### 5.3.2.1 Step-by-step movement

When we apply long movement in interrogative clauses, the moved *wh*-constituent moves stepwise via the specifier(s) of the intermediate CP(s). Coupled with the assumption that each CP has only one specifier, this allowed us to predict the ungrammaticality of (71b) repeated here as (76):

(76) \*I know the candidates [<sub>CP</sub> who [<sub>IP</sub> they wondered [<sub>CP</sub> when [<sub>IP</sub> they will nominate ~~who~~]]]].

(76) is not acceptable because the interrogative constituent *when* in the specifier of the lower CP blocks the transit of the relative pronoun *who* to the specifier position of the higher clause.

If relative clauses lacking a relative pronoun are derived by movement of a non-overt pronoun, we predict similar intervention effects. Non-overt pronouns should always move stepwise. In other words, there should not be any relative clauses in

<sup>58</sup> In fact, there are two ways of looking at this. One option is to say that in examples without an overt relative pronoun the pronoun is an abstract entity: it is merged as a non-overt element. This is what is traditionally meant by a term such as “non-overt pronoun.” We might, however, also say that in relative clauses without an overt pronoun, a genuine pronoun is merged and then moved but that all copies, including the highest one, end up not being pronounced. The difference between these two ways of thinking is subtle and relates to theoretical assumptions. It is not clear that the two analyses would make different empirical predictions.

which a lower SpecCP inside the relative clause is filled by an interrogative constituent. Our hypothesis predicts that certain patterns should not occur. As before, the fact that we do not actually come across the relevant examples as such is not conclusive.<sup>59</sup> However, we can test our prediction by means of an experiment. By inserting a *wh*-constituent in the specifier position of an intermediate CP in (75a), we will create a blockade for the movement of the non-overt pronoun *who*. As in earlier similar experiments,<sup>60</sup> we also must make sure that the embedded interrogative CP can be the complement of the verb it is merged with. (77a) is a constructed example of this type. We have replaced *believe* by *wonder*, and we have moved the manner adjunct *how* to the specifier of the CP embedded under *wonder*. If the relative clause is indeed the result of movement of a non-overt pronoun, we predict that there should be a degradation in grammaticality. Because we are moving a subject we expect the degradation to be severe.<sup>61</sup> The prediction is correct:

- (77) a \*F.B.I. agents investigating falsified identity papers are expanding their dragnet for a growing list of foreign-born men they wonder how may have entered the Unites States from Canada.

In (77b) we indicate the path of the illicit movement of the non-overt relative pronoun by the strikethrough notation:<sup>62</sup>

- (77) b \*foreign-born men [<sub>CP</sub> ~~who~~ [<sub>IP</sub> they wonder [<sub>CP</sub> how [<sub>IP</sub> ~~who~~ may [<sub>VP</sub> ~~who~~ have [<sub>VP</sub> ~~who~~ entered the Unites States from Canada how]]]]]]].

### 5.3.2.2 Subject movement and the complementizer that

In sections 3.2.3 and 5.2.2 we discussed a subject-object asymmetry in relation to the realization of the C position in embedded clauses from which a constituent is extracted. When we move a subject interrogative pronoun or a subject relative pronoun out of an embedded clause, we cannot insert *that* in the C position adjacent to the non-pronounced copy of the moved subject. For interrogative pronouns this was illustrated in examples (54a, b, c) repeated in (78). For relative pronouns this was shown in (74b), repeated here as (78d).

- (78) a \*It baffles me as to who Tony Blair imagines that will work in the universities of the future.  
 b \*Who do you think that is the more moderate politician?  
 c \*What do you think that was the great appeal of the Tramp?

<sup>59</sup> Again we encounter the “white swan problem.” Chapter 1, section 2.3, and this chapter, section 3.2.1.2.

<sup>60</sup> Sections 3.2.1.2 and 5.2.1.

<sup>61</sup> See section 3.2.3.2.

<sup>62</sup> Exercise 10 (A and B).

- d \*A Pakistani jeweler said today that his picture is among those of five men who the F.B.I. says that may have entered the United States on doctored passports.

If, as we claim, the underlined relative clause in (75a), repeated here as (79a), is derived by movement of a non-overt relative pronoun who, itself the subject of an embedded clause, then we predict that insertion of the conjunction *that* should lead to ungrammaticality. As shown by (79b) this prediction is correct:

- (79) a F.B.I. agents investigating falsified identity papers are expanding their dragnet for a growing list of foreign-born men they believe may have entered the Unites States illegally from Canada. (*New York Times*, 2.1.2003, p. A9, col. 2)
- b \*F.B.I. agents investigating falsified identity papers are expanding their dragnet for a growing list of foreign-born men they believe that may have entered the Unites States illegally from Canada.

(79b) is degraded in the same way that (78d) is degraded, confirming the non-overt relative pronoun hypothesis.<sup>63</sup>

## 6 Summary

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This chapter completes the overview of the structure of the sentence. We returned to the derivation of interrogative sentences discussed in Chapter 1, focusing on the functional domain of the sentence in which illocutionary force is encoded. We also examined how a fully formed sentence can be integrated into a larger structure and become an embedded clause. In our discussion of the sentence we have postulated another layer of functional structure, CP. We have also refined the application of Move.

The main body of the chapter focused on the derivation of interrogative clauses. We assumed that a functional head C encodes illocutionary force. In embedded clauses C hosts the conjunction (here called complementizer). In direct questions, C hosts the fronted auxiliary of SAI. The specifier of CP hosts the fronted interrogative constituent which serves to define the scope of a constituent question.

The operation Move plays an important role in the derivation of questions. A distinction is made between short movement, in which a constituent moves to the specifier position of the CP in whose VP it is merged, and long movement, in which a constituent moves out of the CP in which it has first been merged, and lands in the specifier of a higher CP. In the case of long movement, we have observed intervention

<sup>63</sup> Exercise 14. For more extensive introductory discussion of the analysis of relative clauses see also Haegeman and Guéron (1999, chapter 2, section 1.2).

effects. A moved *wh*-constituent cannot cross a *wh*-constituent in the specifier of a SpecCP located between the base position of the moved constituent and its landing site. We have also discovered a subject-object asymmetry with respect to long movement. When a subject undergoes long movement, the C-position that is left-adjacent to its copy must not be filled by *that*. No such constraints hold for long movement of an object.

Like interrogative clauses, relative clauses implicate the CP area, the area of the sentence to the left of the subject. The mechanisms elaborated for the derivation of interrogative clauses can be extended to derive relative clauses. The constraints on movement of interrogative elements carry over to movement of relative elements.

We have also discovered that while the highest copy of a moved interrogative constituent is always overt, all copies of the relative pronoun, including the highest copy, may be non-pronounced. This can be interpreted to mean that a non-overt pronoun is moved. Evidence for postulating such a non-overt pronoun is the fact that relative clauses lacking an overt relative pronoun are subject to the same constraints on movement as relative clauses introduced by an overt relative pronoun.

In the course of the discussion we have repeatedly had to rely on constructed sentences to test our predictions. This was because the predictions that we wanted to test concerned negative generalizations. If all movement proceeds stepwise, for instance, then we predict that movement should never skip an intervening SpecCP. In order to test such a “negative prediction” we cannot simply base ourselves on the observation that the corresponding sentences do not actually occur. We have to construct the relevant sentences ourselves to examine their status.

Needless to say, although this is the final chapter of this introductory book, we have not provided an exhaustive and definitive theory of syntax. The aim of the book was to show how to think about syntax. The book tries to show how syntactic research is done. It also presents a survey of some of the results that have been formulated over the years using this methodology. Many points of syntax have not been discussed at all, and for many others, the discussion is very partial and tentative; this is also because there is still a lot of ongoing debate about the best way to analyze the constructions. However, even if it had been feasible to provide a full survey of current syntactic theory, we would still not have been able to claim that this book is the definitive version of a theory of syntax. Research into the structure of language continues and continuously brings with it novel discoveries and theoretical innovations. After all, this is what science is all about:

In any branch of science there are only two possibilities. There is either nothing left to discover, in which case why work on it, or there are big discoveries yet to be made, in which case what the scientists say now is likely to be false. (Nigel Calder, author of *Magic Universe: The Oxford Guide to Modern Science*. Cited in *Guardian*, 3.6.2004, p. 6, col. 2)

## Exercises

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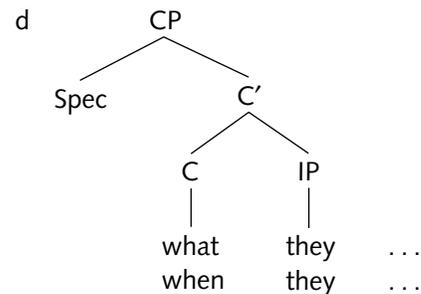
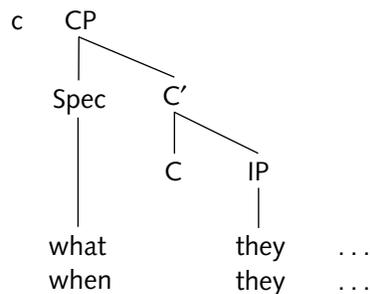
### Exercise 1 SpecCP or C (T)

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Consider the following sentences, focusing on the underlined embedded clause:

- (1) a I wonder what they will buy.  
b I wonder when they will come.

At first glance, it might not be obvious whether the words *what* and *when* occupy the specifier position (c) or the head position (d) of the embedded CP.



What do you think is the appropriate analysis? How could the following examples help us choose between representations (c) and (d)?

- (2) a I wonder which book they will buy.  
 b I wonder on which day they will come.
- (3) a What will they buy?  
 b When will they come?
- (4) a %I wonder what will they buy. (OK in Northern Hiberno English)  
 b %I wonder when will they come. (OK in Northern Hiberno English)

Draw the complete tree diagram representation for the underlined string in (1a) and describe the way the sentence is derived.

## Exercise 2 Fronting operations (T)

---

In the following examples the underlined constituent has been fronted. Locate its base position. What is its function? Has it undergone short movement or long movement?

- (1) While a probationary officer, he said a more senior officer had asked him: "Is it in your religion to lie?" (*Guardian*, 29.10.2003, p. 8, col. 1)
- (2) I've had plenty of advice over what I should say in this speech. Some of it I have even asked for. (*Guardian*, 1.10.2003, p. 6, col. 5)
- (3) A stunningly beautiful building, La Fenice certainly is. (*Guardian*, 6.12.2003, p. 3, col. 1)
- (4) "They must talk about it, and talk about it they must," he said. Food for thought, there! It's a phrase that could add a measure of gravity to any press conference. "We must do this, and do this we must." (*Guardian*, 29.1.2003, p. 2, col. 5)
- (5) It's unbelievable how unlucky he's been, but he's certainly proved he's got tenacity. Whether he'll get out of it or not, only time will tell. (*Guardian*, 8.2.2003, p. 2, col. 8)
- (6) Mr Blair's point was that everything the British had asked for in Greece they had got. (*Guardian*, 7.7.2003, p. 2, col. 5)
- (7) How long he spent there, she couldn't say. (Ian Rankin, *The Falls*, 2001: 328)

- (8) If Tony Blair had listened to us, then I don't think he would have been in the mess he's found himself in and if he starts to listen now, he could lead us into a great third term. (Adapted from *Guardian*, 27.9.2003, p. 5, col. 6)
- (9) By the next election, I intend that we will offer a really fresh alternative to the other two parties. (*Guardian*, 24.9.2003, p. 16, col. 7)
- (10) Kerry said he is running to "restore people's trust that what we say we mean." (*USA Today*, 26.3.2004, p. A4, col. 5)

### Exercise 3 The status of *whether* (T)

---

We have been assuming that the words *that*, *if*, *whether*, and *for* are conjunctions. Discuss the type of clause these conjunctions introduce. Which position do conjunctions occupy in our structures? Draw a tree diagram for the following sentences:

- (1) I wonder whether I should marry this man.
- (2) I wonder whom I should marry.
- (3) I wonder whether to marry this man.
- (4) I wonder whom to marry.
- (5) I wonder how I can establish a family.
- (6) I wonder how to establish a family.

#### COMMENT

In your representations, you will probably have inserted *whether* as a head under C and you will have inserted the interrogative constituents *whom* and *how* under SpecCP. Such a representation means that we assign *whether* to the class of heads, while *whom* and *how* are maximal projections. What motivates treating *whom* and *how* as maximal projections?<sup>1</sup> Discuss the problems raised for this analysis by the following attested example:

- (7) Whether and whom to marry, how to express sexual intimacy, and whether and how to establish a family – these are among the most basic of every individual's liberty and due process rights. (*Guardian*, 19.11.2003, p. 2, col. 3)

<sup>1</sup> See Exercise 1 for evidence.

## Exercise 4 Exclamatives (T)

---

Consider the following examples. What is the function of the underlined constituent? What kind of clause does it introduce?

- (1) What a picture of doom and gloom you paint. (*Guardian*, 26.4.2003, p. 10, col. 7)
- (2) What a player Heskey would be if he had Rooney's confidence. (*Guardian*, 13.3.2003, p. 15, col. 4)
- (3) What a good memory you've got. (Muriel Spark, *The Bachelors*, 1963: 170)
- (4) He's shown what a genius he is again. Those flashes show what a talent he is. (based on *Guardian*, Sport, 7.4.2003, p. 3, col. 5)
- (5) How badly money is wasted in education. (*Guardian*, 5.3.2002, p. 5, col. 6)

### COMMENT

The fronted constituents in the above examples introduce exclamative clauses.<sup>2</sup>

## Exercise 5 Complementizers and inversion (T, E)

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Discuss the contrasts in grammaticality between the following sentences.

- (1) a If your back-supporting muscles should tire, you will be at increased risk of lower-back pain. (based on *Independent on Sunday, Sports*, 14.10.2001, p. 29, col. 3)
- b Should your back-supporting muscles tire, you will be at increased risk of lower-back pain.
- c \*If should your back-supporting muscles tire, you will be at increased risk of lower-back pain.
- d \*Should if your back-supporting muscles tire, you will be at increased risk of lower-back pain.

In section 2.3 of the chapter we account for the complementary distribution of complementizers and inverted auxiliaries by assuming that they target the same position,

<sup>2</sup> For a detailed discussion of the syntax and semantics of exclamative sentences see Zanuttini and Portner (2003).

C. In that section we use conditional clauses rather than embedded interrogative clauses for the discussion. This is because on the one hand, we need embedded clauses to test the distribution of conjunctions and on the other hand, SAI is not possible in embedded interrogatives in Standard English.

Hiberno English does allow for embedded inversion. Consider the following data from Henry (1995: 107, her (25)). Do they corroborate our analysis?<sup>3</sup>

- (2) a They couldn't work out whether we had left.  
 b They couldn't work out if we had left.  
 c %They couldn't work out had we left.  
 d %\*They couldn't work out whether had we left.  
 e %\*They couldn't work out if had we left.

## Exercise 6 Complementizers and negative inversion (T, E)

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In Chapter 1, section 2.3.2, we discussed **negative inversion**. This is the phenomenon whereby SAI is triggered by a negative constituent. The following examples, correspond to (34) in Chapter 1. Identify the inverted auxiliary; identify the negative constituent which triggers inversion.

- (1) a Not one word of evidence have they brought to support that. (*Guardian*, 11.12.2001, p. 4, col. 7)  
 b Within a year of Hague becoming leader, the party had a ballot of its membership to say that not within the lifetime of this parliament would Britain enter the Euro. (*Guardian*, G2, 13.5.2002, p. 7, col. 2)

Consider the examples in (2): in (2a), the fronted constituent contains a negative NP *no account* and it leads to inversion, in (2b), the fronted constituent also contains a negative NP *no time* and yet there is no inversion. Can you see why there should be this difference?

- (2) a On no account should you talk to her.  
 b In no time she had finished her homework.

### COMMENT

Though in both examples the fronted constituent is a PP containing a negative element, the negative component serves to negate the clause only in (2a). Sentential

<sup>3</sup> Henry (1995) offers an accessible introduction to some of the properties of Hiberno English. See also Duffield (1993).

negation bears on the link subject–VP, hence on I. When the fronted negation has sentential scope it attracts I.

In (2b) the negation expressed by *no time* does not affect the clause as a whole: *in no time* does not negate the sentence. (2b) does not mean that she has not finished her homework. What (2b) means is that ‘she had finished her homework’, and that ‘finishing her work took very little time’. Since negation does not have sentential scope it does not interact with I. A negation marker such as *no* in (2b) whose scope is restricted to the containing constituent is sometimes said to express **constituent negation**.

Compare the interpretation of the sentence-initial negative constituents in the following pairs:<sup>4</sup>

- (3) a With no job, Mary would be happy.  
 b With no job would Mary be happy.
- (4) a With no clothes does Robin look attractive.  
 b With no clothes, Robin looks attractive.

## Exercise 7 Non-adjacent inversion: A problem (T, E)

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Discuss the problems that the following examples raise for the structure of the CP that we have been postulating:

- (1) Why for the first two years of government did they do absolutely nothing? (*Guardian*, G2, 23.1.2001, p. 13, col. 4)
- (2) And why in Paris did the Americans modify the agreement at the last minute with the purpose of gaining the signature of the KLA and avoiding that of Yugoslavia? (*Guardian*, 13.4.1999, p. 4, col. 2)
- (3) Why after the chaos on the railways and the near collapse of British Telecom does he believe that private management will improve the efficiency of the health service? (*Guardian*, 21.5.2001, p. 11, col. 7)

### COMMENT

If we assume that a fronted interrogative constituent occupies a specifier position (i.e. SpecCP) and that an inverted auxiliary moves to the head associated with that position (i.e. C), we predict that the fronted constituent and the inverted head will be adjacent. Because there is no position in between the specifier and the head, there cannot be any intervening constituent. This prediction is contradicted by the

<sup>4</sup> For discussion see Haegeman (2000a) and the references cited there.

examples above in which the fronted *wh*-constituent is separated from the inverted auxiliary by an intervening constituent.<sup>5</sup>

### Exercise 8 Problems in the left periphery (T, E)

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Consider the following examples. Discuss which problems, if any, they pose for the clause structure we have been elaborating so far.

You should discuss the examples individually and also try to discover more general patterns that are shared by several examples. For your answer, you should classify the examples according to the type of problem(s) they raise. Observe that the fact that problems arise does not mean that the theory is to be rejected, simply that improvements are needed.<sup>6</sup>

- (1) Doctors' leaders have opposed the proposal on the basis that in no other profession are employees restricted from using their free time as they wish. (*Independent*, 18.10.2000, p. 11, col. 1)
- (2) They feel that it's possible that not many months ago that anthrax – a small quantity of it – was handed over in Prague, Czechoslovakia, to Mohammed Atta, one of the pilots of one of the planes that flew into the World Trade Centre. (*Guardian*, 16.10.2001, p. 4, col. 2)
- (3) Even now, a senior editor points out that, if she really is such a simple soul, how did she wind up at a top literary agency, Peters, Fraser and Dunlop? (*Sunday Times*, 18.2.2001, p. 5, col. 1)
- (4) But I completely understand that once they found him that his daughter wanted a funeral. (*Guardian*, G2, 7.2.2002, p. 9, col. 2)
- (5) I feel very strongly that if women are experiencing domestic violence that they should tell their GP. (*Guardian*, 22.12.2003, p. 7, col. 7)

### Exercise 9 *Wh*-movement (T)

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Identify all the instances of movement of a *wh*-constituent in the following examples. Classify your examples depending on the type of clause that the moved constituent

<sup>5</sup> For some discussion see Haegeman (2000b) and the references cited there.

Notice that in (1)–(3) above the interrogative constituent is *why*. For discussion of *why* see Rizzi (2001).

<sup>6</sup> For more detailed discussions of the structure of the CP domain see Rizzi (1997). For English and Hiberno English see McCloskey (forthcoming).

introduces (relative/interrogative; finite/non-finite). Locate the base position of the moved constituent and identify its function (subject, object, adjunct).

- (1) Within 10 minutes you'll hit upon a television program designed to monitor the most intimate details of our lives in the hopes of finding something mildly amusing with which to capture the attention of fickle viewers. (*Chicago Tribune*, 22.12.2003, Section 13, p. 2, col. 2)
- (2) Thrilled, he accepted the change and brought along several stuffed animal friends who he thought would like the fire-truck bed too. (*Washington Post*, 10.12.2002, p. F4, col. 4)
- (3) A lot of designers come from the perspective of being inventors, which I think is so bogus. (*New York Times*, 28.11.2002, p. D5, col. 2)
- (4) Amy and her mom are together in the kitchen one night. Her mom says she should learn how to cook. Amy seizes the moment: "What kind of husband do you see me with?" (*Washington Post*, 10.12.2002, p. A15, col. 1)
- (5) The National Design Museum turned down the Boyms' proposal in 1994 to sell everyday items like light bulbs, graced with the museum's logo, as gift shop merchandise, which it told Mr Boym was uncommercial thinking. (*New York Times*, 28.11.2002, p. D4, col. 1)
- (6) [Her mother] doesn't know that Amy has already fallen [for a boyfriend] . . . Amy spends hours talking to him on her cell phone, which she sleeps with under her pillow. (*Washington Post*, 10.12.2002, p. A15, col. 1)
- (7) Inevitably, the changes have laid bare frictions – which all sides say were inevitable, and perhaps healthy – within Trinity Parish, which operates St. Paul's, and New York's Episcopal world. (*New York Times*, 28.11.2002, p. A28, col. 1)
- (8) The SEC has no chief accountant and can't sensibly appoint one until it's clear whom this official would report to. (*Washington Post*, 10.12.2002, p. A28, col. 1)
- (9) There are dozens of great new TVs out there. The critical question, even more than what to buy, is when to buy. (*Chicago Tribune*, 22.12.2002, Section 15, p. 3, col. 1)
- (10) [Nawid's family] now have no land on which to build, even if they had the money. (*New York Times*, 2.1.2003, p. A8, col. 3)

## Exercise 10 Constraints on extraction (T, E)

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**10A** Consider (1). Identify the antecedent of the relative pronoun *who*. Insert left-hand brackets labeled “[<sub>IP</sub>” and “[<sub>CP</sub>” in the representation of the underlined relative clause. Add the appropriate right-hand brackets. Represent the unpronounced copy of the relative pronoun by strikethrough (~~*who*~~). Signal the implicit subject of an infinitive by means of the symbol [<sub>NP</sub> ∅] in the SpecIP position. Discuss any problems that arise.

- (1) For decades now, the post of Arts minister has been a dumping ground for nice people who political leaders of the day don't know where else to put. (*Independent on Sunday*, 9.5.2004, p. 24 News, col. 1)

### KEY AND COMMENTS

In (1) the relative pronoun *who* must have first merged with the verb *put*. This verb is found in a non-finite interrogative clause whose SpecCP is filled by a *wh*-constituent *where else*. The extraction of *who* is unexpected because we have seen that moving a *wh*-constituent across a filled specifier of an intervening CP leads to a degradation.

- (1') nice people [<sub>CP</sub> who [<sub>IP</sub> political leaders of the day don't know [<sub>CP</sub> where else [<sub>IP</sub> [<sub>NP</sub> ∅] to [<sub>VP</sub> [<sub>NP</sub> ∅] put ~~*who*~~]]]].
- 

**10B** In section 5.3 of the chapter we postulated that a relative pronoun may be non-overt. Consider the attested examples in (2). For each example insert left-hand brackets labeled “[<sub>IP</sub>” and “[<sub>CP</sub>” in the representation of the underlined relative clauses. Add the matching right-hand brackets. Represent unpronounced copies of the relative pronoun by strikethrough (~~*which*~~). Signal the implicit subject of infinitives by means of the symbol [<sub>NP</sub> ∅] in SpecIP. Discuss the problems raised by the examples. Would the examples in (2) offer any arguments against the hypothesis that relative clauses may be introduced by an unpronounced pronoun (~~*which*~~)?

- (2) a These are things experienced infielders know how to do. (*USA Today*, 26.3.2004, p. 15C, cols 2–3)  
 b There's only one thing we don't know how to do properly, and that's sing like the northern hemisphere sides. (*Guardian*, 13.11.2003, p. 21, col. 6)  
 c These are struggles the government decided how to conduct before it came to power, and the case for its policy then remains as correct as ever. (*Guardian*, 26.11.2002, p. 8, col. 6)  
 d Something I know how to do is close a deal. (*New York Times*, 1.8.2004, p. 7 (ST), col. 4)  
 e We did everything we knew how to do to continue to pursue al Qaeda. (*Wall Street Journal*, 29.3.2004, p. A14, col. 5)

## KEY AND COMMENTS

Assuming that the examples in (2) are derived by movement of a non-pronounced relative pronoun *which*, they display the same unexpected pattern illustrated in (1) in section A:

- (2)' a things [<sub>CP</sub> *which* [<sub>IP</sub> experienced infielders know [<sub>CP</sub> how [<sub>IP</sub> [<sub>NP</sub> Ø] to do *which*]]]]  
 b one thing [<sub>CP</sub> *which* [<sub>IP</sub> we don't know [<sub>CP</sub> how [<sub>IP</sub> [<sub>NP</sub> Ø] to do properly *which*]]]]  
 c struggles [<sub>CP</sub> *which* [<sub>IP</sub> the government decided [<sub>CP</sub> how [<sub>IP</sub> [<sub>NP</sub> Ø] to conduct *which*]]]]  
 d something [<sub>CP</sub> *which* [<sub>IP</sub> I know [<sub>CP</sub> how [<sub>IP</sub> [<sub>NP</sub> Ø] to do *which*]]]]  
 e everything [<sub>CP</sub> *which* [<sub>IP</sub> we knew [<sub>CP</sub> how [<sub>IP</sub> [<sub>NP</sub> Ø] to do *which*]]]]

Taken all by themselves the unexpected examples in (2) might at first sight be thought to constitute evidence against the non-overt relative pronoun hypothesis. After all, a non-overt pronoun would be moved across an interrogative constituent (*how*). However, example (1) in section A shows a similar unexpected pattern with an overt pronoun. This means that even with respect to the non-expected patterns, non-overt relative pronouns (represented as *which* in (2')) behave in the same way as pronounced pronouns (*who* in (1)).<sup>7</sup>

## Exercise 11 Relative clauses and resumptive pronouns (T, E)

While discussing the derivation of relative clauses and of interrogative clauses we have been assuming that a *wh*-constituent is moved from its base position, in which it leaves an unpronounced copy. For instance, for the embedded clauses for our discussion examples (64b) and (65a), repeated here as (1a) and (1b), we proposed representation (1c), in which *who* signals the unpronounced copy of the moved relative pronoun *who*.

- (1) a I wonder who he had met at the party.  
 b I interviewed the man who he had met at the party.  
 c [<sub>CP</sub> who [<sub>IP</sub> he [<sub>I</sub> had] [<sub>VP</sub> *he have* [<sub>VP</sub> *he met who* at the party]]]]<sup>8</sup>

<sup>7</sup> Observe that several of the unexpected examples in (2) concern the sequence *know how to*. It may well be that the pattern *know how to* has special properties. Cinque (2004b: 140) shows that the Italian analogue of *know how to* also displays special properties.

<sup>8</sup> Recall that we assume that there is an unpronounced copy of the moved subject in the specifier position associated with the projection of the auxiliary *have*. See Chapter 4, section 4, for discussion.

Discuss the problems raised for this analysis by the following attested example:

- (2) It was a background discussion which my understanding was that it would not appear anywhere. (*Guardian*, 21.8.2003, p. 9, col. 5)

#### COMMENTS

In this example, instead of having an unpronounced copy in a lower position of the relative pronoun *which* we find the pronoun *it*. When a pronoun occupies a position in which we would have expected an unpronounced copy of a *wh*-constituent we refer to it as a **resumptive** pronoun.

- (2') It was a background discussion [<sub>CP</sub> which [<sub>IP</sub> my understanding was [<sub>CP</sub> that [<sub>IP</sub> it would not appear anywhere]]]].

Could we remove the resumptive pronoun and replace it by an unpronounced copy of the relative pronoun *which*? That is to say, would the spell-out of (3a) be acceptable?

- (3) a \*It was a background discussion [<sub>CP</sub> which [<sub>IP</sub> my understanding was [<sub>CP</sub> ~~which~~ that [<sub>IP</sub> ~~which~~ would not [<sub>VP</sub> ~~which~~ appear anywhere]]]].

Forming relative clauses such as that in (2) without using the **resumptive** pronoun strategy leads to an ungrammatical result, because such examples violate the constraint on subject extraction (see section 3.2.3.1).

- (3) b \*It was a background discussion which my understanding was that would not appear anywhere.

## Exercise 12 Extraction from adjunct clauses and resumptive pronouns (E)

---

In Exercise 11 we discovered that resumptive pronouns can be inserted to overcome constraints on movement. Consider the examples below, which also contain resumptive pronouns in a lower position of a relative pronoun. Locate the relative pronoun and the related resumptive pronoun. Can you remove the resumptive pronoun (that is, can you replace it by an unpronounced copy of the relative pronoun)?

- (1) Bernie is the type of man who when you shake hands with him, it's a deal. (*Guardian*, G2, 11.7.2001, p. 5, col. 3)

- (2) They say he was a workaholic and that work was a drug which when he couldn't have it anymore he got depressed. (Jonathan Frantzen, *The Corrections*, 2001: 75).

#### KEY AND COMMENTS

The relative pronouns in examples (1) and (2) are related to a resumptive pronoun inside an adjunct clause. The relative pronoun is outside the adjunct clause while the resumptive pronoun is inside it.

- (1') Bernie is the type of man who [<sub>CP</sub> when you shake hands with him], it's a deal.  
 (2') They say he was a workaholic and that work was a drug which [<sub>CP</sub> when he couldn't have it anymore] he got depressed.

For (1) and in (2) replacing the resumptive pronouns by an unpronounced copy of the relative pronoun would lead to a degradation. Representations (3a, b) would correspond to sentences (4a, b):

- (3) a Bernie is the type of man who [when you shake hands with who], it's a deal.  
 b They say he was a workaholic and that work was a drug which [when he couldn't have which anymore] he got depressed.  
 (4) a \*Bernie is the type of man who [when you shake hands with], it's a deal.  
 b \*They say he was a workaholic and that work was a drug which [when he couldn't have anymore] he got depressed.

These examples reveal a further constraint on movement of relative pronouns: extracting a relative pronoun from an adjunct clause also leads to a degradation.

### Exercise 13 Movement from adjunct clauses (E)

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In Exercise 12 we discovered that it is not possible to extract a relative pronoun from an adjunct clause. The relevant examples (4a, b) from Exercise 12 are repeated here in (1).

- (1) a \*Bernie is the type of man who when you shake hands with, it's a deal.  
 b \*They say he was a workaholic and that work was a drug which when he couldn't have anymore he got depressed.

In the discussion we have assumed that movement of the relative *wh*-pronoun is similar (or identical) to the movement of the interrogative pronoun. What predictions do we make for the status of the following interrogative examples? Are these predictions correct?

- (2) a Who would it be a deal when you simply shake hands with?  
 b Which drug did he get depressed when he couldn't have any more?

#### KEY AND COMMENTS

(2a) is unacceptable; (2b) is degraded and for many speakers it is also unacceptable. The degradations are predicted by our hypothesis that movement of relative pronouns and movement of interrogative pronouns are two instantiations of the same operation *Move*.

### Exercise 14 *That* relatives (T, E)

---

(1a) corresponds to the text example (75a). Compare the underlined string in (1b) with the relative clause in (1a):

- (1) a F.B.I. agents investigating falsified identity papers are expanding their dragnet for a growing list of foreign-born men they believe may have entered the Unites States illegally from Canada.  
 b F.B.I. agents investigating falsified identity papers are expanding their dragnet for a growing list of foreign-born men that they believe may have entered the Unites States illegally from Canada.

We have proposed that in (1a) a non-overt relative pronoun undergoes (long) movement. In the literature it is often proposed that in (1b) a relative pronoun has also moved to SpecCP, but again this pronoun is not pronounced. In other words (1b) would have the partial representation in (1c).

- (1) c foreign-born men [<sub>CP</sub> who that [<sub>IP</sub> they believe [<sub>CP</sub> who [<sub>IP</sub> who may [<sub>VP</sub> who have [<sub>VP</sub> who entered the Unites States illegally from Canada]]]]]]<sup>9</sup>

Consider the examples below. Discuss how they provide support for the non-overt pronoun hypothesis represented in (1c).

- (2) a \*F.B.I. agents investigating falsified identity papers are expanding their dragnet for a growing list of foreign-born men that they wonder how may have entered the Unites States from Canada.  
 b \*F.B.I. agents investigating falsified identity papers are expanding their dragnet for a growing list of foreign-born men that they believe that may have entered the Unites States illegally from Canada.

<sup>9</sup> Recall that we assume that there is an unpronounced copy of the moved subject in the specifier position associated with the projection of the auxiliary *have*. See Chapter 4, section 4, for discussion.

## KEY AND COMMENTS

In (2a) we have inserted the interrogative constituent *how* in the specifier position of an intermediate CP. This leads to a strong degradation in acceptability of the example. Similarly, inserting *that* in the position adjacent to the subject position from which the non-overt relative pronoun would have been moved leads to a strong degradation in (2b). These two effects are identical to those discussed in connection with movement of overt interrogative and relative pronouns in sections 3.2 and 5.2 of the chapter, and they also extend to movement of non-overt relative pronouns as discussed in section 5.3.

One point needs to be added here: in Modern English the complementizer *that* can only be used to introduce a relative clause if the constituent in SpecCP itself is non-overt. If both the constituent in SpecCP and the complementizer *that* in the adjacent C position are overt (representation (1d)), the resulting sentence is ungrammatical (1e):<sup>10</sup>

- (1) d \*foreign-born men [<sub>CP</sub> who that [<sub>IP</sub> they believe [<sub>CP</sub> who [<sub>IP</sub> who may [<sub>VP</sub> who have [<sub>VP</sub> who entered the Unites States illegally from Canada]]]]].  
 e \*F.B.I. agents investigating falsified identity papers are expanding their dragnet for a growing list of foreign-born men who that they believe may have entered the Unites States illegally from Canada.

Discuss how the *that* relative in (3) could be derived:

- (3) These are precisely the kinds of things that students and faculty members will find at the newly renovated Milbank Memorial library. (*New York Times, Education*, 1.8.2004, p. 19, col. 1)

## Exercise 15 Postverbal subjects and inversion in French (E)

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Consider the French examples in (1). How could we represent the structure for (1a)? And for (1b)? On the basis of their English glosses you might be tempted to assign to (1b) the same structure as (1a). The only difference would be that while the subject in (1b) is a lexical NP *les étudiants* ('the students'), that in (1a) is a pronoun.

- (1) a Combien d'argent dépensent-ils?  
 how much money spend-3PL they  
 'How much money do they spend?'

<sup>10</sup> There is a similar effect with interrogatives, cf. section 2.6.

- b Combien d'argent dépensent les étudiants?  
 how much money spend-3<sub>PL</sub> the students  
 'How much money do the students spend?'

On the basis of the data below, can we maintain that (1a) and (1b) have the same derivation?

- (2) a Combien d'argent ont-ils dépensé?  
 how much money have-3<sub>PL</sub> -they spent-PART  
 'How much money have they spent?'
- b \*Combien d'argent ont les étudiants dépensé?  
 how much money have-3<sub>PL</sub> the students spent-PART
- (3) a \*Combien d'argent ont dépensé-ils?  
 how much money have-3<sub>PL</sub> spent-PART they
- b Combien d'argent ont dépensé les étudiants?  
 how much money have-3<sub>PL</sub> spent-PART the students  
 'How much money have the students spent?'
- (4) a \*Je me demande combien d'argent dépensent-ils.  
 I wonder how much money spend-3<sub>PL</sub> they
- b Je me demande combien d'argent dépensent les étudiants.  
 I wonder how much money spend-3<sub>PL</sub> the students  
 'I wonder how much money the students spend.'
- c Je me demande combien d'argent ont dépensé les étudiants.  
 I wonder how much money have-3<sub>PL</sub> spent-PART the students  
 'I wonder how much money the students have spent.'
- (5) a Dépensent-ils beaucoup d'argent?  
 spend-3<sub>PL</sub> they a lot of money  
 'Do they spend a lot of money?'
- b \*Dépensent les étudiants beaucoup d'argent?  
 spend-3<sub>PL</sub> the students a lot of money

#### KEY AND COMMENTS

The derivation of (1a) is relatively straightforward: we assume that the inflected verb *dépensent* ('spend') has undergone inversion (SVI) and has moved to C. The fronted direct object *combien d'argent* ('how much money') is an interrogative constituent in SpecCP:

- (1) c [<sub>CP</sub> [<sub>NP</sub> Combien d'argent] [<sub>C</sub> dépensent] [<sub>IP</sub> ils [<sub>I</sub> ~~dépensent~~] [<sub>VP</sub> ils ~~dépens-~~  
[<sub>NP</sub> ~~combien d'argent~~]]]]].

One might think that (1b) has the same derivation, with a lexical NP *les étudiants* ('the students') rather than a pronoun (*ils*, 'they') as the subject in SpecIP. But the additional data show that the distribution of pronominal subjects is different from that of full NP subjects.

In (2a) the inflected auxiliary *ont* ('have') has moved to C, the lexical VP is headed by a past participle *dépensé* ('spent').

- (2) c [<sub>CP</sub> [<sub>NP</sub> Combien d'argent] [<sub>C</sub> ont] [<sub>IP</sub> ils [<sub>I</sub> ~~ont~~] [<sub>VP</sub> ~~ils av-~~<sup>11</sup> [<sub>VP</sub> ils dépensé [<sub>NP</sub>  
~~combien d'argent~~]]]]]?]

(2b/d) shows that the analogue of derivation (2a/c) with an NP subject is ungrammatical:

- (2) d \*[[<sub>CP</sub> [<sub>NP</sub> Combien d'argent] [<sub>C</sub> ont] [<sub>IP</sub> les étudiants [<sub>I</sub> ~~ont~~] [<sub>VP</sub> ~~les étudiants av-~~  
[<sub>VP</sub> ~~les étudiants dépensé~~ [<sub>NP</sub> ~~combien d'argent~~]]]]]]]?]

Rather, as shown by (3b), a lexical subject must occupy a position to the right of the participle. This is a position in which the pronominal subject cannot occur (3a).

As shown by (4a), with pronominal subjects, SVI is restricted to main clauses. In contrast, the inverted position occupied by lexical subjects is also available in embedded interrogatives (4b), in which the lexical subject can also follow a participle (4c).

(5a) shows that with a pronominal subject, SVI is also found in *yes/no* questions. On the other hand, in *yes/no* questions lexical subjects cannot occupy the postverbal position.

We conclude that though both (1a) and (1b) contain postverbal subjects, we have to distinguish their structures.<sup>12</sup>

<sup>11</sup> In (2c) we represent the root of the verb *avoir* ('have') as *av-*. This is an approximation.

<sup>12</sup> For introductory discussions of these data see Battye, Hintze, and Rowlett (2000: 202–5) and Rowlett (2005). For advanced discussion see Kayne (1972), and Kayne and Pollock (1978, 2001).

For examples in English in which a postverbal NP subject is not derived by SAI see Chapter 1, Exercises 11 and 12, and Chapter 4, Exercise 23.