In this chapter, we discuss the syntactic structure of questions, a sentence type that we introduced in Chapter 2 as a test for constituenthood. We will pursue an insight already mentioned there—namely, that forming *wh*-questions is conveniently understood as a combination of replacing a constituent by a suitable *wh*-phrase and moving it to the beginning of the sentence. For obvious reasons, we call this movement *wh*-movement. The first section of the chapter gives a basic introduction to the syntax of questions. The next section presents the syntactic derivation of *wh*-questions, which extends straightforwardly to *yes-no questions*. The second section then extends the analysis of questions yet further to another sentence type from Chapter 2, which we there called *movement*, but which we will refer to from now on as *topicalization* in order to distinguish it from other instances of movement. The final section covers the various types of *relative clauses* found in English. As we will show, each of these three phenomena
involves movement of a constituent to Spec(CP). In the case of questions and relative clauses, the constituent is a \textit{wh} phrase; in the topicalization, it is not. Despite this difference, the syntax literature often follows Chomsky (1977) in using the term \textit{wh}-movement to include topicalization in order to highlight the shared properties of all three phenomena, and we will follow that usage. If need be, it is always possible to distinguish between \textit{wh}-movement in the wide sense (where it includes topicalization) versus in the narrow sense (where it does not).

### Basic descriptive terminology for types of questions

#### 1.1 Yes-no versus \textit{wh}-questions

Questions can be divided into \textbf{yes-no questions} (also known as polar questions) and \textbf{wh-questions} (also known as constituent questions), according to the expected answer. As the name implies, the answer to a yes-no question is either ‘yes’ or ‘no’. And again, as the name implies, \textit{wh}-questions begin with a \textit{wh}-expression (\textit{who, what, which, where, when, why}). \textit{How} counts as a \textit{wh}-expression by virtue of its meaning, even though it doesn’t begin with \textit{wh}-.

The distinction between the two question types is illustrated in (1) and (2).

(1) Yes-no question:
   \begin{itemize}
   \item Q: Has he called?
   \item A: \{ Yes, no \}.
   \end{itemize}

(2) \textit{Wh}-question:
   \begin{itemize}
   \item a. Q: Who just came in?
   \item A: \textit{The boy from next door}.
   \item b. Q: Who(m) did you invite?
   \item A: All my friends.
   \item c. Q: When did she call?
   \item A: After dinner.
   \item d. Q: Why did he do that?
   \item A: Out of ignorance.
   \item e. Q: How did you fix it?
   \item A: With the right tool.
   \end{itemize}
1.2 Direct versus indirect questions

Another distinction that can be drawn is between direct questions and indirect questions. Direct questions are main clauses, whereas indirect questions are part of a larger matrix sentence (possibly a question itself). Direct questions are generally used to elicit information. They are associated with characteristic intonation contours, which are represented in standard orthography by a question mark. Indirect questions are generally used to report about direct questions and are not associated with a special intonation.

The questions in (1) and (2) are all direct questions. The corresponding indirect questions are given in (3) and (4). Here and in what follows, indirect questions are enclosed in square brackets.

(3) Indirect yes-no question:
I can’t remember [ { whether, if } he has called ].

(4) Indirect wh-question:
   a. I can’t remember [ who just came in ].
   b. I can’t remember [ who(m) you invited ].
   c. I can’t remember [ when she called ].
   d. I can’t remember [ why he did that ].
   e. I can’t remember [ how you fixed it ].

(5) gives examples of various syntactic contexts in which indirect questions occur.

(5) a. Complement of verb:
   She asked [ whether they are coming ].
   b. Complement of adjective:
   I’m not sure [ whether they are coming ].
   c. Complement of preposition:
   The question of [ whether they are coming ] remains unresolved.
   d. Subject:
   [ Whether they are coming ] remains up in the air.

Finally, indirect questions can be finite or nonfinite, as shown in (6) and (7) (see §8 of Chapter 2 on the nature of finiteness). Notice that if, in contrast to whether, requires finite complements.

(6) Indirect yes-no question:
   a. They can’t remember [ { whether, if } they should turn off the lights ]. (finite)
   b. They can’t remember [ whether to turn off the lights ]. (nonfinite)

(7) Indirect wh-question:
   a. They can’t remember [ what they should pay attention to ]. (finite)
   b. They can’t remember [ what to pay attention to ]. (nonfinite)
1.3 Information questions versus echo questions

Ordinarily, speakers use questions to elicit information, potentially initiating a discourse with them, as in (8).

(8)  a. How do you do?
    b. What’s up?

But questions can also be used to signal a failure to understand the previous move in a conversation. The failure to understand can be genuine or feigned (calculated to express surprise, disapproval, outrage, and so on). Accordingly, we can distinguish between information questions and echo questions (also known as reprise questions); the latter two terms underline the response character of the second type of question. Echo questions can have the same syntactic form as information questions, but they are associated with a melody that is quite distinct from that of information questions. Speakers can also further mark the special discourse function of echo questions by giving them a special syntactic form in which the wh- phrase does not undergo wh- movement. The wh- phrase is said to remain in situ. (9) and (10) illustrates the two forms that echo questions can take (with or without wh- movement).

(9)  A: Over break, I ended up visiting my [unintelligible]
B: Who did you end up visiting? (wh- movement)
    You ended up visiting who? (wh- in situ)

(10) A: Her parents burned all of her clothes.
    B: What did they do⁈ (wh- movement)
        They did what⁈ (wh- in situ)

The association of the wh- in situ form with the echo function is not universal. Some languages do not have wh- movement at all (see Chapter 14 for discussion), and some wh- movement languages allow wh- in situ questions to serve as either information questions or echo questions. This is illustrated for French in (11) (Engdahl 2006, p. 104, (33)–(34)).

(11)  a. A: Ton fils, il lit quoi?
      your son he reads what
      ‘What does your son read?’
      B: Des bandes desinées.
         of the comics
         ‘Comics.’

  b. A: Mon fils, il lit [inaudible]?
      my son he reads
      ‘My son reads …’
      B: Il lit quoi?
         he reads what
         ‘He reads what?’
A movement analysis of questions

2.1 Indirect questions

We begin our analysis of questions by considering indirect questions. This may seem counter-intuitive, but it is actually a more direct path to understanding the structure of questions than if we were to begin with direct questions. As the presence of the complementizer *if* in (12) shows, the verb *wonder* takes a CP complement.

(12) They wonder *if* the lions will devour the zebra.

The elementary trees for *wonder* and *if* are given in (13a)–(13b), and the entire tree for (12) is given in (13c).

(13) a. \[
\begin{array}{c}
\text{VP} \\
\text{»DP«} \\
\text{V''} \\
\text{V'} \\
wonder \\
\text{»CP«}
\end{array}
\]

b. \[
\begin{array}{c}
\text{CP} \\
\text{C'} \\
\text{if} \\
\text{»IP«}
\end{array}
\]
Now consider the indirect question in (14), which begins with a *wh*-phrase (a maximal projection) rather than with a complementizer (a head).

(14) They wonder *which zebra* the lions will devour.

Let’s adopt the null hypothesis that *wonder* is associated with the same elementary tree in (14) as it is in (12)—namely, with (13a). Since (14) contains no overt complementizer, the CP that substitutes into the complement node of *wonder* must then be the projection of a silent complementizer. For reasons to be given shortly, we take this complementizer to be a silent counterpart of *that*. In deriving the tree for (14), a further difficulty arises concerning the *wh*-phrase *which zebra*. On the one hand, the *wh*-phrase must be the object of *devour*, just as in (12), because *devour* is obligatorily transitive. But on the other hand, the *wh*-phrase precedes the subject of the subordinate clause rather than following the verb. As usual when we are confronted with a mismatch of this sort, we invoke movement in order to allow a single phrase to simultaneously play more than one role in a sentence. Specifically, we will first substitute the *wh*-phrase into the complement node of *wonder* and then move it to Spec(CP). This allows us to accommodate the word order in (14), while maintaining the status of *devour* as a transitive verb regardless of which clause type (declarative or interrogative) it happens to occur in. The requisite elementary tree for the silent complementizer is shown in (15); by contrast to the elementary tree for *if*, it contains a specifier node for the *wh*-phrase. The full structure of the *wh*-phrase that moves to that specifier node is shown in (15b). The resulting structure for (14) is shown in (15c).
(15) a. \[
\begin{array}{c}
\text{CP} \\
\text{XP} \\
\text{C'} \\
\phi_{\text{that}} \\
\text{IP} \\
\end{array}
\]
b. \[
\begin{array}{c}
\text{DP} \\
\text{D'} \\
\text{NP} \\
\text{which} \\
\text{N'} \\
\text{zebra} \\
\end{array}
\]
c. \[
\begin{array}{c}
\text{IP} \\
\text{DP}_i \\
\text{they} \\
\text{[PRS]} \\
\text{VP} \\
\text{t}_i \\
\text{V'} \\
\text{C'} \\
\phi_{\text{that}} \\
\text{IP} \\
\text{DP}_k \\
\text{which zebra} \\
\end{array}
\]

The argument just presented is based on the obligatorily transitive character of *devour*, but it extends straightforwardly to other syntactic relations—for instance, modification. Recall that the way that we have chosen to represent the modification relation is to adjoin the modifier at the intermediate projection of the head that is being modified. In (16a), the adverb phrase *unbelievably quickly* modifies the verb *devour*, and so it adjoins at \(V'\). In (16b), the corresponding *wh- phrase how quickly* also modifies *devour*, so it needs to adjoin to \(V'\) as well, but it precedes the subject.

(16) a. The lions will devour the zebra *unbelievably quickly*.
b. They wonder *how quickly* the lions will devour the zebra.

Again, we resolve the mismatch between the position where the phrase is interpreted and where
it is pronounced by first adjoining the modifier and then moving it to Spec(CP). (17a) shows the full structure of the phrase that undergoes movement, and (17b) shows the structure of the entire question.

(17)  

a. \[
\begin{array}{c}
    \text{AdvP} \\
    \text{Adv'} \\
    \text{AdvP} \\
    \text{Adv'} \\
    \text{Adv'} \\
    \text{how} \\
    \text{quickly} \\
\end{array}
\]

b. \[
\begin{array}{c}
    \text{IP} \\
    \text{DP}_i \\
    \text{they} \\
    \text{[prs]} \\
    \text{I'} \\
    \text{VP} \\
    \text{t}_i \\
    \text{V'} \\
    \text{V'} \\
    \text{CP} \\
    \text{wonder} \\
    \text{AdvP}_{k} \\
    \text{how} \\
    \text{quickly} \\
    \text{C'} \\
    \text{IP} \\
    \text{DP}_{m} \\
    \text{the} \\
    \text{lions} \\
    \text{will} \\
    \text{t}_m \\
    \text{V'} \\
    \text{V'} \\
    \text{t}_k \\
    \text{devour} \\
    \text{DP} \\
    \text{the} \\
    \text{zebra}
\end{array}
\]
Why a silent complementizer?

Let’s delve a bit deeper into why we treat the complementizer in (15) and in (17) as a silent counterpart of *that*. There are several reasons. First, Middle English (1150–1500) routinely allowed (though it did not require) overt *that* as the head of indirect *wh-* questions. The examples in (18) are all from texts by Chaucer that are part of the Penn-Helsinki Parsed Corpus of Middle English; (18c)–(18d) show that *that* alternated with its silent counterpart even within a single sentence by a single author.

(18) a. he wiste wel hymself *what* *that* he wolde answere (cmctmeli.m3, 219.C1.75)  
   ‘he himself knew well what he would answer’

b. for ye han ful ofte assayed … *how wel* *that* I kan hyde and hele thynges (cmctmeli.m3, 221.C1.149)  
   ‘for you have very often determined how well … I can hide and conceal things’

c. I wolde fayn knoue *how* *that* ye understonde thilke wordes and *what* is youre sentence (cmctmeli.m3, 227.C2.408)  
   ‘I would like to know how you understand these same words and what your judgment is’

d. And forther over, it is necessarie to understonde *whennes* *that* synnes spryngen, and *how* they encreessen (cmctpars.m3, 296.C1b.355)  
   ‘And moreover, it is necessary to understand where sins come from and how they increase’

e. Now shal ye understonde *in what manere* *that* synne wexeth or encreeseth in man. (cmctpars.m3, 297.C2.393)  
   ‘Now you shall understand in what manner sin grows or increases in man.’

f. The fifthe circumstaunce is *how manye tymes* *that* he hath synned … and *how ofte* *that* he hath falle. (cmctpars.m3, 323.C1.1502)  
   ‘The fifth circumstance is how many times he has sinned … and how often he has fallen.’

Second, contemporary Belfast English (the variety of English that is the focus of Exercise 1.2) resembles Middle English in this respect (Henry 1995, p. 107).

(19) a. I wonder *which dish* *that* they picked.

b. They didn’t know *which model* *that* we had discussed.

Third, *wh-* phrases followed by *that* continue to be attested in the unplanned usage of speakers of modern Mainstream U.S. English (Radford 1988, p. 500). A few of the examples that we have collected over the years are shown in (20); the entire collection is here.

(20) a. I realized *how interesting* *that* it was.  

b. Most of my colleagues were amazed *how quickly* *that* I recovered.
c. “These recounts will determine how much of a pick-up that we will have”, said Democratic National Committee Chairman Joe Andrew.


Finally, sequences of ‘wh- phrase and overt complementizer in indirect questions occur in languages other than English. The complementizer in question is generally the counterpart of that, but the counterpart of if is attested as well.

(21) Bavarian (Bayer 1983, p. 212, (8a–d)):
   a. I woass ned wer dass des toa hod.
      I know not who that that done has
      ‘I don’t know who did that.’
   b. ... wos dass ma toa soin.
      what that we do should
      ‘...what we should do.’
   c. ... wann dass da Xaver kumpt.
      when that the comes
      ‘...when Xaver is coming.’
   d. ... wiavui dass a kriagt.
      how.much that he gets
      ‘...how much he gets.’

(22) Dutch (Besten 1989, p. 23, (21b)):
   a. welk boek (of) hij wil lezen
      which book if he wants read
      ‘...which book he wants to read’

2.2 Direct questions

Direct wh- questions

Having argued that wh- phrases move to Spec(CP) in indirect questions, we assume for uniformity that the same is true for direct questions like (23).

(23) a. [DP Which zebra ] will the lions devour?
   b. [AdvP How quickly ] will the lions devour the zebra?
   c. [AdjP How experienced ] should they be?
   d. [PP Under which shell ] will they hide the pea?

As is evident from comparing the direct questions in (23) with their indirect question counterparts, wh- movement in direct questions is accompanied by movement of the modal from its ordinary position after the subject to a position immediately preceding the subject. For obvious reasons, we will refer to this type of movement as head movement. The particular instance of head movement at issue here is often called subject-aux inversion. From our point of view, the
term is slightly misleading since subject-aux inversion affects not just the auxiliary verbs *be, do,* and *have,* but also modals. Nevertheless, we will sometimes use the term when it is useful for expository purposes. In what follows, we will focus on questions with modals. Questions with auxiliary and ordinary verbs involve complications that are not relevant here; see Chapter 10 and especially Exercise 10.5.

We will begin by assuming that the CP involved in the derivation of direct questions is headed by a morpheme expressing interrogative (= information-seeking) force. Despite the formal (= structural) similarity between direct and indirect questions, indirect questions do not have this same basic pragmatic force. In some languages, such as Japanese, the question morpheme is overt, as illustrated in (24). (The question morpheme *ka,* glossed as “q”, appears in final position because Japanese is a consistently head-final language, as noted in Chapter 5, § 4; the case particles separated from their nouns by hyphens can be ignored for present purposes.)

(24) 誰が 命司を 飲めました か？
Dare-ga sushi-o tabe-mashi-ta ka?
who-nom sushi-acc eat-pol-pst Q
‘Who ate sushi?’

In contrast to Japanese, the question morpheme in English is silent. This gives us (25a) as the counterpart to *if* in (13b), and (25b) as the direct-question counterpart to the indirect question in (13c), pending subject-aux inversion.

(25) a. CP
    »XP« C’
    C’ »IP« [q]

b. CP
    DP_k
    which zebra C’ IP [q]
    DP_l
    the lions I’ VP
        will t_i
    t_k
    V’ devour
Head movement

The structure in (25b) actually turns out to be a possible structure for direct questions in African-American English, where subject-aux inversion in direct questions is optional. In that variety, direct questions without subject-aux inversion still differ from the corresponding indirect questions in intonation; that is the contribution of the question morpheme. However, in mainstream varieties of English, direct questions require inversion. In the two cases of movement that we have considered so far (subject movement in Chapter 4 and wh- movement in this chapter), the “landing site” of movement has been a substitution node in an elementary tree. But this option is not available in the case of subject-aux inversion. The modal in I cannot substitute in C, because C is already filled by the question morpheme. We can’t simply allow the modal to overwrite the question morpheme, since then the tree would not contain the information necessary to generate the proper question intonation. We also want to continue to say that elementary trees are projections of morphemes rather than of syntactic categories. In other words, we do not want to allow elementary trees as in (26), which consist solely of substitution nodes.

\[(26)\]
\[
\begin{array}{l}
CP \\
\downarrow \\
C^\circ \\
\leftarrow \text{not a possible elementary tree!}
\end{array}
\]

As a result of these considerations, we will implement movement of the modal to the presubject position via adjunction rather than with substitution. We use the same formal definition of adjunction in Chapter 4, § 3. That is, we first by select the target of adjunction, then clone that target, and finally attach the adjoining element (here, the modal undergoing movement) as the daughter of the higher clone. (27) shows the operation on the relevant heads in isolation.

\[(27)\]
\[
\begin{array}{lll}
a. & C^\circ & [q] \\
b. & C^\circ & \downarrow \\
 & C^\circ & [q] \\
c. & \vdash & C^\circ \\
 & \text{modal} & [q]
\end{array}
\]

\[
\text{Select target of adjunction} \quad \text{Clone target of adjunction} \quad \text{Attach modal}
\]

(28) shows the final structure for the direct question. Just like the moved phrases, the moved head bears a unique index linking it to its trace.
Although the formal operation of adjunction is defined in exactly the same way regardless of the use to which we put it, the two uses are associated with differences. First and foremost, the operation represents different linguistic relations in the two cases. As we already know from Chapter 4, §3, adjunction can represent the modification relation, which corresponds to a semantic subset relation. In the case of head movement, adjunction represents an entirely different linguistic relation. In this case, we can think of the structure formed by adjunction as a morphologically complex head—or to put it more colloquially, as a compound word. In Chapter 10, we will invoke head movement to combine verb stems with tense suffixes to form finite verbs. In that case, the position of the tense suffix tells us that the verb left-adojins to I. By analogy, we assume that I in the case at hand left-adojins also; in other words, we are treating the silent question morpheme as a suffix, just like any other inflectional morpheme in English. Second, the projection level of the target node differs; it is an intermediate projection for modification versus a head for head movement. Third, the projection level of the adjoining element differs. It is a maximal projection for modification versus a head for head movement. Finally, for modification, the adjoining element is not yet part of the structure, and adjunction is "pure" in the sense that it doesn’t involve concomitant movement. For head movement, the adjoining element is already part of the structure, and hence movement is involved. Table 6.1 summarizes the above discussion.

<table>
<thead>
<tr>
<th>Use of adjunction for ...</th>
<th>Modification</th>
<th>Head movement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjunction structure represents ...</td>
<td>semantic restriction</td>
<td>morphological relation</td>
</tr>
<tr>
<td>Target of adjunction</td>
<td>intermediate projection</td>
<td>head</td>
</tr>
<tr>
<td>Adjoining node</td>
<td>maximal projection</td>
<td>head</td>
</tr>
<tr>
<td>Adjoining node already part of structure? (= Movement involved?)</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

Table 6.1: Comparison of adjunction in modification and head movement
Yes-no questions

As we have already seen, the elementary trees required to derive indirect questions can either include a specifier, as in (15a), or not, as in (13b). As expected given the generality of the X’ schema, the same is true of the elementary trees for direct questions. In particular, the question morpheme in (25a) has a variant without a specifier, as shown in (29).

(29) \[
\begin{array}{c}
  \text{CP} \\
  \mid \\
  C' \\
  \mid \\
  C^\circ \quad \text{»IP«} \\
  [\text{q}]
\end{array}
\]

Using this elementary tree allows us to derive yes-no questions like (30), whose structure is shown in (31).

(30) Will the lions devour the zebra?

(31) \[
\begin{array}{c}
  \text{CP} \\
  \mid \\
  C' \\
  \mid \\
  C^\circ \quad \text{IP} \\
  \mid \\
  I^\circ \quad \text{DP}_k \quad I' \\
  \mid \\
  \text{will} \quad [\text{q}] \quad \text{the lions} \quad t_i \quad \text{VP} \\
  \mid \\
  t_k \quad \text{V}' \\
  \mid \\
  \text{V}^\circ \quad \text{DP} \\
  \mid \\
  \text{devour} \quad \text{the zebra}
\end{array}
\]

The direct question in (30) corresponds to the indirect yes-no question in (12) that we began our investigation with. So we now have structures for all four question types that result from crossing direct versus indirect questions with wh- versus yes-no questions.

In concluding this section, we note that traditional grammar distinguishes three types of illocutionary force: declarative (statements), interrogative (questions), and imperative (commands). The word order of English questions forces us to add a CP projection to the IP projection that we have been using to represent declaratives. In the interests of uniformity—recall the discussion of normal form from Chapter 4—it would be sensible to represent ordinary declarative sentences as CPs also, with a head encoding the declarative illocutionary force. We could represent the head as [DECL], or we could even use punctuation marks to represent the three three illocutionary forces—[.], [?] (replacing [q]), and [!] However, despite our love for normal forms,
we will bow to standard practice and not represent declarative sentences as CPs. We will only do so where forced to do so by the word order (we will see examples in Chapter 12).

**Topicalization**

We turn now to **topicalization**, which we already know from Chapter 2, § 2.2, though under another name, as already mentioned in the introduction to the chapter. From a descriptive point of view, the term is not completely felicitous, since topicalization is not restricted to topics (= previously mentioned discourse entities). Nevertheless, we will use the term because it is standard in the syntax literature. (32) gives some examples

(32)  
\[\begin{align*}
\text{a.} & \quad [\text{DP} \quad \text{The smallest zebra,}] \quad \text{the lions will devour.} \\
\text{b.} & \quad [\text{AdvP} \quad \text{Unbelievably quickly,}] \quad \text{the lions will devour the zebra.} \\
\text{c.} & \quad [\text{AdjP} \quad \text{Quick as a wink,}] \quad \text{the cat hid under the covers.} \\
\text{d.} & \quad [\text{PP} \quad \text{Over the next few days,}] \quad \text{the snow will melt.}
\end{align*}\]

It is very clear from (32a) that topicalization must involve movement because *devour* is obligatorily transitive, and so the position where the object is pronounced (at the beginning of the sentence) is not where it is interpreted (as the complement of the verb). As in *wh*- questions, the subject is preceded by some other constituent. But in contrast to direct *wh*- questions, the examples in (32) do not exhibit subject-aux inversion. All of these properties, topicalization shares with indirect *wh*- questions, so the obvious thing to do is to extend the analysis of indirect questions to topicalization. There is an outstanding question, though—what morpheme heads the CP projection? Since the instances of topicalization in (32) are not subordinate clauses, it is not attractive to treat them as projections of (silent) *that*. Once again, Japanese comes to the rescue. Just as Japanese has an overt question morpheme *ka*, so, too, does it have an overt topic morpheme -*wa*. Some examples are given in (33). (Subjects and direct objects are marked in Japanese with the particles -*ga* and -*o*, respectively, but both can be overridden by -*wa*.)

(33)  
\[\begin{align*}
\text{a.} & \quad \text{子供は} \quad \text{りんごを} \quad \text{食べました。} \\
& \quad \text{Kodomo-wa ringo-o} \quad \text{tabe-mashi-ta.} \\
& \quad \text{child-top} \quad \text{apple-acc} \quad \text{eat-pol-pst} \\
& \quad \text{‘As for the child, it ate the apple.’} \\
\text{b.} & \quad \text{りんごは} \quad \text{子供が} \quad \text{食べました。} \\
& \quad \text{Ringo-wa kodomo-ga} \quad \text{tabe-mashi-ta.} \\
& \quad \text{apple-top} \quad \text{child-nom} \quad \text{eat-pol-pst} \\
& \quad \text{‘As for the apple, the child ate it.’}
\end{align*}\]

As we did with the direct question morpheme earlier, we can say that English has a silent morpheme that corresponds to an overt Japanese morpheme. The structure for (32) is then as in
(34), where \( \text{top} \) (short for “topicalization”) is the silent English topic morpheme.

We invite you to build the structures for the remaining instances of topicalization in (32b)–(32d) in Exercise 6.3.

Relative clauses

4.1 Wh- relative clauses

As (35) and (36) show, there is a striking parallel in English between wh- relative clauses and indirect questions: both are introduced by wh- phrases.

(35) Indirect question:
   a. We can’t remember who moved in next door.
   b. We can’t remember who(m) you met.
   c. We can’t remember where you met them.
   d. We can’t remember which you prefer.
   e. We can’t remember whose parents you met.

(36) Relative clause:
   a. the people who moved in next door
   b. the people who(m) you met.
   c. the place where you met them.
   d. the movie which you prefer.
This parallel follows straightforwardly if we assume that *wh*-relative clauses are structurally parallel to indirect questions. The structure of the relative clause in (36b) is given in (37a). In contrast to indirect questions, which are ordinarily complements, relative clauses are always modifiers. We therefore integrate the relative clause into the surrounding syntactic structure by adjunction, as in (37b) (where we collapse the internal structure of the relative clause for simplicity).

(37) a. CP
   \[
   \begin{array}{c}
   \text{DP}_i \quad \text{C}' \\
   \text{who(m)} \quad \text{C'} \\
   \varnothing_{\text{that}} \quad \text{IP} \\
   \text{DP}_k \quad \text{I}' \\
   \text{you} \quad \text{I'} \\
   \text{[PST]} \quad \text{VP} \\
   \text{t}_k \quad \text{V'} \\
   \text{t}_i \quad \text{V'} \\
   \text{met} \\
   \end{array}
   \]

b. DP
   \[
   \begin{array}{c}
   \text{D'} \\
   \text{the} \\
   \text{N'} \\
   \text{who(m) you met} \\
   \text{people} \\
   \end{array}
   \]

**4.2 That relative clauses**

In addition to *wh*-relative clauses, English also has *that* relative clauses, as illustrated in (38).¹

(38) a. the people *that* moved in next door.

b. the people *that* you met.

c. the place *that* you met them.

d. the movie *that* you prefer.

Structurally, *that* relative clauses are completely parallel to *wh*-relative clauses. But in contrast to *wh*-relative clauses, it is the complementizer *that* which is overt in *that* relative
clauses, and the wh- phrase that is silent. The structures corresponding to the ones in (37) are given in (39).

(39) a. CP
    \[\begin{array}{c}
    \text{DP}_i \\
    \quad \triangle \quad \&_{\text{who}(m)} \\
    \quad \text{C'} \quad \text{IP} \\
    \quad \text{that} \\
    \text{DP}_k \\
    \quad \text{I}' \\
    \quad \text{you} \\
    \quad \text{VP} \\
    \quad \text{[PST]} \\
    \quad t_k \quad V' \\
    \quad V' \quad t_i \quad \text{met}
    \end{array}\]

b. DP
    \[\begin{array}{c}
    \text{D'} \\
    \quad \text{D}'' \\
    \quad \text{the} \\
    \quad \text{N''} \quad \text{CP} \\
    \quad \text{N''} \quad \text{that} \quad \text{you} \quad \text{met}
    \end{array}\]

people

4.3 Zero relative clauses

Given the availability of silent wh- elements and silent complementizers in English, we would expect to find relative clauses that are not introduced by any overt element at all. Such zero relative clauses (also known as contact relative clauses) are indeed possible in English, as shown in (40).²

(40) a. the people ___ you met²
    b. the place ___ you met them.
    c. the movie ___ you prefer.

Given the grammaticality of (40), we would expect the zero relative counterparts of subject relative clauses like (40a)–(40b) to be fully grammatical and acceptable, but speakers tend to reject examples like (40c), especially when they are presented in isolation.

(41) a. ✓ The people who moved in next door were from New York.
    b. ✓ The people that moved in next door were from New York.
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c. ?? The people moved in next door were from New York.

Nevertheless, structurally analogous examples, as in (42), are attested.

(42) a. Everybody ___ lives in the mountains has an accent all to theirself. (Christian and Wolfram 1976, front matter)
    b. Three times a day some nurse ___ looks like Pancho Villa shoots sheep cum into my belly. (Hiaasen 1995, pp. 248–249)

(43)–(46) give further examples from several varieties of English, classified by linguistic environment.

(43) Existential there clause:
    a. There’s a shortcut ___ takes you to the shops. (Henry 1995, p. 125)
    b. “Thanks for the hurricane, there’s a hundred fifty thousand houses in Dade County ___ need new roofs”, he began. (Hiaasen 1995, pp. 110–111)
    c. … it might be worthwhile to mention that there’s a train ___ leaves Pangbourne, I know, soon after five … (Jerome 1889, p. 207)

(44) It cleft:
    a. It was John ___ told us about it. (Henry 1995, p. 125)
    b. ’Tis grace ___ hath brought me safe thus far (“Amazing Grace”)
    c. It was the quickness of the hand ___ deceived the eye. (Jerome 1889, p. 221)

(45) Copular construction:
    a. John is the person ___ could help you with that. (Henry 1995, p. 125)
    b. You’re the second guy this month ___ wants to take out trade in this bizzare fashion. (Wagner 1986, p. 119)
    c. He’s the one ___ inspected the damn things. (Hiaasen 1995, p. 5)

(46) Introduction of discourse entity in object position:
    a. I met a man ___ can speak five languages. (Henry 1995, p. 125)
    b. how come we have … a pink-haired punk granddaughter ___ got the manners of a terrorist? … Wears somethin’ ___ makes the garage door flap up? (Wagner 1986, p. 81)

The proper analysis of zero subject relative clauses is still being debated and goes beyond the scope of this textbook. On the one hand, Henry (1995) argues that such clauses are not true relative clauses. On the other hand, it has been argued that zero subject relative clauses are grammatical, but avoided for psycholinguistic reasons (Bever and Langendoen 1971, especially Section 5; see also Doherty 1993). The idea is that zero subject relative clauses are hard to process in real time; in particular, they are liable to be misparsed as the predicate of the matrix clause, at least when they modify subjects, as they do in (41c) and (42). In the sentence-processing literature, constructions that invite misparsing are known as garden-path constructions. The classic example is shown in (47).
(47) The horse raced past the barn fell.

When presented with a word-by-word written version of (47), experimental subjects register surprise at the last word fell, because they have mistakenly taken raced to be the predicate of the main clause, as it is in The horse raced past the barn. In other words, they have been led down the proverbial garden path and must now recover by backtracking to raced and revising their interpretation so that they can properly process fell as the predicate of the main clause.

In the classic example, the sequence raced past the barn is what is called a reduced relative clause (“reduced” because it doesn’t contain a finite verb), the analysis of which is again beyond the scope of this book. However, the same garden path effect arises in the zero subject relative clause variant of (47) in (48).

(48) The horse was raced past the barn fell.

Once again, the relative clause was raced past the barn is first taken as the main clause predicate (The horse was raced past the barn) until fell makes that interpretation impossible.

It is worth noting that the sentence-processing approach is consistent with the fact that all of the examples in (42)–(46) are either spoken or from works intending to represent spoken examples, where intonation would help hearers to avoid the garden path interpretation. Note also that it is only in (42) that the zero subject relative clause modifies the subject of the main clause. In the other examples, the zero subject relative clause comes later in the sentence—indeed, at the very end, thus virtually eliminating a garden path interpretation.

### 4.4 Doubly marked relative clauses

Finally, given the discussion so far, we would expect to find the converse of zero relative clauses—namely, ones with an overt wh- element in Spec(CP) combined with an overt complementizer, as in (49).

(49) The people who(m) that you met

Such doubly marked relative clauses are judged to be unacceptable in mainstream varieties of modern English. However, just like doubly marked indirect questions, they are attested in Middle English, as shown in (40) (once again, the examples are from the Penn-Helsinki Parsed Corpus of Middle English).

(50) a. thy freend which that thou has lorn (cmctmeli.m3, 218.C1.31)
   ‘your friend that you have lost’
 b. the conseil which that was yeven to yow by the men of lawe and the wise folk (cmctmeli.m3, 226.C2.373)
   ‘the counsel that was given to you by the men of lawe and the wise people’
 c. the seconde condicion which that the same Tullius addeth in this matiere (cmctmeli.m3, 228.C1.429)
   ‘the second condition that this same Tullius adds in this matter’
d. for hire olde freendes which that were trewe and wyse (cmctmeli.m3, 237.C2.799)
   ‘for her old friends who were loyal and wise’

e. the fire of angre and of wratthe, which that he sholde quenche (cmctpars.m3, 308.C2.859)
   ‘the fire of anger and wrath, which he should quench’

Doubly marked relative clauses are also attested in vernacular varieties of other languages. (51) gives examples from Bavarian German.

(51) Bavarian (Bayer 1983, p. 23, (10a, b)):
   a. der Hund der wo gestern d’ Katz bissn hod
      the dog who that yesterday the cat bitten has
      ‘the dog that bit the cat yesterday’
   b. die Frau dera wo da Xaver a Bussl g’gem hod
      the woman who dat that the a kiss given has
      ‘the woman that Xaver gave a kiss to’

4.5 Stylistic considerations

What these facts suggest is that doubly marked wh- movement constructions (both relative clauses and indirect questions) are grammatical (= well-formed from a purely structural point of view). However, their subordinate clause status is signalled redundantly by the absence of subject-aux inversion as well as by the presence of the overt complementizer, and perhaps a stylistic constraint has developed in the history of mainstream English and other languages that deprecates such redundant marking. It is clear that stylistic constraints of the sort that we postulate exist. For instance, formal contexts favor the presence of an overt complementizer in contexts like (52), where the grammar allows the complementizer to be silent (Kroch and Small 1978).

(52) I think (that) they are coming.

   It might be objected that the stylistic constraint required for (52) favors the presence of that, whereas what is at issue for wh- relative clauses in modern English is the absence of that. Very true. The stylistic economy principle as in (53) covers both cases.

(53) Stylistic economy principle:
   Mark subordination (and constructions more generally) in a way that is explicit but not redundant.

If you like, you can think of (53) as an Goldilocks principle (not too little marking, and not too much, either—but just right). The Goldilocks principle also seems to be at work in the proscription that developed in the history of English against negative concord, discussed briefly in Chapter 1.

There is one final loose end—namely, that zero relative clauses violate the Goldilocks principle as it stands. We can make sense of this by assuming that language users have a stylistic monitor, whose job it is to guard against violations of (53) and other shibboleths. Now notice
that redundant marking gives the stylistic monitor an overt element to detect, whereas that is not true for implicit marking, which might therefore be more likely to fly under the stylistic monitor’s radar, so to speak. In other words, we can take the principle as absolute, but its application by the stylistic monitor as subject to (human) error.

When the Goldilocks principle operates at the stylistic level, as we are proposing in connection with the cases just discussed, it works as a filter on structures that are otherwise grammatical. In formal contexts, it might be set to high alert, but to a lower level otherwise. This fits nicely with the idea of vernacular usage being “unfiltered”, and it also explains the observation mentioned earlier in connection with (52).

4.6  A historical note

As we have just seen, English in its modern form, and even more so over the course of its history, exhibits several different options for forming relative clauses—more options than are common in a single language. The reason for this state of affairs is the rich and complicated history of the English language. Old English, the oldest recorded stage of the language, already had several different types of relative clauses, notably one corresponding to that relative clauses and another corresponding roughly to doubly marked relative clauses, except that what combined with overt that was a demonstrative pronoun rather than a wh- word. So instead of who that, Old English had se þe ‘this that’.

Towards the end of the Old English period, beginning in 793 and ending with a peace treaty in 878, England was invaded by Vikings, who eventually occupied about half of England, the so-called Danelaw. For our purposes, what is important is that the Vikings spoke Old Norse, the ancestor of the modern Scandinavian languages, which in contrast to Old English had silent that in ordinary complement clauses and relative clauses. Once the Vikings invaders settled in England permanently, they learned English as adults and carried over this silent that into their non-native English. English-speaking children growing up in communities in the Danelaw then acquired this feature natively, and over time it became a feature of English even outside the Danelaw.

The Vikings not only invaded and settled in England. They also invaded and settled in the north of France, where they were known as Normans (literally “North men”). Eventually, they became dukes of Normandy, and one of their dynasty (William the Conqueror) invaded England, won a decisive battle at Hastings, and was crowned king of England on Christmas Day in 1066. This chain of events is known as the Norman Conquest, and it is conventionally used as an (approximate) cutoff point between Old English and Middle English. Until 1362, the official language of England was French (or more specifically Anglo-Norman, the variety of French originally spoken in Normandy, but as used in England), and members of the governing class in England were bilingual in English and French. In fact, many were trilingual because they also spoke and wrote Latin. For our purposes, the Norman Conquest and the multilingualism of England during the Middle English period of the language is important because relative clauses in French (and Latin and its descendant Romance languages more generally) are formed with question words. In Romance, these words generally begin with qu- (qui ‘who’, que ‘what’, quand ‘when’, and others), but it is standard in the syntax literature to call them wh- words, and so we will, too. It is plausible to attribute the presence, or least the prevalence, of wh- relative clauses in English to this influ-
ence from French. Recall that Old English had a type of relative clause formed with a pronoun followed by a complementizer (se þe ‘this the’). Replacing the demonstrative pronoun with the corresponding wh- word (as well as replacing Old English þe with Middle English that) yields the doubly marked relative clauses typical of Middle English (who that).

Because French (and Latin) were high-status languages, the originally Romance (or at least Romance-influenced) wh- relative clauses were and still are evaluated as fancy. By contrast, the originally Old Norse silent complementizer was and still is evaluated as not fancy, since it was more typical of the north than of the high-status south (the location of London, the capital).

Notes

1. The that counterpart to (36e) is missing; it would look as in (i).

   (i) the friend ____’s parents that you met

   The intended interpretation is as in (36e). In other words, (i) might go on as in (ii.a), but not as in (ii.b), where the relative clause is that you met, not the intended ____’s parents that you met.

   (ii) a. The friend [ ____’s parents that you met ] is coming over for dinner.
   b. The friend’s parents [ that you met ] are coming over for dinner.

2. Once again, the counterpart to (36e) is missing for reasons analogous to those in Note 1; just delete that in the examples there.

Exercises and problems

Exercise 6.1

A. Build structures for both of the direct questions in (12). Treat auxiliary do as a modal. You can use a triangle for personal pronouns, but build full structures for the wh- phrases.

   (1) a. In which house do you live?  
   b. Which house do you live in?

B. In your trees for (A), you have attached the PP as either a complement or an adjunct. Provide the relevant evidence.
C. Build structures for the complex sentences in (2), which contain indirect questions. From now on, you can also collapse the *wh*-phrases using triangle notation.

(2)  
   a. I forget [ in which house you live ].  
      (pied piping)  
   b. I forget [ which house you live in ].  
      (preposition stranding)  

D. Build structures for the noun phrases in (3).

(3)  
   a. the house [ in which you live ].  
      (pied piping)  
   b. the house [ which you live in ].  
      (preposition stranding)

Exercise 6.2

A. The question in the reporter’s telegram in (1a) is structurally ambiguous. Paraphrase the two interpretations.

(1)  
   a. Reporter’s telegram: How old Cary Grant?  
   b. Cary Grant’s reply: Old Cary Grant fine.

B. Build a structure for the interpretation of (1a) that the reporter intended. Here and in (C), treat *Cary Grant* as a compound noun with a silent determiner, and do not attempt to implement verb movement to C. (The absence of *do* support is unexpected. The issue is addressed in Chapter 10.)

C. Build the structure for the other interpretation—the one that Cary Grant cleverly exploits.

Exercise 6.3

A. Using (17a) in the text as a model, build full structures for the topicalized phrases in (1a)–(1c) (= (32b)–(32d)). Treat *as* as P, and *next* and *few* as Adj. Treat *quick as a wink* as a modifier.

(1)  
   a. [AdvP Unbelievably quickly ] the lions will devour the zebra. 
   b. [AdjP Quick as a wink ], the cat hid under the covers. 
   c. [PP Over the next few days ], the snow will melt.

B. Using (17b) in the text as a model for when to use triangles, build full structures for the entire sentences in (1a)–(1c).
Exercise 6.4

A. The noun phrase (1) is structurally ambiguous. Paraphrase or otherwise distinguish between the two interpretations.

(1) the cat that ate the rat that ate the cheese

B. Build the structure for the first relative clause. There is no need to build a structure for the second one, as it is identical except for the last word.

C. Build structures for the two interpretations, indicating clearly which structure goes with which interpretation. For simplicity, you can use triangle notation for the relative clauses when it is not necessary to give the full structure.

Exercise 6.5

The following quote (from The Prime of Miss Jean Brodie) exists in several different forms. The one in (1) is the most abstruse.

(1) It’s the kind of thing that people who like that kind of thing like.

A. Build the full structure for the relative clause who like that kind of thing. Here and throughout, assume for simplicity that of phrases are complements.

B. Build the structure for the relative clause that people who like that kind of thing like. Use triangle notation for the embedded relative clause that you’ve already built in (A).

C. Build the structure for the remainder of the sentence (that is, for the matrix sentence excluding both relative clauses).

D. Describe how the structures in (A)–(C) fit together.

Exercise 6.6

English conditional clauses are ordinarily introduced by if, as in (1), but English also allows such clauses to be marked by subject-aux inversion, as in (2).

(1) a. I will call if I have time.
   b. If I have time, I will call.

(2) a. I will call should I have time.
   b. Should I have time, I will call.

A. Build two structures for (1a)—a full structure for the conditional clause (no triangles) and a structure for the entire sentence. For simplicity, collapse the noun phrases and the conditional clause in the second structure.

B. Build a structure for the full sentence in (1b). Once again, collapse the noun phrases and the conditional clause.

C. Repeat (A) and (B) for (2). Propose a suitable C head to accommodate the inversion of the subject with the modal.
Exercise 6.7

This exercise extends Exercise 5.8.

English has two sorts of *though* clauses: ordinary ones that do not involve movement, as in (1a), and ones that do, as in (1b). We will refer to the construction in (1b) as the *though* preposing construction.

**Word of Caution**

The term *though* preposing is potentially confusing. What is preposed is not *though* itself, but some constituent of the *though* clause. In other words, *though* preposing is XP preposing that is licensed by *though*.

(1)  

a. We will solve the problem, though it seems difficult.  
   (ordinary)  

b. We will solve the problem, difficult though it seems.  
   (*though* preposing)

A. Build two structures for (1a)—the full structure for the *though* clause (no triangles), and a structure for the entire sentence. For simplicity, collapse the noun phrases and the *though* clause in the second structure. Treat *though* as a P, as argued in Chapter 5, § 3.2.

B. Build the full structure for the subordinate clause in (1b).

C. How do the elementary trees for *though* needed in (A) and (B) differ?

D. *Though* preposing is grammatical in (2a), but not in (2b). Explain. You should not need more than two sentences.

(2)  

a. ✓ Difficult though the problem seems, ...

b. * Difficult though the problem seems very, ...

Exercise 6.8

A. Based on the data in (1) and (2), how do *why* questions differ from *how come* questions in Mainstream English?

(1)  

a. ✓ Why are they making such a fuss?

b. * Why they are making such a fuss?

(2)  

a. * How come are they making such a fuss?

b. ✓ How come they are making such a fuss?

B. Based on the data in (3), how would you characterize the difference between direct questions in African American English (AAE) and in Mainstream American English (MAE)?

(3)  

a. Why you didn’t tell me that?  
   (overheard at Market and 22nd Street, Philadelphia, PA, 26 September 1998)

b. What you bought tickets for?  
   (overheard at 30th Street Station, Philadelphia, PA, 26 November 1998)
c. Where you was at?
   (overheard at Rittenhouse Square, Philadelphia, PA, 20 July 2001)

d. Where you went?
   (overheard at Chestnut and 36th Street, Philadelphia, PA, 13 August 2001)

e. What I told you?
   (Willie Perdomo. From where a nickel cost a dime. Real News. April 2002. 28)

**Problem 6.1**

Build the full structure for the noun phrase in (1). For the purposes of this exercise, treat *has* as a modal.

(1) a product that’s time has come

**Hint:** Some speakers have reanalyzed *that* in relative clauses as a relative pronoun.

**Problem 6.2**

A. Given the discussion in the chapter as it stands, is it possible to derive the statement by Yoda in (1)? Explain.

(1) When 900 years you reach, look as good you will not.

B. If not, what adjustments would have to be made to accommodate the sentence?

**Extra Info**

We discuss the syntax of *not* in Chapter 10. For the moment, ignore *not* in your answer.

If you’re curious, 900 is a Num(ber), a subtype of Adj, and *as* is a Deg(ree) word, a subtype of Adv. However, for this problem, you can ignore the internal structure of 900 years and look as good.