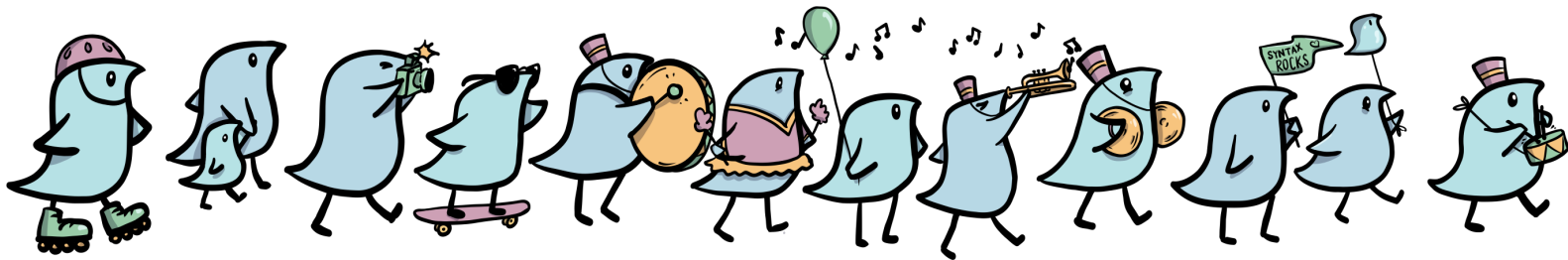


2nd Edition

The Syntax of Natural Language



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DRAFT manuscript, currently undergoing classroom testing.
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Preface

TBD

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Wug drawings (including cover art) are by Laura McLaren and Hannah Lippard. The wug has become somewhat of an unofficial mascot of linguistics, and is a product of the Jean Berko-Gleason's (1958) language acquisition experiment.

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Foundational issues

Chapter outline

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Prescriptive versus descriptive grammar

1

This book is an introduction to generative grammar from a Chomskyan perspective. By the time you finish this chapter, you will have a clearer understanding of what we mean by this sentence, and by the time you finish the entire book, your understanding of it will be clearer and deeper still. But for the moment, you have probably gained the impression that this book is about grammar of some sort. And right there, we have a problem. The problem is that there is an everyday sense of the term ‘grammar’ and a quite different sense in which the term is used in linguistics.

In the everyday sense, ‘grammar’ refers to a collection of rules concerning what counts as socially acceptable and unacceptable language use. Some of these rules, like the ones in (1), make reference to particular words and apply to both spoken and written language.

- (1) a. Don’t use *ain’t*.
- b. Don’t use *seen* as the past tense of *see* (as in *I seen him at the party last night*).

But mainly, the rules in question concern the proper composition of sentences in written language. You may recall being taught rules at school like those in (2).

- (2) Selected prescriptive grammatical rules for English
 - a. Don’t end a sentence with a linking verb.
 - b. Don’t end a sentence with a preposition.
 - c. Don’t split infinitives.
 - d. Don’t start a sentence with a conjunction.
 - e. Don’t use a plural pronoun to refer back to a singular noun like *everyone*, *no-one*, *someone*, and the like.
 - f. Don’t use an object pronoun for a subject pronoun in a conjoined subject.
 - g. Don’t use contractions.
 - h. Don’t use dangling participles.
 - i. Don’t use sentence fragments.
 - j. Use *whom*, not *who*, as the object of a verb or preposition.

Someone who composes sentences in accordance with rules like those in (2) is said to have good grammar, whereas someone said to have bad grammar doesn’t apply the rules when they ought to be applied¹ and so produces sentences like (3).

- (3) a. Over there is the guy *who* I went to the party *with*. violates (2b), (2j)
- b. Bill and *me* went to the store. violates (2f)

From the amount of attention that people devote to rules like those in (1) and (2), it is easy to get the impression that they are the only linguistic rules there are. But it is also easy to see

that that can't be so. The reason is that even people who don't follow the rules in (1) and (2) don't produce rampantly variable, confusing word salad. For instance, even people who invariably produce sentences like (3) do not produce the likes of (4).

- (4) a. Over there is guy the who I went to party the with.
- b. Over there is the who I went to the party with guy.
- c. Bill and me the store to went.

The sentences in (3) may be instances of bad grammar in the sense of the term “grammar” that is often used in English classes in elementary and secondary school. But they are nonetheless still English sentences that people will readily say in conversation and will accept as possible sentences in their language. By contrast, we don't need to rely on school rules to tell us that the examples in (4) are not English sentences—even though they contain exactly the same English words as the sentences in (3).

Since native speakers of English do not produce a variable mishmash of words of the sort in (4), there must be another type of rules according to which sentences are composed. We can determine what some of them are by taking a closer look at the sequences in (4). Why exactly is it that they are word salad? In (4a), the article *the* is in the wrong order with respect to the nouns that it belongs with, *guy* and *party*. In (4b), the relative clause (*who I went to the party with*) is in the wrong order with respect to the noun that it modifies (*guy*). In (4c), the preposition *to* is in the wrong order with respect to its object (*the store*). In other words, the sentences in (4) do not follow the rules in (5).

- (5) a. Articles precede nouns.
- b. Relative clauses follow the noun that they modify.
- c. Prepositions precede their objects.

There's another rule that's not followed in (4), which you are asked to formulate in Exercise 1.1.

Rules like those in (5) have a different intention than those in (2). The rules in (2) are **prescriptive**; those in (5) are **descriptive**. Rules of prescriptive grammar have the same status as rules of etiquette (like table manners or dress codes) or the laws of society, which divide the spectrum of possible human behavior into socially acceptable or legal behavior, on the one hand, and socially unacceptable or illegal behavior, on the other. Rules of prescriptive grammar make statements about how people ought to use language, and often they are framed as negative injunctions (“Thou shalt not split infinitives”, on a par with “Thou shalt not steal”). In contrast, rules of descriptive grammar have the status of scientific observations, and they are intended as insightful generalizations about the way that speakers use language in fact, rather than about the way that they ought to use it. Descriptive rules are more general and more fundamental than prescriptive rules in the sense that all sentences of a language are formed in accordance with them. Beyond this, most prescriptive rules have a classist and often racist foundation in the US, in that only certain dominant groups' language counts as “standard”/acceptable, whereas the language of socially marginalized communities is itself marginalized as “bad” grammar. More on that below.

A useful way to think about the descriptive rules of a language (to which we return in more detail [below](#)) is that they produce, or **generate**, all the sentences of a language. The prescriptive rules can then be thought of social control: attempts to filter out some (relatively minute) portion of the entire output of the descriptive rules as socially unacceptable.

In syntax, as in modern linguistics more generally, we adopt a resolutely descriptive perspective concerning language. In particular, when linguists say that a sentence is **grammatical**, we don't mean that it is correct from a prescriptive point of view, but rather that it conforms to descriptive rules like those in (5). In order to indicate that a sequence of words or morphemes is ungrammatical in this descriptive sense, we prefix it with an asterisk. Grammatical sentences are usually not specially marked, but sometimes we prefix them with a checkmark (✓) for clarity. These conventions are illustrated in (6) and (7).

- (6) a. * Over there is guy the who I went to party the with. (= (4a))
 b. * Over there is the who I went to the party with guy. (= (4b))
- (7) a. ✓ Over there is the guy who I went to the party with. (= (3a))
 b. ✓ Over there is the guy with whom I went to the party.

That is to say, by saying that the sentences in (7) are grammatical, we are describing a psychological phenomenon that is automatic. Nobody who speaks Mainstream U.S. English needs to be taught that the sentences in (7) are grammatical but the sentences in (6) are not: everyone already knows this.

Prescriptive grammar is based on the idea that there is a single right way to do things. When there is more than one way of saying something, prescriptive grammar is generally concerned with declaring one (and only one) of the variants to be correct. The favored variant is usually justified as being better (whether more logical, more euphonious, or more desirable on some other grounds) than the marginalized variant that is being discriminated against. In the same situation of linguistic variability, descriptive grammar is content simply to document the variants—without passing judgment on them. For instance, consider the variable subject-verb agreement pattern in (8).

- (8) a. **There's** *some boxes* left on the porch.
 b. **There** *are some boxes* left on the porch.

In (8a), the singular verb *is* (contracted to 's) agrees in number with the preverbal **expletive** subject *there* (in **bold**), whereas in (8b), the plural verb *are* agrees with the postverbal logical subject *some boxes* (in *italics*). The color and font of the verb indicates which of the two subjects it agrees with.

The prescriptive and descriptive rules concerning this pattern are given in (9). The differences between the two rules are emphasized by underlining.

- (9) In a sentence containing both the singular expletive subject *there* and a plural logical subject ...
- Prescriptive rule: ... the verb should agree in number with the logical subject.
 - Descriptive rule: ... the verb can agree in number with either the expletive subject or the logical subject.

To take another example, let's consider the prescriptive rule that says, "Don't end a sentence with a preposition."² A prescriptivist might argue that keeping the preposition (in *italics*) together with its object (in **boldface**), as in (10a), makes sentences easier to understand than does separating the two, as in (10b).

- (10) a. *With* **which friend** did you go to the party?
 b. **Which friend** did you go to the party *with*?

But by that reasoning, (11a), where the verb and its object are adjacent, is preferable to (11b), where they are not. In fact, however, (11a) is completely ungrammatical in English.

- (11) a. * Adopt which cat did your friend?
 b. ✓ Which cat did your friend adopt?

Beyond that, the prescriptive rule against sentences ending with prepositions is quite clearly not a rule that is part of our mental grammars. This is illustrated by the (perhaps apocryphal) story about Winston Churchill's response to this rule:

- (12) This is the type of arrant pedantry up with which I will not put.

(12) is an absurdly weird sentence: clearly, it's not a rule of mental grammars of English that prepositions can't end sentences.

It is important to understand that there is no semantic or other conceptual reason that prepositions can be separated from their objects in English, but that verbs can't. From a descriptive perspective, the grammaticality contrast between (10a) and (11a) is simply a matter of fact, irreducible to more basic considerations (at least given our present state of knowledge). (13) highlights the difference between the relevant prescriptive and descriptive rule.

- (13) When the object of a preposition appears in a position other than its ordinary one (as in a question), ...
- Prescriptive rule: ... it should be preceded by the preposition.
 - Descriptive rule: ... it can either be preceded by the preposition, or stand alone, with the preposition remaining in its ordinary position.

The contrasting attitude of prescriptive and descriptive grammar towards linguistic variation has a quasi-paradoxical consequence: namely, that prescriptive rules are never descriptive rules. The reason for this has to do with the way that social systems (not just language) work. If everyone in a community consistently behaves in a way that is socially acceptable in some respect, then there is no need for explicit prescriptive rules to ensure the behavior in question. It is only when behavior that is perceived as socially unacceptable becomes common that prescriptive

rules come to be formulated to keep the unacceptable behavior in check. For example, if every customer entering a store invariably wears both a shirt and shoes, there is no need for the store owner to put up a sign that says “No shirt, no shoes, no service.” Conversely, it is precisely at illegal dump sites that we observe “No dumping” signs. In an analogous way, in the domain of language use, rules of prescriptive grammar are only ever formulated in situations where linguistic variation is common. But being prescriptive, they cannot treat all of the occurring variants as equally acceptable—with the result that they can’t ever be descriptive. So prescriptive rules only ever exist to attempt to outlaw grammatical constructions that **are** in the mental grammars of many speakers of a language.

We can’t emphasize enough that the modern basis of a vast amount of prescriptive grammar teaching is largely classist and often racist: certain kinds of language have been deemed acceptable, and those deemed unacceptable are those of social groups that have been marginalized in society. This is not to impugn the motives of any particular English teacher: they are just doing their job as they have been trained to do it. But a system has arisen that centers a particular variety of English and marginalizes a host of other perfectly legitimate varieties of English. Lippi-Green (2012) is a good first resource on this topic, though students very interested in these social phenomena should take a sociolinguistics course, which will cover these issues in much more depth. In the realm of syntax specifically, the Yale Grammatical Diversity Project (<https://ygdp.yale.edu>) is an excellent resource, as it provides linguistic descriptions of grammatical constructions that are often the target of prescriptive rules.

Rule formation and syntactic structure in language acquisition

2

As we have just seen, prescriptive and descriptive rules of grammar differ in intention. In addition, they differ in how they come to be part of a speaker’s knowledge. Prescriptive rules are taught at school, and because they are taught, people tend to be conscious of them, even if they don’t actually follow them. By contrast, we follow the rules of descriptive grammar consistently³ and effortlessly, yet without learning them at school. In fact, children have essentially mastered these rules on their own by first grade. Ordinarily, we are completely unconscious of the descriptive rules of language. If we do become conscious of them, it tends to be in connection with learning a foreign language whose descriptive grammar differs from that of our native language. In order to emphasize the difference between the unconscious way that we learn a native language (or several) in early childhood and the conscious way that we learn a foreign language later on in life, the first process is often called **language acquisition** rather than language learning.

As you consider descriptive rules like those in (5), you might not find it all that surprising that a child raised in an English-speaking community would acquire, say, the rule that articles precede nouns. After all, you might say, all the child ever hears are articles and nouns in that order. (Hmmm, though, actually... see the note.)⁴ So why would it ever occur to such a child to put the article and the noun in the other order? Isn’t it just common sense that children learn

their native language by imitating older speakers around them?

Well, yes and no. It is true that children learn some aspects of their native language by imitation and memorization. Children in English-speaking communities learn English words, children in Navajo-speaking communities learn Navajo words, children in Swahili-speaking communities learn Swahili words, and so on. But language acquisition isn't purely a process of memorization. In fact, given current human life spans, it couldn't possibly be!

2.1 A thought experiment

To see this, let's consider a toy version of English that contains three-word sentences consisting of a noun, a transitive verb, and another noun. The toy version contains sentences like (14) that are sensible given the real world as well as sentences like (15) that aren't, but that might be useful in fairy tale or science fiction contexts.

- (14) a. Cats detest lemons.
- b. Children eat tomatoes.
- c. Cheetahs chase gazelles.

- (15) a. Lemons detest cats.
 ("Secret life of citrus fruits")
- b. Tomatoes eat children.
 ("Attack of the genetically modified tomatoes")
- c. Gazelles chase cheetahs.
 ("Avenger gazelle")

Again for the sake of argument, let's assume a (small) vocabulary of 1,000 nouns and 100 verbs. This gives us a list of $1,000 \times 100 \times 1,000$ (= 100 million) three-word sentences of the type in (14) and (15). Numbers of this magnitude are difficult to put in human perspective, so let's estimate how long it would take a child to learn all the sentences on the list. Again, for the sake of argument, let's assume that children can memorize sentences quickly, at a rate of one sentence a second. The entire list of three-word sentences could then be memorized in 100 million seconds, which comes to 3.17 years. So far, so good. However, the minute we start adding complexity to Toy English, the number of sentences and the time it would take to memorize them quickly mushrooms. For instance, adding only 10 adjectives to the child's vocabulary would cause the number of five-word sentences of the form in (16) to grow to 10 billion ($100 \text{ million} \times 10 \times 10$).

- (16) a. Black cats detest green peas.
- b. Happy children eat ripe tomatoes.
- c. Hungry cheetahs chase speedy gazelles.

Even at the quick rate of one sentence per second that we're assuming, the list of all such five-word sentences would take a bit over 317 years to learn. Clearly, this is an absurd consequence. For instance, how could our memorious child ever come to know, as every English

speaker plainly does, that the sentence in (17) is ungrammatical? If grammatical knowledge were based purely on rote memorization, the only way to determine this would be to compare (17) to all of the 10 billion five-word sentences and to find that it matches none of them.

(17) * Cats black detest peas green.

And even after performing the comparison, our fictitious language learner still wouldn't have the faintest clue as to why (17) is ungrammatical!

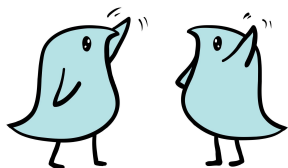
In addition to this thought experiment with its comically absurd consequences, there is another reason to think that language acquisition isn't entirely based on rote memorization—namely, that children use what they hear of language as raw material to construct linguistic rules. How do we know this? We know because children sometimes produce rule-based forms that they have never heard before.

2.2 Rule-based word formation

One of the earliest demonstrations that children acquire linguistic rules, rather than simply imitating the forms of adult language, is the wug experiment (Berko 1958). In it, the psycholinguist [Jean Berko Gleason](#) used invented words to examine (among other things) how children between the ages of 4 and 7 form plurals in English. She showed the children cards with simple line drawings of objects and animals and elicited plurals from them by reading them accompanying texts like ((18)).⁵

(18) This is a wug. Now there is another one. There are two of them. There are two ____ .

(19) Wugs, for reference



More than 75% of the children pluralized the invented words *cra*, *lun*, *tor*, and *wug* in exactly the same way that adults did in a control group: they added the sound -z to the word (Berko 1958, pp. 159–162).⁶ Since none of the children had encountered the invented words before the experiment, their response clearly indicates that they had acquired a plural rule and were using it to produce the novel forms.

Children are also observed to produce novel rule-based forms instead of existing irregular adult forms (for instance, *comed* or *goed* instead of *came* or *went*). This process, which is known as **overregularization**, is further illustrated in (20) (Marcus et al. 1992, pp. 148–149; based on Brown 1973).

- (20) a. *beated*, *blowed*, *caught*, *cuttet*, *doed*, *drawed*, *drived*, *faller*, *feeler*, *growed*, *holded*, *maked*, *sleeper*, *stander*, *sticker*, *taker*, *teacher*, *thrower*, *waker*, *winner*
(Adam, between the ages of 2 and 5)
- b. *drinker*, *seed*, *weared* (Eve, between the ages of 1½ and 2)

Overregularized forms don't amount to a large fraction of the forms that children produce overall (less than 5% in the case of past tense forms, according to Marcus et al. 1992, p. 35), but they are important because they clearly show that even the acquisition of words can't be completely reduced to rote memorization.

2.3 Question formation

In addition to morphological rules (which concern the structure of words), children also acquire syntactic rules (which concern the structure of sentences). Some of these rules are of particular interest because they differ from the corresponding adult rules that the children eventually acquire. At the same time, however, the children's novel rules don't differ from the rules of the adult grammar in completely arbitrary ways. Rather, the children's rules share certain abstract properties with the adult rules, even when they differ from them.

To see this, let's consider how young children form *yes-no questions*. Some 3- to 5-year-olds form such questions from declarative sentences by copying the auxiliary element to the beginning of the sentence, as in (21) (Crain and Nakayama 1987, p. 536). (We use the term 'auxiliary element' as a convenient cover term for elements that invert with the subject in (adult) English questions, like forms of the verb *to be* or modals like *can*. See § 1.4 of Chapter 2 for more details.)

- (21) a. The girl is tall. → Is the girl is tall?
 b. The red pig can stand on the house. → Can the red pig can stand on the house?

In the course of language acquisition, the questions in (21) are eventually replaced by those in (22), where we can think of the auxiliary element as having been moved rather than copied.

- (22) a. Is the girl ___ tall?
 b. Can the red pig ___ stand on the house?

But now notice a striking indeterminacy, first pointed out by Chomsky (1971, pp. 26–27). When children produce questions like those in (22), there is no way of telling whether they are using the adult rule for question formation in (23a) or the logically possible alternative rule in (23b).

- (23) a. Adult question formation rule:
 To form a question from a declarative sentence containing an auxiliary element, find the *subject* of the sentence, and invert the subject and the auxiliary.
 b. Logically possible alternative:
 To form a question from a declarative sentence containing an auxiliary element, find the first auxiliary element, and move it to the beginning of the sentence.

Word of Caution

Don't confuse 'subject' with 'simple subject.' Subjects, in contrast to simple subjects, are possible responses to questions like *Who is tall?* and *Who can stand on the house?* The subjects in (22) are the noun phrases *the girl* and *the red pig*.

If the subject consists of a single word or a clause, then the simple subject is identical to the subject; otherwise, the simple subject of a sentence is obtained by stripping the subject of any modifiers (yielding *girl* and *pig* as the simple subjects of (22)). The notion of subject is basic to syntactic theory, but we will have no further use for the notion of simple subject.

Both rules in (23) give the same result for simple sentences, which are likely to form most of the data that young children attend to. Both rules also require children to identify auxiliary elements. However, the adult rule additionally requires children to identify the subject of the sentence by grouping together sequences of words like *the girl* or *the red pig* into a single abstract structural unit. Because of this grouping requirement, the adult rule is called **structure-dependent**. By contrast, the alternative rule in (23b) is not structure-dependent, since it requires the child only to classify words according to their syntactic category (Is this word an auxiliary element?), but not to group the words into structural units. The rule in (23b) is simpler in the sense that it relies on fewer, as well as computationally less complex, cognitive operations, and children might reasonably be expected to experiment with it in the course of acquiring question formation. Nevertheless, Chomsky (1971) predicted that children would use only structure-dependent rules in the course of acquisition.

As we mentioned, both rules give the same result for simple sentences. So how could we possibly tell which of the two rules a child was actually using? Well, forming yes-no questions is not restricted to simple sentences. So although we can't tell which rule a child is using in the case of simple sentences like (21), the rules in (23) give different results for a complex sentence like (24), which contains a relative clause (*who was holding the plate*).

(24) The boy who was holding the plate is crying.

In particular, the sentence in (24) contains two auxiliary elements—one (*was*) for the relative clause, and another one (*is*) for the entire sentence (the so-called matrix sentence, which contains the relative clause). A child applying the structure-dependent question formation rule to (24) would first identify the subject of the matrix sentence (*the boy who was holding the plate*) and then invert the entire subject—including the relative clause and the auxiliary contained within it (*was*)—with the matrix auxiliary (*is*). On the other hand, a child applying the structure-independent rule would identify the first auxiliary (*was*) and move it to the beginning of the sentence. As shown in (25), the two rules have very different results,

- (25) a. Structure-dependent rule:
 [The boy who was running] is crying.
 Is [the boy who was running] ___ crying?
 ↑
 └──────────────────────────┘

- b. Structure-independent rule:

The boy who was running is crying.

Was the boy who ___ running is crying?



Recall that Chomsky predicted that children would not use structure-independent rules, even though they are (in some sense) simpler than structure-dependent ones. This prediction was tested in an experiment with 3- to 5-year-old children by Crain and Nakayama (1987). In the experiment, the experimenter had the children pose yes-no questions to a doll (Jabba the Hut from *Star Wars*). For instance, the experimenter would say to each child *Ask Jabba if the boy who was holding the plate is crying*. This task elicited various responses. Some children produced the adult question in (25a), whereas others produced the copy question in (26a) or the restart question in (26b).

- (26) a. Is [the boy who was holding the plate] is crying?
 b. Is [the boy who was holding the plate], is he crying?

Although neither of the questions in (26) uses the adult rule in (23a), the rules that the children used to produce them are structure-dependent in the same way that the adult rule is. This is because children who produced (26a) or (26b) must have identified the subject of the sentence, just like the children who produced (25a). Out of the 155 questions that the children produced, none were of the structure-independent type in (25b). Moreover, no child produced the structure-independent counterpart of (26a), shown in (27), which results from copying (rather than moving) the first auxiliary element in the sentence.

- (27) Was the boy who was holding the plate is crying?

In other words, regardless of whether a child succeeded in producing the adult question in (25a), every child in the experiment treated the sequence *the boy who was holding the plate* as a structural unit, thus confirming Chomsky's prediction.

More evidence for syntactic structure

3

We have seen that young children are capable of forming and applying both morphological and syntactic rules. Moreover, as we have seen in connection with question formation, children do not immediately acquire the rules of the adult grammar. Nevertheless, the syntactic rules that children are observed to use in the course of acquisition are a subset of the logically possible rules that they might postulate in principle. In particular, as we have just seen, children's syntactic rules are structure-dependent, even when they differ from the target adult rules. Another way of putting this is that the objects that syntactic rules operate on (declarative sentences in the case

of the question formation rule) are not simply strings of words, but rather groups of words that belong together, so-called **syntactic constituents**.

3.1 Intuitions about words belonging together

Evidence for **syntactic structure** isn't restricted to data from child language acquisition. Further evidence comes from the intuitions that speakers, whether adults or (older) children, have that certain words in a sentence belong together, whereas others do not. For instance, in a sentence like (28), we have the strong intuition that the first *the* belongs with *dog*, but not with *did*, even though *the* is adjacent to both.

(28) Did the dog chase the cat?

Similarly, the second *the* in (28) belongs with *cat* and not with *chase*. But a word doesn't always belong with the following word. For instance, in (29), *dog* belongs with the preceding *the*, not with the following *the*.

(29) Did the dog the children like chase the cat?

Words that belong together can sometimes be replaced by placeholder elements such as pronouns, as illustrated in (30).

- (30) a. Did the dog chase the cat? → Did she chase him?
 b. Did the dog the children like chase the cat? → Did the dog they like chase him?

Extra Info

Strictly speaking, the term 'pronoun' is misleading since it suggests that pronouns substitute for nouns regardless of syntactic context. In fact, pronouns substitute for noun phrases (as will be discussed in more detail in Chapter 2). A less confusing term would be 'pro-noun phrase,' but we'll continue to use the traditional term.

It's important to recognize that pronouns don't simply replace strings of words regardless of context. Just because a string like *the dog* is a constituent in (30a) doesn't mean that it's always a constituent. We can see this by replacing *the dog* by a pronoun in (30b), which leads to the ungrammatical result in (31).

- (31) Did the dog the children like chase the cat?
 ↓
 * Did she the children like chase the cat?

The ungrammaticality in (31) is evidence that *the* and *dog* belong together less closely in (30b) than in (30a). In particular, in (30b), *dog* combines with the relative clause, and *the* combines with the result of this combination, not with *dog* directly, as it does in (30a). (We will consider the internal structure of noun phrases more closely in Chapter 5.)

In some sentences, we have the intuition that words belong together even when they are not adjacent. For instance, *see* and *who* in (32a) belong together in much the same way as *see* and *Bill* do in (32b).

- (32) a. Who will they see?
b. They will see Bill.

Finally, we can observe that there are various sorts of ways that words can belong together. For instance, in a phrase like *the big dog*, *big* belongs with *dog*, and we have the intuition that *big* **modifies** *dog*. On the other hand, the relation between *see* and *Bill* in (32b) isn't one of modification. Rather, we have the intuition that Bill is a **participant** in a seeing event.

In the course of this book, we will introduce more precise ways of expressing and representing intuitions like the ones just discussed. For the moment, what is important is that we have strong intuitions that words belong together in ways that go beyond adjacency.

3.2 Structural ambiguity

A particularly striking piece of evidence for the existence of syntactic structure is the phenomenon of **structural ambiguity**. The classified advertisement in (33) is a humorous illustration.

- (33) Wanted: Man to take care of cow that does not smoke or drink.

World knowledge tells us that the intent of the advertiser is to hire a clean-living man to take care of a cow. But because of the way the advertisement is formulated, it also has an unintentionally comical interpretation—namely, that the advertiser has a clean-living cow and that the advertiser wants a man (possibly a chain-smoking alcoholic) to take care of this animal. The intended and unintended interpretations describe sharply different situations; that is why we say that (33) is ambiguous (like the two mutually exclusive interpretations of an optical illusion), rather than that it is vague (like a blurry image). Moreover, the ambiguity of (33) can't be pinned on a particular word, as is possible in ambiguous sentences like those in (34).

- (34) a. As far as I'm concerned, any gender is a **drag**. (Patti Smith)
b. Our bikinis are exciting. They are simply the **tops**.

Sentences like those in (34) are examples of **lexical ambiguity**; their ambiguity is based on a **lexeme** (= vocabulary item) with two distinct meanings. In (33), on the other hand, the words themselves have the same meanings in each of the two interpretations, and the ambiguity derives from the possibility of grouping the words in distinct ways. In the intended interpretation, the relative clause *that does not smoke or drink* modifies *man*; in the unintended interpretation, it modifies *cow*.

To avoid any confusion, we should emphasize that we are here considering structural ambiguity from a purely descriptive perspective, focusing on what it tells us about the design features of human language and disregarding the practical issue of effective communication. As writers of advertisements ourselves, we would take care not to use (33), but to **disambiguate** it by means

of an appropriate **paraphrase**. For the ordinary interpretation of (33), where the relative clause modifies *man*, we might move the relative clause next to the intended modifier, as in (35a). The comical interpretation of (33), on the other hand, cannot be expressed unambiguously by moving the relative clause. If it were the desired interpretation, we would have to resort to a more drastic reformulation, such as (35b).

- (35) a. Wanted: Man that does not smoke or drink to take care of cow.
 b. Wanted: Man to take care of nonsmoking, nondrinking cow.

The topic of our investigation in this book is not about editorial questions like when sentences like (35) should replace sentences like (33), though the skills you build here will surely help with editorial precision. Rather, our focus is on the more foundational issues: why does human language have the characteristics that it does? For example, why do ambiguities like these only arise in certain contexts and not others?

Universal Grammar

4

4.1 Formal universals

The structure-dependent character of syntactic rules is a general property of the human **language faculty** (the part of the mind/brain that is devoted to language), often also referred to as **Universal Grammar**, especially when considered in abstraction from any particular language. There are two sources of evidence for this. First, as we have seen, the syntactic rules that children acquire are structure-dependent (even when they are not the rules that adults use). Second, even though structure-independent rules are logically possible and computationally tractable, no known human language actually has rules that disregard syntactic structure as a matter of course. For instance, (36) gives two examples of computationally very simple rules for question formation, but no known human language has rules of this type.

- (36) a. To form a question, switch the order of the first and second words in the corresponding declarative sentence.
 The girl is tall. → Girl the is tall?
 The blond girl is tall. → Blond the girl is tall?
 b. To form a question, reverse the order of the words in the corresponding declarative sentence.
 The girl is tall. → Tall is girl the?
 The blond girl is tall. → Tall is girl blond the?

The structure-dependent character of syntactic rules (often referred to more briefly as **structure dependence**) is what is known as a **formal universal** of human language—a property

common to all human languages that is independent of the meanings of words. Formal universals are distinguished from **substantive universals**, which concern the substance, or meaning, of linguistic elements. An example of a substantive universal is the fact that all languages have **indexical** elements such as *I*, *here*, and *now*. These words have the special property that their meanings are predictable in the sense that they denote the speaker, the speaker's location, and the time of speaking, but that what exactly they refer to depends on the identity of the speaker.

4.2 Recursion

Another formal universal is the property of **recursion**. A simple illustration of this property is the fact that it is possible for one sentence to contain another. For instance, the simple sentence in (37a) forms part of the complex sentence in (37b), and the resulting sentence can form part of a still more complex sentence. Recursive embedding is illustrated in (37) up to a level of five embeddings.

- (37) a. She won.
 b. The Times reported that
 [*she won*].
 c. John told me that
 [the Times reported that
 [*she won*]].
 d. I remember distinctly that
 [John told me that
 [the Times reported that
 [*she won*]]].
 e. They don't believe that
 [I remember distinctly that
 [John told me that
 [the Times reported that
 [*she won*]]]].
 f. I suspect that
 [they don't believe that
 [I remember distinctly that
 [John told me that
 [the Times reported that
 [*she won*]]]]].

4.3 Parameters

Formal universals like structure dependence and recursion are of particular interest to linguistics in the Chomskyan tradition. This is not to deny, however, that individual languages differ from one another, and not just in the sense that their vocabularies differ. In other words, Universal Grammar is not completely fixed, but allows some variation. The ways in which grammars can differ are called **parameters**.

One simple parameter concerns the order of verbs and their objects. In principle, two orders are possible: verb-object (VO) or object-verb (OV), and different human languages use either one or the other. As illustrated in (38) and (39), English and French are languages of the VO type, whereas Hindi, Japanese, and Korean are languages of the OV type.

- (38) a. Peter **read** *the book*. [English]
 b. Pierre **lisait** le livre. [French]
 Pierre was.reading the book
 ‘Pierre was reading the book.’
- (39) a. पवित्र ने किताब पढ़ी । [Hindi]
 Pavitr-ne *kitaab* **parh-ii**.
 Pavitr book read
 ‘Pavitr read the book.’
 b. 漣が 本を 読んだ。 [Japanese]
 Ren-ga *hon-o* **yon-da**.
 Ren book read
 ‘Ren read the book.’
 c. 현서가 책을 읽었다. [Korean]
 Hyense-ka *chayk-ul* **ilk-ess-ta**.
 Hyense book read
 ‘Hyense read the book.’

Another parameter of Universal Grammar concerns the possibility, mentioned earlier in connection with prescriptive rules, of separating a preposition from its object, or **preposition stranding**. (The idea behind the metaphor is that the movement of the object of the preposition away from its ordinary position leaves the preposition stranded high and dry.) The parametric alternative to preposition stranding goes by the name of **pied piping**,⁷ by analogy to the Pied Piper of Hamelin, who took revenge on the citizens of Hamelin for mistreating him by luring the town’s children away with him. In pied piping of the syntactic sort, the object of the preposition moves away from its usual position, just as in preposition stranding, but it takes the preposition along with it. The two parametric options are illustrated in (40). (You’ll note that a single language can exhibit two parameter settings. We return to this issue later on in the chapter, in the section on [Grammar versus language](#).)

- (40) a. Preposition stranding: ✓ **Which house** does your friend live *in*?
 b. Pied piping: ✓ *In* **which house** does your friend live?

Just as in English, preposition stranding and pied piping are both grammatical in Swedish. (In Swedish, it is preposition stranding that counts as prescriptively correct! Pied piping is frowned upon, on the grounds that it sounds stiff and artificial.)

(41) Swedish

- a. ✓ **Vilket hus** bor din kompis *i*?
which house lives your friend in
'Which house does your friend live in?'
- b. ✓ *I* **vilket hus** bor din kompis?

In other languages, such as French and Italian, preposition stranding is actually ungrammatical. Speakers of these languages reject examples like (42b) and (43b) as word salad, and accept only the corresponding pied-piping examples in (42a) and (43a).

(42) a. ✓ *Dans* **quelle maison** est-ce que ton ami habite? [French]

in which house is it that your friend lives
'Which house does your friend live in?'

- b. * **Quelle maison** est-ce que ton ami habite *dans*?
which house is it that your friend lives in
Intended meaning: 'Which house does your friend live in?'

(43) a. ✓ *In* **quale casa** abita il tuo amico? [Italian]

in which house lives the your friend
'Which house does your friend live in?'

- b. * **Quale casa** abita il tuo amico *in*?
which house lives the your friend in
Intended meaning: 'Which house does your friend live in?'

Generative grammar

5

At the beginning of this chapter, we said that this book was an introduction to generative grammar from a Chomskyan perspective. Until now, we have clarified our use of the term 'grammar,' and we have explained that a Chomskyan perspective on grammar is concerned with the formal principles that all languages share as well as with the parameters that distinguish them. Let's now turn to the notion of a generative grammar.

- (44) A **generative grammar** is an **algorithm** for specifying, or **generating**, all and only the grammatical sentences in a language.

What's an algorithm? It's simply any finite, explicit procedure for accomplishing some task, beginning in some initial state and terminating in a defined end state. Computer programs

are the algorithms par excellence. More concrete examples of algorithms include recipes, knitting patterns, the instructions for assembling an IKEA bookcase, or a list of steps for balancing your checkbook.

An important point to keep in mind is that it is often difficult to construct an algorithm for even trivial tasks. A quick way to gain an appreciation for this is to describe how to tie a bow. Like speaking a language, tying a bow is a skill that most of us master around school age and that we perform more or less unconsciously thereafter. But describing (not demonstrating!) how to do it is not that easy, especially if we're not familiar with the technical terminology of knot-tying. In an analogous way, constructing a generative grammar of English is a completely different task than speaking the language, and much more difficult (or at least difficult in a different way)!

Just like a cooking recipe, a generative grammar needs to specify the ingredients and procedures that are necessary for generating grammatical sentences. We won't introduce all of these in this first chapter, but in the remainder of the section, we'll introduce enough ingredients and procedures to give a flavor of what's to come.

5.1 Elementary trees and substitution

The raw ingredients that sentences consist of are **vocabulary items**. These belong to various **syntactic categories**, like noun, adjective, transitive verb, preposition, and so forth. Depending on their syntactic category, vocabulary items combine with one another to form constituents, which in turn belong to syntactic categories of their own. For instance, determiners (a category that includes the articles *a* and *the* and the demonstratives *this*, *that*, *these* and *those*) can combine with nouns to form noun phrases, but they can't (or at least don't ordinarily) combine with other syntactic categories like adverbs, verbs, or prepositions.

- (45) a. ✓ a house
b. ✓ the cats
c. ✓ those books
- (46) a. * a slowly
b. * the went
c. * those of

It's possible to represent the information contained in a constituent by using **labeled bracketing**. Each vocabulary item is enclosed in brackets that are labeled with the appropriate syntactic category. The constituent that results from combining vocabulary items is in turn enclosed in brackets that are labeled with the constituent's syntactic category. The labeled bracketings for the noun phrases in (45) are given in (47).

- (47) a. [_{NounPhr} [_{Det} a] [_{Noun} house]]
b. [_{NounPhr} [_{Det} the] [_{Noun} cats]]
c. [_{NounPhr} [_{Det} those] [_{Noun} books]]

Noun phrases can combine with other syntactic categories, such as prepositions or transitive verbs. Prepositions combine with a noun phrase to form prepositional phrases. A transitive verb

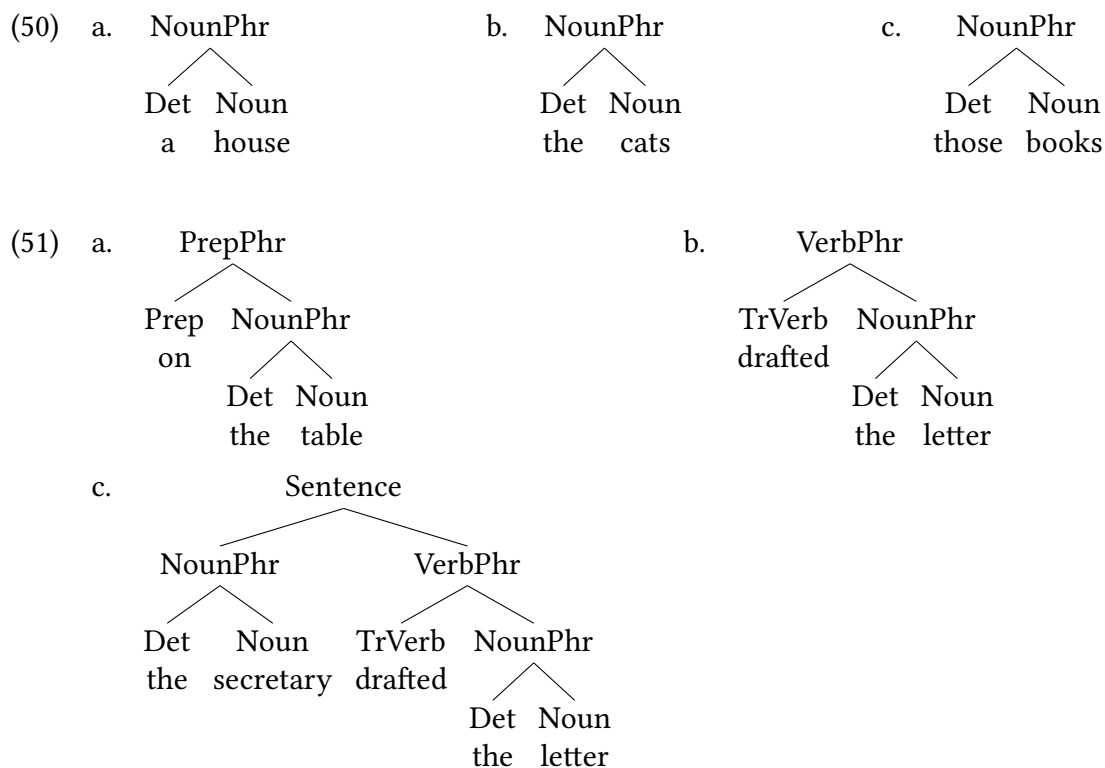
combines with one noun phrase to form a verb phrase, which in turn combines with a second noun phrase to form a complete sentence.

- (48) a. [PrepPhr [Prep on] [NounPhr [Det the] [Noun table]]]
 b. [VerbPhr [TrVerb drafted] [NounPhr [Det a] [Noun letter]]]
 c. [Sentence [NounPhr [Det the] [Noun secretary]] [VerbPhr [TrVerb drafted] [NounPhr [Det a] [Noun letter]]]]

Noun phrases don't, however, combine with any and all syntactic categories. For instance, they can't combine with determiners (at least not in English).

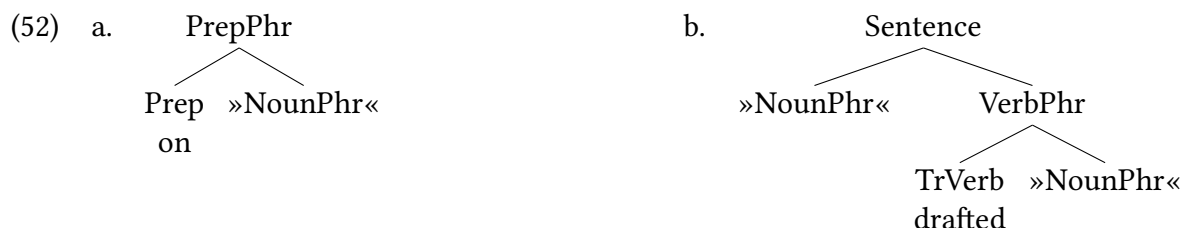
- (49) * the this letter

As constituent structure grows more complex, labeled bracketings very quickly grow difficult for humans to visually process, as you may have experienced while looking at (48c). It's often more convenient to represent constituent structure with **tree diagrams**. Tree diagrams, or trees for short, convey exactly the same information as labeled bracketings, but the information is presented differently. Instead of enclosing an element in brackets that are labeled with a syntactic category, the category is placed immediately above the element and connected to it with a line or **branch**. The labeled bracketings that we have seen so far translate into the trees in (50) and (51).⁸

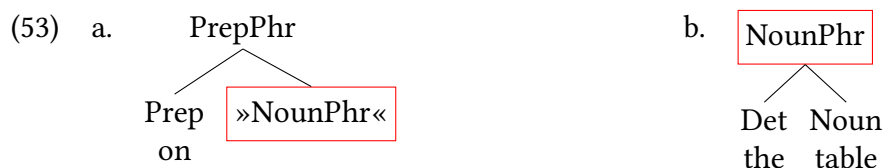


Trees like those in (50) and (51) resemble dishes that are ready to serve; they don't provide a record of how they were brought into being. We can provide such a record by representing

vocabulary items themselves in the form of trees that include combinatorial information. For example, prepositions and transitive verbs can be represented as trees with empty slots for noun phrases to fit into, as shown in (52).

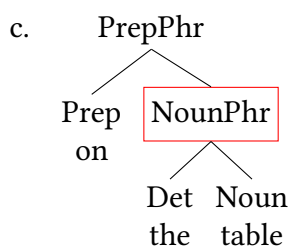


We'll refer to trees for vocabulary items like those in (52) as **elementary trees**. The purpose of elementary trees is to represent a vocabulary item's combinatorial possibilities, and so they ordinarily contain unfilled nodes. Such nodes are called **substitution nodes**, and they are filled by a **substitution** operation, as shown in (53). In this text, we will indicate substitution nodes by enclosing them in inverted guillemets (» «). The guillemets "point" to the spot where a node needs to be filled.



(53a) has a substitution node of some syntactic category.

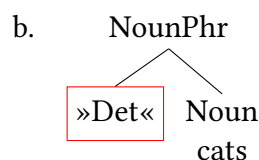
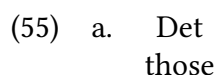
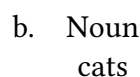
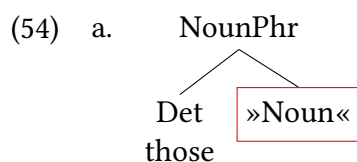
The root (topmost) node in (53b) has the same syntactic category as the substitution node in (53a).



Substitution occurs when the root node of (53b) is identified with the substitution node in (53a).

Elementary trees don't necessarily contain substitution nodes, though; ones that invariably play the role of (53b) in the substitution operation don't. The elementary tree for the noun in (54b) is an example.

Notice, by the way, that there are two conceivable ways to arrive at trees for noun phrases like *those cats*, depending on whether it is the noun that is taken as the substitution node, as in (54), or the determiner, as in (55). At this point, there is no reason to prefer one way over the other, but in Chapter 5, we will adopt a variant of (54).



In summary, a generative grammar as we've constructed it so far consists of a set of elementary trees, which represent the vocabulary items in a language and the range of their combinatorial possibilities, and a substitution operation, by means of which the elementary trees combine into larger constituents and ultimately into grammatical sentences. In Chapter 4, we will introduce two further formal operations. The first, **adjunction**, will enable the grammar to generate sentences containing modifiers, such as adjectives or relative clauses modifying nouns (*the big dog*, *the dog that the children like*). The second, **movement**, will enable the grammar to represent, among other things, the similarities and the differences between declarative sentences (*They will see Bill*) and questions corresponding to them (*Will they see Bill?*, *Who(m) will they see?*).

5.2 Grammaticality

As we mentioned earlier, the aim of a generative grammar is to generate all and only the grammatical sentences of a language. Since the notion of grammaticality is basic to syntactic theory, it is important to distinguish it from notions with which it is easily confused.

First and foremost, 'is grammatical' is not the same thing as 'makes sense.' The sentences in (56) all 'make sense' in the sense that it is easy to interpret them. Nevertheless, as indicated by the asterisks, they are not grammatical.⁹

- (56) a. * Is our children learning?
 b. * Me wants fabric.
 c. * To where are we be taking thou, sir?
 d. * The introduction explained that "the Genoese people, *besides of hard worker, are good eater too, and even 'gourmand,'* of that honest gourmandise which will not drive a man to hell but which is, after all, one of the few pleasures that mankind can enjoy in this often sorrowful world."

Conversely, sentences can be grammatical, but not ‘make sense.’ The ‘fairy tale’ or ‘science fiction’ sentences in (15) are of this type. Two further examples are given in (57). Since the sentences are grammatical, they aren’t preceded by an asterisk. Their semantic anomaly can be indicated, if desired, by a prefixed pound sign (hash mark).

- (57) a. # Colorless green ideas sleep furiously. (Chomsky 1965, p. 149) — cf. Revolutionary new ideas appear infrequently.
 b. # I plan to travel there last year. — cf. I plan to travel there next year.

Second, ‘grammatical’ must be distinguished from ‘acceptable’ or ‘easily processable by human beings’. This is because it turns out that certain well-motivated simple grammatical operations can be applied in ways that result in sentences that are virtually impossible for human beings to process. For instance, it is possible in English to modify a noun with a relative clause, and sentences containing nouns that are modified in this way, like those in (58), are ordinarily perfectly acceptable and easily understood. (Here and in the following examples, the relative clauses are bracketed and the modified noun is underlined.)

- (58) a. The mouse [that the cat chased] escaped.
 b. The cat [that the dog scared] jumped out the window.

But now notice what happens when we modify the noun within the relative clause in (58a) with a relative clause of its own.

- (59) The mouse [that the cat [that the dog scared] chased] escaped.

Even though (59) differs from (58a) by only four additional words and a single additional level of embedding, the result is virtually uninterpretable without pencil and paper. The reason is not that relative clause modification can’t apply more than once, since the variant of (58a) in (60), which contains exactly the same words and is exactly as long, is perfectly fine (or at any rate much more acceptable than (59)).

- (60) The mouse escaped [that the cat chased] [that the dog scared].

The reason that (59) is virtually uninterpretable is also not that it contains recursive structure (the relative clause that modifies *mouse* contains the relative clause that modifies *cat*). After all, the structures in (37) are recursive, yet they don’t throw us for a loop the way that (59) does.

(59) is unacceptable not because it is ungrammatical, but because of certain limitations on human short-term memory (Chomsky and Miller 1963, pp. 286, 471). Specifically, notice that in the (relatively) acceptable (60), the subject of the main clause *the mouse* doesn’t have to “wait” (that is, be kept active in short-term memory) for its verb *escaped* since the verb is immediately adjacent to the subject. The same is true for the subjects and verbs of each of the relative clauses (*the cat* and *chased*, and *the dog* and *scared*). In (59), on the other hand, *the mouse* must be kept active in memory, waiting for its verb *escaped*, for the length of the entire sentence. What is even worse, however, is that the period during which *the mouse* is waiting for its verb *escaped* overlaps the period during which *the cat* must be kept active, waiting for its verb *chased*. What makes (59)

so difficult, then, is not the mere fact of recursion, but that two relations of exactly the same sort (the subject-verb relation) must be kept active in memory at the same time. In none of the other relative clause sentences is such double activation necessary. For instance, in (58a), *the mouse* must be kept active for the length of the relative clause, but the subject of the relative clause (*the cat*) needn't be kept active since it immediately precedes its verb *chased*.

Extra Info

Sentences like (58) and (59) are often referred to as **center-embedding** structures, and the dependencies between the subjects and their verbs are said to be **nested**.

The mouse that the cat chased escaped.

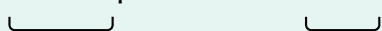


The mouse that the cat that the dog scared chased escaped.



By contrast, the corresponding dependencies in (60) are not nested.

The mouse escaped that the cat chased.

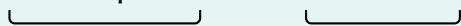


The mouse escaped that the cat chased that the dog scared.



This remains true even if we focus on the dependencies between the relative clauses and the nouns that they modify.

The mouse escaped that the cat chased that the dog scared.



A final important point to bear in mind is that any sentence is an expression that is paired with a particular interpretation. Grammaticality is always determined with respect to a pairing of form and meaning. This means that a particular string can be grammatical under one interpretation, but not under another. For instance, (61) is ungrammatical under an subject-object-verb (SOV) interpretation (that is, when the sentence is interpreted as *Sue hired Tom*).

(61) Sue Tom hired.

(61) is grammatical, however, under an object-subject-verb (OSV) interpretation (that is, when it is interpreted as *Tom hired Sue*). On this interpretation, *Sue* receives a special intonation marking contrast, which would ordinarily be indicated in writing by setting off *Sue* from the rest of the sentence by a comma. In other words, the grammaticality of (61) depends on whether its interpretation is analogous to (62a) or (62b).

- (62) a. * She him hired.
b. ✓ Her, he hired. (The other job candidates, he didn't even call back.)

5.3 Grammar versus language

We conclude this chapter by considering the relationship between the concepts of grammar and language. The notion of language seems straightforward because we are used to thinking and speaking of “the English language,” “the French language,” “the Swahili language,” and so forth. But these terms are actually much vaguer than they seem at first glance because they cover a plethora of varieties, including ones that differ enough to be mutually unintelligible. For instance, *Ethnologue* distinguishes 32 dialects of *English* in the United Kingdom alone. In addition, distinct dialects of English are spoken in former British colonies, including Australia, Canada, India, New Zealand, South Africa, the United States, and many other African, Asian, and Caribbean nations, and many of these dialects have subdialects of their own. Similarly, *Ethnologue* distinguishes 11 dialects of *French* in France and 10 dialects of *Swahili* in Kenya, and there are further dialects in other countries in which these languages are spoken. Moreover, we use terms like “the English language” to refer to historical varieties that differ as profoundly as present-day English does from Old English, which is about as intelligible to a speaker of modern English as German—that is to say, not.

Although the most salient differences between dialects are often phonological (that is, speakers of different dialects often have different accents), dialects of a so-called single language can differ syntactically as well. For instance, in standard French, as in the Romance languages more generally, adjectives ordinarily follow the noun that they modify. But that order is reversed in *Walloon*, a variety of French spoken in Belgium. The two parametric options are illustrated in (63) (Bernstein 1993, pp. 25–26).

- | | | | |
|------|----|--|-------------------|
| (63) | a. | un chapeau noir
a hat black | [Standard French] |
| | b. | on neûr tchapê
a black hat
'a black hat' | [Walloon] |

Another example of the same sort concerns multiple negation in sentences like (64a) in varieties of English.

- (64) a. The kids didn't eat nothing.
b. The kids didn't eat anything.

In present-day Mainstream U.S. English, *didn't* and *nothing* each contribute their negative force to the sentence, and the overall force of (64a) isn't negative; rather, the sentence means that the kids ate something. In many varieties of English, however, (64a) conveys exactly the same meaning as in Mainstream U.S. English (64b); that is, the sentence as a whole has negative force. In these varieties, the negation in *nothing* can be thought of as agreeing with (and reinforcing) the negation in *didn't* rather than cancelling it; hence the term **negative concord** for this phenomenon ('concord' is a variant term for 'agreement'). Negative concord is routinely characterized as “illogical” by prescriptivists,¹⁰ and it is one of the most heavily stigmatized features in present-day English.¹¹ However, it was productive in earlier forms of English, and it is attested in renowned masters of the language such as Chaucer and Shakespeare. Moreover, negative concord is part of the mainstream forms of languages like Afrikaans, French, modern Greek,

Hausa, Italian, Lubukusu, Moroccan Arabic, Nweh, Spanish, and Tarifit Berber (just to name a few). From a descriptive and generative point of view, negative concord is simply a parametric option of Universal Grammar just like any other, and negative concord is no more illogical than the noun-adjective order in (63a) or preposition stranding.

In both of the examples just discussed, we have dialects of “the same language” (English and French, respectively) differing with respect to a parameter. The converse is also possible: two “different languages” that are parametrically (all but) indistinguishable. For example, the same linguistic variety spoken on the Dutch-German border may count as a dialect of Dutch or German depending on which side of the political border it is spoken, and the same is true of many other border dialects as well. According to Max Weinreich, “a language is a dialect with an army and a navy.” A striking confirmation of this aphorism concerns the recent terminological history of Serbo-Croatian. As long as Yugoslavia was a federal state, Serbo-Croatian was considered a single language with a number of regional dialects. The 14th edition of *Ethnologue*, published in 2000, still has a single entry for [Serbo-Croatian](#). In the 15th edition, published in 2005, the single entry is replaced by three new entries for [Bosnian](#), [Croatian](#), and [Serbian](#). What changed in the meantime wasn’t the languages, but the political situation.

As the previous discussion has shown, the notion of language is based more on sociopolitical considerations than on strictly linguistic ones. By contrast, the term ‘grammar’ refers to a particular set of parametric options that a speaker acquires. For this reason, the distinction between language and grammar that we have been drawing is also referred to as the distinction between **E-language** and **I-language** (mnemonic for ‘external’ and ‘internal’ language) (Chomsky 1986).

As we have seen, the same language label can be associated with more than one grammar (the label “English” is associated with grammars both with and without negative concord), and a single grammar can be associated with more than one language label (as in the case of border dialects). It is important to distinguish the concept of shared grammar from mutual intelligibility. To a large extent, Mainstream U.S. English and many other varieties of American English are mutually intelligible even where their grammars differ with respect to one parameter or another. On the other hand, it is perfectly possible for two or more varieties that are mutually unintelligible to share a single grammar. For instance, in the Indian village of Kupwar (Gumperz and Wilson 1971), the three languages Marathi, Urdu, and Kannada, each spoken by a different ethnic group, have been in contact for about 400 years, and most of the men in the village are bi- or trilingual. Like the standard varieties of these languages, their Kupwar varieties have distinct vocabularies, thus rendering them mutually unintelligible to monolingual speakers, but in Kupwar, the considerable grammatical differences that exist among the languages as spoken in other parts of India have been virtually eliminated. The difference between standard French and Walloon with respect to prenominal adjectives is another instance of this same convergence phenomenon. Here, too, the adjective-noun order in Walloon is due to language contact and bilingualism, in this case between French and Flemish, the other language spoken in Belgium; in Flemish, as in the Germanic languages more generally, adjectives ordinarily precede the nouns that they modify.

Finally, we should point out that it is perfectly possible for a single speaker to acquire more than one grammar. This is most strikingly evident in balanced bilinguals. Speakers can also acquire more than one grammar in situations of syntactic change. For instance, in the course of

its history, English changed from an OV to a VO language, and individual speakers during the transition period (which began in late Old English and continued into Middle English) acquired and used both parametric options. Speakers can also acquire more than one grammar in situations of diglossia or stable syntactic variation. For instance, English speakers whose vernacular grammar has negative concord or preposition stranding might acquire the parametric variants without negative concord or with pied piping in the course of formal education.

Notes

6

1. It is also possible to overzealously apply rules like those in (2), even in cases where they shouldn't be applied. This phenomenon is known as [hypercorrection](#). Two common instances are illustrated in (i).

(i) Hypercorrect example	Mainstream target	Explanation
Over there is the guy whom I think took her to the party.	the guy <i>who</i> I think took her to the party	the relative pronoun <i>who</i> is the subject of the relative clause, not the object (cf. the guy <i>who</i> , <i>*whom</i> took her to the party)
This is strictly between you and I.	between you and <i>me</i>	the second pronoun is part of the conjoined object of the preposition <i>between</i> , not part of a subject

2. The prescriptive rule is actually better stated as “Don't separate a preposition from its object,” since the traditional formulation invites exchanges like (i).

- (i) A: Who are you going to the party with?
 B: Didn't they teach you never to end a sentence with a preposition?
 A: Sorry, let me rephrase that. Who are you going to the party with, Mr. Know-it-all?

3. As [William Labov](#) has often pointed out, everyday speech (apart from false starts and other self-editing phenomena) hardly ever violates the rules of descriptive grammar.
4. Actually, that's an oversimplification. Not all the articles and nouns an English-speaking child hears appear in the article-noun order. To see why, carefully consider the underlined sentence in this note.
5. Since then, wugs have become something of an unofficial mascot for linguistics; it is wugs that adorn the cover of this book.
6. When children didn't respond this way, they either repeated the original invented word, or they didn't respond at all. It's not clear what to make of these responses. Either response might indicate that the children were stumped by the experimental task. Alternatively, repetition might have been intended as an irregular plural (cf. *deer* and *sheep*), and silence might indicate that some of the invented words (for instance, *cra*) struck the children as phonologically strange.
7. The term 'pied piping' was invented in the 1960s by John Robert Ross (1967), a syntactician with a penchant for

metaphorical terminology.

8. Online corpora that are annotated with syntactic structure, such as the [Penn Treebank](#), the [Penn Parsed Corpora of Historical English](#), and others like them, tend to use labeled bracketing because the resulting files are computationally extremely tractable. The readability of such corpora for humans can be improved by suitable formatting of the labeled bracketing or by providing an interface that translates the bracketed structures into tree diagrams.
9. (56a) is from a speech by George W. Bush (linked [here](#)). (56b) was the subject line of an email message in response to an offer of free fabric; the author is humorously attempting to imitate the language of a child greedy for goodies. (56c) is from “Pardon my French” (Calvin Trillin. 1990. Enough’s enough (and other rules of life). p. 169). (56d) is from “Connoisseurs and patriots” (Joseph Wechsberg. 1948. Blue trout and black truffles: The peregrinations of an epicure. p. 127).
10. Two important references concerning the supposed illogicality of negative concord (and of marginalized varieties of English more generally) are Labov (1972a) and Labov (1972b).

Those who argue that negative concord is illogical often liken the rules of grammar to those of formal logic or arithmetic, where one negation operator or subtraction operation cancels out another; that is, (NOT (NOT A)) is identical to A, and $(-(-5)) = +5$. Such prescriptivists never distinguish between sentences containing even and odd numbers of negative expressions. By their own reasoning, (i.a) should have a completely different status than (i.b)—not illogical, but at worst redundant.

 - (i) a. They never told nobody nothing.
 - b. They never told nobody.
11. Because of the social stigma associated with it, it is essentially impossible to study negative concord in present-day English. This is because even for those speakers of negative concord varieties who don’t productively control Mainstream U.S. English as a second dialect, the influence of prescriptive grammar is so pervasive that if such speakers reject negative concord sentences as unacceptable, we don’t know whether they are rejecting them for grammatical or for social reasons.

Exercises and problems

7

Exercise 1.1

The sentences in (4) violate several descriptive rules of English, three of which were given in (5). As mentioned in the text, there is a fourth descriptive rule that is violated in (4). Formulate the rule (you shouldn’t need more than a sentence).

Exercise 1.2

(1)–(4) illustrate the facts of subject-verb agreement in the variety of English spoken in Belfast, Ireland (data from Henry 1995, chapter 2). Describe the data as clearly and briefly as you can.

Take Note

In order to avoid conflating morphological form with semantic function, you can refer to “is” and “are” as “the *i*- form” and “the *a*- form”, rather than as “singular” and “plural”.

- | | | | |
|-----|---|-----|--|
| (1) | a. ✓ The girl is late.
b. ✓ She is late.
c. ✓ Is {the girl, she} late? | (2) | a. * The girl are late.
b. * She are late.
c. * Are {the girl, she} late? |
| (3) | a. ✓ The girls are late.
b. ✓ They are late.
c. ✓ Are {the girls, they} late? | (4) | a. ✓ The girls is late.
b. * They is late.
c. * Is {the girls, they} late? |

Exercise 1.3

A. Which of the newspaper headlines in (1) are lexically ambiguous, which are structurally ambiguous, and which are a mixture of both types of ambiguity? Explain.

- (1)
- a. Beating witness provides names
 - b. Child teaching expert to speak
 - c. Drunk gets nine months in violin case
 - d. Enraged cow injures farmer with ax
 - e. Prostitutes appeal to pope
 - f. Teacher strikes idle kids
 - g. Teller stuns man with stolen check

B. At least two of the examples form a subgroup even within their type (lexical, structural, mixed). Can you find them and explain their similarity?

Exercise 1.4

In the chapter, we showed that sentences are recursive categories. In other words, one instance of the syntactic category ‘Sentence’ can contain another instance of the same category. Provide **evidence** that noun phrases and prepositional phrases are recursive categories, too.

Word of Caution

Be careful to give examples that are recursive, and not just ones in which the syntactic category in question occurs more than once. For instance, (1) does not provide the evidence required in this exercise, because the second prepositional phrase is not contained in the first. This is clearly shown by the fact that the order of the prepositional phrases can be switched.

- (1) a. The cat jumped [pp onto the table] [pp without the slightest hesitation].
 b. The cat jumped [pp without the slightest hesitation] [pp onto the table].

Exercise 1.5

Which, if any, of the sentences in (1)–(6) are ungrammatical? Which, if any, are semantically or otherwise anomalous? Briefly explain.

- (1) a. They decided to go tomorrow yesterday.
 b. They decided to go yesterday tomorrow.
- (2) a. They decided yesterday to go tomorrow.
 b. They decided tomorrow to go yesterday.
- (3) a. Yesterday, they decided to go tomorrow.
 b. Tomorrow, they decided to go yesterday.
- (4) They decided to go yesterday yesterday.
- (5) How long didn't Rebecca wait?
- (6) Pelé came from a much poor family.

Exercise 1.6

- A. The following expressions are structurally ambiguous. For each reading (= interpretation), provide a paraphrase that is itself unambiguous or a diagnostic scenario (that is, a scenario that is compatible only with the reading in question).
- (1) a. chocolate cake icing
b. clever boys and girls
c. Charis will answer the question precisely at noon.
d. Laila will watch the man from across the street.
e. They should decide if they will come tomorrow.
- B. For each reading, provide as much of a labeled bracketing as you can, focusing on distinguishing between the readings. In other words, you may not be able to give a full labeled bracketing, but for each reading, determine which words go together more or less closely.

Exercise 1.7

Can you solve the riddle posed in endnote 4 of this chapter?

Problem 1.1

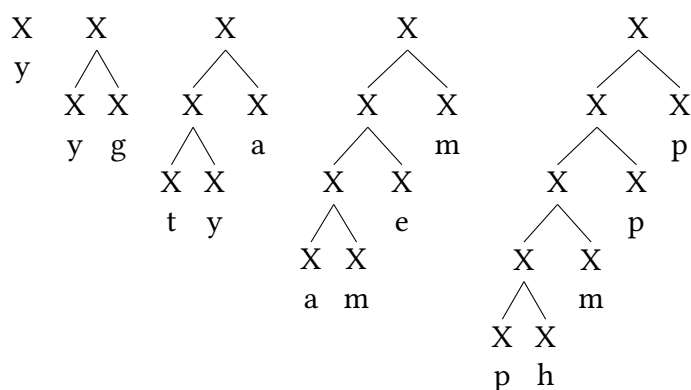
Syntactic structure and recursion are both formal universals of human language. Are they both equally basic? Explain in a (possibly very) brief paragraph.

Problem 1.2

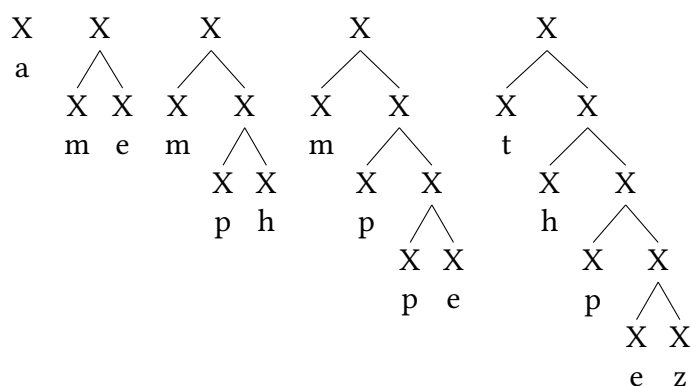
- A. Can you come up with a sentence (or other expression) that is structurally ambiguous more than two ways? For each reading, provide an unambiguous paraphrase or a diagnostic scenario.
- B. For each reading, which words go together? Provide a labeled bracketing, with a focus on distinguishing the interpretations (that is, you don't necessarily need to label each word).

Problem 1.3

Assume a toy grammar G1 with a vocabulary of lowercase letters and a single syntactic category X. G1 generates structures like the following:



Another toy grammar G2 generates structures like this:



Briefly answer the following questions:

- A. What is the difference between G1 and G2?
- B. If presented with a string of lowercase letters (for example, “abc”), is it possible to tell which grammar has generated the string?

Problem 1.4

The grammars of Early Modern English (1500–1710) and present-day English differ enough for certain Early Modern English sentences to be ungrammatical today. Find several such sentences, and briefly describe the source of the ungrammaticality as best as you can. Early Modern English texts that are easily accessible on the Web include Shakespeare’s plays and the Authorized Version of the Bible (also known as the King James Bible).

Problem 1.5

Can you think of other cognitive domains that exhibit structure-dependence, recursion, and/or structural ambiguity?

Syntactic categories and constituenthood

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In Chapter 1, we provided evidence for the idea that sentences aren’t just strings of words, but that they consist of **syntactic constituents**—groups of words that belong together. In many cases, native speakers have clear intuitions about whether a particular string is a constituent. But not all cases are clear, and it is useful to have diagnostic tests at our disposal for determining constituenthood in such cases. It also sometimes happens that native speakers disagree over

whether a string is a constituent. In such cases, the tests can help us to clearly establish that fact so that we have a firm basis for further exploring the differences between the alternative mental grammars.

As we will discuss in more detail in Chapters 4 and 5, syntactic constituents come in various ‘flavors’ like noun phrases, verb phrases, adjective phrases, adverb phrases, and several others. The reason is that the words that make up the constituents themselves belong to different syntactic categories. Traditionally, these are known as parts of speech. However, the traditional notion of part of speech is flawed in two ways. First, the concept of ‘word’ seems simple and straightforward, but isn’t. Second, parts of speech are traditionally defined in terms of meaning, even though these definitions quickly break down. Our solution to these problems will be to allow syntactic categories to be associated with morphemes (rather than words) and to define them in terms of **morphological form** and **morphosyntactic distribution** (rather than semantic function).

The chapter is organized as follows. We begin by clarifying the notion of syntactic category itself, as just discussed, and presenting four syntactic categories. We then present the constituenthood tests and some complications in applying them in connection with certain syntactic categories. Finally, we introduce the graphic representation of constituenthood by means of syntactic trees.

Parts of speech

1

In the U.S. education system, many people’s first experiences with so-called grammar involves identifying parts of speech as part of the task of “diagramming sentences.” So in an example like (1), we can label the words in the sentence based on the category they fall into.

- (1) Dolphins play endlessly.
 noun *verb adverb*

Linguists tend to divide **lexical items** (memorized elements in a language) into two broad sets of categories: lexical categories, which tend to be open-class elements with real-world semantic content, and functional categories, which tend to mainly serve functions within grammar, to make sentences fit together, as it were. Rather than using the term **parts of speech**, we will use the term **syntactic category** to capture the same notion.

Lexical:	
syntactic category	Examples
noun	kumquat, Darius, thusness
verb	synthesize, endure, appear
adjective	glad, comely, unequivocal
adverb	rather, simply, luckily
Functional:	
syntactic category	Examples
preposition	with, under, beside
article	the, a, an
demonstrative	this, that, yonder
quantifier	every, any, no, few
pronoun	me, us, I, who
possessive pronoun	hers, mine, theirs
complementizer/subordinator	that, whether, if
auxiliary verb	be, have, do

Table 2.1: Selected English grammatical categories, both lexical and functional

In some sense, grammatical categories might seem simple or fundamental, and they are very useful in understanding grammatical patterns. But they can get somewhat complicated to define, especially given how we're accustomed to thinking about them.

1.1 The trouble with “words” and “parts of speech”

What kinds of elements are able to be assigned a part of speech? Colloquially we think of ‘words’ having parts of speech, but the concept of a ‘word’ falls apart surprisingly quickly when you investigate it. The elements we call ‘words’ generally have some degree of phonological and grammatical independence. So, phonologically, we can see a word standing alone, not requiring other content to be said.

- (2) Q: Which do you like better, coffee or tea?
A: Tea.

Likewise, many ‘words’ tend to be able to combine with other ‘words’ in flexible ways. So in (3) *tea* can be used as the subject or the object of the sentence, or as part of a prepositional phrase.

- (3) a. Tea is good for you.
b. She doesn't drink tea.
c. There are beneficial antioxidants in tea.

But these notions start to fall apart fairly quickly once you poke at them a little. The sentences in (4) include the phonetically transcribed [t^hiz].

- (4) a. Please do not [tʰɪz] your younger sibling. (tease)
 b. That shop sells [tʰɪz] from around the world. (teas)
 c. I think the antioxidants are [tʰɪz] best property. (tea's = tea POSSESSIVE)
 d. [tʰɪz] good for you. (tea's = tea is)

Most of us would say without hesitation that that *tease* in (4a) is a word. And even though *teas* in (4b) is made up of two morphemes (*tea* + PLURAL), we'd guess that most of you would still be inclined to call that a word. But are the instances of [tʰɪz] *tea's* in (4c) and (4d) words? For many native English speakers, intuitions about what a 'word' is start to fall apart here. Despite being phonetically identical to the other elements we readily call words, in (4d) we have a sense that two different grammatical elements are being combined, a noun *tea* and a verbal element *is* (a similar argument can be applied to (4c)). So though we are taught in primary school (we can call it "4th grade grammar" for simplicity) that 'words' have parts of speech, it's not clear what a word even is. (The issue becomes even more salient when looking at agglutinative languages, where entire sentences can be expressed with a single 'word'.)

So perhaps at bare minimum we need to say that morphemes are assigned parts of speech, and not 'words.' But even a monomorphemic word can be trouble. Consider our 4th grade grammar definitions of major parts of speech, which tend to rely on semantic classifications.

- (5) a. **Noun**
 person place thing (or idea!)
 b. **Verb**
 an action (or state!)
 c. **Adjective**
 modifies a noun
 d. **Adverb**
 modifies a verb or adjective

These classifications fall apart fairly quickly on closer inspection. A word like *yesterday* in (6a) we might want to say is an adverb, since it modifies a verb (*yesterday* is when the going happened). But *yesterday* in (6b) is clearly not an adverb, being used as a possessor. But *yesterday* means the same thing in both instances.

- (6) a. We went to the beach yesterday.
 b. Yesterday's beach trip was fun.

Likewise, *beer* is clearly a noun in (7a) (and typically would be considered a noun), but is used as a verb in (7b) to mean 'give (someone) a beer.'

- (7) a. Give me a beer!
 b. Beer me! (Colloquial Mainstream English, = "give me a beer")

The morphological properties of 'words' further complicates things. *Reading* in (8a) behaves like a verb, yet in (8b) it behaves like a noun. But in each case it's referring to something we'd reasonably call the action of reading.

- (8) a. Maisha is reading an Elephant and Piggie book.
- b. Daily reading is recommended for kindergarteners.

The canonical example of this from the literature is *destroy*, as in (9). A verbal use of *destroy* is unambiguous in (9a), but even though in (9b) *destruction* is a noun, it transparently describes an action.

- (9) a. The cat destroyed the couch.
- b. the cat's destruction of the couch

So what do we do about our definitions from (5) above? Clearly they're not sufficient. In fact, a linguist is much more inclined to write definitions like those in (10).

- (10) a. **Noun**
 'Words' that do nouny things
- b. **Verb**
 'Words' that do verby things
- c. **Adjective**
 'Words' that do adjective-y things
- d. **Adverb**
 'Words' that do adverb-y things

The definitions in (10) are of course silly, but they're actually not far off. What (10a), for instance, presupposes is that there are such things as 'nouny things.' What this is saying is that syntactic categories are defined by their *grammatical distribution*, not by *semantic properties*. So what are 'nouny' sorts of things to do? We can consider both morphological distribution and syntactic distribution. Syntactically, for example, nouns often serve as the subject or object of a sentence and they commonly follow determiners and adjectives. Morphologically, they can be marked as plural and take various derivational affixes that only attach to nouns (like *-tion* and *-er*, for example). In English, elements that behave in this way are consistently nouns.¹ The tables below illustrate (non-exhaustively) some of the distributional properties of major grammatical categories in English.

Category	Syntactic Distribution	Examples
Noun	<ul style="list-style-type: none"> ▶ subject/object of sentence ▶ object of preposition ▶ often follow determiners/adjectives 	<i>The small dog ran away.</i> <i>The chew toy is with Lilly.</i>
Verb	<ul style="list-style-type: none"> ▶ takes a subject/object ▶ can follow auxiliary verbs like <i>be</i> and <i>have</i> ▶ can follow modals like <i>might</i> and <i>should</i> ▶ can follow the infinitive marker <i>to</i> 	<i>Lilly might run away.</i> <i>Cooper wants Lilly to run away.</i>
Adjective	<ul style="list-style-type: none"> ▶ often follow a determiner and precede a noun ▶ often follow linking verbs like <i>be</i> and <i>seem</i> ▶ can follow intensifiers like <i>very</i> and <i>so</i> 	<i>The very small dog ran away.</i> <i>Lilly looks so small!</i>
Adverb	<ul style="list-style-type: none"> ▶ often precede adjectives ▶ often precede or follow verb phrases ▶ some appear at the beginning of a sentence 	<i>The small dog ran away briefly.</i> <i>Luckily it won't take a week.</i>

Table 2.2: Syntactic distribution of selected English grammatical categories

Category	Morphological Distribution	Examples
Noun	<ul style="list-style-type: none"> ▶ bears plural morphology ▶ some derivational affixes are only on nouns (e.g. <i>-tion</i>, <i>-er</i>) 	<i>cats, wishes, children</i> <i>prediction, driver</i>
Verb	<ul style="list-style-type: none"> ▶ take the third-person singular <i>-s</i> suffix ▶ bear past tense morphology ▶ can bear the affixes <i>-ize</i>, <i>-ate</i>, <i>-ify</i> 	<i>loathes, says, tries</i> <i>jumped, dreamt, froze</i> <i>pixelize, formulate, beautify</i>
Adjective	<ul style="list-style-type: none"> ▶ can bear the affixes <i>-ish</i>, <i>-like</i> ▶ can occur in comparative (<i>-er</i>) and superlative (<i>-est</i>) forms (see § 3 for details) 	<i>childish, childlike</i> <i>bigger, biggest</i>
Adverb	<ul style="list-style-type: none"> ▶ often bear the affix <i>-ly</i> ▶ can occur in comparative (<i>-er/more</i>) and superlative (<i>-est/most</i>) forms 	<i>briefly, coolly, equally</i> <i>more briefly, cooler, coolest</i>

Table 2.3: Morphological properties of selected English grammatical categories

The fact that distributional properties are primary in our knowledge of grammatical categories is evident in literature, especially children's literature, where invented nonsense words sometimes play a major role. The following is a brief selection from Dr. Seuss's *The Lorax*:

You won't see the **Once-ler**. Don't knock at his door. He stays in his **Lerkim** on top of his store. He stays in his Lerkim, cold under the floor, where he makes his own clothes out of **miff-muffled moof**. And on special dank midnights in August, he peeks out of the shutters and sometimes he speaks and tells how the **Lorax** was lifted away. He'll tell you, perhaps... if you're willing to pay.

...

Then he pulls up the pail, makes a most careful count to see if you've paid him the proper amount. Then he hides what you paid him away in his **Snuvv**, his secret strange hole in his **gruvvulous** glove. Then he grunts. "I will call you by **Whisper-ma-Phone**, for the secrets I tell you are for your ears alone."

SLUPP!

Down **slupps** the Whisper-ma-Phone to your ear and the old Once-ler's whispers are not very clear, since they have to come down through a **snergely** hose, and he sounds as if he had smallish bees up his nose. "Now I'll tell you", he says, with his teeth sounding gray, "how the Lorax got lifted and taken away... It all started way back... such a long, long time back..."

Each of the bolded words in the selection above were invented by Theodor Geisel (a.k.a. Dr. Seuss), and if you've never read *The Lorax*, this may be the first time you've encountered them. Sometimes we can get an interpretation: "*Down slupps the Whisper-ma-Phone*" invokes an onomatopoeic interpretation of *slupp* as the sound the phone is making while being lowered. Others, like *gruvvulous*, don't suggest much of an interpretation at all, instead achieving a stylistic and rhythmic effect. Yet in all cases we have a very clear sense of their syntactic category: *slupps* is a verb describing the motion of the Whisper-ma-phone, *gruvvulous* and *snergely* are adjectives describing *glove* and *hose*, respectively, and *Lerkim*, *Snuvv*, and *Lorax* are all nouns. For each, our ability to readily identify their syntactic category is due to the fact that their use falls within the distributional criteria for each category, like those illustrated in Tables 2.2 and 2.3.

Again we are left to conclude that the proper defining characteristics of grammatical categories are not based in semantics: even nonsense words have grammatical categories, despite not meaning anything. Instead, grammatical categories are defined by grammatical criteria: their morphological and syntactic distributions. In the sections that follow, we provide additional description of the nuances around some prominent grammatical categories.

1.2 Nouns

In the traditional school definition, a noun “refers to a person, place, or thing”. But as has often been pointed out, this definition incorrectly excludes nouns like those in (11) (unless the concept of *thing* is reduced to near-vacuity).

- (11) explosion, glint, mind, moment, thunder

As a result, modern linguists (not just generative ones) define nouns not in semantic (meaning-based) terms, but in distributional terms—with reference to their occurrence relative to other syntactic categories in the language. In English, for instance, a useful criterion for whether a word is a noun is whether it can form a phrase with the determiner *the*. According to this criterion, the words in curly brackets in (12a) are nouns, but those in (12b) are not.

- (12) a. the { explosion, glint, mind, moment, thunder }
 b. * the { explodes, glinted, minded, momentous, thundered }

Count nouns and mass nouns

Nouns are traditionally divided into two major subclasses: **count nouns** and **mass nouns**. Count nouns (in Mainstream U.S. English) can be accompanied by the indefinite article, and they have a plural form, whereas mass nouns have neither of these properties.

- (13) Count noun:
 a. a(n) { book, child, couch, explosion, invitation, job, problem, vegetable }
 b. books, children, couches, explosions, invitations, jobs, problems, vegetables
- (14) Mass noun:
 a. * a(n) { advice, furniture, rice }
 b. * advices, furnitures, rices

Conversely, singular count nouns cannot follow expressions of quantity like *a lot of*, *much*, and so on, whereas mass nouns can.

- (15) Count noun:
 a. * a lot of { book, child, couch, explosion, invitation, job, problem, vegetable }
 b. * much { book, child, couch, explosion, invitation, job, problem, vegetable }
- (16) Mass noun:
 a. a lot of { advice, furniture, rice }
 b. much { advice, furniture, rice }

Although the distinction between count and mass nouns is generally clear-cut, under special circumstances, what are ordinarily mass nouns in English can be used as count nouns—for instance, when it is possible to impose an interpretation of *a kind of X* or *a salient quantity of X* on the mass noun. Notice, incidentally, that the interpretation of the plural mass nouns in (17b) depends on whether *we* refers to a group of coffee shop customers (salient quantity reading) or to a business owner (salient kind reading).

- (17) a. Different *rices* have different cooking times.
 b. We ordered four *coffees* and two *teas*.

For some mass nouns, the conversion to count noun is very natural.

- (18) a. Mass noun use (basic):
 a lot of *wine*, *wine* from Burgundy, more *wine* than we can drink tonight
 b. Count noun use:
 a *wine* from Alsace, *wines* from Burgundy, more *wines* than I had ever heard of

Conversely, it is possible for what are ordinarily count nouns to be pressed into service as mass nouns.

- (19) a. ? This recipe for carrot cake calls for { a lot of *carrot*, more *carrot* than I have on hand }
 b. ? There's just not enough *couch* for all ten of you.
 c. 2nd Servant: Pray heauen it be not full of *Knight* againe.
 1st Servant: I hope not, I had lief as beare so much lead.
 (William Shakespeare. *Merry Wives of Windsor*, Act 4, Scene 2.)
 d. The article says that [Mr. Mangetout] once consumed fifteen pounds of *bicycle* in twelve days ... Just as an example, I have never eaten so much as a pound of *bicycle*. ... I can see myself acting with considerable restraint at a dinner party at which the main course, is, say, *queen-size waterbed*.
 (Calvin Trillin. 1983. Third helpings. 3.)

Although the match between count and mass nouns across languages is reasonably good, mismatches occur. Some examples of nouns that are mass nouns in English, but count nouns in other languages are given in (20)–(22).

- (20) French:
 a. un meuble, des meuble-s
 a furniture.SG, of.the furniture-PL
 'a piece of furniture, furniture'
 b. un renseignement, des renseignement-s
 an information.SG, of.the information-PL
 'a piece of information, information'
- (21) German:
 a. ein Möbel, Möbel
 a furniture.SG, furniture.PL
 'a piece of furniture, furniture'
 b. ein Ratschlag, Ratschläg-e
 an advice.SG, advice-PL
 'a piece of advice, advice'

- c. eine Nachricht, Nachricht-en
 - a news.SG, news-PL
 - ‘a piece of news, news’

(22) Italian:

- a. un consigli-o, consigl-i
 - an advice.SG, advice-PL
 - ‘a piece of advice, advice’
- b. una notizia, notizi-e
 - a news.SG, news-PL
 - ‘a piece of news, news’

Not surprisingly, when learning English as a foreign language, speakers from these languages often produce ungrammatical examples like (23).

- (23) a. * They gave me some useful *advices*.
 b. * The room was crowded with too many *furnitures*.
 c. * Before I decide, I need some further *informations*.

In conclusion, here’s a question for you. Is *mail* a count noun or a mass noun? And how about *email*? Does everyone agree with you, especially about *email*?

Proper nouns and common nouns

A further distinction is traditionally drawn between **proper nouns** (also known as **proper names**) and **common nouns**. In contrast to common nouns, proper nouns are conventionally capitalized in English.

- (24) a. Common nouns:
 city, collie, country, planet, state
 b. Proper nouns:
 Philadelphia, Lassie, France, Jupiter, Maryland

Proper nouns refer to particular individual entities. The relation between proper nouns and individuals is not necessarily one-to-one, however. For instance, the proper noun *Sandra* may refer to many different individuals of that name. Individuals with the same proper name needn’t share any distinguishing properties (other than having the same name). So Athens, Greece and Athens, Georgia needn’t have any substantive property in common that sets them apart from other cities, and there is nothing to stop us from giving the name *Lassie* to a pet without any of the prototypical qualities of Lassie from the television show (intelligence, loyalty, and so on). Our Lassie, in fact, needn’t even be a dog. In short, proper nouns function like pure pointers. In the same way that one and the same pointer can be used to point to different and unrelated items in a presentation, the same proper noun can be used to refer to different and unrelated individuals. In contrast, common nouns refer to sets of entities that are related by sharing certain properties. That is, common nouns have intrinsic semantic content and cannot be used in the relatively arbitrary way that proper nouns can be.

From the point of view of reference, then, proper nouns behave like pronouns, which also function like pointers to individuals without themselves containing much in the way of semantic content. At first glance, it might therefore seem that the term ‘proper noun’ is a misnomer, and that proper nouns could essentially be classified as determiners rather than as nouns, similar to how pronouns can be aligned with determiners. However, there are two arguments against this misnomer view of proper nouns.

Proper nouns with and without determiners

First, although proper nouns in English typically appear without a determiner, certain proper nouns must be accompanied by the definite article. Some examples are given in (25).

- (25) the Bronx, the Hague, the Thames, the Titanic, the Soviet Union, the United States, the White House

Pronouns, on the other hand, can’t be accompanied by an article, as shown in (26).

- (26) * the { you, he, she, it, we, they }

Given the contrast between (25) and (26), the proper nouns in (25) can’t themselves be determiners, but must be nouns, as English does not tolerate sequences of determiners. Even the misnomer view must therefore admit the existence of nouns that refer to particular individual entities. But if the proper nouns in (25) are in fact nouns, then there is no conceptual advantage in assuming that those in (24b) are determiners. Instead, we could simply take the view that proper nouns are invariably nouns, but that some are complements of the ordinary overt definite article *the*, whereas others are complements of a silent counterpart of it. In other words, the proper nouns in (24b) would be structurally parallel to those in (25), as indicated in (27).

- (27) a. Overt determiner:
the Bronx, the Hague, the Thames, the Titanic, ...
b. Silent determiner:
[DEF] Philadelphia, [DEF] Lassie, [DEF] France, ...

Several additional pieces of evidence, all of the same type, point in the same direction. Before the breakup of the Soviet Union, the Soviet republic whose capital is Kiev was called the Ukraine, but after the breakup, the newly independent country began to be called Ukraine, without the article. Similarly, the United States is generally referred to in Spanish as *los Estados Unidos* ‘the United States’, but in recent years, Latin American newspapers have begun to omit the article *los*. According to the misnomer view, *Ukraine* and *Estados Unidos* would be nouns in the old usage and turn into determiners in the new usage. Treating the change as affecting the pronunciation of the determiner is clearly more straightforward.

In French, names of countries and regions must be accompanied by the definite article, whereas in English, they generally aren’t (the change from *the Ukraine* to *Ukraine* thus eliminated its exceptional status in English). Some examples are shown in (28); *la* and *le* are the feminine and masculine forms of the French definite article, respectively.

- (28) a. French:
la Bolivie, la Bourgogne, le Brésil, le Canada, le Danemark, la France, le Pérou
- b. English:
Bolivia, Burgundy, Brazil, Canada, Denmark, France, Peru

According to the misnomer view, the names of countries and regions would be nouns in French but determiners in English. Again, it seems more reasonable to pin the difference between the two languages not on the nouns themselves, but on the status of the determiner.

In standard German, personal names stand alone in the standard language. But in the vernacular, they can be accompanied by the definite article, as shown in (29); *der* and *die* are masculine and feminine forms of the German definite article, respectively.

- (29) a. Standard German:
Annemarie, Eva, Lukas, Peter
- b. Vernacular German:
die Annemarie, die Eva, der Lukas, der Peter

According to the misnomer view, proper names would change syntactic category depending on the speaker's register, whereas the alternative view again more straightforwardly pins the variation on the determiner.

Finally, in modern Greek, personal names are normally accompanied by the definite article. This is shown for the **nominative** in (30); *o/o* and *η/i* are masculine and feminine forms of the Greek definite article, respectively. ("Nominative" is the form in which subjects of sentences appear: see Chapter 7.)

- (30) Greek, nominative:
η Ελένη, η Βάλια, ο Παύλος, ο Γιάννης
i Eleni, i Valia, o Pavlos, o Yannis

Modern Greek retains from its ancestor language Indo-European a special **vocative** case form that is used when addressing someone. Masculine nouns lose their final -s in the vocative, and other nouns remain unchanged, but for all nouns, the article is obligatorily absent in the vocative, as shown in (31).²

- (31) Greek, vocative:
(*η) Ελένη, (*η) Βάλια, (*ο) Παύλος, (*ο) Γιάννης
(*i) Eleni, (*i) Valia, (*o) Pavlos, (*o) Yannis

Once again, under the misnomer view, names in Greek would change their syntactic category depending on their case form—a bizarre consequence.

Borrowing

A second type of argument against the misnomer view of proper nouns is based on linguistic borrowing. Speakers of one language often borrow words from another language, either because no native words exist for certain concepts or because the borrowed word is perceived as having a cachet that the native counterparts lack. Proper nouns are easily borrowed in this way; we need only to think of the many geographical names in English derived from various indigenous languages. The prolific borrowing of proper nouns is not surprising if proper nouns are a subcategory of nouns, since nouns are precisely the category that is most readily borrowed. But it is unexpected under the misnomer view, since pronouns are ordinarily not borrowed at all.

On the basis of the considerations just discussed, we conclude, then, that proper nouns are a semantically (and often syntactically) special subtype of noun.

1.3 Adjectives

Adjectives versus modifiers

In the teaching of high school English, the terms ‘adjective’ and ‘modifier’ seem to be used relatively interchangeably. From the point of view of linguistic theory, this usage reflects a lamentable lack of appreciation for the central linguistic distinction between function and form. **Modifiers** are linguistic expressions that serve a certain function—namely, to restrict or qualify some other expression. **Adjectives**, on the other hand, are members of a syntactic category that is defined by certain formal properties. For instance, it is possible to derive adverbs from many adjectives (*heavy, heavily; mere, merely; rough, roughly; sweet, sweetly*).

There is no one-to-one relation between modifiers and adjective phrases. Modifiers are not necessarily adjective phrases, as illustrated in (32).

- (32) a. Adjective phrase:
a *very aggressive* driver
- b. Adverb phrase:
They drive *very aggressively*.
- c. Prepositional phrase:
the desk *next to the window*
They arrived *on time*.
- d. Noun phrase:
They will arrive *Monday night*

Conversely, adjective phrases are not necessarily modifiers. For instance, the adjective phrase in (33) is the predicate of a simple clause.

- (33) This candidate is *very suitable*.

See the next section for more discussion of predicative uses of adjectives, and see §3 of Chapter 3 for discussion of the notion of a predicate.

Adnominal versus predicative use

In English, adjective phrases that modify a noun typically occur in **prenominal** position.

- (34) a. a *very big* box, this *blue* book
 b. * a box *very big*, this book *blue*

However, there are other languages that typically require adjectival modifiers of nouns to be **postnominal**. The examples in (35) are from French.

- (35) a. une chaise *très confortable*, ce livre *bleu*
 a chair very comfortable this book blue
 b. * une *très confortable* chaise, ce *bleu* livre
 a very comfortable chair this blue book

But even in English, adjective phrases can occur postnominally if they are ‘heavy’ enough, and even relatively short adjectives are sometimes used postnominally to convey elegance or high style.³

- (36) a. ✓ an *unlikely* story
 b. * an *unlikely to be true* story
 (37) a. * a story *unlikely*
 b. ✓ a story *unlikely to be true*
 (38) *House Beautiful* (*upscale interior decorating magazine*)

A convenient cover term for ‘prenominal’ and ‘postnominal’ is **adnominal**. It is worth noting that certain adjectives can only be used adnominally, and not predicatively.

- (39) a. the mere fact, her utter surprise
 b. * The fact is mere, Her surprise was utter

The postnominal use of adjective phrases should not be confused with their predicative use, as illustrated above in (33).

Gradable versus categorical adjectives

Many adjectives have the property of denoting properties that an entity can exhibit to a greater or lesser degree. Examples of such **gradable** adjectives are given in (40).

- (40) beautiful, heavy, kind, loud, rich

Gradable adjectives can be modified by means of degree adverbs like *enough*, *exceedingly*, *overly*, *too*, *very*, and so on, and they are associated with three **degrees of comparison**, as illustrated in Table 2.4.

Positive	Comparative	Superlative
friendly	friendli-er	friendli-est
heavy	heavi-er	heavi-est
compatible	more compatible	most compatible
intelligent	more intelligent	most intelligent

Table 2.4: Gradable adjectives in English

English is unusual in having two ways of forming the degrees of comparison, an **inflectional** way involving the use of the bound morphemes *-er* and *-est*, and an **analytical** way involving the use of the free morphemes *more* and *most*. Most languages allow only one option or the other.⁴ For instance, German allows only the inflectional option.⁵

Positive	Comparative	Superlative	Gloss
freundlich	freundlich-er	freundlich-st-	‘friendly’
schwer	schwer-er	schwer-st-	‘heavy’
kompatibel	kompatibl-er	kompatibel-st-	‘compatible’
intelligent	intelligent-er	intelligent-est	‘intelligent’

Table 2.5: Gradable adjectives in German

The Romance languages, on the other hand, generally only allow the analytical option, as illustrated in Table 2.6 for French.⁶

Positive	Comparative	Superlative	Gloss
belle	plus belle	la plus belle	‘beautiful.F’
long	plus long	le plus long	‘long.M’
compatible	plus compatible	le/la plus compatible	‘compatible’
intelligent	plus intelligent	le plus intelligent	‘intelligent.M’

Table 2.6: Gradable adjectives in French

In contrast to gradable adjectives, some adjectives denote categorical properties—properties that entities can either have or not have. For instance, integers are either prime or not. Some further examples of categorical adjectives are given in (41).

- (41) dead, married, pregnant, unique

It is possible for adjectives that are basically categorical to have restricted or extended senses that are gradable. For instance, *pregnant* has a restricted sense of ‘visibly pregnant’, and *unique* has an extended vernacular sense of ‘unusual’, rather than the original strict sense of ‘one of a kind’. Given these senses, sentences like (42) are expected.

- (42) a. Lois looks more pregnant than Stacy.
b. A more unique present would be hard to find.

1.4 Modals

Historically, English modals, which are listed in (43), derive from a special class of verbs in Proto-Germanic (the ancestor of English and the other Germanic languages).

- (43) can, could, may, might, must, shall, should, will, would

Modals have always differed from ordinary verbs in Germanic, and over the history of English, they have diverged even further, to the point where they are now assigned a syntactic category of their own. Because the modals have meanings that are often expressed in other languages by verbal inflections, this category has been called I(nflection). Nowadays it is more often called T(ense), but we will continue to use the older term, as the motivation for using “T” has become obsolete.

In what follows, we review the ways that modals differ from verbs in English, both morphologically (which forms they exhibit) and syntactically (how they combine with other elements of a sentence).

Morphology

Modals differ markedly from verbs in the range of forms that they exhibit. English verbs appear in a number of distinct forms (see § 8.1 for details), whereas modals have a single, invariant form.

Modals never end in -s, even in sentences with third person singular subjects.

- (44) a. ✓ She { can, may } play the piano.
b. * She { can-s, may-s } play the piano.

Modals also lack productive past tense forms. It is true that *could*, *might*, *should*, and *would* originated in Germanic as past tense forms of *can*, *may*, *shall*, and *will*. But today, only *could* can serve as the past tense of *can*, and that only in certain contexts.⁷

Example	Potential paraphrase
Nowadays, you can get one for a dollar.	= Nowadays, it is possible to get one for a dollar.
Back then, you could get one for a dollar.	= Back then, it was possible to get one for a dollar.
We can go there tomorrow.	= It is possible for us to go there tomorrow.
We could go there tomorrow.	≠ It was possible for us to go there tomorrow.
You may ask the boss.	= You are allowed to ask the boss.
You might ask the boss.	≠ You were allowed to ask the boss.
Shall I pick up some bread?	= Is it a good idea for me to pick up some bread?
Should I pick up some bread?	≠ Was it a good idea for me to pick up some bread?

Table 2.7: Lack of productive past tense forms for English modals

Finally, and very strikingly, modals have lost their nonfinite forms (infinitives, *-ing* forms, past participles); the missing forms must be paraphrased.

(45) Infinitive after (another) modal:

- a. * They must can speak Spanish. (modal)
- b. ✓ They must be able to speak Spanish. (paraphrase of modal)
- c. ✓ They must speak Spanish. (verb)

(46) Infinitive after infinitival *to*:

- a. * They want to can speak Spanish. (modal)
- b. ✓ They want to be able to speak Spanish. (paraphrase of modal)
- c. ✓ They want to speak Spanish. (verb)

(47) *-ing* as gerund:

- a. * They like { cann-ing, may-ing } play the piano. (modal)
- b. ✓ They like { being able, being allowed } to play the piano. (paraphrase of modal)
- c. ✓ They like learning to play the piano. (verb)

(48) Past participle:

- a. * They have { cann-ed, may-ed } play the piano. (modal)
- b. ✓ They have { been able, been allowed } to play the piano. (paraphrase of modal)
- c. ✓ They have learned to play the piano. (verb)

Syntax

The loss of nonfinite forms for modals gives rise to three further differences between verbs and modals, all of them manifestations of an important phenomenon in the grammar of modern English called **do support**.

Emphasis

In the simplest case, *do* support affects affirmative sentences whose truth is being emphasized. It involves replacing the finite verb by the verb's bare form and adding a form of **auxiliary do** to the sentence in the appropriate tense (either present or past tense). This form of *do* then receives emphatic stress, as indicated by underlining in (49).

- (49) a. ✓ He dances; she sang. (unemphatic, without *do* support)
 b. ✓ He does dance; she did sing. (emphatic, with *do* support)

By contrast, emphasizing the truth of a sentence with a modal is achieved by simply stressing the modal, and *do* support with modals is ungrammatical.

- (50) a. ✓ He can dance; she will sing. (emphasis without *do* support)
 b. * He does can dance; she does will sing. (emphasis with *do* support)

Negation

English sentences containing modals are negated by simply adding *not* (or its contracted form *-n't*) after the modal. *Do* support is ungrammatical.

- (51) a. ✓ He { may, must, should, will, would } not dance. (negation without *do* support)
 b. * He does not { may, must, should, will, would } dance. (negation with *do* support)

By contrast, negated sentences without modals require *do* support in modern English. As in the case of **emphasis**, the verb appears in its bare form, and an appropriately tensed form of auxiliary *do* is added to the sentence, followed by negation.

- (52) a. ✓ She { does, did } not dance. (negation with *do* support)
 b. * She not { dances, danced }. (negation without *do* support)
 * She { dances, danced } not.

Questions

The final difference between modals and verbs concerns question formation. If a declarative sentence contains a modal, the corresponding question is formed by inverting the modal with the subject. *Do* support is ungrammatical.

- (53) a. ✓ { Can, may, must, should, will, would } he dance? (question without *do* support)
 b. * Does he { can, may, must, should, will, would } dance? (question with *do* support)

Once again, however, in a sentence without a modal, question formation requires *do* support. That is, it is an appropriately tensed form of *do*, rather than the verb itself, that inverts with the subject.

- (54) a. ✓ { Does, did } she dance? (question with *do* support)
 b. * { Dances, danced } she? (question without *do* support)

1.5 Auxiliary verbs

English has three auxiliary verbs, each homonymous with an ordinary verb: *be*, *do*, and *have*.

Auxiliary *do*

The goal of [the previous section](#) was to establish the special status of modals, and we used the facts of *do* support as a criterion for distinguishing modals from verbs. In this section, we consider some of the same facts, but with a different focus. Rather than focusing on the distinctive properties of modals, we focus on the morphological and syntactic properties of auxiliary *do* itself.

The only difference between auxiliary *do* and the modals is that it has an -s form. In this respect, it patterns with ordinary verbs, including its main verb counterpart.

- (55) Modal:
- I can dance the polka.
 - He { can, * can-s } dance the polka.
-
- (56) Auxiliary *do* (emphasis, negation, question):
- I do dance the polka. I do not dance the polka. Do you dance the polka?
 - She do-es dance the polka. She do-es not dance the polka. Do-es she dance the polka?
- (57) Main verb *do*:
- I do the dishes.
 - He do-es the dishes.
- (58) Ordinary verb:
- I dance the polka.

- b. She dance-s the polka.

In all other respects, auxiliary *do* resembles a modal rather than an ordinary verb. In particular, it does not occur in nonfinite contexts. Notice the clear contrast between the judgments for auxiliary *do* in (60) and main verb *do* in (61).

(59) Modal:

- a. * They will can dance the polka. (after another modal)
- b. * They want to can dance the polka. (after infinitival *to*)
- c. * Their canning dance the polka while blindfolded is unusual. (gerund)

(60) Auxiliary *do* (emphasis):

- a. * They will do dance the polka. (after another modal)
Intended meaning: It will be the case they do dance the polka.
- b. * They claim to do dance the polka. (after infinitival *to*)
Intended meaning: They claim that they do dance the polka.
- c. * Their doing dance the polka while blindfolded is unwise. (gerund)
Intended meaning: That they do dance the polka while blindfolded is unwise.

(61) Main verb *do*:

- a. ✓ They will do the dishes. (after another modal)
- b. ✓ They want to do the dishes. (after infinitival *to*)
- c. ✓ Their doing the dishes was considerate. (gerund)

(62) Ordinary verb:

- a. ✓ They will dance the polka. (after another modal)
- b. ✓ They want to dance the polka. (after infinitival *to*)
- c. ✓ Their dancing the polka while blindfolded is unwise. (gerund)

Auxiliary *do* also behaves like a modal in *do* support contexts. Double instances of auxiliary *do* are ruled out, just like double modals are (see (48a)). Once again, auxiliary *do* and main verb *do* differ sharply, as shown in (64) and (65).

(63) Modal:

- a. * They does can dance the polka. (emphasis)
- b. * They doesn't can dance the polka. (negation)
- c. * Does he can dance the polka? (question)

(64) Auxiliary *do*:

- a. * She does do dance the polka. (emphasis)
Intended meaning: It is the case that she does dance the polka.
- b. * She doesn't do dance the polka. (negation)
Intended meaning: It isn't the case that she does dance the polka.

- c. * Does she do dance the polka? (question)
 Intended meaning: Is it the case that she does dance the polka?
-

(65) Main verb *do*:

- a. ✓ He does do the dishes. (emphasis)
 b. ✓ He doesn't do the dishes. (negation)
 c. ✓ Does he do the dishes? (question)

(66) Ordinary verb:

- a. ✓ She does dance the polka. (emphasis)
 b. ✓ She doesn't dance the polka. (negation)
 c. ✓ Does she dance the polka? (question)

Auxiliary *have*

Let's now turn to auxiliary *have*, which combines with past participles to form the **perfect** forms of verbs. Auxiliary *have* behaves like a V with respect to its morphology and its occurrence in nonfinite contexts, but like an I with respect to *do* support. Specifically, auxiliary *have*, like auxiliary *do*, shares all the morphological properties of its main verb counterpart. In addition, it can appear in nonfinite contexts (unlike auxiliary *do*). With respect to *do* support, however, auxiliary *have* differs from its main verb counterpart and patterns together with the modals and auxiliary *do*. The complex behavior of auxiliary *have* can be captured by saying that it moves from V to I in the course of the derivation. (see Chapter 10, § 4.5 for further discussion.)

(67) and (68) show that auxiliary *have*, like auxiliary *do* (cf. (56)), behaves morphologically like its main verb counterpart in having an -s form.

(67) Auxiliary *have*:

- a. I have adopted two cats.
 b. He ha-s adopted two cats.

(68) Main verb *have*:

- a. I have two cats.
 b. He ha-s two cats.

Auxiliary *have* differs from auxiliary *do* (cf. (60)) and resembles main verb *have* in being able to appear in nonfinite contexts.

(69) Auxiliary *have*:

- a. ✓ They must have adopted two cats. (after modal)
 b. ✓ They claim to have adopted two cats. (after infinitival *to*)
 c. ✓ They do not regret having adopted two cats. (gerund)

(70) Main verb *have*:

- a. ✓ They must have two cats. (after modal)

- b. ✓ They claim to have two cats. (after infinitival *to*)
- c. ✓ They do not regret having two cats. (gerund)

However, just like auxiliary *do* (cf. (64)) and in contrast to main verb *have*, auxiliary *have* is ruled out in *do* support contexts.

(71) Auxiliary *have*:

- a. * He does have adopted two cats. (emphasis)
- b. * He doesn't have adopted two cats. (negation)
- c. * Does he have adopted two cats? (question)

(72) Main verb *have*:

- a. ✓ She does have two cats. (emphasis)
- b. ✓ She doesn't have two cats. (negation)
- c. ✓ Does she have two cats? (question)

Be (auxiliary and main verb)

The examples in (73)-(75a) illustrate the behavior of auxiliary *be*, which is used to form the progressive (*is coming*, *was dancing*) and the passive (*is abandoned*, *was sold*) in English. Auxiliary *be* behaves just like auxiliary *have*. In particular, it has an -s form (irregular though that form is), and it can appear in nonfinite contexts, but it is excluded from *do* support contexts. As a result, auxiliary *be* can be treated just like auxiliary *have*—as belonging to the syntactic category V, but moving from V to I in the course of a derivation.

Main verb *be* differs from all other main verbs in English in behaving exactly like its auxiliary counterpart. In other words, main verb *be* is the only main verb in modern English that moves from V to I.

(73) Auxiliary *be*:

- a. ✓ They are learning Spanish. They are invited to the ceremony. (non-third person)
- b. ✓ He i-s learning Spanish. He i-s invited to the ceremony. (third person)

(74) Main verb *be*:

- a. ✓ They are happy. (non-third person)
- b. ✓ She i-s happy. (third person)

(75) Auxiliary *be*:⁸

- a. ✓ They must be learning Spanish. (after modal)
- b. ✓ They must be invited to the ceremony.
- c. ✓ They claim to be learning Spanish. (after infinitival *to*)
- d. ✓ They claim to be invited to the ceremony.
- e. ✓ They don't regret being invited to the ceremony. (gerund)

(76) Main verb *be*:

- a. ✓ They must be happy. (after modal)

- b. ✓ They claim to be happy. (after infinitival *to*)
 c. ✓ They don't regret being syntacticians. (gerund)

(77) Auxiliary verb *be*:

- a. * He does be learning Spanish. He does be invited to the ceremony. (emphasis)
 b. * He doesn't be learning Spanish. He doesn't be invited to the ceremony. (negation)
 c. * Does he be learning Spanish? Does he be invited to the ceremony? (question)

(78) Main verb *be*:

- a. * She does be happy. (emphasis)
 b. * She doesn't be happy. (negation)
 c. * Does she be happy? (question)

Summary

Table 2.8 provides a synopsis of the morphological and syntactic properties of the items that we have discussed, arranged from most to least verb-like. As is evident from the table, the syntactic category of an item depends on whether it is the verb-like or the modal-like properties that predominate.

	Ordinary verb	<i>Be</i> and auxiliary <i>have</i>	Auxiliary <i>do</i>	Modal
Has -s form	yes	yes	yes	no
Occurs in nonfinite contexts	yes	yes	no	no
Occurs with <i>do</i> support	yes	no	no	no
Syntactic category	V	V	I	I

Table 2.8: Summary of morphological and syntactic properties of ordinary verbs, auxiliaries verbs, and modals in English

Tests for determining syntactic constituenthood

2

At first glance, a sentence consists of a string of words arranged in a single dimension—that of linear order. However, we presented evidence in Chapter 1 for a second dimension that is less obvious (though no less real!) than linear order—the dimension of **syntactic structure**. Whether a particular string of words is a syntactic constituent isn't always self-evident, and so several tests have been developed as diagnostics for constituenthood. In this chapter, we review these tests, along with some of the complications that arise in applying them. We also discuss in more detail how syntactic structure is represented in tree diagrams of the sort introduced in § 5.1 of Chapter 1.

the validity of the test, however. All that is necessary is that the pro-form can replace the string, preserving (at least roughly) the original meaning.

The word *so* can substitute for adjective phrases (here, the most natural-sounding results are obtained in contexts of comparison or contrast). As usual, the same string sometimes is a constituent and sometimes isn't. (The judgments in (84) are ours; for some speakers, (84c) is grammatical.)

- (84) a. ✓ I am very happy, and Linda is so, too.
 b. ✓ I am very fond of Lukas, and Linda is so, too.
 c. * I am very fond of my nephew, and Linda is so of her niece.

Finally, pronouns and sometimes the word *so* can substitute for subordinate clauses introduced by *that*, as in (85) and (86).

- (85) a. I { know, suspect } that they're invited.
b. ✓ I { know, suspect } it.
- (86) a. I { imagine, think } that they're invited.
b. ✓ I { imagine, think } so.

We conclude our discussion of substitution by noting a complicating factor. Nowhere is it written that every constituent has a corresponding pro-form. For instance, although some prepositional phrases can be replaced by the pro-forms *here* or *there*, others—for instance, ones referring to purposes or reasons—can’t. As a result, it is perfectly possible for the substitution test to give false negative results, and for the results of the substitution to disagree with the results of the other tests presented in what follows. We return to the issue of false negatives later on in section 3.2.


2.2 Movement

Substitution by pro-forms is not the only diagnostic for whether a string is a constituent. If it is possible to move a particular string from its ordinary position to another position—typically, at least in English, to the beginning of the sentence—that, too, is evidence that the string is a constituent. In order to make the result of movement completely acceptable, especially in the case of noun phrases, it’s sometimes necessary to use a special intonation or to invoke a special discourse context. In the examples that follow, “___” indicates the ordinary position that a constituent has moved from, and appropriate discourse material (enclosed in parentheses) may be added to make the examples sound natural.


- (87) a. I fed the cats.
b. ✓ The cats, I fed _____. (The dogs, I didn't.)
- (88) a. I fed the cats with long, fluffy tails.
b. ✓ The cats with long, fluffy tails, I fed _____. (The other cats, I didn't.)

Movement of constituents other than noun phrases is illustrated in (89)–(91).


Adjective phrase:

- (89) a. Ali Baba returned from his travels wiser than before.
 b. ✓ Wiser than before, Ali Baba returned from his travels ____.
- 

Adverb phrase:

- (90) a. They arrived at the concert hall more quickly than they had expected.
 b. ✓ More quickly than they had expected, they arrived at the concert hall ____.
- 

Prepositional phrase:

- (91) a. The cat strolled across the porch with a confident air.
 b. ✓ With a confident air, the cat strolled across the porch ____.
- 

2.3 Questions and short answers

Another diagnostic for constituenthood is whether the string can function as a short answer to a question. The question itself also functions as a diagnostic test, since we can think of it as being derived by substituting a question word for a string and subsequently moving the question word to the beginning of the sentence.⁹ (92)–(96) illustrate this pair of tests for a variety of constituent types.

Noun phrase:

- (92) What do you see?
 a. The cats.
 b. Cats with long, fluffy tails.
 c. The cats with long, fluffy tails.

Adjective phrase:

- (93) How did the traveler return?
 a. Wiser than before.
 b. Fairly jet-lagged.

Adverb phrase:

- (94) How did they do?
 a. Not badly.
 b. Surprisingly well.
 c. Much better than they had expected.

Prepositional phrase:

- (95) How did the cat stroll across the porch?
 a. With a confident air.
 b. quickly.
 (96) Where did Ali Baba go?
 a. On a long journey.
 b. To New York.

Notice, incidentally, that *so* substitution, discussed [earlier](#), has a variant that is reminiscent of questions. In addition to just substituting for the string of interest, *so* can subsequently move

to the beginning of the sentence, triggering **subject-aux inversion**—the same process that turns declarative sentences into yes-no questions. This variant of *so* substitution is illustrated in (97) and (98). (The judgment for (97c) varies across speakers in the same way as the one for (84c).)

- (97) a. ✓ I am very happy, and so is Linda.
 b. ✓ I am very fond of Lukas, and so is Linda.
 c. * I am very fond of my nephew, and so is Linda of her niece.
- (98) ✓ I { imagine, think } that they're invited, and so do they.

2.4 *It* clefts

The final constituent test that we'll consider is based on a special sentence type known as ***it* clefts**. We begin by noting that ordinary sentences can often be divided into two parts: a part that contains background information that is presupposed, the **ground**, and a part that is intended to be particularly informative, the **focus**. In spoken language, this focus-ground partition (also known as its **information structure**) is often conveyed by intonation alone in English.¹⁰ But English can also express the focus/ground distinction, via a syntactic frame consisting of *it*, a form of the copula *to be*, and the subordinating conjunction *that*. In the examples in (99)–(100), the frame is in standard font, the ground is in *italics*, and the focus is in **bold**. Notice that a single sentence can be partitioned into focus and ground in more than one way, giving rise to more than one *it* cleft.

- (99) a. **Ordinary cats** *detest the smell of citrus fruits.*
 b. ✓ It is **ordinary cats** that *detest the smell of citrus fruits.*
- (100) a. *Ordinary cats* **detest the smell of citrus fruits.**
 b. ✓ It is **the smell of citrus fruits** that *ordinary cats detest.*

If a string can appear as the focus of an *it* cleft, then it is a constituent. Some examples for various constituent types other than noun phrase are given in (101)–(103).

Adjective phrase:

- (101) a. Ali Baba returned from his travels wiser than before.
 b. ✓ It was wiser than before that Ali Baba returned from his travels ____.

Adverb phrase:

- (102) a. They arrived at the concert hall more quickly than they had expected.
 b. ✓ It was more quickly than they had expected that they arrived at the concert hall ____.

Prepositional phrase:

- (103) a. The cat strolled across the porch with a confident air.
 b. ✓ It was with a confident air that the cat strolled across the porch ____.

Some complications for constituency diagnostics

3

3.1 Mismatches between syntactic structure and other structure

We mentioned earlier that it is not always self-evident whether a particular sequence of words is a syntactic constituent. For instance, in reading a sentence like (104) out loud, we can perceive an intonation break between *cat* and *that* (indicated by the slash).

(104) This is the cat / that chased the rat.

Because the intonation break is clearly audible, it is very tempting to equate the sentence's abstract syntactic structure with its relatively concrete prosodic structure. Specifically, because *the* and *cat* belong to the same prosodic constituent, it is tempting to treat *the cat* as a syntactic constituent.

There are two pieces of evidence against doing so. First, as we have already seen in similar examples, substituting a pronoun for the string *the cat* is ungrammatical in the context of (104) (though not in other contexts).

- (105) a. This is the cat that chased the rat.
 b. * This is it that chased the rat.
- (106) a. I petted the cat.
 b. ✓ I petted it.

Second, the string *cat that chased the rat* is shown to be a constituent by the grammaticality of substituting the pro-form *one* (*one* substitution is discussed in more detail in section 1.4 of Chapter 5).

- (107) a. This is the cat that chased the rat.
 b. * This is the one.

The facts in (105) and (107) converge to tell us that the word *cat* first combines with the relative clause, not with *the*. Thus, (104) exhibits a **mismatch** between two types of linguistic structure: syntactic and prosodic.

It is worth noting that the syntactic structure just described corresponds to the way that the interpretation of the entire expression *the cat that chased the rat* is composed from the interpretation of smaller expressions. In a simple semantics, the term *cat* denotes the set of all cats. Combining *cat* with the relative clause yields *cat that chased the rat*, which denotes a subset of all cats—namely, those with the property of having chased the rat. Further combining *cat that chased the rat* with the definite article *the* yields as a denotation some unique individual within the rat-chasing subset of cats (exactly which individual this is depends on the discourse context).¹¹

This correspondence of syntactic structure and semantic structure (the step-by-step composition of the expression's meaning, as just illustrated for (104)) holds up as a first approximation, and it is consistent with the correspondence between noun phrases and individuals, between adjective phrases and properties, between prepositional phrases and locations, directions, etc., between verb phrases and events, states, etc., and so on. Nevertheless, mismatches between syntactic structure and semantic structure are possible. For instance, the sentence in (108) has two distinct meanings, which can be paraphrased as in (109).

(108) Every student knows two languages.

- (109) a. For every student, it is the case that they know two languages.
(Langston knows Arabic and Basque, Maisha knows Chinese and Danish, Lucca knows English and French, ...)
- b. There are two languages that every student knows.
(Arabic and Basque are known by Langston, Maisha, Lucca, ...)

In the interpretation in (109a), the universal quantifier *every* is said to take scope over the number *two* (EVERY > TWO). In the interpretation in (109b), the number takes scope over the universal quantifier (TWO > EVERY). In either case, though, the ambiguous sentence itself (not the paraphrases!) has a single syntactic structure. This is evident from the syntactic constituenthood tests in (110)–(111), where the question and short answer pair are compatible with either scope interpretation.

- (110) a. Every student knows two languages.
- b. Who knows two languages? Every student.
- (111) a. Every student knows two languages.
- b. What does every student know? Two languages.

Other mismatches are also possible. Recall from the section on *it* clefts that one and the same sentence can be associated with more than one information structure. Finally, mismatches between syntactic and morphological structure are common (we discuss two important cases in Chapters 10 and 11).

3.2 False negative results

In a perfect world for syntacticians, the relation between a string's being a constituent and its passing the constituenthood tests (also called constituency tests) would be biconditional, as indicated in the "Dream world" column in Table 2.9. The world, however, is not made to order for syntacticians, and it turns out to be possible for constituents to fail one or more constituenthood tests. The actual state of affairs is thus as indicated in the "Real world" column of Table 2.9.¹²

If a string...	then it...	Dream world	Real world
passes the constituency tests,	is a constituent.	TRUE	TRUE
is a constituent,	passes the constituency tests.	TRUE	<u>sometimes FALSE</u>

Table 2.9: False negatives in constituency tests

In other words, the failure of a string to pass a constituenthood test can be a false negative result. In what follows, we present three such cases—constituents that fail at least some of the constituenthood tests

- ▶ because they are words rather than phrases,
- ▶ because they contain *finite* verbs, or
- ▶ because they are contained within so-called syntactic islands.

Phrasal versus lexical constituents.

Since single words are indivisible units, they are constituents by definition.¹³ Nevertheless, they don't necessarily behave on a par with multiword constituents. For instance, *cats* passes the constituenthood tests reviewed earlier in (112), but not in (113).

(112) Cats are not social animals. → They are not social animals.

- (113) a. *The* cats are hungry. → * *The* they are hungry.
b. *Tabby* cats are quite common. → * *Tabby* they are quite common.
c. Cats *without tails* are relatively rare. → * They *without tails* are relatively rare.

The reason for the grammaticality contrast in (112) and (113) is a systematic difference between the syntactic contexts in these examples. In (113), the word *cats* is accompanied by a determiner or a modifier of some sort, indicated by *italics*. In such contexts, *cats* combines with these other words to form a noun phrase, but it isn't a noun phrase in its own right. By contrast, *cats* in (112) is a bare, or unmodified, noun. As such, it functions as a noun and as a noun phrase at the same time. In other words, there are two levels of constituenthood: the **lexical** level, where single words are constituents by definition, and the **phrasal** level, where single words don't necessarily behave on a par with multiword constituents.

The constituenthood tests reviewed earlier turn out to be diagnostic only for phrasal constituents. Moving, questioning, and *it*-clefting lexical constituents, rather than phrasal ones, yields ungrammatical results, as illustrated in (114)–(125). As before, the relevant lexical constituent is underlined, and any material belonging with it to the same phrasal constituent is in *italics*.

Movement:

- (114) a. I fed *the* cats.
b. * Cats, I fed *the* ____.

- (115) a. Ali Baba returned from his travels wiser *than before*.
 b. * Wiser, Ali Baba returned from his travels ___ *than before*.
- (116) a. They arrived at the concert hall *more* quickly *than they had expected*.
 b. * Quickly, they arrived at the concert hall *more* ___ *than they had expected*.
- (117) a. The cat strolled across the porch with *a confident air*.
 b. * With, the cat strolled across the porch ___ *a confident air*.

Question/short answer:

- (118) a. * What did you see *the* ___?
 b. * Cats.
- (119) a. * How did Ali Baba return from his travels ___ *than before*?
 b. * Wiser.
- (120) a. * How did they arrive at the concert hall *more* ___ *than they expected*?
 b. * Quickly.
- (121) a. * How did the cat stroll across the porch ___ *a confident air*?
 b. * With.

It cleft:

- (122) a. Ordinary cats detest *the* smell *of citrus fruits*.
 b. * It is smell that ordinary cats detest *the* ___ *of citrus fruits*.
- (123) a. Ali Baba returned from his travels wiser *than before*.
 b. * It was wiser that Ali Baba returned from his travels ___ *than before*.
- (124) a. They arrived at the concert hall *more* quickly *than they had expected*.
 b. * It was quickly that they arrived at the concert hall *more* ___ *than they had expected*.
- (125) a. The cat strolled across the porch with *a confident air*.
 b. * It was with that the cat strolled across the porch ___ *a confident air*.

By contrast, the examples in (126)–(134) illustrate the grammatical results of moving, questioning, and *it*-clefting phrasal constituents that happen to consist of a single word (notice the absence of italicized material in this case). Examples for prepositional phrases are missing because prepositions, at least the ones in the examples that we have been using, require an object.

Movement:

- (126) a. I like cats.
 b. ✓ Cats, I like ___.

- (127) a. Ali Baba returned from his travels wiser.
 b. ✓ Wiser, Ali Baba returned from his travels ____.
- (128) a. They arrived at the concert hall quickly.
 b. ✓ Quickly, they arrived at the concert hall ____.

Question/short answer:

- (129) a. ✓ What do you like ____?
 b. ✓ Cats.
- (130) a. ✓ How did Ali Baba return from his travels ____ ?
 b. ✓ Wiser.
- (131) a. ✓ How did they arrive at the concert hall ____ ?
 b. ✓ Quickly.

It cleft:

- (132) a. Ordinary cats detest citrus.
 b. ✓ It is citrus that ordinary cats detest ____.
- (133) a. Ali Baba returned from his travels wiser.
 b. ✓ It was wiser that Ali Baba returned from his travels ____.
- (134) a. They arrived at the concert hall quickly.
 b. ✓ It was quickly that they arrived at the concert hall ____.

Finiteness

Testing for the constituenthood of verb phrases is more complicated than is testing for the constituenthood of other syntactic categories. First, there are no simple pro-forms for verb phrases. The best we can do is to use the periphrastic forms *do so* for substitution and *do what* for questions.¹⁴ (Notice that it's only *what*, rather than the entire pro-form *do what*, that moves to the beginning of a question.)

- (135) Substitution:
 a. She will write a book. → ✓ She will do so.
 b. The two boys could order tuna salad sandwiches. → ✓ The two boys could do so.
- (136) Question/short answer:
 a. What will she do? → ✓ Write a book.
 b. What could the two boys do? → ✓ Order tuna salad sandwiches.

Second, and more importantly, given our present focus on false negative results, verbs and the verb phrases that contain them come in two varieties, **finite** and **nonfinite**. Roughly speaking (see §8 for details), finiteness refers to whether the verb bears tense and agreement (finite) or not (nonfinite). Finite verbs can function on their own as the core of an independent sentence, whereas nonfinite verbs cannot. Now, two of the constituenthood tests—substitution and the question/short answer test—yield grammatical results regardless of a verb phrase’s finiteness, as shown in (137) and (138).

- (137) a. Substitution, nonfinite verb phrase:
 She will write a book. → ✓ She will do so.
 b. Substitution, finite verb phrase:
 She wrote a book. → ✓ She did so.
- (138) a. Question/short answer, nonfinite verb phrase:
 What will she do? → ✓ Write a book.
 b. Question/short answer, finite verb phrase:
 What did she do? → ? Wrote a book.

But the results from the other two tests are more complex. Movement of nonfinite verb phrases is grammatical,¹⁵ but movement of finite ones is not.

- (139) Movement, nonfinite verb phrase:
 a. (She says that) she will write a book, → ✓ (and) write a book, she will ____.
 b. though she may write a book → ✓ write a book though she may ____
- (140) Movement, finite verb phrase:
 a. (She says that) she wrote a book, → * (and) wrote a book, she ____.
 b. though she wrote a book → * wrote a book though she ____

In *it* clefts, nonfinite verb phrases are marginally acceptable in focus, whereas finite verb phrases are again clearly ruled out.

- (141) *It* cleft, nonfinite verb phrase:
 She will write a book. → ?? It is write a book that she will ____.
- (142) *It* cleft, finite verb phrase:
 She wrote a book. → * It is wrote a book that she ____.

To summarize: we have good evidence that nonfinite verb phrases are constituents. In the case of finite verb phrases, we have evidence for constituenthood from two of the four constituenthood tests. Given this slightly complex state of affairs, we will proceed as follows. We will make the simplifying assumption that the ungrammaticality of moving or focusing finite verb phrases has nothing to do with their constituenthood, but that it is due to some other reason, yet to be determined. (We give you a stab at solving the problem in Problem 10.2.) Having made this assumption, we are free to treat finite verb phrases as constituents on a par with their nonfinite

counterparts even though the syntactic behavior of the two types of verb phrases is not identical in all respects.

Chances are that you are a bit leery of the simplifying assumption just described. If so, think of it as comparable to taking out a loan. True, taking out a loan is risky, and taking out loans in a careless or irresponsible way can lead to financial disaster. Nevertheless, the credit market is a necessary and productive part of any modern economy. In a similar way, making simplifying assumptions in science can help us to make progress where we would otherwise be stumped by the complexity of the phenomena that we are investigating. Of course, we have to be careful about what simplifying assumptions we make. Otherwise, we end up fooling ourselves into believing that we are making progress, when in fact we are working on such a distorted model of reality that our work is worthless.

Apart from this wrinkle concerning finiteness, verb phrases behave just as we have come to expect from other constituent types. The tests yield grammatical results for verb phrases, but not for verbs.

(143) Substitution:

She will write a book. → * She will do so a book.

(144) Movement:

a. (She says that) she will write a book, → * and write, she will ___ a book.

b. though she may write a book → * write though she may ___ a book

(145) Question/short answer:

a. * What will she do a book?

b. * Write.

(146) *It* cleft:

She will write a book. → * It is write that she will ___ a book.

And once again, particular strings can be phrasal constituents in one syntactic context, but not in another. For instance, *write* isn't a phrasal constituent when it combines with a direct object, but it is when used on its own. This is the source of the grammaticality contrast between (143)–(146) and (147)–(150).

(147) Substitution:

She will write. → ✓ She will do so.

(148) Movement:

a. (She says that) she will write, → ✓ and write, she will ___.

b. though she may write → ✓ write though she may ___

(149) Question/short answer:

a. What will she do?

b. ✓ Write.

(150) *It* cleft:

She will write. → ? It is write that she will ____.

As we proceed, we will develop a model of phrase structure that readily explains the apparently variable behavior of verbs as constituents (or not).

Islands

In (151a), *the doctors* is a constituent, as is evident from the possibility of substituting a pronoun for the string, as in (151b).

- (151) a. We should invite the lawyers and the doctors.
b. We should invite the lawyers and them. (pointing to the doctors)

But although *the doctors* passes the substitution test, the other three tests yield ungrammatical results.

- (152) * The doctors, we should invite the lawyers and ____.
(153) a. * Who should we invite the lawyers and ____?
b. * The doctors.
(154) * It is the doctors that we should invite the lawyers and ____.

Take Note

Earlier, we pointed out that question formation can be thought of as a combination of substitution and movement. The parallel between movement and question formation in (152), (153) and *it* clefting in (154) suggests that the latter, too, involves movement in some way. In the remainder of this section, we will therefore use the term ‘movement’ in a broad sense to include all three constituenthood tests in (152)–(154).

Notice that there is nothing semantically or conceptually ill-formed about (152)–(154), since it is possible to paraphrase the intended meaning grammatically as in (155)–(157).

- (155) ✓ The doctors, we should invite ____ together with the lawyers.
(156) a. ✓ Who should we invite ____ together with the lawyers?
b. ✓ The doctors.
(157) ✓ It is the doctors that we should invite ____ together with the lawyers.

Taken together with the grammaticality of (151b), the contrast between (152)–(154) and (155)–(157) shows that movement of the noun phrase *the doctors* is somehow prevented by the specific syntactic configuration in (152)–(154). Ross (1967) introduced the metaphorical term **island** for configurations in which movement is blocked where it is expected to be possible. The conceit underlying the term is that the constituents that might be expected to move, but can’t, are stranded on an island like castaways.¹⁶

Ross identified several types of islands, including conjoined phrases like those in (152)–(154), and his work has given rise to an enormous body of literature. Our purpose here is neither to catalog the types of islands nor to pursue the proper linguistic analysis of them (we return to the topic in Chapter 13), but simply to point out that constituenthood tests based on movement will yield false negative results for phrasal constituents if they happen to be contained within islands.

Representing syntactic constituenthood

4

In Chapter 1, § 5.1, we introduced tree diagrams as a convenient way of representing syntactic structure. For mathematicians working in the field of graph theory, the formal properties of tree diagrams are interesting in their own right, but for syntacticians, the interest of trees lies in the fact that they are **representations**, or **models**, of constituent structure. In other words, the graphic structure of a tree on the page is intended as a statement (or at least, a hypothesis) about the way that speakers group together syntactic elements in their minds. In a good model, the properties of the model correspond straightforwardly to the properties of the domain of inquiry. Such a close correspondence allows us to state observations and generalizations about the domain of inquiry without undue complication. Moreover, if we're lucky, we might even be able to use our understanding of the model's formal properties as a sort of conceptual lever to generate hypotheses and to discover facts and generalizations about the domain of inquiry that would otherwise escape notice.

In light of these considerations, let's consider the sentence in (158), focusing particularly on the constituenthood of the underlined string.

(158) The secretary drafted the letter.

According to the two tests that apply to finite verb phrases, the string *draft the letter* is a constituent.

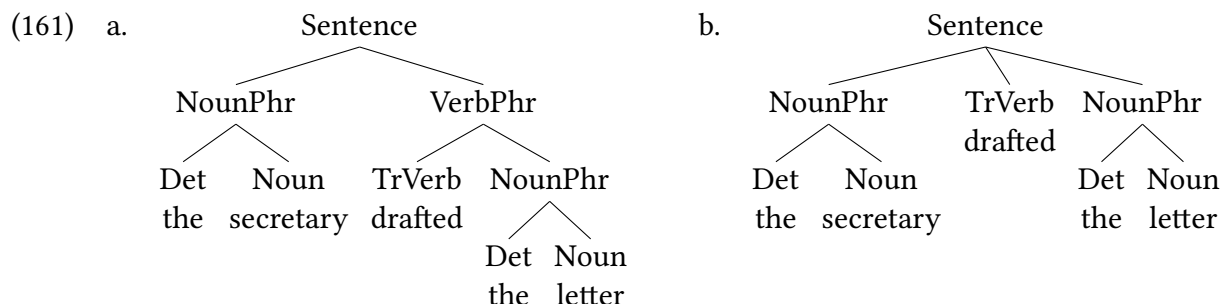
Substitution:

(159) The secretary drafted the letter. → The secretary did so.

Question/short answer:

- (160) a. What did the secretary do?
b. Draft the letter.

Having established this fact, let's now consider two alternative representations of the sentence. We've already encountered (161a) in Chapter 1, § 5.1. (161b) is an alternative, 'flatter' tree.



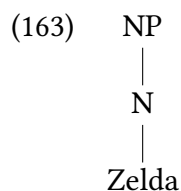
At first glance, the flatter tree might be argued to be preferable on the grounds that it is simpler in the sense of containing fewer nodes. But let's focus on the question of which tree is a better representation of the sentence as it exists in a speaker's mind. Specifically, let's ask whether either of the trees in (161) has some graphic property that corresponds to the results of the constituenthood tests in (159) and (160). In (161a), the answer is 'yes', since there is a single node (the one labeled `VerbPhr`) that dominates all and only the words in the string *drafted the letter*. We say that the node **exhaustively dominates** the string (for more details, see §4.2. By contrast, the tree in (161b) lacks such a node and has no other graphic property corresponding to the string's constituenthood. Clearly, then, (161a) is a more useful model of the sentence, because it follows the natural convention in (162).

(162) Syntactic constituents are represented graphically as nodes in a tree.

4.1 Basic terms and relations

Dominance

It is convenient to represent syntactic structure by means of graphic structures called **trees**; these consist of a set of **nodes** connected by **branches**. It is sometimes useful to distinguish between two types of nodes: **terminal nodes**, which are labeled with vocabulary items, and **nonterminal nodes**, which are labeled with syntactic categories. In a very simple tree like (163), the only terminal node is labeled `Zelda`, and the two nonterminals are labeled `N` and `NP`.



In (163), no node has more than one branch emanating from it. The nodes in such a simple tree are related to one another by a single relation, the **dominance** relation. Dominance is a theoretical primitive; in other words, it is an irreducibly basic notion, comparable to a mathematical concept like point. Dominance is represented graphically in terms of top-to-bottom order. That is, if a node A dominates a node B, A appears above B in the tree. In (163), for instance, NP dominates N and `Zelda`, and N dominates `Zelda`. The node that dominates all other nodes in a tree, and is itself dominated by none, is called the **root node**.

Dominance is a **transitive** relation (in the logical sense of the term, not the grammatical one). In other words, if A dominates B, and if B dominates C, then it is necessarily the case that A dominates C.

Does a node A dominate itself? If the answer to this question is defined to be yes, then the dominance relation is **reflexive** (again, in the logical sense of the term, not the grammatical one); if not, then it is **irreflexive**. In principle, it is possible to build a coherent formal system based on either answer. From the point of view of syntactic theory, it is preferable to define dominance as reflexive because it simplifies the definitions of linguistically relevant derived relations such as c-command and binding.

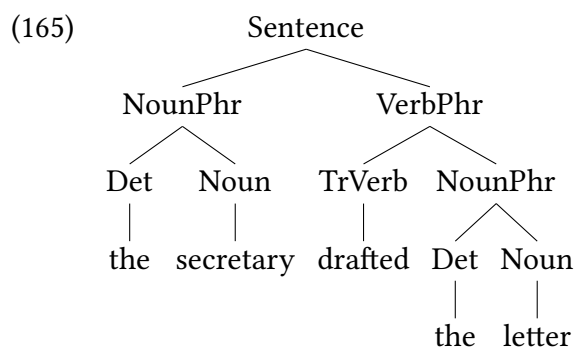
An important subcase of dominance is **immediate dominance**. This is the case where the two nodes in question are connected by a single branch without any intervening nodes. More formally, immediate dominance is defined as in (164).

- (164) A **immediately dominates** B if and only if
- a. A dominates B, and
 - b. there is no node C, distinct from A and B, such that A dominates C and C dominates B.

Unlike dominance, immediate dominance is not a transitive relation. This is apparent from even a simple structure like (163), where NP immediately dominates N, and N immediately dominates *Zelda*, but NP does not immediately dominate *Zelda*.

Precedence

In general, trees are more complex than the very simple case in (163), and they contain nodes that have more than one branch emanating from them, as in (165) (=Chapter 1, (51c)).



In such trees, two nodes are related either by dominance or by a second primitive relation, **precedence**. Precedence is represented graphically in terms of left-to-right order. Dominance and precedence are mutually exclusive. That is, if A dominates B, A cannot precede B, and conversely, if A precedes B, A cannot dominate B. Like dominance, precedence is a transitive relation, and just as with dominance, there is a nontransitive subcase called **immediate precedence**. The definition of immediate precedence is analogous to that of immediate dominance; the term *dominates* in (164) is simply replaced by *precedes*. The difference between precedence, which is transitive, and immediate precedence, which isn't, can be illustrated in connection with (165). The

first instance of `Noun` (the one that immediately dominates `secretary`) both precedes and immediately precedes `TrVerb`, and `TrVerb` in turn both precedes and immediately precedes the second instance of `NounPhr` (the one that dominates `the letter`). The first instance of `Noun` precedes the second instance of `NounPhr`, but not immediately.

4.2 Derived terms and relations

Kinship terminology

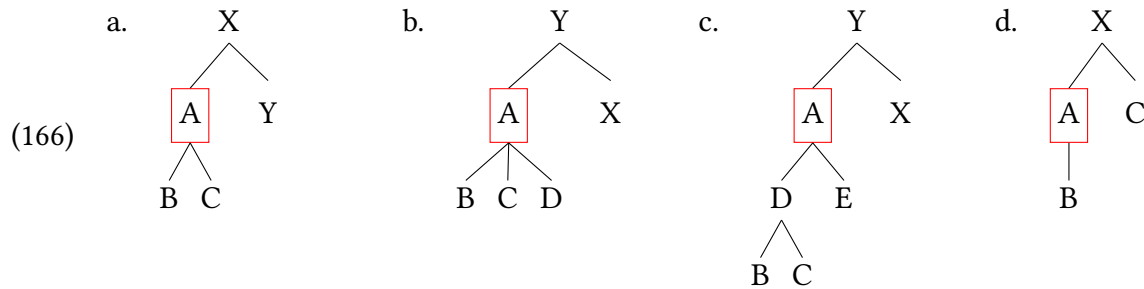
Certain relations among nodes are often expressed by using kinship terms. If `A` dominates `B`, then `A` is the **ancestor** of `B`, and `B` is the **descendant** of `A`. If `A` immediately dominates `B`, then `A` is the **parent** of `B`, and `B` is the **child** of `A`. If `A` immediately dominates `B` and `C`, then `B` and `C` are **siblings**. Often, the female kinship terms **mother**, **daughter**, and **sister** are used for the corresponding sex-neutral ones. In (165), `Sentence` is the ancestor of every other node in the tree. The terminal `secretary` is the child of the first `Noun`. The first `NounPhr` and `VerbPhr` are sisters, and so are `TrVerb` and the second `NounPhr`, but `drafted` and the second instance of `the` are not (they don't have the same mother). Notice, incidentally, that syntactic trees are single-parent families. Most theories of syntax do not allow nodes with more than one parent.

Branching

Depending on the number of daughters, nodes are classified as either **nonbranching** (one daughter) or **branching** (more than one daughter). A more detailed system of terminology distinguishes nodes that are **unary-branching** (one daughter), **binary-branching** (two daughters), and **ternary-branching** (three daughters). Nodes with more than three daughters are hardly ever posited in syntactic theory. Indeed, according to an influential hypothesis (Kayne 1984), Universal Grammar allows at most binary-branching nodes. According to this hypothesis, it is a **formal universal** of human language that no node can have more than two branches.

Exhaustive dominance

Some node `A` **exhaustively dominates** two or more nodes `B`, `C`, ... if and only if `A` dominates all and only `B`, `C`, ... For instance, `A` dominates the string `B C` in (166a)–(166c), but exhaustively dominates it only in (166a). In (166b) and (166c), `A` fails to exhaustively dominate `B` and `C` because it runs afoul of the *only* condition (it dominates too much material). In (166d), `A` fails to exhaustively dominate `B` and `C` for the opposite reason. `A` doesn't dominate `C`, because it runs afoul of the *all* condition (it dominates too little material).



As is evident from (166b)–(166d), dominance is a necessary but not a sufficient condition for exhaustive dominance.

Regarding scientific models

5

We conclude this discussion of the model character of syntactic representations by emphasizing that models are just that—models, and not the actual domain of inquiry itself. The purpose of any model is to help us understand some part of reality that is too complex to understand in all of its detail, at least all at once. This means that models are partial in two respects. A first way is that they leave out properties of a phenomenon that aren't relevant from a particular point of view. This fact is often stated as the maxim “Don't mistake the map for the territory”. For instance, a mountaineer's map might show topographical information in great detail, but completely ignore political boundaries, whereas just the reverse might be true of a diplomat's map. Analogously, in linguistics, syntactic models leave out many important properties of language, such as real-world plausibility, pragmatic felicity, the location of intonation breaks, variation based on social factors like race, gender, age, and other aspects of identity, and so on. These are the focus of other subdisciplines of linguistics, which in turn might ignore syntactic structure. Our attention on the aspects of language we are working on should not be interpreted as trivializing the aspects we are not working on.

A second way that models are partial is that they are subject to revision as our understanding of a particular domain improves and deepens. Another way of putting this—which sounds more impressive—is to say that scientific progress is possible.

Notes

6

1. These distributional lists are built based on Nagelhout et al. (2018)
2. For the (*) notation, see the glossary entry [asterisk \(*\)](#).
3. Originally, English, like the other Germanic languages, allowed adjective phrase modifiers only in prenominal position. After the Norman Conquest in 1066, Norman French became the official language of England and remained so for several centuries. In Norman French, as in the other Romance languages, adjective phrase modifiers were primarily postnominal. The word order variation illustrated in (34) and (36) and the stylistic connotations of the postnominal order are thus the result of language contact. See also Note 4.

The situation in English is the reverse of that in [Walloon](#), a variety of French spoken in Belgium. Unlike in standard French, adjective phrases modifying nouns are prenominal in Walloon. This is the result of language contact with Flemish, a variety of Germanic.

4. Once again, the unusual situation in English is a result of the complicated history of the language (see Note 3). Originally, English, like the other Germanic languages, allowed only inflectional comparison. Contact with Norman French introduced the option of analytical comparison. In the modern language, most adjectives are associated with one or the other of the options. As a rule of thumb, the inflectional option is used for short adjectives and the analytic option for long ones. But what exactly counts as “short” and “long” is variable across speakers and sometimes even within the same individual.
5. The word-final hyphen on the superlative forms is intended to indicate that further endings must be added before they are full-fledged German words.
6. Certain adjectives in Romance do require inflectional comparison. These are irregular adjectives whose comparison involves **suppletion** (that is, the stems from which the comparative and/or superlative degrees are formed are etymologically unrelated to the positive). Some examples of inflectional comparison in Romance are French *bon* ‘good’ versus *mieux* ‘better’ and *mal* ‘bad’ versus *pire* ‘worse’. Notice that the English counterparts show suppletion as well. Suppletion is not restricted to adjective comparison; the relation between *go* and its past tense form *went* is also suppletive (*went* is etymologically related to the *wend* of *to wend one’s way*).
7. It is useful to distinguish between form (morphology) and meaning (reference). Ordinarily, forms with past-tense morphology are used to refer to an event or state prior to the time of speaking. However, it is possible in English to use past-tense forms to refer to events or states contemporaneous with a reported time of speaking; this is the so-called sequence-of-tense phenomenon in reported speech, illustrated in (i).

- | | | |
|-----|------------------------------------|-------------------|
| (i) | a. He said, “They know a lot”. | (direct speech) |
| | b. He said (that) they knew a lot. | (reported speech) |

As is evident from (ii) and (iii), *can*, *may*, *shall*, and *will* continue to maintain a productive morphological relationship with *could*, *might*, *should*, and *would*, respectively, in sequence-of-tense contexts.

(ii) Direct speech:

- a. She said, “That may be so”.
- b. He told us, “You won’t last long”.

(iii) Reported speech:

- a. She said (that) that might be so.
- b. He told us (that) we wouldn't last long.

Nevertheless, in keeping with the point made in the body of the text, the morphological relationship between the modals in (ii) and their counterparts in (iii) is purely formal, lacking the referential underpinning evident in (6).

- (iv) a. They know a lot { ✓ now, * then }.
- b. They knew a lot { * now, ✓ then }.

We thank Aaron Dinkin for drawing our attention to the sequence-of-tense phenomenon.

8. For reasons not well understood, gerunds of progressive forms, as in (i), are unacceptable.

- (i) * I like be-ing learn-ing Spanish.

9. Under certain discourse conditions, English allows the question word to remain **in situ** (that is, in the place where it substitutes before it moves), as illustrated in (i). See Chapter 6 for more discussion.

- (i) a. Who did you see? (information question or echo question)
- b. You saw who? (only echo question)

10. It is worth pointing out that focus-ground partitioning is relevant not just for *it* clefts, but also for questions and (short) answers. The focus in a question is the unknown information expressed by the question word. A short answer to a question consists of a focus and no other material. Repeating the ground of the question yields a full sentence (that is, includes material apart from the focus).

- (i) a. **What animals** *detest the smell of citrus fruits?* (question)
- b. **Ordinary cats.** (short answer)
- c. **Ordinary cats** *detest the smell of citrus fruits.* (full answer)
- (ii) a. **What** *do ordinary cats detest?* (question)
- b. **The smell of citrus fruits.** (short answer)
- c. *Ordinary cats detest* **the smell of citrus fruits.** (full answer)

11. Notice that the resultant interpretation is distinct from the one that would result from first combining *cat* and *the* and then combining *the cat* with the relative clause. The denotation of *the cat* is a unique member of the set of cats. Combining *the cat* with the relative clause would attribute to this unique entity the property of having chased the rat. Given that *the cat* already denotes a unique entity, the property of having chased the rat wouldn't be a defining property of the cat in question; it would simply be an additional, more or less accidental one. The interpretation in question is possible semantically, and it can be expressed by using a non-restrictive relative clause, as in (i).

- (i) This is the cat, which (by the way) chased the rat.

But (i) is not synonymous with (104), where the rat-chasing property is restrictive, that is, defining.

12. In contrast to the statement in row 2 of Table 2.9, the statement in (i), derived from the statement in row one of Table 2.9 by the *modus tollens* rule of propositional logic, is true.

- (i) If a string isn't a constituent, then it doesn't pass the constituenthood tests.

13. For simplicity, we ignore syntax-morphology mismatches of the sort alluded to earlier.

14. For completeness, we should mention that *do so* substitution and the question test for verb phrases are subject to a semantic restriction. Specifically, *do so* and *do what* cannot substitute for verb phrases with so-called stative verbs like *know* or *want*.

- (i) a. They { know her parents, want the cookies }.
- b. * They do so.
- (ii) a. What do they do?
- b. * { Know her parents, want the cookies }.

As their name implies, stative verbs refer to states (rather than to activities or accomplishments), and a reasonably reliable diagnostic for them is their inability to appear in the progressive construction.

- (iii) a. * They are { knowing her parents; wanting the cookies }. (stative verb)
- b. ✓ They are { meeting her parents; eating the cookies }. (nonstative verb)

Since *do* is the prototypical activity verb, it is not surprising that expressions containing it, like *do so* and *do what*, give rise to a semantic clash when they substitute for verb phrases containing stative verbs.

15. It is true that movement of nonfinite verb phrases in out-of-the-blue contexts, as in (i), is not very felicitous:

- (i) Write a book, she will ____.

But it is clearly grammatical given appropriate discourse contexts, as the examples in the text show.

16. The island metaphor is not perfect. Although constituents can't move out of an island, islands as a whole are able to move, as shown in (i)–(iii).

- (i) ✓ The doctors and lawyers, we should invite ____.
- (ii) a. ✓ Who should we invite ____?
- b. ✓ The lawyers and the doctors.
- (iii) ✓ It is the lawyers and the doctors that we should invite ____.

Exercises and problems

7

Exercise 2.1

Using the constituenthood tests reviewed in this chapter, determine whether the underlined strings in the following sentences are (phrasal) constituents. Some of the sentences below have more than one interpretation. Begin by focusing on the ordinary interpretation, and then consider any more unusual readings.

Take Note

Here and throughout the exercises in the book, your answer should include not just your conclusions, but also the supporting evidence. What we mean by the term **evidence** is one or more linguistic expressions (sentences or phrases) together with an indication of their grammaticality (checkmark or asterisk). Sometimes providing the evidence is all that is necessary. At other times, a bit of discussion is required to explain the relevance of the evidence to the question at hand.

- (1) a. They put the car in the garage.
b. They put the car in the garage.
c. They put the car in the garage.
- (2) a. They know the guy with the fedora.
b. They know the guy with the fedora.
- (3) a. They threw the towel in the closet.
b. They threw in the towel.

Exercise 2.2

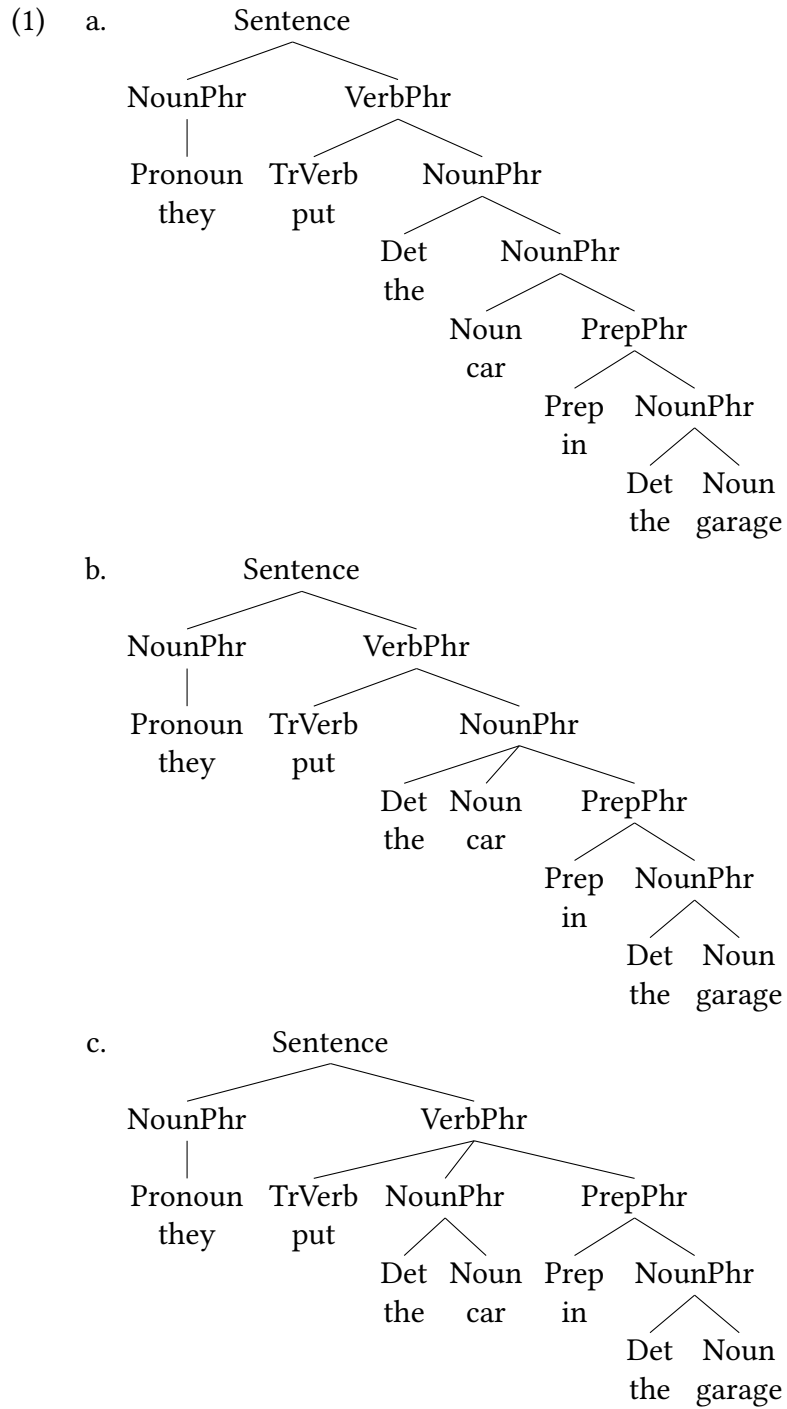
How well does each of the trees in (1) and (2) represent the syntactic structure of the sentence it is intended to represent? Here are key questions to consider:

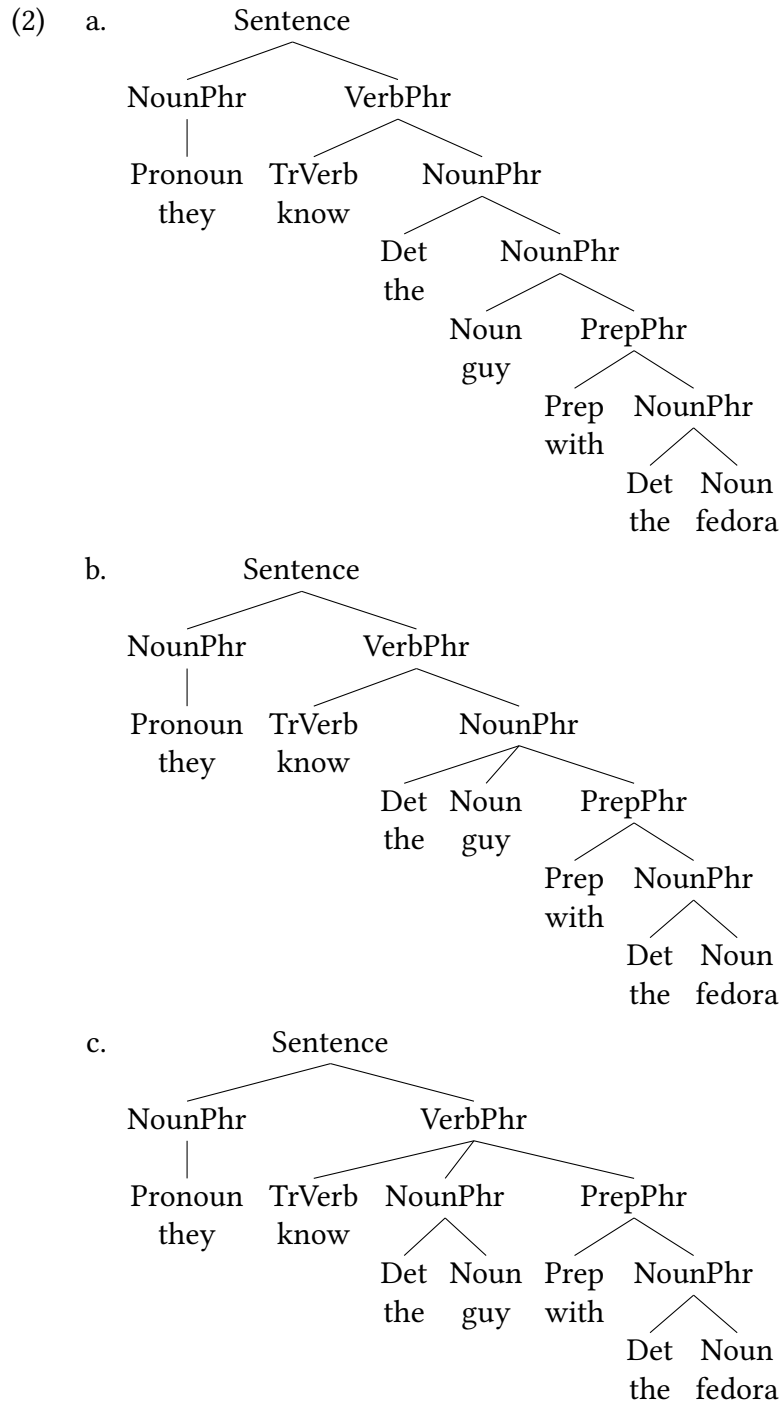
- Are any strings represented as constituents that shouldn't be?
- Are any strings not represented as constituents that should be?
- Are any of the trees misleading in other respects?

Background Info

Abbreviations for syntactic categories:

Det - determiner (roughly speaking, article or demonstrative pronoun), NounPhr - noun phrase, PrepP - prepositional phrase, TrVerb - transitive verb, VerbPhr - verb phrase





Exercise 2.3

Particle verbs in Germanic languages pose a number of interesting syntactic puzzles. This exercise investigates a limited component of those puzzles. In English, like other Germanic languages, many constructions have a preposition-like particle following the verb.

- (1) a. I messed up the assignment.
- b. I climbed up the stairs.
- c. I looked after my friend.

As it turns out, there are a number of sub-categories of these particle verbs, some of which can be identified based on their constituent structure. Specifically looking at the constituency of the potential prepositional phrase following the verb, note the difference between *climb up* and *mess up* in how they behave when testing for a PP constituent using the it-cleft constituency diagnostic.

- (2) a. It is up the stairs that I climbed.
- b. *It is up the assignment that I messed.

This suggests that in an example like (1b) there is a PP constituent, but there is no PP constituent in an example like (1a).

- (3) a. Climb [up the stairs]
- b. *Mess [up the assignment]

For the sake of this exercise, we can use the term prepositional verb for a particle verb construction where the P forms a PP constituent with the following noun phrase, and the term phrasal verb for a particle verb construction where the P does not form a constituent with the following noun phrase.

- (4) a. Prepositional Verb: [_{VP} V [_{PP} P NP]]
- b. Phrasal Verb: [_{VP} V P NP]]

For this exercise, you will look at the English phrase *turn on*. This phrase is multiply-ambiguous, as we illustrate below.

- (5) a. Alex turned on College Avenue. (physical turning onto a road)
- b. Alex turned on the light. (activation)
- c. Alex turned on Jay.
 - i. sexual arousal – Alex aroused Jay
 - ii. betrayal – Alex betrayed Jay

Your task is to use constituency diagnostics (or other differences you note) to say whether the ambiguities here are lexical ambiguities or structural ambiguities. That is, do these interpretations all have the same syntactic structure and just mean different things (lexical ambiguity)? Or are there different syntactic structures involved (syntactic ambiguity)? Or is it some of both?

If you are a native speaker of English, you can provide the judgments for the sentences you create on your own. If you are not a native speaker of English, you will need to work with someone who is, or ask someone who is for judgments on the diagnostic sentences you construct.

We specifically recommend testing for the potential PP constituent, though you can note other patterns that you find as well.

Exercise 2.4

As we mentioned in this chapter, children's stories and poetry are often excellent instances of nonce words (nonsense words) being used creatively for expressive effect. Lewis Carroll's poem "Jabberwocky" is another such instance, and gives an opportunity to explore our intuitions about these invented words.

Jabberwocky, by Lewis Carroll

'Twas brillig, and the **slithy** toves
Did gyre and gimble in the wabe:
All mimsy were the borogoves,
And the **mome raths outgrabe**.

"Beware the Jabberwock, my son!
The jaws that bite, the claws that catch!
Beware the Jubjub bird, and shun
The frumious Bandersnatch!"

He took his vorpal sword in hand;
Long time the **manxome** foe he sought—
So rested he by the **Tumtum** tree
And stood awhile in thought.

And, as in uffish thought he stood,
The Jabberwock, with eyes of flame,
Came whiffing through the tulgey wood,
And burbled as it came!

One, two! One, two! And through and through
The vorpal blade went snicker-snack!
He left it dead, and with its head
He went **galumphing** back.

"And hast thou slain the Jabberwock?
Come to my arms, my **beamish** boy!"

O **frabjous** day! Callooh! Callay!”
He chortled in his joy.

’Twas brillig, and the slithy toves
Did gyre and gimble in the wabe:
All mimsy were the borogoves,
And the mome raths outgrabe.

(*Through the Looking Glass*, Lewis Carroll, 1871)

Your task in this exercise is identify the syntactic categories of each of the words bolded in the poem. For list items with phrases containing multiple words, identify the syntactic category for each. For each word, explain the diagnostic evidence that supports your conclusion. This will include evidence from both morphological and syntactic distribution, but can also include additional intuitions that you have, just be as specific as possible about where you think the intuition comes from.

There are not specifically correct answers here, in the sense that these words are clearly made up. But for some of them, native English speakers will have very clear judgments about what syntactic category they must be (which arise from specific properties of their distribution). For other words here, there may be multiple different (“right”) answers, in the sense that there are multiple parses/structures of the sentence that are possible. The point is not to get a right answer, but to build a strong argument, based on specific evidence.

Problem 2.1

The [substitution test](#) discussed in detail in this chapter and the substitution operation introduced in [Chapter 1](#) are not identical, but they are related. In a few sentences, explain how.

Appendix: Finiteness in English

8

Take Note

A number of points in the constituency discussion in this chapter run into questions about how finite verbs pattern differently from nonfinite verbs in English. This appendix details finiteness in English in additional detail.

8.1 Verb forms

English verbs can take the various forms listed in Table 2.10.

Name	Description	Examples
bare	Default form in present tense sentences. Also appears in various nonfinite contexts, such as in <i>to</i> infinitive clauses, after modals , and in connection with do support .	They <i>play</i> together. I <i>see</i> . I want to <i>play</i> . They need to <i>see</i> you. They may <i>play</i> . We will <i>see</i> . They don't <i>play</i> lacrosse. Do you <i>see</i> ?
-s	Special form used in the present tense to mark agreement with a third person singular subject.	Lukas <i>runs</i> for miles. The cat <i>enjoys</i> treats.
-ing	As present participle , combines with auxiliary be to express various aspectual nuances. Also occurs on its own as the gerund .	The cat is <i>playing</i> with the yarn. I was <i>seeing</i> her until a week ago. <i>Playing</i> with landmines is dangerous. We always enjoy <i>seeing</i> you.
past tense	The morphologically simplest way of expressing past tense.	The cat <i>played</i> with the yarn. We <i>saw</i> a deer.
past participle	Combines with auxiliary be to form passive forms. Combines with auxiliary have to form perfect forms.	Baseball is <i>played</i> all over the world. She was last <i>seen</i> off Mozambique. They have never <i>played</i> lacrosse. I had never <i>seen</i> it before.

Table 2.10: Verb forms in English

- ▶ For all verbs, the *-ing* form is predictable from the bare form, being derived from it by the affixation of *-ing* (*play-ing*, *see-ing*, *hav-ing*, *be-ing*).
- ▶ The *-s* form is similarly predictable for most verbs, with major (*be*, *is*) or minor (*have*, *has*) exceptions.
- ▶ The past tense and past participle forms are predictable from the bare form in some cases, but not in others. With regular verbs, the past tense and past participle forms are homonymous and are formed by affixing *-ed* to the bare form. Why bother distinguishing between the two forms? That is, why not just posit a single past form? The reason is that the past tense and the past participle are distinct for irregular verbs such as *go* (*went*, *gone*), *see* (*saw*, *seen*), *sing* (*sang*, *sung*), or *write* (*wrote*, *written*).

- ▶ The past tense form is sometimes called the **-ed form** (read “ee dee form”) because *-ed* is the default expression of the past tense morpheme.
- ▶ The past participle form is sometimes called the **-en form** (read “ee enn form”) because *-en* is a common expression of the past participle morpheme (though not the default expression, which, as just mentioned, is homonymous with the default past tense morpheme).
- ▶ A verb’s bare form, past tense, and past participle (in other words, exactly the forms that aren’t generally predictable) are known as its **principal parts**. (1) shows some examples.

- (1)
- a. play, played, played
 - b. come, came, come
 - c. stand, stood, stood

8.2 Finiteness

Finiteness of verbs

The verb forms just discussed are classified into two categories: **finite** and **nonfinite**. Finite verbs can function on their own as the core of an independent sentence, whereas nonfinite verbs cannot. Rather, nonfinite verbs must ordinarily combine with a **modal**, an **auxiliary verb**, or the infinitival particle *to*.

A verb’s *-s* form and past tense form are always finite, and the two participles (the *-ing* and *-en* forms) are always nonfinite.

- (2) Finite verb:
- a. ✓ He *gives* a performance every week.
 - b. ✓ He *gave* a performance every week.
- (3) Nonfinite verb:
- a. ✓ She is *giving* a performance here tonight.
 - b. ✓ She has *given* a performance here in the past.

To complicate matters a bit, a verb’s bare form can be either finite or nonfinite. Bare forms that occur on their own are finite and express present tense. Otherwise, bare forms are nonfinite. Examples are given in (4) and (5).

- (4) Finite verb:
- a. ✓ We *give* performances all the time.
- (5) Nonfinite verb:
- a. ✓ We will *give* a performance tomorrow.
 - b. ✓ We promised to *give* a performance soon.

Table 2.11 summarizes the above discussion.

Example	Verb form	Finite?
play-s, see-s	3sg present tense	yes
play-ed, saw	past tense	
play, see	bare (present tense)	
	bare (otherwise)	no
play-ing, see-ing	-ing	
play-ed, see-n	past participle	

Table 2.11: Verb forms and finiteness in English

Finiteness of clauses

Finiteness is a property not only of verbs, but also of clauses. Ordinary clauses—ones that can stand alone—are finite. All finite clauses contain exactly one finite element per clause. In the simplest case, this finite element is a finite verb, as illustrated in (6).

- (6) They helped us. (finite clause, finite main verb)

It is also possible for a finite clause's finite element to be a finite **auxiliary verb** or a **modal** (finite by definition). In this case, illustrated in (7), the entire clause is then finite, the auxiliary verb or modal is finite, but the main verb is nonfinite.

- (7) They did help us. (finite clause, finite auxiliary verb, nonfinite main verb.)

Clauses can also be nonfinite. The verb of a nonfinite clause is always nonfinite. (8) illustrates the case that is easiest to recognize—the case where the nonfinite clause (enclosed in square brackets) contains the particle *to*.

- (8) They agreed [to help us]. (nonfinite clause, nonfinite main verb.)

You might be wondering why we classify the subordinate-clause verb in (8)—*help*—as nonfinite. After all, *help* is a bare verb form, and so in principle might be finite (recall Table 2.11). The reason is that the verb neither expresses present tense nor agrees with a third-person singular subject. We can see this clearly by changing the past tense verb of the main clause to present tense and the main-clause subject to third-person singular. As shown in (9), *help* does not change to *help-s*, as we would expect if it were finite.

- (9) He always agrees [to { help, *help-s } us].

The same reasoning extends to cases where the nonfinite clause has a subject of its own. The examples in (10) and (11) show that neither a subordinate-clause nor a main-clause third-person subject causes the bare verb to change form.

- (10) a. We expect [her to { help, *help-s } us].
b. She expects [him to { help, *help-s } us].

- (11) a. We make [her { help, *help-s } us].
 b. She makes [him { help, *help-s } us].

We conclude from this that the bare forms are nonfinite, as are the clauses containing them.

Table 2.12 summarizes the above discussion. The relevant clauses are uniformly delimited by square brackets. In the general case, the yes/no values agree across columns; it is only the second row that contains a mismatch.

Example	Is the clause finite?	Does the clause contain a finite element?	Is the main verb finite?
[They helped us] .	yes	yes	yes
[They did help us] .	yes	yes	no
He always agrees [to help us] .	no	no	no
She expects [him to help us] .	no	no	no
He makes [her help us] .	no	no	no

Table 2.12: Clauses and finiteness in English

Some basic linguistic relations

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In Chapters 1 and 2, we presented various pieces of evidence for the existence of syntactic structure in human language. The facts presented there raise a simple question—what is the basis of syntactic structure? In this chapter, we introduce three fundamental linguistic relationships that underlie syntactic structure, which will lay the foundation for discussions that follow. Two of these—argumenthood and modification—are at bottom semantic relationships (although the

expression of argumenthood is more constrained in natural language than purely semantic considerations would dictate). The third—predication—is arguably purely syntactic. The chapter also presents and illustrates two further basic linguistic concepts that are related but not identical: thematic roles and grammatical relations.

Argumenthood

1

1.1 Semantic valency

Background Info

Semantics borrows a lot of formalisms from math and logic: one we will refer to here is a **function**. For those of us who are allergic to math, a function relates an input to an output: you can think of it metaphorically as a machine that takes some input and for each input, generates some output.

A very rudimentary function, for example, is a function that adds 2 to an input.

Input	Relationship	Output
1	+2	3
5	+2	7
10	+2	12
20	+2	22
100	+2	102

The most obvious factor that determines how vocabulary items combine in sentences has to do with their meaning, a point most conveniently illustrated with verbs. From the point of view of a simple formal semantics, the verb *laugh* is a function from entities to truth values, as illustrated in (1). Entities that laugh are associated with the value T(rue); entities that don't with the value F(alse). In the possible world described in (1), Beatrice, Alex, Charis, and Xiaoxing laugh, and Maisha and Langston don't.

Extra Info

By convention, entities (i.e. individual elements) are indicated by **boldface**, sets of entities are enclosed in curly brackets ($\{ \}$), and ordered pairs are enclosed in angle brackets ($\langle \rangle$). It is also conventional to indicate denotations (i.e. the formal semantic properties) of expressions by enclosing the expressions in special double square brackets ($\llbracket \rrbracket$).

$$(1) \llbracket \text{laugh} \rrbracket = \left\{ \begin{array}{ll} \text{Beatrice} & \rightarrow T, \\ \text{Maisha} & \rightarrow F, \\ \text{Langston} & \rightarrow F, \\ \text{Alex} & \rightarrow T, \\ \text{Charis} & \rightarrow T, \\ \text{Xiaoxing} & \rightarrow T \end{array} \right\}$$

Laugh can combine with a single **argument**, which denotes an entity. Intuitively, we can think of arguments as the central participants in a situation/event: a laughing event necessarily includes a laugher (and doesn't necessarily include any other participant), so we say that *laugh* takes one argument. Combining *laugh* with an argument (say, *Alex*) has a syntactic effect and a corresponding semantic effect. The syntactic effect is to yield the sentence in (2a). (The semantic contribution of the past tense morpheme *-ed* is irrelevant for present purposes, and so we will ignore it in what follows.) The corresponding semantic effect is to apply the function in (1) to the argument; that is, to select the relevant the argument in the function and to return the associated value. In the example at hand, the sentence comes out as true.

- (2) a. Alex laughed.
b. $\llbracket \text{Alex laughed} \rrbracket = T$

But combining *Maisha* with *laughed* yields *Maisha laughed*, which is false in the imaginary (and simplified) world under consideration.

In addition to denoting simple functions, verbs can also denote recursive functions. For instance, a transitive verb denotes a function from entities to a second function, the latter of the same type as just described for the intransitive verb *laugh* (a function from entities to truth values). So the transitive verb *invite* might denote the function in (3).

$$(3) \llbracket \text{invite} \rrbracket = \left\{ \begin{array}{ll} \text{Tre} & \rightarrow (\text{Maisha} \rightarrow T), \\ \text{Langston} & \rightarrow (\text{Maisha} \rightarrow T), \\ \text{Ruth} & \rightarrow (\text{Maisha} \rightarrow F), \\ \text{Tre} & \rightarrow (\text{Alex} \rightarrow F), \\ \text{Langston} & \rightarrow (\text{Alex} \rightarrow F), \\ \text{Ruth} & \rightarrow (\text{Alex} \rightarrow T) \end{array} \right\}$$

Combining *invite* with a **theme argument** like *Langston*—that is, the participant who is being invited—has the syntactic effect of yielding the phrase in (4a). As before, the corresponding semantic effect is to select the entity denoted by the argument in (3) and to return the associated values, as shown in (4b).

- (4) a. invited Langston.
b. $\llbracket \text{invited Langston} \rrbracket = \left\{ \begin{array}{ll} (\text{Maisha} \rightarrow T), \\ (\text{Alex} \rightarrow F) \end{array} \right\}$

Further combining *invited Langston* with an **agent argument** (say, *Maisha*) yields the sentence in (5a) and the truth value in (5b). This second step in the derivation of a transitive sentence is exactly equivalent to the first and only step that is necessary in an intransitive sentence.

- (5) a. Maisha invited Langston.
 b. $\llbracket \text{Maisha invited Langston} \rrbracket = T$

It is important to understand that the order of the arguments in (3) reflects derivational order (the order in which the arguments combine structurally), not their superficial linear order. Given purely semantic considerations, it is equally easy to write functions in which the derivational order is congruent with the linear order. Exercise 3.1 asks you to do so.

Verbs like *laugh* and *invite* are instances of **one-place** and **two-place predicates**, respectively. The term **predicate** here refers to a vocabulary item, with a focus on its capacity to combine with one or more arguments. The number of arguments that a predicate requires is its semantic **valency**.

The relations denoted by predicates can involve more than two arguments. An example of a three-place predicate is *give*, which denotes the relation among a set of givers, a set of gifts, and a set of recipients. Even more complex relations are possible. For instance, *rent* is a five-place predicate denoting a relation among property owners, tenants, rental property, amounts of money, and lengths of time (lease terms).

It will be useful to have terminology for the different kinds of arguments that we will encounter: we summarize the main kinds of verbal arguments in §4 below.

1.2 Transitivity

In principle, a predicate's valency might completely determine the syntactic structure that it appears in. The ungrammaticality of the sentences in (6) would fall out directly from such a system.

- (6) a. *Lukas laughed the train. (one-place predicate; superfluous argument)
 b. *Andy invited. (two-place predicate; missing theme argument)

The actual situation, however, is more complex. For instance, *eat* denotes a relation between eaters and food. It is therefore a two-place predicate, like *invite*. However, unlike *invite*, *eat* has both a **transitive** and an **intransitive** use, as illustrated in (7).

- (7) a. Transitive:
 The children have eaten their supper.
 b. Intransitive:
 The children have eaten.

Notice that the semantic properties of *eat* remain constant in (7). In other words, (7a) and (7b) are both interpreted as involving the ingestion of food, even though there is no explicit mention of food in (7b). In view of the mismatch between the semantic and syntactic properties of *eat* in sentences like (7b), it is useful to distinguish between semantic and syntactic arguments. As mentioned earlier, we can think of semantic arguments as central participants in a situation. Syntactic arguments, on the other hand, are constituents that appear in particular syntactic positions

(see Chapter 4 for further discussion). Semantic arguments are typically expressed as syntactic arguments, but the correspondence between the two is not perfect, as (7b) shows.

We will use the term **transitivity** to refer to the number of syntactic arguments that a verb combines with, and we can then divide verbs into three subcategories as in Table 3.1.

Word of Caution

We are using the term ‘transitivity’ in a slightly unorthodox way. Traditionally, the term refers to the number of a verb’s objects, which is one less than the number of its arguments. Thus, as the terms imply, an intransitive takes no objects, and a ditransitive takes two.

Degree of transitivity	Number of syntactic arguments
Intransitive	1
Transitive	2
Ditransitive	3

Table 3.1: Transitivity is the number of syntactic arguments a verb takes

Because of mismatches as in (7), it turns out to be quite rare for verbs to belong to just one syntactic subcategory. (8)–(10) shows some two-place verbs besides *eat* that can be used either transitively or intransitively. The slashes separate the arguments from the predicate and each other.

- (8) a. He / *interrupted* / the meeting. (basically transitive)
- b. He / *interrupted*. (intransitive use)
- (9) a. Amy / *knits* / sweaters. (basically transitive)
- b. Amy / *knits*. (intransitive use)
- (10) a. They / are *reading* / a book. (basically transitive)
- b. They / are *reading*. (intransitive use)

Conversely, certain one-place verbs can be used not only intransitively, but also transitively, as illustrated in (11)–(13). Notice that the verb and its object in the transitive examples are etymologically related, or cognate. For this reason, the transitive use of one-place verbs as in (11)–(13) is known as the **cognate object construction**.

- (11) a. Charlie / *died*. (basically intransitive)
- b. Charlie / *died* / a peaceful death. (transitive use)
- (12) a. Maisha / *laughed*. (basically intransitive)
- b. Maisha / *laughed* / an infectious laugh. (transitive use)
- (13) a. Mona Lisa / was *smiling*. (basically intransitive)
- b. Mona Lisa / was *smiling* / a mysterious smile. (transitive use)

Further, it is possible to use some basically three-place verbs not just ditransitively, but transitively and even intransitively.

- | | | |
|------|---|--------------------------|
| (14) | a. We / <i>teach</i> / college students / syntax. | (basically ditransitive) |
| | b. We / <i>teach</i> / college students. | (transitive use) |
| | c. We / <i>teach</i> / syntax. | (transitive use) |
| | d. We / <i>teach</i> . | (intransitive use) |
| (15) | a. He / <i>told</i> / me / the whole story. | (basically ditransitive) |
| | b. He / <i>told</i> / me. | (transitive use) |
| | c. He / <i>told</i> / the whole story. | (transitive use) |
| | d. He / better not <i>tell</i> . | (intransitive use) |

Finally, it is possible to use basically two-place verbs ditransitively.

- | | | |
|------|--|------------------------|
| (16) | a. I / <i>baked</i> / a delicious cake. | (basically transitive) |
| | b. I / <i>baked</i> / my friends / a delicious cake. | (ditransitive use) |
| (17) | a. She / <i>sang</i> / a lullaby. | (basically transitive) |
| | b. She / <i>sang</i> / her baby / a lullaby. | (ditransitive use) |

Many transitive predicates in Mainstream U.S. English allow for the addition of a recipient of the event, as in (16) and (17), which is always placed between the verb and the theme object. See §4 for more discussion of what kinds of thematic roles are relevant for syntax.

Modification

2

Events are associated with more or less central participants and properties. The central participants are the semantic arguments just discussed. Properties of a situation typically taken to be less central, such as manner, place (location, origin, destination, path), time (point in time, duration, frequency), reason (cause, purpose), and so on, can be expressed by **modifiers**. Semantic arguments are closely associated with specific predicates; modifiers, less so. For examples, not all situations are associated with themes, so themes are arguments. But situations are all located in time, so temporal expressions are modifiers.

Take Note

Arguments and modifiers both introduce restrictions on the denotation of a predicate, and the relationships of argumenthood and modification do not differ in this respect. For instance, the situations denoted by *invite Langston* (where *Langston* is an argument) are a subset of those denoted by *invite*, just as the situations denoted by *laugh uproariously* (where *uproariously* is a modifier) are a subset of those denoted by *laugh*. This means that the distinction between arguments and modifiers is not a semantic distinction, but a syntactic one.

Modifiers of verbs are typically adverb phrases or prepositional phrases, but noun phrases can serve as verbal modifiers as well (Exercise 3.3 asks you to find examples). In the following examples, the modifier is in italics, and the verb that it modifies is underlined.

- (18) a. Manner:
He read the letter *carefully*.
- b. Location:
We met the students *in my office*.
- c. Origin:
We departed *from Bangalore*.
- d. Destination:
We arrived *in Benares*.
- e. Path:
We followed *along the path*.
- f. Point in time:
They discussed the proposal *in the afternoon*.
- g. Duration:
She kept their books *for five years*.
- h. Frequency:
They read the Times *quite often*.
- i. Cause:
He threw it away *out of spite*.
- j. Purpose:
You should send a message *(in order) to warn everyone*.

Because of their semantically peripheral character, modifiers are syntactically optional. The converse is not true, however. Not all syntactically optional constituents are modifiers; recall from (7b) that semantic arguments aren't always expressed.

Verbs are not the only category that can be modified. For instance, nouns are often modified by adjective phrases, prepositional phrases, and relative clauses, and contrary to what the name might suggest, even adverb phrases can modify nouns.

- (19) a. a *very important* period
 b. a period *of great import*
 c. the car *that just turned the corner*
 d. the instructions *below*

Moreover, adjective phrases, adverb phrases, and preposition phrases, which typically serve as modifiers (though they are not restricted to that function), can themselves contain modifiers.

- (20) a. *very* proud of the children
 b. *surprisingly* good to eat
- (21) a. *almost* there
 b. *right* below
- (22) a. *very much* in the dark
 b. *two feet* under the shed

There are cases where it is difficult to tell which constituent is the modifier and which the modifiee. For instance, in an expression like *early in the morning*, is the adverb modifying the preposition, as indicated in (23a), or is the prepositional phrase modifying the adverb, as in (23b), or is either of these possibilities grammatical (that is, is the expression structurally ambiguous)?

- (23) a. *early* in the morning
 b. early *in the morning*

Predication

3

The two linguistic relations discussed so far—argumenthood and modification—are basically semantic notions that are optionally expressed in the syntax. In this section, we introduce a third relation, **predication**, which differs from argumenthood and modification in being an irreducibly syntactic relation. By this, we mean that some cases of predication are not semantically motivated.

As a very basic introduction, predication is essentially the attribution of a property to some individual/element (the ‘subject’). The predicates are bracketed in (24), where ‘dog-ness’ is attributed to Lilly in (24a) and happiness is attributed to Lilly in (24b).

- (24) a. Lilly is [a dog].
 b. Lilly is [happy].

3.1 Evidence for a subject requirement: Expletive *it*

In order to establish that predication cannot be reduced to semantic considerations, we begin by distinguishing between two kinds of *it*: ordinary **referential** *it* and **expletive** *it*. As the name implies, referential *it* has some referent (for more on referents and reference, see §1 of Chapter 15). As a result, it can be replaced by a more complex description of that referent, as in (25).

- (25) a. It bit the zebu.
b. The tsetse fly bit the zebu.

Referential *it* can also receive stress (indicated by underlining) in answers to questions, as shown in (26).

- (26) a. What bit the zebu?
b. (pointing) It did.

By contrast, expletive *it* doesn't refer, so it can't be replaced by a description, as shown in (27).

- (27) a. It seems that the manuscript has been found.
b. * The fact seems that the manuscript has been found.

This lack of content of the expletive is also evident in the lack of a content question that replaces the expletive with *what*:

- (28) * W
hat seems that the manuscript has been found?

Expletive *it* is unable to receive stress. In fact, as (29) shows, a situation designed to elicit an answer analogous to (26b) is ungrammatical. So if (29a) is uttered based on some evidence, it's not possible to utter (29b) in response in order to invoke the idea that some different sort of evidence is relevant.

- (29) a. It seems that the manuscript has been found.
b. * (pointing) No, IT does.

The point is that expletive *it* in examples like (27a) is a different sort of element from referential *it* in examples like (25a).

Returning now to the main thread of the discussion, we note that the italicized *that* clause in (30a) functions as the sole syntactic argument of the adjective *evident*, on a par with the noun phrase in (30b). (For simplicity, we ignore the copula as semantically vacuous.)

- (30) a. *That they are corrupt* is evident.
b. *Their corruption* is evident.

An indication of the semantic equivalence of the two expressions is the fact that they can both serve as a short answer to the question in (31a).

- (31) a. What is evident?
 b. That they are corrupt.
 Their corruption.

(32) shows a syntactic variant of (30a) where the *that* clause appears at the end of the entire sentence. The original preverbal position of the *that* clause is occupied by expletive *it*.

- (32) It is evident that they are corrupt.

Given that the *that* clause satisfies the semantic requirement of *evident* for an argument in both (30a) and (32), the presence of the expletive pronoun in (32) is apparently superfluous. From a semantic point of view, one might therefore expect it to be optional. But this is not the case, as the ungrammaticality of (33) shows.

- (33) * Is evident that they are corrupt.

The ungrammaticality of (33) leads us to conclude that there exists a purely syntactic well-formedness condition requiring all clauses to have a **subject**.

Earlier, we saw that it is possible for arguments to be semantically motivated and yet not appear overtly in the syntax. Expletive subjects represent roughly the converse of this situation, being cases where an expression that is not motivated by semantic considerations is nevertheless obligatory in the syntax.

3.2 Aristotelian versus Fregean predicates

We will refer to the requirement just mentioned as the **subject requirement**. According to it, every clause consists of a subject and a predicate (independently of semantic requirements). The term ‘predicate’ as used here has a different sense than in our earlier discussion concerning argumenthood; it refers to what remains of a clause when its subject is removed.

For clarity, we can use the term ‘Aristotelian predicate’ for this sense, since the observation that all sentences consist of a subject and a predicate goes back (at least) to Aristotle (384–322 BCE). **Predication** is the relation between a subject and an Aristotelian predicate. So (34a) and (34b) are two alternative ways of stating the subject requirement.

- (34) a. Every clause has a subject.
 b. Every clause is an instance of predication.

The sense of ‘predicate’ that we used earlier, to refer to a single vocabulary item, is much more recent and can be attributed to one of the founders of modern logic, the mathematician and philosopher [Gottlob Frege](#) (1848–1925). Accordingly, we can use the term ‘Fregean predicate’ for this sense. What Frege recognized is that Aristotle’s division of a clause into subject and predicate is simply the first of a potential series of such bifurcations. Just as it is possible to peel off, as it were, the subject of a clause, leaving the Aristotelian predicate, it is possible to further peel off any arguments (and modifiers) contained within the Aristotelian predicate, yielding in the final instance a single vocabulary item, the Fregean predicate. So in a sentence like *the children chased*

the dogs with water balloons, the Aristotelian predicate is *chased the dogs with water balloons*, whereas the Fregean predicate is *chase*.

Fruitful as Frege's analytic insight is, we should not let it obscure the key difference between subjects and other constituents of a clause: namely, that constituents contained within an Aristotelian predicate must be **licensed** by semantic considerations (in other words, these constituents are present because of semantic considerations), whereas the subject, which is external to the Aristotelian predicate and combines with it, is required independently of semantic considerations.

In (35), the Aristotelian predicate of the largest clause is in italics, and its Fregean predicate is underlined. As the increasingly complex sentences show, Aristotelian predicates are recursive categories. Fregean predicates, on the other hand, not being phrases, are not.

- (35) a. The tabby cat *enjoys catnip immensely*.
 b. They have found *that the tabby cat enjoys catnip immensely*.
 c. My downstairs neighbor suspects *that they have found that the tabby cat enjoys catnip immensely*.

3.3 More evidence for the subject requirement: Expletive *there*

In English, further evidence for the purely syntactic character of the subject requirement comes from the expletive *there* construction. As with *it*, English *there* comes in two variants: locative and expletive. The pro-form *there* has inherently locative meaning in (36); this is evident in the fact that the adjuncts (*right*) *here* and (*over*) *there* render (36a) and (36b) self-contradictory and redundant, respectively.

- (36) a. # There comes the train (*right*) *here*.
 b. ✓ There comes the train (*over*) *there*.

It is possible to stress locative *there*, regardless of its position in a sentence.

Expletive *there* has no locative meaning, and so both sentences in (37) are completely acceptable. In contrast to locative *there*, expletive *there* can never bear stress.

- (37) a. ✓ There is a clean shirt (*right*) *here*.
 b. ✓ There is a clean shirt (*over*) *there*.

Expletive *there* behaves like an ordinary subject in ways that clause-initial locative *there* doesn't. For instance, it inverts with the verb in direct questions, and it is grammatical in so-called small clauses (in this instance, selected by *despite*: see §3.4 for more on small clauses).

- (38) a. ✓ Is there a problem?
 b. * Is (*over*) there our train?
- (39) a. ✓ despite [there being a problem]
 b. * despite (*over*) [there being our train]

(40) illustrates an ordinary sentence and its expletive *there* counterpart.

- (40) a. Several vexing questions remain.
b. There remain several vexing questions.

Just as expletive *it* occupies the position that would otherwise be occupied by a clausal subject, expletive *there* occupies the position that would otherwise be occupied by a noun phrase subject. And just as with expletive *it*, omitting expletive *there* results in ungrammaticality.

- (41) * Remain several vexing questions.

It should be pointed out that not every English sentence has an expletive *there* counterpart. Rather, expletive *there* is subject to a **licensing condition** (a necessary condition for its occurrence) that can be stated roughly as in (42).

- (42) Licensing condition on expletive *there*:
For expletive *there* to be grammatical as the subject of a clause, the (Fregean) predicate of that same clause must be a verb of existence or coming into existence.

In the following examples, the (Fregean) predicate licensing the expletive *there* is **in blue bold-face**.

- (43) a. After their military defeat, *there* **arose** among the Plains tribes a powerful spiritual movement.
b. *There* **is** a problem.
c. *There* **began** a reign of terror.
d. In the end, *there* **emerged** a new caudillo.
e. *There* **ensued** a period of unrest and lawlessness.
f. *There* **exists** an antidote.
g. *There* has **occurred** an unfortunate incident.
h. *There* **remains** a single course of action.

Predicates that aren't verbs of (coming into) existence don't license expletive *there*. This is the reason for the ungrammaticality of the following examples; the non-licensing (Fregean) predicates are underlined in red.

- (44) a. * *There* came more than sixty dignitaries.
b. * *There* continued the same problem.
c. * *There* rang the mail carrier.
d. * *There* sang an impressive choir from Russia.
e. * *There* strutted a poodle into the room.

3.4 Some special cases

Nonfinite clauses

The instances of predication provided so far have all been *finite clauses* like those in (45) (i.e. clauses that bear tense).

- (45) a. *He* laughed uproariously.
 b. *It* will seem that they won the game.
 c. *There* is a problem.

Nonfinite clauses like those in (46) are also instances of predication; the clauses at issue are set off by brackets.

- (46) a. We expected [*him* to laugh uproariously].
 b. We expected [*it* to seem that they won the game].
 c. We expected [*there* to be a problem].

At first glance, it might seem preferable to treat the italicized noun phrases in (47) as objects of *expected*, rather than as subjects of the embedded nonfinite clause the way we have done. However, such an approach faces at least two difficulties. First, the relation between the italicized and underlined constituents in the all of nonfinite embedded clauses in (46) is the same as the relation between the undoubted subjects and predicates of the finite clauses in (45) and their embedded counterparts in (47).

- (47) a. We expected that [*he* would laugh uproariously].
 b. We expected that [*it* would seem that they won the game].
 c. We expected that [*there* would be a problem].

Second, in (46a), the thematic relation of agent that the noun phrase *him* bears to *laugh* is exactly the same as that between the subject *he* and *laughed* in (45a) and (47a). If *him* were the object of *expected* rather than the subject of the nonfinite clause, that fact would not be captured directly. Moreover, we would be forced to admit the otherwise unprecedented pairing of the grammatical relation of direct object with the thematic role of agent (see §4 and §5).

Small clauses

Because of the parallel between nonfinite and finite embedded clauses illustrated in (46) and (47), it makes sense to assign *to* in *to*-infinitive clauses to the same category as modals (see Chapter 4, §2.1). There also exist instances of predication without any instantiation of I whatsoever. These are called **small clauses** (the idea behind the name is that the absence of I makes them smaller than an ordinary clause).¹ (48)–(51) provide some examples; the captions indicate the syntactic category of the small clause's (Aristotelian) predicate, which is underlined.

- (48) Adjective phrase:
 a. We consider [*the proposed solution* completely inadequate].

- b. They proved [*the theory* false].
- (49) Noun phrase:
- a. They called [*the actor* a traitor].
- b. I consider [*Mark Judy's closest collaborator*].
- (50) Prepositional phrase:
- a. They made [*him* into a star].
- b. I want [*everyone* off the boat].
- (51) Verb phrase:
- a. God let [*there* be light]. (bare verb)
- b. I hear [*the cat* scratching at the door]. (gerund)

Small clauses are typically arguments of verbs, but they can also be arguments of (certain) prepositions—notably *with*—as illustrated in (52).

- (52) a. Adjective phrase:
With *the weather* much less turbulent, flights were able to resume for the first time in days.
- b. Noun phrase:
With *her husband* an airline industry lobbyist, the senator's support for the bailout was hardly surprising.
- c. Prepositional phrase:
With *all three of their kids* in college, their budget is pretty tight.
- d. Verb phrase (gerund):
With *the parade* passing right in front of her house, Jenny could not have asked for a better view of it.

Imperatives

Imperative sentences like (53) appear to lack a subject.

- (53) Come over here.

There is reason to believe, however, that they contain a second-person subject comparable to the pronoun *you* except that it is silent (the “you understood” of traditional grammar). For one thing, (53) has a variant in (54) where the subject is explicitly expressed.

- (54) You come over here.

Another reason to assume that all imperatives contain a silent, yet syntactically active subject is that the grammaticality pattern in (55), where the subject is overt, has an exact counterpart in (56).

- (55) a. You shave { yourself, yourselves }.

- b. * You shave you.
 - c. * You shave themselves.
- (56)
- a. Shave { yourself, yourselves }.
 - b. * Shave you.
 - c. * Shave themselves.

Thematic roles

4

This section provides an elementary overview of concepts and terminology related to thematic roles.

4.1 Agent, cause, and instrument

Agents are arguments that bring about a state of affairs.² The line between agents, on the one hand, and **causes** or **instruments**, on the other, can be fuzzy, but agents are (or are perceived to be) conscious or sentient, in a way that causes or instruments aren't. Some examples are given in (57)–(59).

(57) Agent:

- a. *The lions devoured the wildebeest.*
- b. *The boys caught some fish.*
- c. *My mother wrote me a letter.*

(58) Cause:

- a. *Hurricane-force winds demolished much of the town.*
- b. *An epidemic killed off all of the tomatoes.*
- c. *An economic downturn put thousands of workers out of work.*

(59) Instrument:

- a. *This key opens the door to the main office.*
- b. *They must have used indelible ink.*

4.2 Experienter

Experienters are arguments that undergo a sensory, cognitive, or emotional experience.

- (60) Experienter:
- a. *The rhesus monkey* had never seen snow before.
 - b. *Many people* fear snakes.
 - c. Their resourcefulness struck *her* as admirable.

4.3 Recipient

Recipients are arguments that receive something (whether good or bad) in a situation.

- (61) Recipient:
- a. They gave *the workers* a raise.
 - b. I paid my landlord the rent.
 - c. He spared *me* his usual sob story.

4.4 Location, path, and goal

Locations are points (or regions) in space.

- (62) Location:
- a. We always eat breakfast *in the kitchen*.
 - b. The cork has been bobbing *under the bridge* for an hour.

Paths connect locations.

- (63) Path:
- a. Lucky raced *down the driveway*.
 - b. The boat passed *under the bridge* so quickly I missed seeing it.
 - c. We drove *the scenic route*.

When locations serve as endpoints of paths, we generally refer to them as **goals**.

- (64) Goal:
- a. We traveled to *Paris* quite a bit in those days.
 - b. Lucky raced to *the edge of the woods*.
 - c. I'd like to send this package to *France*.

Recipients can also serve as the endpoint of paths, and the distinction between goals and recipients can be difficult. (The issue is addressed in detail in §3 of Chapter 11.)

- (65) I'd like to send this package to *my cousin*.

Locations and paths can also be spatial or temporal.

- (66) a. Point in time:
Let's start the meeting at two.
b. Goal in time:
The meeting will last until two.

4.5 Measure

Measure (a.k.a. amount) arguments express extensions along some dimension (length, duration, cost, and so on).

- (67) Measure:
a. They rowed *for three days*.
b. The book costs *ten dollars*.

4.6 Theme

Finally, the thematic role of **theme** is something of a catch-all. According to one definition, 'theme' refers to an argument undergoing motion of some sort, including motion in a metaphorical sense, such as a change of state. As is usual in the syntactic literature, we will also use the term for arguments that are most 'affected' in a situation or for the content of an experience.

- (68) Theme:
a. The lions devoured *the wildebeest*.
b. This key opens *the front door*.
c. Hurricane-force winds demolished *much of the town*.
d. They gave the workers *a raise*.
e. I'd like to send *this package* to France.
f. Many people fear *snakes*.

Grammatical relations

5

Grammatical relations must be carefully distinguished from **thematic roles**. In what follows, we illustrate three basic grammatical relations: subject, indirect object, and direct object. The apparent contradiction between the existence of sentences with two objects and the binary-branching hypothesis of phrase structure is addressed in Chapter 11.

5.1 Subjects

Subjects are ordinarily the only argument to precede the predicate in English. As the examples in (69) illustrate, subjects can express many different thematic roles.

Word of Caution

Take care not to confuse the grammatical relation of subject with the thematic role of agent. The existence of passive sentences is a clear indication that the two notions are not synonymous (compare (69a) with (69h) and also (69i)).

- | | | |
|------|--|---------------|
| (69) | a. <i>The lions</i> devoured the wildebeest. | (agent) |
| | b. <i>Hurricane-force winds</i> demolished much of the town. | (cause) |
| | c. <i>This key</i> opens the door to the main office. | (instrument) |
| | d. <i>The children</i> liked all their Christmas presents. | (experiencer) |
| | e. <i>The workers</i> got a raise. | (recipient) |
| | f. <i>An unpaved road</i> led up to the shanty. | (path) |
| | g. <i>The summit</i> wasn't attained until years later. | (goal) |
| | h. <i>The wildebeest</i> was devoured by the lions. | (theme) |
| | i. <i>The ball</i> rolled down the hill. | (theme) |

5.2 Indirect objects

Indirect objects occur in conjunction with direct objects, as illustrated in (70).

- | | | |
|------|--------------------------------------|-------------|
| (70) | The gave <i>the workers</i> a raise. | (recipient) |
|------|--------------------------------------|-------------|

They are thematically very restricted—namely, to recipients. Nevertheless, there is no one-to-one correspondence between the grammatical relation of indirect object and the thematic role of recipient. This is because recipients needn't be indirect objects, but can also be expressed as subjects, as in (69e).

5.3 Direct objects

Direct objects include a verb's remaining noun phrase arguments. Thematically, they are almost as flexible as subjects, as shown in (71).

- | | | |
|------|--|---------------|
| (71) | a. You should use <i>this key</i> for the door to the main office. | (instrument) |
| | b. The children's drawings pleased <i>their parents</i> to no end. | (experiencer) |
| | c. We drove <i>the scenic route</i> . | (path) |
| | d. We reached <i>our hotel</i> after a short subway ride. | (goal) |
| | e. The performance lasted <i>two hours</i> . | (measure) |
| | f. The lions devoured <i>the wildebeest</i> . | (theme) |
| | g. We rolled <i>the ball</i> down the hill. | (theme) |
| | h. They gave the workers <i>a raise</i> . | (theme) |

5.4 Distinguishing properties of grammatical relations

Linear order

In many languages, word order correlates to some degree with grammatical relations, in that a language will typically place subjects and objects in some typical position. In most of the world's languages, subjects precede their predicates, regardless of whether a language is verb-initial (SVO) or verb-final (SOV). The ordinary position for direct objects is adjacent to the verb—immediately following it in verb-initial languages (V-DO) and immediately preceding it in verb-final ones (DO-V). However, indirect objects ordinarily intervene between the verb and the direct object in verb-initial languages, yielding V-IO-DO order. In verb-final languages, the corresponding order often is not, as might be expected, the mirror image order. Rather, the indirect object continues to precede the direct object, yielding the order IO-DO-V.

These are of course drastic oversimplifications: there are exceptions to these generalizations, and there is a lot of nuance within languages affecting canonical word orders (as reported above) vs. non-canonical word orders that are often used for various kinds of discourse functions. The point, of course, is that in many languages word order has a relatively direct correlation with grammatical relations.

Case

However, in many languages, word order is not a diagnostic property of grammatical roles. In many such languages, it is instead a property called **case** that is a more consistent identifier of which noun phrases represent which grammatical relation in the sentence. We discuss this in much more depth in Chapter 7, but we will introduce it briefly here as is relevant for our current concerns.

Basic aspects of case are already familiar to English speakers, which has case-marking of nominals in its pronominal system. In English, pronominal subjects of a sentence appear in a distinct form from pronouns that appear elsewhere.

- (72) a. They like her.
b. She likes them.

- (73) a. *Them like she.
b. *Her likes they.

We use the term **nominative** to refer to the case form that sentence subjects appear in, and **accusative** to refer to the form that sentence objects appear in. So the nominative forms of the pronouns above are *they* and *she*, and the accusative forms are *them* and *her*.³

There are many languages, however, where case-marking is more thorough, appearing on most or all nominals in the language, and differentiating much more than subjects vs. non-subjects. The Turkish example in (74) distinguishes the morphological form of direct objects (accusative case) from indirect objects (**dative case**)

- (74) Mehmet-Ø adam-a elma-lar-ı ver-di
 Mehmet-NOM man-DAT apple-PL-ACC give-PST.3SG
 ‘Mehmet gave the apples to the man.’ (Blake 2004, p. 1)

Turkish marks nominals with six distinct cases based on their grammatical function in a sentence. These forms (and their functions) are described by the table in (75).

- (75) Case-marking in Turkish (Blake 2004, p. 2)

Case	Grammatical function	form of the word <i>adam</i> - ‘man’
nominative	subject	<i>adam</i>
accusative	direct object	<i>adamı</i>
genitive	possessor	<i>adamin</i>
dative	indirect object	<i>adama</i>
locative	location	<i>adamda</i>
ablative	source location	<i>adamdan</i>

There are two main (distinct) systems of case-marking that appear across human languages: what is known as nominative-accusative case alignment (as illustrated above), and ergative-absolutive alignment, which slices up the case-marking pie in a different sort of way (marking agentive subjects differently from non-agentive subjects, for example). Case-marking in human languages is extraordinarily complex cross-linguistically, so this is only a rudimentary introduction: the point is that case-marking is one of the ways that grammatical relations are morphosyntactically represented in language.

Verbal inflectional morphology

Another way that morphology encodes grammatical relations in syntax is via **agreement** and other kinds of inflectional morphology, where the morphological form of one element changes based on the properties of some other element. The version of this that most language learners are relatively familiar with is verbal agreement (i.e. verb conjugation). Inflection on Swahili verbs appears in the template in (76).

- (76) Subject.Agreement - Tense - Object.Agreement - Verb

So in an example like (77a), the plural subject agreement agrees with *wazazi* ‘parents,’ and the singular object agreement agrees with *mtoto* ‘child.’ In Swahili it’s possible to leave the subject and object unpronounced as in (77b) so that just the agreement morphemes themselves specify the relevant grammatical relations of subject and object.

- (77) a. Wazazi wa- li- mu- ona mtoto.
 parents SUBJ.AGR.PL- PST- OBJ.AGR.SG- see child
 ‘The parents saw the child.’
 b. wa- li- mu- ona
 SUBJ.AGR.PL- PST- OBJ.AGR.SG- see
 ‘They (pl) (parents) saw her/him/them(sg) (child)’

- c. *mu- li- wa- ona
 OBJ.AGR.SG- PST- SUBJ.AGR.PL- see

Example (77c) attempts to switch the position of the subject and object agreement, but this is ungrammatical. As shown in (78), it is possible to switch the singular and plural agreements (subject agreement for the singular form has a different form), but this switches the grammatical functions: now the child is the one seeing the parents.

- (78) a- li- wa- ona
 SUBJ.AGR.SG- PST- OBJ.AGR.PL- see
 ‘She/he/they(sg) (child) saw them (pl) (parents).’

So we see that languages may encode grammatical relations in multiple ways: word order, nominal inflection (case), and verbal inflection (agreement). And many languages use more than one of these strategies, at times marking the same grammatical relation repeatedly, such as marking subjecthood with word order, nominative case-marking, and subject agreement on the verb. Each of these strategies is itself a large area of inquiry, but for our purposes we are simply using these to understand grammatical relations.

Notes

6

- Small clauses are exceptional in another regard: they are a further instance of constituents where the constituenthood tests of Chapter 2 yield [false negative results](#) (at least for most speakers).
 - What do you like?
 - ?? My coffee hot.
- Here and in the rest of the section, our usage is a bit sloppy. Specifically, we ignore the distinction between linguistic expressions and the discourse entities that they refer to (for some discussion, see §1 of Chapter 15). For instance, in (57a), the agent of the devouring is a group of live animals, not the two words referring to them). So a more precise formulation would be something like “We use the term ‘agent’ to refer to linguistic expressions that (in turn) refer to entities that bring about a state of affairs.” This mild imprecision is hopefully tolerable in service of a more natural exposition.
- In fact, those forms are probably default forms rather than specifically accusative forms, since they are used much more broadly than just accusative contexts.

Exercises and problems

7

Exercise 3.1

- A. Imagine a language Hsilgne that is exactly like English except that transitive predicates combine first with the agent, and then with the theme. Does (1) mean the same thing in Hsilgne as it does in English? Explain, using the discussion in connection with (3)–(5) in the text as a model.

(1) Alex invited Langston.

- B. Are you sure that you speak English and not Hsilgne? What's the **evidence** for your conclusion?

Exercise 3.2

- A. In your own words, discuss the difference between the terms 'modify' and 'refer'. (See Chapter 15 for discussion of the term 'refer'.) Feel free to use illustrative examples, but be as concise as you can.
- B. In your own words, discuss the difference between 'modify' and 'predicate'. Feel free to use illustrative examples, but be as concise as you can.
- C. This part of the exercise focuses on a fundamental distinction in linguistics—that of form vs. function. In everyday usage, the term 'modifier', which refers to any expression that adds information about some other expression, is sometimes used interchangeably with the term 'adjective'. By contrast, linguists distinguish carefully between the two terms and define adjectives on the basis of morphosyntactic form rather than on the basis of function (see Chapter 2, § 1.3 for details). Assuming the linguistic definition of 'adjective', give an example of your own of 1) an adjective (or adjective phrase) that is not a modifier, and 2) a modifier that is not an adjective.
- D. This part of the exercise is intended to help you get a better feel for the concept of 'small clause', which many students find difficult. Make up some example sentences that you think might contain small clauses, but that you're not sure about. Clearly indicate the string that you think is the small clause.

Exercise 3.3

- A. This part of the exercise focuses on a fundamental distinction in linguistics—that of form vs. function. The function of modification is typically expressed by constituents of a certain form—namely, adverb phrases or prepositional phrases. But modifiers can also take the form of noun phrases, as in (1).

(1) Manner: They solved the problem *another way*.

Provide examples of noun phrase modifiers for the other types of modification illustrated in the chapter in (18), repeated for convenience as (2). (This is not necessarily possible for every type.)

- (2)
- a. Manner:
He read the letter *carefully*.
 - b. Location:
We met the students *in my office*.
 - c. Origin:
We departed *from Bangalore*.
 - d. Destination:
We arrived *in Benares*.
 - e. Path:
We followed *along the path*.
 - f. Point in time:
They discussed the proposal *in the afternoon*.
 - g. Duration:
She kept their books *for five years*.
 - h. Frequency:
They read the Times *quite often*.
 - i. Cause:
He threw it away *out of spite*.
 - j. Purpose:
You should send a message *(in order) to warn everyone*.

- B. Here are some questions concerning the relationship between **thematic roles** and **grammatical functions**.

- Is there a one-to-one relations between thematic roles and grammatical relations?
- Are there any thematic roles that must be expressed by a particular grammatical relation? For instance, are agents invariably expressed as subjects?
- Conversely, are there grammatical relations that are restricted to expressing a particular thematic role? For instance, do direct objects always express themes?

- Are there typical or common mappings between thematic roles and grammatical relations?
- Can you imagine a prepositional phrase expressing the thematic role of theme (not necessarily in English)?

Exercise 3.4

Given the licensing condition on expletive *there*, repeated in (1), determine whether each of the grammaticality judgments in (2) is expected. The brackets indicate clause boundaries (of *to* infinitive clauses or small clauses).

- (1) For expletive *there* to be grammatical as the subject of a clause, the (Fregean) predicate of that same clause must be a verb of existence or coming into existence.
- (2) a. ✓ Feynman suspected [there to be a problem with the O-ring].
 b. * Feynman suspected [there a problem with the O-ring].
 c. ✓ There was suspected [to be a problem with the O-ring].
 d. * There was suspected [a problem with the O-ring].

Exercise 3.5

Using concepts introduced in this chapter, discuss the syntactic difference(s) between the two sentences in (1).

- (1) a. Winston considered the judges careful.
 b. Winston considered the judges carefully.

(The sentences come from [this source](#), but the discussion there of (1a) is confusing. Thanks to Rosemary George for tracking down the archived link.)

Exercise 3.6

- A. The following headlines each have an intended reading and (possibly more than one) unintended humorous reading. Using the concepts introduced in this chapter, explain the differences between the intended and unintended readings.

- (1) a. Greeks Fine Hookers
 b. Lawmen from Mexico Barbecue Guests
 c. Lawyers Give Poor Free Legal Advice
 d. Lung Cancer in Women Mushrooms
- (2) Q: What did the Zen master say to the guy at the hot dog stand?
 A: Make me one with everything.
- (3) The comedian and civil rights activist [Dick Gregory](#) tells of walking up to a lunch counter in Mississippi during the days of racial segregation. The waitress said to him, “We don’t serve colored people”. “That’s fine,” he replied, “I don’t eat colored people. I’d like a piece of chicken.”

- B. Recall Exercise 1.3. (Re)formulate (and possibly improve/generalize) your answer to Part B in terms of the concepts introduced in this chapter.

Problem 3.1

Nonfinite clauses like the bracketed sequence in (1) are *prima facie* counterexamples to the subject requirement.

- (1) I promised [to come on time].

Provide as much **evidence** as you can for the existence of a silent subject in (1) and nonfinite clauses like it.

Problem 3.2

The acceptability of (1) in vernacular usage might tempt one to conclude that the subject requirement is not absolute in English.

- (1) Seems like they're finally getting somewhere.

Provide as much **evidence** as you can bearing on this conclusion.

Problem 3.3

The sentences in (1) apparently violate the **licensing condition on expletive *there***, yet they are still acceptable (though quite formal). Explain.

- (1) a. At the end of the intermission, there sounded a silvery bell.
b. Then the curtain rose, and there waltzed onto the stage a strangely, but exquisitely dressed apparition.

Introducing the X' schema of phrase structure

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As was mentioned in Chapter 1 we can represent the individual vocabulary items of a language as small pieces of syntactic structure, or **elementary trees**. The idea is to **generate** phrases and sentences by composing (and possibly otherwise manipulating) these elementary trees in mathematically well-defined ways. In this view, vocabulary items are comparable to the atoms of physical matter. Atoms do not combine into molecules just because they happen to be next to each other; rather, their combinatorial possibilities are governed by their internal structure (for instance, the number of electrons on an atom's outermost shell and the relative number of protons and electrons).

Accordingly, in the first part of this chapter, we consider the internal structure of elementary trees. As in the last chapter, we begin by focusing on how verbs combine with their arguments to form larger phrases. For the time being, we will treat noun phrases and prepositional phrases as unanalyzed chunks, postponing discussion of their internal structure until Chapter 5. We then generalize the approach developed for verbs and their arguments to the point where

we can build sentences—both simple ones and complex ones containing subordinate clauses. In order to derive sentences, we will find it necessary to introduce a formal operation called **movement**, which allows us to represent the fact that constituents can have more than one function in a sentence.

In the second part of the chapter, we turn to the representation of the modification relation (already familiar from Chapter 3, § 2). As we will show, it is not possible to combine modifiers with elementary trees by the substitution operation introduced in Chapter 1. Besides substitution and movement, we therefore introduce a third and final formal operation called **adjunction**.

This chapter repeatedly references structural relationships in trees. If the jargon becomes difficult to follow, you may find yourself wanting to revisit Chapter 2, § 4, where the terms are introduced.

The X' schema for elementary trees

1

1.1 Transitive elementary trees

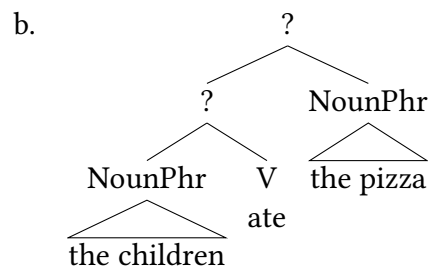
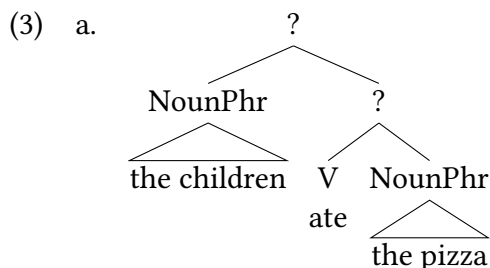
We begin our investigation of the internal structure of elementary trees by considering how a transitive verb like *ate* combines with its two arguments in a sentence like (1).

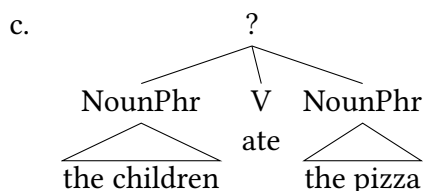
- (1) The children ate the pizza.

From the possibility of pronoun substitution, as in (2), we know that the two arguments are constituents (specifically, noun phrases).

- (2) They ate it.

In principle, the verb could combine with its two noun phrase arguments in either order, or with both at once. The three possibilities are represented by the structures in (3) (we address the question of which syntactic category to assign to the nodes labeled by question marks in a moment).





However, as we already know from the substitution test introduced in Chapter 2, § 4, transitive verbs form a constituent with their object, as shown in (4).

- (4) The children ate the pizza. → ✓ The children did so.

In other words, only (3a) is an adequate representation of the sentence.

What is the syntactic category of the constituents that result from these two combinations? In principle, the result of combining a verb with a noun phrase might be a phrase with either verbal or nominal properties. But clearly, a phrase like *ate the pizza* doesn't have the distribution of a noun phrase. For instance, it can't function as the object of a preposition (even a semantically vacuous one like *of*). Nor does it pattern like a noun phrase in other respects. As we have just seen, the appropriate pro-form for it is not a pronoun, but a form of *do so*, just as would be the case if the predicate of the sentence were an intransitive verb. In other words, for the purposes of *do so* substitution, the combination of a verb and its object is equivalent to an intransitive verb (say, intransitive *eat*); cf. (4) with (5).

- (5) The children ate. → ✓ The children did so.

So how about if we assign the syntactic category V to the verb-object combination? That won't do, though, because then *do so* should be able to substitute for *eat* regardless of the presence of an object. But that isn't the case, as shown in (6), which contrasts with (5).

- (6) The children ate the pizza. → * The children did so the pizza.

Notice furthermore that the syntactic category of the verb-object constituent is distinct from the syntactic category of the constituent that includes the subject. This is evident from the contrast in (7), which would be unexpected if both constituents belonged to the same syntactic category.

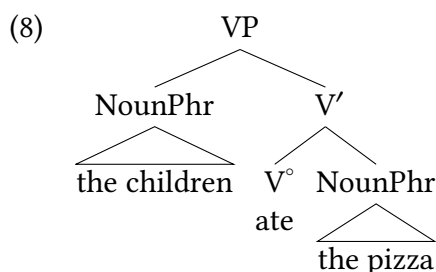
- (7) a. ✓ We saw the children eat the pizza.
b. * We saw eat the pizza.

In order to represent the facts in (4)–(7), the following notation has been developed. Verbs are said to **project** three **bar levels**, conventionally numbered from zero to two. The lowest bar level, V^0 , is a syntactic category for vocabulary items; it is often indicated simply by V without a superscript. The next bar level is V' (read as 'V-bar'),¹ the syntactic category of a transitive verb and its object. The highest bar level is V'' (read as 'V double bar'), which is the result of combining a V' with a subject. For a transitive verb, each bar level corresponds to the number of arguments with which the verb has combined.

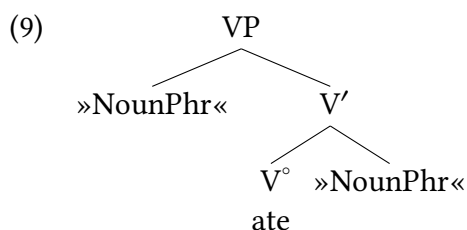
Somewhat confusingly for the novice, the verb's second projection, V'' , is more often than not labeled VP. In early work in generative grammar, the label VP was intended as a mnemonic

abbreviation for the verb phrase of traditional grammar and did indeed correspond to that category. In current phrase structure theory, however, the label that corresponds to the traditional verb phrase is V' , whereas VP includes a verb's subject, which the traditional verb phrase does not. The idea is that the highest bar level projected by a verb contains all of its arguments. For clarity, we will avoid using the term 'verb phrase' if possible, but if we do use it, we mean the traditional verb phrase that excludes the subject (that is, V' , not VP). Conversely, when we say VP, we always mean the projection that contains all of the verb's arguments, not the verb phrase of traditional grammar.

The fully labeled structure for (1), with the standard labels for the three verbal projections, is given in (8).

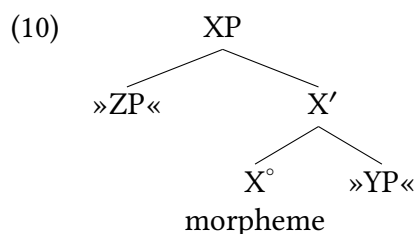


Given (8), we can 'un-substitute' the two arguments. This yields the elementary tree for *ate* in (9).



1.2 The X' schema

As we show in § 2 later on in this chapter and in Chapter 5, the basic form of the elementary tree in (9) can be extended to other syntactic categories. In other words, (9) is an instantiation of a general phrase structure template, shown in (10) and known as the **X' schema** (read: X-bar schema) of phrase structure. X, Y, and Z are variables over syntactic categories, meaning any kind of syntactic category will have a structure like in (10).



A number of standard terms are used in connection with the X' schema. The vocabulary item dominated by X—the element that projects the entire syntactic structure—is known, following traditional terminology, as the **head**. X (also written X°) is the head's **lexical projection**, X'

the **intermediate projection**, and XP (also written X'') the **maximal projection** (sometimes also called **phrasal projection**).

Word of Caution

The terms ‘intermediate’ and ‘phrasal’ are somewhat misleading, since they suggest that the syntactic status of intermediate projections is somehow intermediate between lexical and phrasal constituents. This is not the case. Intermediate projections are full-fledged phrases, and ‘intermediate’ simply refers to the position of the projection in the tree structure.

The three projections of the head form what we will call the **spine** of the elementary tree. The correspondence between projections and the bar levels mentioned earlier is summarized in Table 4.1.

Label	Alternate label	Projection	Bar level
X	X ⁰	Lexical	0
X'		Intermediate	1
XP	X''	Maximal (phrasal)	2

Table 4.1: Correspondence between projections and bar levels

Again following traditional terminology, the sibling of the head—YP in (10)—is called its **complement**. As we discuss [in the next subsection](#), elementary trees need not include a complement position.

Word of Caution

Note the spelling of *complement* with *e* (not *i*). The idea is that complements complete the meaning of the head.

The child of the maximal projection—ZP in (10)—is called the **specifier**.

Word of Caution

The term “specifier” suggests that constituents in that position somehow specify the remainder of the tree, and this might lead you to confuse specifiers with modifiers (discussed later on in this chapter). At one point, constituents in specifier position were indeed thought to have this function, and that is how the name arose. We no longer believe this, but the name has stuck (what we might call terminological inertia). In order to minimize this confusion, syntacticians often use the abbreviation “spec” (pronounced “speck” and sometimes spelled with an initial capital).

Each elementary tree has at most one specifier, and elementary trees can lack a specifier altogether, as we will see [later on](#) in this chapter. The specifier and complement positions of a

head are its (syntactic) **argument** positions. In summary, an elementary tree consists of a spine and from zero to two argument positions.

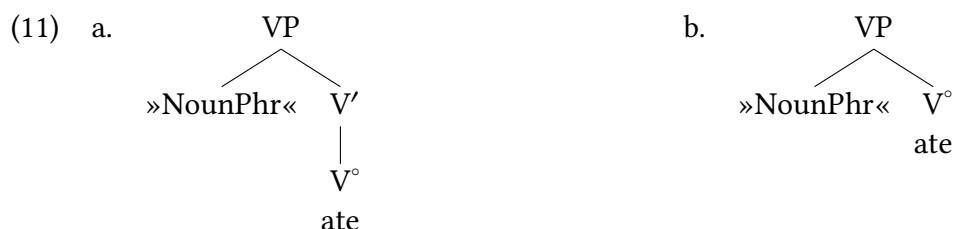
Take Note

The terms ‘specifier’, ‘complement’, and ‘argument’ can be used to refer to the structural positions just defined or to the constituents that substitute into those positions. (This is analogous to the way we can use a nontechnical term like ‘bowl’ to refer either to the container itself (*Hand me the bowl*) or to its contents (*I’d like a bowl (of soup)*). If it is necessary to avoid confusion between the two senses, we can distinguish between ‘specifier position’ and ‘constituent in specifier position’ (and analogously for ‘complement’ and ‘argument’).

An important question that arises in connection with the X' schema in (10) is how to represent predicates with more than two semantic arguments (say, *rent* or *give*). The most obvious approach is to allow elementary trees with more than two complements. Plausible as this approach may seem, however, it is now widely assumed that syntactic structure is at most **binary-branching**. In cases where we have evidence from linguistic judgments concerning the issue, we repeatedly find that binary-branching structures correctly represent our judgments, whereas ones with more branches don't. It is this empirical basis that leads us to hypothesize that binary-branchingness is a formal universal. If a predicate has more than two semantic arguments, there are two ways in which the additional arguments can be integrated into syntactic structure. In some cases (as with *rent*), the supernumerary arguments are integrated into syntactic structure by **adjunction**, an operation distinct from substitution that we introduce [later on in this chapter](#). This case involves a **syntax-semantics mismatch**, since a semantic argument ends up occupying a position that is not a syntactic argument position. In other cases (as with *give*), the apparently atomic predicate is decomposed semantically and syntactically into more than one head, thus yielding a total of more than two argument positions. This second case is discussed in detail in Chapter 11.

1.3 Intransitive elementary trees

So far, we have discussed the internal structure of the elementary trees required for transitive verbs (and transitive categories more generally). In this section, we address the internal structure of the elementary trees required for intransitive verbs—for instance, intransitive *eat*. Two structures come to mind as possibilities—shown in (11).



The trees differ in the presence of an intermediate projection, and (11b) might at first glance seem

preferable because it is simpler (in the sense of containing fewer nodes). However, (11b) violates the X' schema, and adopting it would complicate the grammar as a whole, which consists not just of the elementary trees, but of the rules and definitions stated over them. For instance, adopting (11a) allows us to summarize the facts concerning *do so* substitution illustrated in (4)–(6) by means of the succinct generalization in (12).

(12) *Do so* substitutes for instances of V'.

Given (11b), (12) would need to be reformulated as the more cumbersome **disjunctive statement** (that is, a statement containing *or*) in (13).

(13) *Do so* substitutes for instances of V' or of V without a complement.

A second, similar reason to prefer (11a) is that it permits the succinct definition of the notion of specifier in (14a) rather than the disjunctive statement in (14b).

- (14) a. Specifiers are siblings of intermediate projections.
 b. Specifiers are siblings of intermediate projections or of lexical projections without a complement.

Notice that we allow verbs that can be used either transitively or intransitively, such as *eat*, to be associated with two elementary trees. More generally, we will allow a vocabulary item of any syntactic category to project one or more elementary trees, as required by its combinatorial properties.

Deriving sentences

2

2.1 Simple sentences

We are almost at the point of being able to construct X'-compliant representations of complete sentences, but before we can do so, we need to address the syntactic representation of **tense**. The following discussion relies on the notion of **do support** and on the status of **modals** and **auxiliary do** as members of the same syntactic category I(nflection); see Chapter 2, § 1.4 for detailed discussion.

In a sentence like (15), the verb *waited* contains the **bound morpheme** *-ed*, which expresses past tense.

(15) They waited.

If tense morphemes were invariably expressed on the verb in this way, then complete structures for full sentences could be derived by substituting appropriate structures into the argument

positions of the verb's elementary tree. But this is not a general solution, because tense is not always expressed as a bound morpheme. For instance, in (16), the future tense counterpart of (15), the future tense is expressed by a **free morpheme**, the modal *will*.

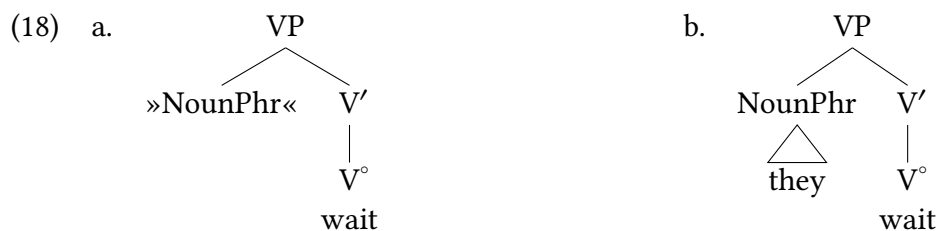
(16) They will wait.

Even more strikingly, the past tense in English, though ordinarily expressed as a bound morpheme, must be expressed by a free morpheme in *do support contexts*, as shown in (17).

- (17) a. Emphasis: b. Negation: c. Question:
 They did wait. They didn't wait. Did they wait?

The morphologically variable expression of tense as a free or a bound morpheme raises two related syntactic questions. First, what is the representation of sentences like (16) and (17a), where tense is expressed as a free morpheme? (We postpone the treatment of questions and negated sentences to Chapters 6 and 10, respectively.) Second, and more generally, how can we represent all sentences in a syntactically uniform way, regardless of how tense is expressed morphologically? There are two reasons for wanting a uniform representation. First, from a semantic point of view, both past and future are semantically parallel functions, taking situations (denoted by VPs) as input and returning as output situations that are located in time, either before or after the time of speaking.² Second, and very generally, when similar objects are represented in a uniform way, it is easier for the mind to manipulate them, and they are computationally more tractable than when they are not so represented. Mathematicians, logicians, computer scientists, and others are therefore fond of finding **normal forms** (also known as **canonical forms**) for the abstract objects they deal with. An example from daily life is that we impose a normal form on the set of letters in the alphabet (namely, the conventional order in the alphabet song). That way, looking up words in the dictionary is much quicker than it would be if the words were not sorted with reference to the alphabet's normal form. The X' schema of phrase structure under discussion in this chapter is a normal form, and our earlier preference for (11a) over (11b) can be framed as a preference for a representation that is in normal form over one that isn't.

Returning to the problem at hand, we begin by answering the first question in several steps. First, it is clear that (16) and (17a) share a common **predicate-argument** structure (predicate used here in the sense of Fregean predicate). That is, both of these sentences denote a situation in which someone is waiting, with the sentences differing only as to which point in time the situation holds. We can capture this commonality by taking the elementary tree for the verb *wait* in (18a) and substituting an argument constituent in the specifier position, yielding (18b).



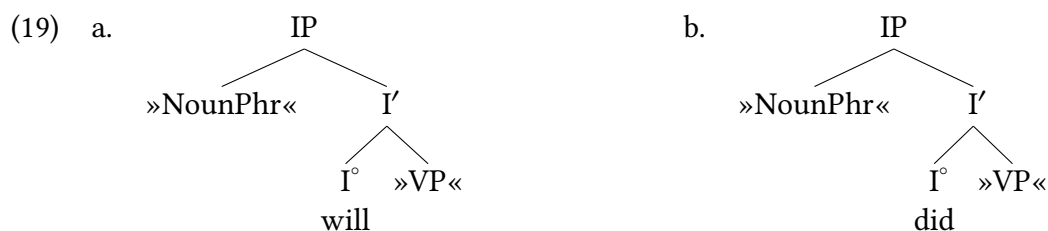
Second, in accordance with the general approach to syntactic structure that we have been developing, modals and auxiliaries, like all vocabulary items, project elementary trees. The elementary

trees for *will* and auxiliary *did* are shown in (19).

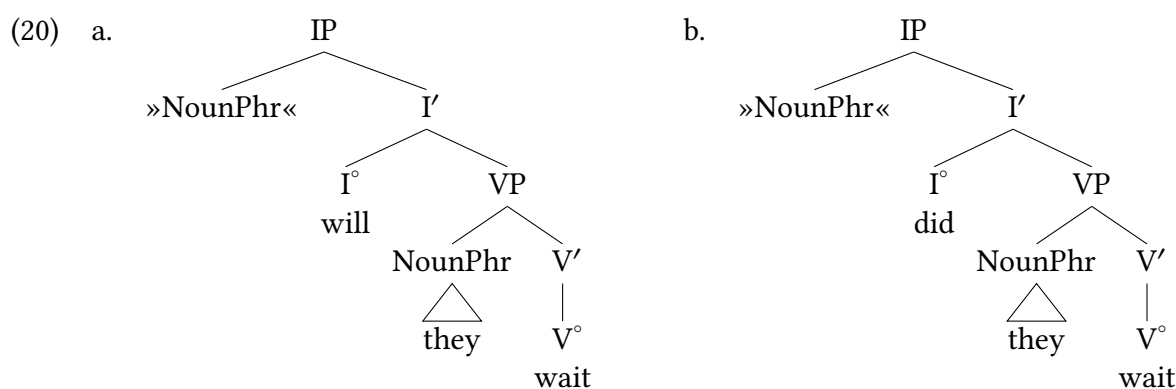
Extra Info

In this book, we give the syntactic category for modals, auxiliary *do*, and the silent tense morphemes that we introduce presently the name 'I', short for "inflection". (The auxiliary verbs *be* and *have* are introduced in connection with the passive in Chapter 8.)

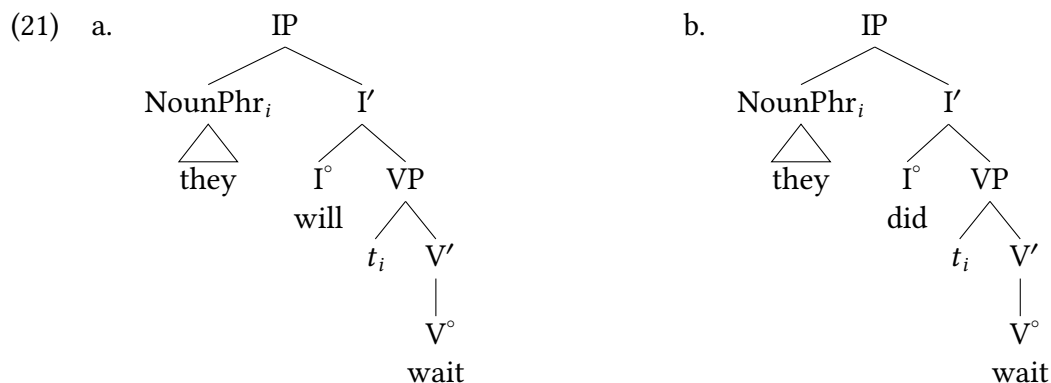
Nowadays, the usual name for this category is T, short for "tense". Both names designate exactly the same category. We prefer I, because the category includes modals, which do not express tense, at least not in a "pure" way. The reason for the other name is historical. The abbreviation T was current at one point, but then there were thought to be reasons to "split" it into two separate heads: T(ense) and Agr(eement). This split was later abandoned, and Agr(eement) became obsolete. Although there was no reason not to bring back the old name I, the new label T stuck. Another instance of terminological inertia!



We can substitute the structure in (18b) into each of the elementary trees in (19), yielding (20).³



The structures in (20) neatly reflect the semantic relation between tense and situations. The element in I corresponds to the tense function, the complement of I (= VP) corresponds to the function's input (the situation), and the maximal projection of I (= IP) corresponds to the function's output (the situation located in time). There remains a problem, however: the I element and the subject of the sentence are in the wrong order in (20). This problem can be solved by introducing a **movement** operation that transforms the structures in (20) into those in (21).



A few remarks are in order about this operation, but first, let's introduce some descriptive terminology. Movement always leaves a **trace** in the moved constituent's original position. A constituent and its traces (there can be more than one) are called a **chain**, and the elements of a chain are its **links**. As we will see, even simple sentences can contain more than one chain, so chains need to be distinguished from one another. Therefore, all links of a chain share an **index**. We will use the lowercase letters (*i*, *k*, *m*, ...) as movement indices.⁴ (We will generally omit the indices *j* and *l*, since they are easily confused with *i* at small font sizes.) Higher links in a chain are called the **antecedents** of lower ones. Finally, the highest and lowest links in a chain are called the chain's **head** and **tail**, respectively. It is perfectly possible, by the way, for a chain to consist of a single constituent.⁵ This happens when a constituent hasn't moved. The chain then contains a single link, which is simultaneously the chain's head and its tail.

Word of Caution

Don't confuse the movement chain sense of the term 'head' with the X' schema sense. The head of an X' structure is the vocabulary item that projects the structure. The head of a movement chain is the highest constituent in a chain, regardless of its X' status. Which sense is meant is generally clear from the context.

Is the head of the movement chains in (21) necessarily a head in the X' sense? No, because the subject of a sentence can be a multi-word expression like *the students in the class*.

The movement operation just introduced is not intended to represent a psycholinguistic process. Rather, it is conveniently understood as a way of representing mismatches between various aspects of linguistic structure. Specifically, in the case at hand, *they* satisfies two distinct functions. First, it is a semantic argument of the verb *wait*. Second, it is the subject of the entire sentence, whose syntactic head is I, not V. It is important to understand that the thematic role is distinct from the grammatical function. This is clearly shown by the existence of passive sentences. For instance, in the active sentence in (22a), it is the **agent argument** that functions as the **subject**, whereas in its passive counterpart in (22b), it is the **theme argument**.

Background Info

In (22), grammatical functions are indicated above the boxed element and thematic roles are indicated below. The following abbreviations are used:

SBJ - subject, OBJ - object, PP - prepositional phrase, A - agent, THM - theme

- (22) a.
- b.

But despite the double function of *they*, it is pronounced in the sentence only once. In other words, there is a mismatch (a lack of one-to-one correspondence) between properties of the syntax and properties of the phonology. It is this mismatch that is resolved by assuming movement. Now there are two links, one corresponding to each syntactic property (argument, subject), but only one of them is pronounced, which is consistent with the phonology.

We are now in a position to answer the second question posed earlier—namely, how can sentences be represented in a syntactically uniform way regardless of the morphological expression of tense? A simple answer to this question is possible if we assume that English has tense elements that are structurally analogous to auxiliary *do*, but not pronounced, as shown in (23). In this book, we adopt the convention of enclosing such silent elements in square brackets.

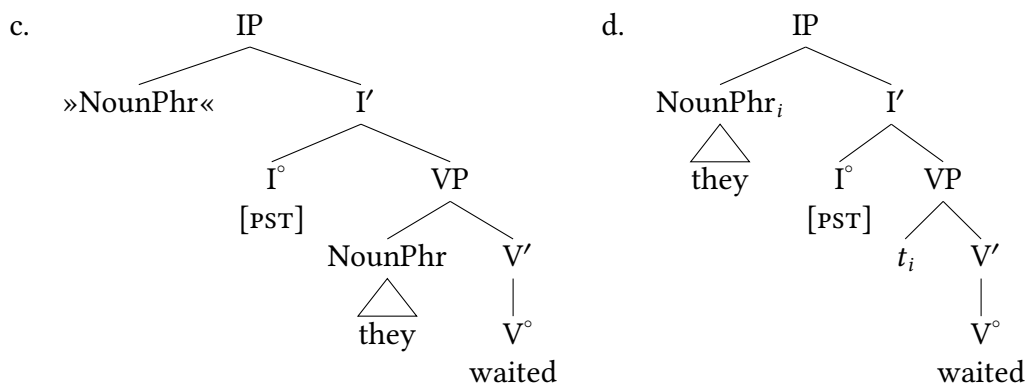
- (23) a.
- b.

Elementary trees like (23) make it possible to derive structures for sentences in which tense is expressed as a bound morpheme along the same lines as for sentences containing a modal or auxiliary *do*. In other words, they make it possible to impose IP as the normal form for all sentences. In (24), we illustrate the derivation of *They waited*.

- (24) a.
- b.

Select elementary tree for verb

Substitute argument



Substitute predicate-argument structure in (24b) in elementary tree for tense

Move subject from Spec(VP) to Spec(IP)

2.2 Complex sentences

This section is devoted to the derivation of sentences that contain complement **clauses** (also known as **clausal complements**). Some examples are given in (25); the complement clauses are in *italics*.

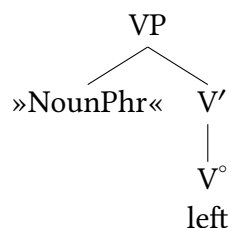
- (25) a. We will ask *if they left*.
 b. We believe *that they came*.

Although sentences with complement clauses can become unboundedly long (recall the instances of **recursion** in Chapter 1, deriving structures for them proceeds straightforwardly along the lines already laid out. *If* and *that* are both **complementizers**, so called because they have the effect of turning independent sentences into the complements of a **matrix** verb, and they project the elementary trees in (26).



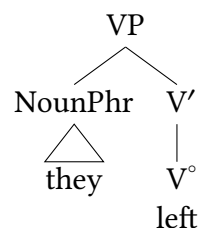
Given elementary trees like (26), we can derive the italicized complement clause in (25a) as in (27). The steps in (27a)–(27d) are analogous to (24a)–(24d).

(27) a.



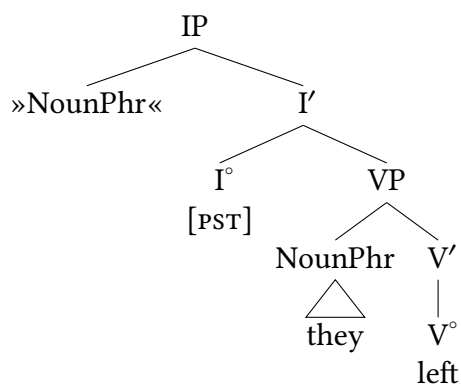
Select elementary tree for verb

b.



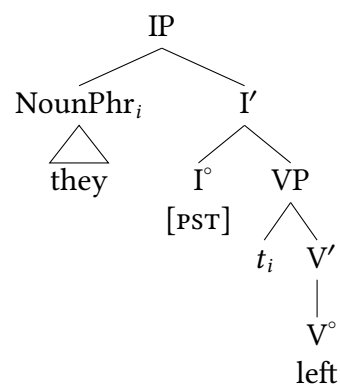
Substitute argument

c.



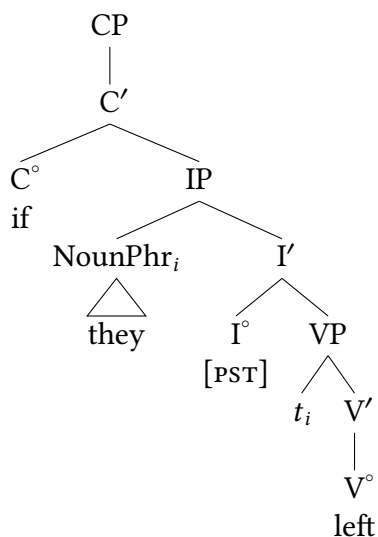
Substitute predicate-argument structure in (27b) in elementary tree for tense

d.



Move subject from Spec(VP) to Spec(IP)

e.

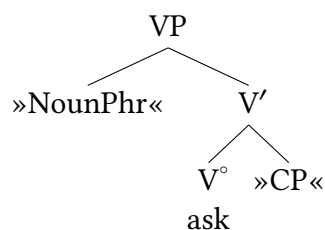


Add complementizer layer

The structure in (27e) in turn allows us to derive the entire matrix clause, as in (28). For readability, we collapse the internal structure of the complement clause in what follows.

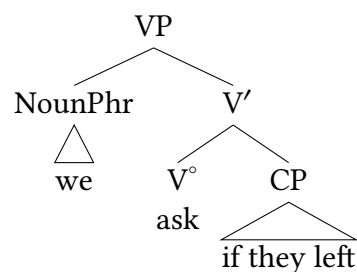
(28)

a.



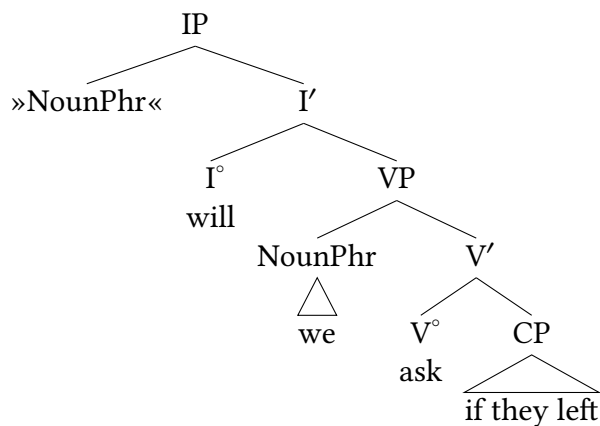
Elementary tree for matrix clause
verb

b.



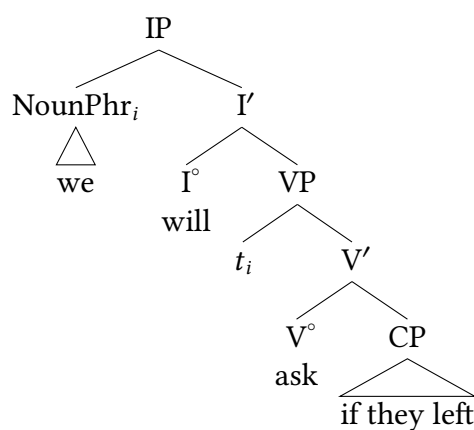
Substitute arguments, including
clausal complement (27e)

c.



Substitute (28b) in for modal (19a)

d.



Move subject from Spec(VP) to Spec(IP)

Given representations like (28d), we can now formally characterize **recursive structures** as in (29).

- (29) a. A structure is **recursive** if and only if it contains at least one recursive node.
 b. A node is recursive if and only if it dominates a node distinct from it, but with the same label.

Word of Caution

The recursive nodes in (28d) are the higher IP, I', VP, and V' nodes (and no others). The lower IP, I', VP, and V' nodes (hidden in the triangle in (28d), but visible in (27e)) are not recursive nodes, since they don't dominate another instance of the same category.

Note that a recursive node need not be the root node of a tree and that it can be any projection level (XP, X', or X).

For a node to be recursive, it is not enough that the tree contains a second instance of the category somewhere. For instance, none of the NounPhr nodes in (28d) is recursive, even though the sentences contains many of them. The first node has to dominate (though not necessarily immediately dominate) the second one.

The adjunct relation

3

3.1 Modification is different

The elementary trees introduced so far allow us to represent two of the three basic linguistic relations discussed in Chapter 3—namely, argumenthood and predication. As we have seen, semantic arguments of a verb can be represented by substituting syntactic arguments at one of the two argument positions in the verb's elementary tree: either the complement position or the specifier position. VPs and IPs can be treated as arguments (specifically, as complements) of I and C, respectively. And finally, although predication is not reducible to argumenthood (recall from Chapter 3 that expletive subjects are required independently of a verb's semantic requirements), subjects occupy specifier positions regardless of whether they are semantic arguments or not. In other words, predication does not require a special structural relation uniquely associated with it.

An important remaining question is how to represent the modification relation using the X' schema developed so far. In principle, modification might resemble predication in not requiring a structural relation of its own. As it turns out, however, neither of the two head-argument relations (head-specifier, head-complement) adequately represents the relation between a head and its modifier. As we have seen, when a verb combines with a complement, the category of the

resulting constituent (V') is distinct from that of the verb (V) (recall the contrast between (4) and (6)), and when the verb and the complement in turn combine with the specifier, the category of the resulting constituent (VP) is distinct yet again (recall the contrast in (7)). By contrast, modifying a verb-complement combination like *ate the pizza* in (30) does not change the syntactic category of the resulting constituent, which remains V' (the modifier is in italics).

- (30) a. The children ate the pizza.
b. The children ate the pizza *with gusto*.

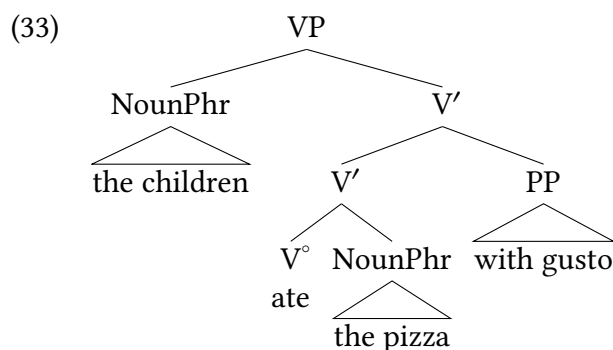
This is evident from the *do so* substitution facts in (31), where *do so* can replace either the unmodified or the modified verb-complement combination.

- (31) a. The children ate the pizza with gusto. → ✓ The children did so with gusto.
b. The children ate the pizza with gusto. → ✓ The children did so.

The same pattern holds for intransitive verbs that combine with a modifier.

- (32) a. The children ate with gusto. → ✓ The children did so with gusto.
b. The children ate with gusto. → ✓ The children did so.

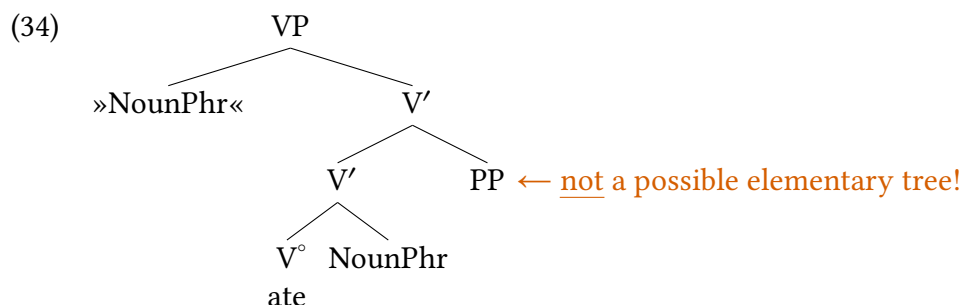
The *do so* substitution facts in (31) and (32) motivate the syntactic structure for (30b) that is given in (33) (for clarity, we focus on the internal structure of the VP).



The structural relation of the modifier *with gusto* to the spine of the V projection is known as the **adjunct** relation, and the modifier itself is said to be an **adjunct**. Modifiers are always represented as adjuncts. As a result, ‘modifier’ and ‘adjunct’ tend to be used somewhat interchangeably. In this book, however, we will distinguish between the two terms as follows. We will use ‘modifier’ when we want to highlight a phrase’s semantic function of qualifying or restricting the constituent being modified. For instance, as we mentioned in Chapter 3, a verb like *laugh* denotes the set of entities that laugh. Combining the verb with a modifier like *uproariously* yields the expression *laugh uproariously*, which denotes a subset of the set denoted by *laugh*. We will use the term ‘adjunct’ when focusing on a constituent’s structural position in a tree. As we will see [later on](#) in this chapter, it is possible for semantic arguments to be represented as syntactic adjuncts. This does not change the semantic argument into a modifier, however!

3.2 The need for an adjunction operation

The structure in (33) raises the question of what elementary tree for transitive *ate* is involved in its derivation. ‘Unsubstituting’ both arguments and the modifier, as we did in (9) for trees containing only arguments, yields the structure in (34).



Is the structure in (34) a satisfactory elementary tree? Clearly, allowing it means that our grammar now contains two elementary trees for transitive *ate*. At first glance, this doesn't seem like a serious problem, since we already allow two elementary trees for *ate*, the intransitive and transitive ones in (35).



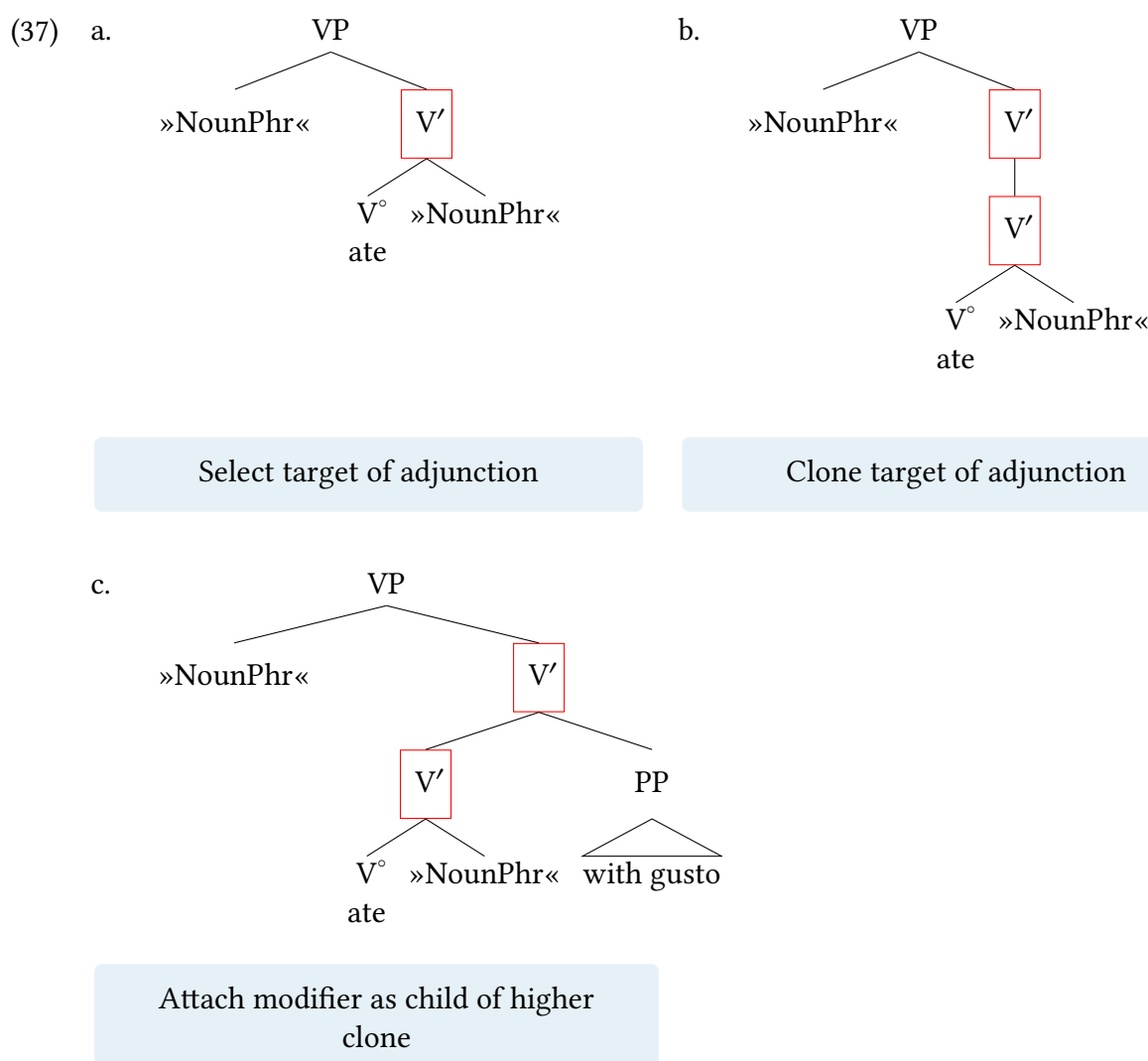
But (34) differs in a crucial respect from the structures in (35): it is a recursive structure. This has an extremely undesirable consequence: namely, that if we were to derive structures like (33) by means of elementary trees like those in (34), there would be no principled way to avoid an unbounded number of such elementary trees. For instance, the derivations of the sentences in (36), with their increasing number of modifiers, would each require a distinct elementary tree for *drink*, and each additional modifier would require an additional elementary tree.

- (36)
- We would drink lemonade.
 - We would drink lemonade / in summer.
 - We would drink lemonade / in summer / on the porch.
 - We would drink lemonade / in summer / on the porch / with friends.
 - We would drink lemonade / in summer / on the porch / with friends / for fun.

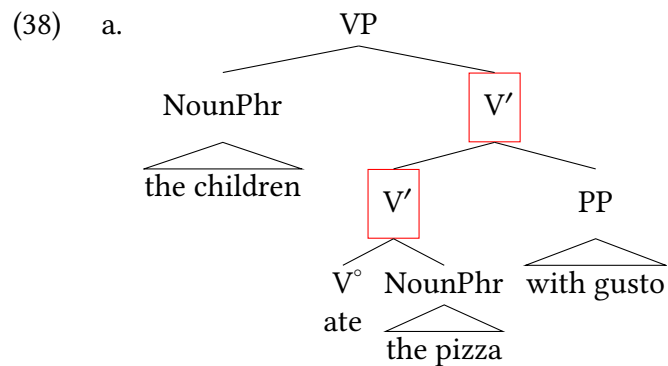
But the whole point of a generative grammar is to generate an unbounded set of sentences from a finite set of elementary expressions and operations. Given this aim, elementary trees must be non-recursive structures, with the consequence that adjuncts cannot be integrated into larger syntactic structures by substitution. Accordingly, we introduce a further tree operation called **adjunction**. The specific operation of interest to us is sometimes called Chomsky-adjunction,

to distinguish it from Joshi-adjunction, a different formal operation that plays a central role in *Tree-Adjoining Grammar* (Joshi, Levy, and Takahashi 1975).

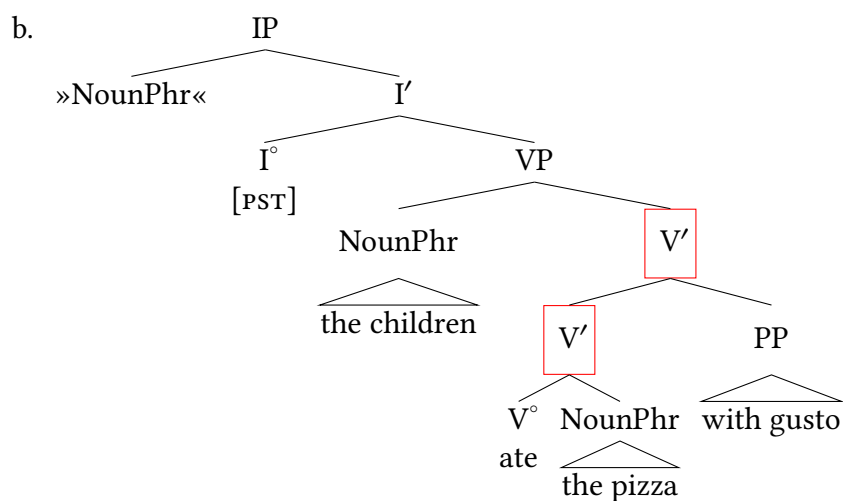
For the moment, we will use the adjunction operation to integrate modifiers into syntactic structures. As we will see in Chapter 6, the adjunction operation is also used for other purposes. Whatever its linguistic purpose, however, it is always the same formal (that is, graph-theoretical) operation: namely, a two-step process that targets a particular node. When the purpose of adjunction is to integrate a modifier into a larger structure, as it is here, the target of adjunction is an intermediate projection, indicated by the red box in (37a). The first step in carrying out adjunction is to make a clone of the target of adjunction that immediately dominates the original node, as in (37b). The second step is to attach the tree for the modifier as a child of this higher clone, as in (37c).



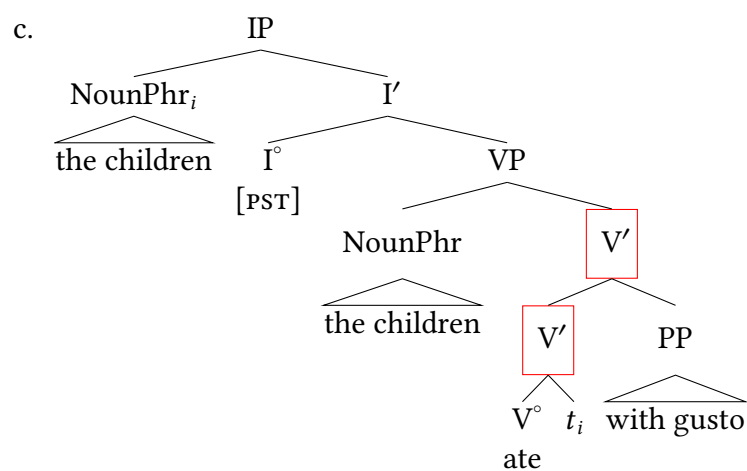
Deriving the rest of the structure for the entire sentence proceeds as outlined in § 2.1 earlier, as shown in (38).



Substitute arguments



Substitute (38a) in elementary tree for tense



Move subject

For expository reasons, we have illustrated the derivation of the sentence with adjunction preceding substitution and movement. However, the order of adjunction with respect to the other operations is irrelevant.

3.3 A typology of syntactic dependents

A convenient cover term for complements, specifiers, and adjuncts is **syntactic dependent**. Each type of syntactic dependent stands in a unique structural relation to the head and the spine that it projects. Complements and adjuncts are both children of intermediate projections, but they differ in that complements are siblings of heads, whereas adjuncts are siblings of the next higher projection level. As siblings of intermediate projections, adjuncts resemble specifiers. But adjuncts are children of intermediate projections, whereas a specifier is the child of a maximal projection. These structural relations and distinctions are summarized in Table 4.2, which also includes the formal operations that fill or create the positions in question.

Relation to head	Sibling of...	Child of...	Formal operation
Complement	Head	Intermediate projection	Substitution
Adjunct	Intermediate projection	Intermediate projection	Adjunction
Specifier	Intermediate projection	Maximal projection	Substitution

Table 4.2: Summary of structural relations and formal operations

3.4 More on the distinction between complements and adjuncts

Given Table 4.2, it is easy to tell whether a constituent is represented in a particular tree diagram as a complement or as an adjunct. However, it is not always self-evident whether a phrase is a complement or an adjunct as a matter of linguistic fact.

Word of Caution

Remember that tree structures are models of linguistic facts, that can be correct or incorrect. Just because it is possible to build a tree that represents a certain phrase as a complement doesn't mean that the phrase actually is a complement.

The most reliable way to determine the relation of a particular phrase to a verb is to use *do so* substitution. If a phrase need not be included as part of the sequence being replaced by *do so*, then it is an adjunct. If it must be included, then it is a complement. Using this test, we find that phrases specifying cause or rationale, time, location, or manner are generally adjuncts, even if they are noun phrases. Some examples, including the results of *do so* substitution, are given in (39); the adjuncts are in italics.

- (39) a. Rationale:
 They waited *for no good reason*, but we did so *for a very good one*.
 b. Duration:
 They waited *(for) a day*, but we did so *(for) a month*.

c. Location:

They waited *in the parking lot*, but we did so *across the street*.

d. Manner:

They waited *patiently*, but we did so *impatiently*.

In the examples that we have seen in this book so far, semantic arguments are expressed as syntactic arguments (or not at all). It is possible, however, for semantic arguments to be expressed in the syntax as adjuncts (this is one of the [the mismatch cases](#) mentioned earlier in connection with binary-branchingness). For example, as we mentioned in Chapter 3, § 1, *rent*, from a semantic point of view, is a five-place predicate, with arguments denoting property owner, tenant, rental property, amount of money, and lease term. Some of these semantic arguments are expressed as syntactic arguments. For instance, in (40), the phrase denoting the rental property is a complement, as is evident from the results of *do so* substitution.

(40) Dennis rented the apartment to Lois. → *Dennis did so the apartment to Lois.

By contrast, *do so* substitution shows that the phrase denoting the lease term is an adjunct, even though lease terms are semantic arguments of *rent* on a par with rental properties.

(41) Dennis rented Lois the apartment for two months. → ✓ Dennis did so for two months.

A final word should be said about the correlation between a syntactic dependent's obligatory or optional character and its status as a complement or adjunct. It is tempting to assume the biconditional relationship in the "Dream world" column in Table 4.3.⁶

If a syntactic dependent is...	then it is...	Dream world	Real world
obligatory	a complement.	TRUE	TRUE
a complement	obligatory.	TRUE	<u>sometimes FALSE</u>

Table 4.3: Correlation between obligatoriness and complement status

But as the rightmost column indicates, the biconditional relationship doesn't hold. It is true that obligatory syntactic dependents are complements. For instance, the contrast in (42) is evidence that the noun phrase following *devour* is a complement, a conclusion that is borne out by *do so* substitution in (43).

(42) Every time I see him...

a. *...he's devouring.

b. ✓...he's devouring a six-inch steak.

(43) *He devoured a hamburger and french fries, ...

a. *...and she did so six samosas.

b. ✓...and she did so, too.

But not all complements are obligatory. The grammaticality of both (44a) and (44b) shows that the phrase *French fries* in (44b) is optional. But the ungrammaticality of (44c) shows that it is nevertheless a complement.

- (44) a. ✓ She ate, and he did so, too.
 b. ✓ She ate French fries, and he did so, too.
 c. * She ate French fries, and he did so three samosas.

Although the second row of Table 4.3 is false, the first row does have the valid consequence in (45) (derived by the *modus tollens* rule of propositional logic).

- (45) If a syntactic dependent is not a complement, it is not obligatory.

The two valid generalizations in the first row of Table 4.3 and (45) can be summarized succinctly as in (46).

- (46) a. Obligatory syntactic dependents are complements.
 b. Adjuncts are optional.

Do we need intermediate projections?

4

We conclude this chapter by raising a question concerning the simplicity of the theory of phrase structure that we have been developing. Given that words (or syntactic atoms of some sort) combine with one another to form phrases, any theory of syntax must assume heads and phrases. But making a further distinction between two types of phrases (intermediate projections versus maximal projections) seems inelegant, and attempts have therefore been made to eliminate intermediate projections, along with the possibility of adjunction to them. For instance, given our current assumptions, sentences like (47) force us to allow adjunction to intermediate projections.

- (47) a. [_{IP} They [_{I'} never [_{I'} will agree to that]]].
 b. God let [_{VP} there [_{V'} suddenly [_{V'} be light]]].

However, if the IP and the small clause VP in such sentences were ‘split up’ into two separate projections, it would be possible to eliminate the intermediate projections and to adjoin the modifiers to maximal projections instead. This is illustrated in (48), where IP has been split into Agr(eement)P and T(ense)P, and the small clause VP has been split into Pred(ication)P and a lower VP.

- (48) a. [_{AgrP} They [_{TP} never [_{TP} will agree to that]]].

b. God let [_{PredP} there [_{VP} suddenly [_{VP} be light]]].

A useful way to frame the issue is as a trade-off between two options. The first option buys a relatively small set of familiar syntactic categories at the cost of assuming intermediate projections. The second option buys an intuitively appealing two-level phrase structure scheme at the cost of a proliferating and increasingly abstract set of syntactic categories. In this introductory textbook, we will continue to assume the classic X' schema in (10) with its three bar levels.

Given this choice, we know from (47) that adjunction must be able to target intermediate projections. As we will see in Chapter 6, adjunction must also be able to target heads. Assuming three bar levels, can adjunction also target maximal projections? The simplest answer (taking 'simple' to mean 'maximally general') answer is 'yes'. In this textbook, however, we will see only examples of adjunction to heads and intermediate projections.⁷

Notes

5

1. Why is V' read as V-bar when it contains not a bar (\bar{V}), but a prime symbol? The reason is that when the idea of bar levels was introduced in the 1970s, the various levels were distinguished by horizontal bars over a syntactic category. The lowest level had no bars, the first level one, and the second two. But back in the days of typewriters, such overbars were cumbersome to type (you typed the symbol $-*$, rolled up the platen a bit, backspaced, typed an overbar $*$, repeated from $-*$ to $*-$ for each overbar, and then rolled the platen down again the right amount). Overbars are also expensive to typeset, and even today, they aren't part of the standard character sets for HTML documents. Therefore, it was and continues to be convenient to substitute prime symbols for overbars. However, linguists have failed to update their terminology (terminological inertia again!), and so the old term 'bar' is still with us.
2. The semantics of tense we are assuming here is oversimplified, but sufficient for our purposes.
3. The representations in (20) look like appropriate representations for the questions *Will he wait?* and *Did he wait?* But they can't be, since they contain unfilled substitution nodes. Moreover, as we will see in Chapter 6, there is reason to postulate a projection above IP in the representations of questions.
4. In the syntax literature, it is standard to use alphabetical subscripts not just to track movement but also to indicate reference and coreference (see § 1 of Chapter 15). For clarity, this book uses lowercase letters as movement indices exclusively. If we need referential indices, we use the natural numbers.
5. Mathematicians would call a chain with a single constituent a degenerate case.
6. A similarly tempting biconditional relationship (and false there, too) was discussed in §3.2 of Chapter 2.
7. Sentences like (i) appear to require adjunction to maximal projections (IP, given our assumptions).

(i) Tomorrow, we will eat pizza.

However, in Chapter 6, we will give such examples a structure in which the clause-initial phrase moves to the

specifier position of the projection of a (silent) head higher than I. Analogous reasoning would extend to examples like (ii), where the silent head would have to be even higher.

- (ii) Tomorrow, what will we eat?

Exercises and problems

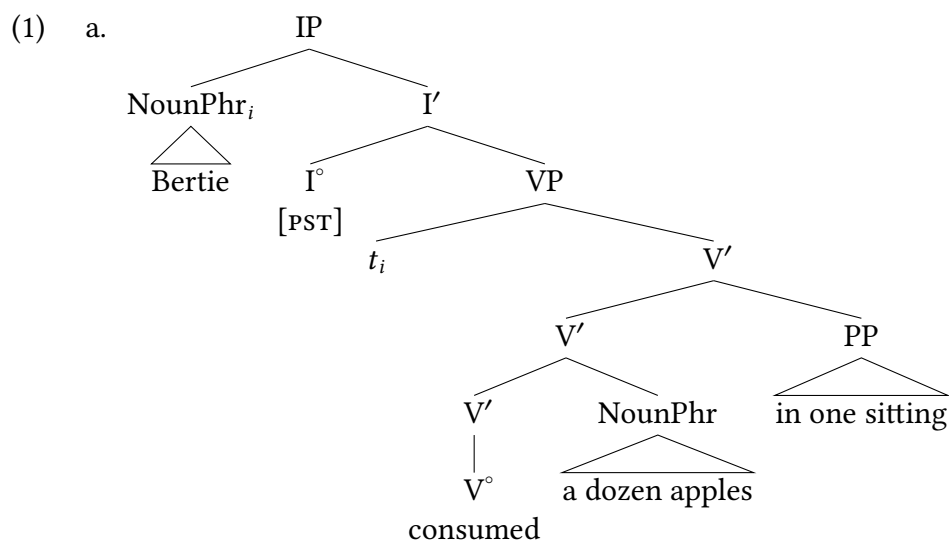
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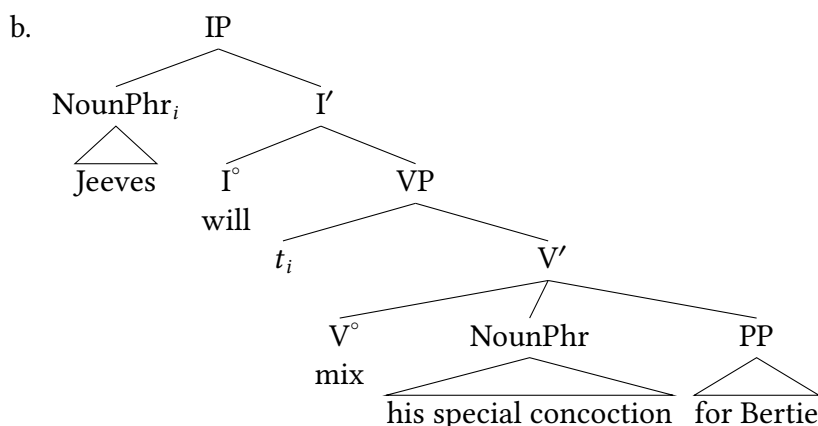
Exercise 4.1

What is the X' status of Fregean and of Aristotelian predicates? You should be able to answer in one or two brief sentences.

Exercise 4.2

The trees in (1) fail to correctly account for certain grammaticality judgments. What are those judgments?





Exercise 4.3

A. Are the italicized phrases in (1) syntactic arguments or adjuncts? Explain. There is no need for extensive discussion beyond your one-word conclusion and the evidence from *do so* substitution on which you base it.

- (1)
- They waited *for us*.
 - This program costs *twenty dollars*.
 - We drove *to Denver*.
 - We worded the letter *carefully*.
 - They may behave *very inconsiderately*.
 - This volcano might erupt *any minute*.

B. Build structures for the sentences in (1). Needless to say, the structures you build should be consistent with the evidence you gave in (A).

Exercise 4.4

A. Build structures for the sentences in (1). Motivate your attachment of the lowest argument or adjunct in each sentence (in other words, provide the *do so* substitution evidence that leads you to attach the phrase in question the way that you do).

- (1)
- They demolished the house.
 - Mona Lisa called the other neighbor.
 - Mona Lisa called the other day.
 - You will recall that her smile amazed everyone.
 - Most people doubt that Mona Lisa lives in Kansas.
 - My friend wondered if Mona Lisa would come to his party.

B. Indicate all recursive nodes in the structures that you build for (1).

Exercise 4.5

- A. (1) is structurally ambiguous. Paraphrase (or otherwise distinguish) the two relevant interpretations. (Focus on the structural ambiguity, ignoring the referential ambiguity of *they*.)

(1) They claimed that they paid on the 15th.

- B. Build a structure for each of the interpretations, indicating which structure goes with which interpretation. We encourage you to build chunks and indicate how they fit together differently for the two interpretations.
- C. Indicate all recursive nodes in the structures that you build for (1).

Exercise 4.6

- A. Make up a sentence with two adjuncts. Provide syntactic evidence that the adjuncts are adjuncts rather than syntactic arguments. Then build the structure for the sentence. Finally, switch the linear order of the adjuncts, and build the structure for the resulting word order variant of your original sentence.
- B. Make up a simple sentence in which one of the semantic arguments of the verb is expressed in the syntax as an adjunct. Provide evidence that the adjunct is one. Finally, build the structure for your sentence.

Exercise 4.7

In connection with introducing the formal operation of adjunction, we insisted that “the whole point of a generative grammar is to generate an unbounded set of sentences from a finite set of elementary expressions and operations”. What problem arises if we allow a generative grammar to include a potentially unbounded set of elementary trees or operations?

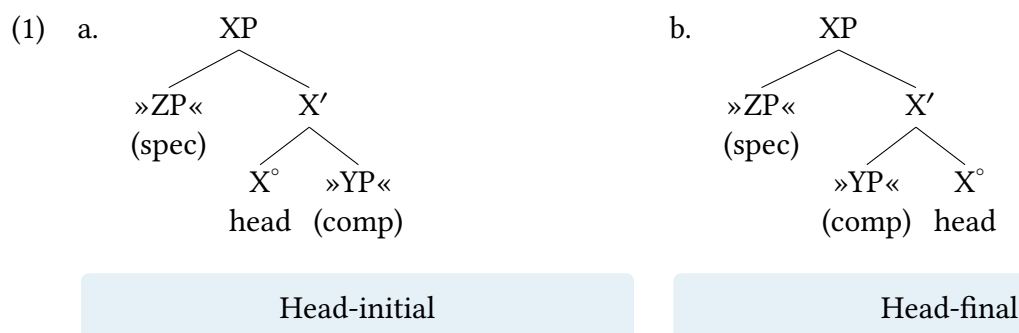
Exercise 4.8

Is it possible for two adjuncts to be siblings? Explain.

Problem 4.1

Is it possible for an adjunct to precede a complement? How about immediately precede?

What if you are allowed to “swivel” at X' in the X' schema, so that YP precedes X? (The resulting head-final structures are discussed in more detail in Chapter 5, § 4.)

**Problem 4.2**

In the chapter, we define adjunction as an operation that clones a target node and attaches a phrase as the child of the higher clone. Imagine an operation that clones the target node and attaches a phrase as the child of the lower clone. Would such an operation be useful? Explain.

Problem 4.3

As mentioned in the text, it is attractive to assume a theory of phrase structure that does away with the notion of intermediate projection. For cases like (47), it is possible to eliminate the distinction between intermediate and maximal projections by means of extending the set of syntactic categories.

But there are further difficulties that cannot be solved by this means. What are they? Can you think of a way of solving them?

Hint: Redo Table 4.2 using two bar levels.

Extending the X' schema

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In Chapter 4, we introduced a [normal form](#) for phrase structure, the X' schema, according to which lexical items project an elementary tree consisting of a spine and up to two argument positions. In this chapter, we extend the X' schema to syntactic categories other than V, I, or C, to include N(oun), D(eterminer), A(djective), and P(reposition). The final section of the chapter illustrates crosslinguistic variation with regard to the order of heads and complements.

Noun phrases

1

1.1 Parallels and differences between noun phrases and sentences

The X' schema of phrase structure that we introduced in Chapter 4 is a specific expression of a more general idea—namely, that lexical items of different syntactic categories show significant **cross-categorical** parallels. In the history of generative grammar, this idea was primarily based on the cross-categorical parallels between noun phrases and sentences (Chomsky 1970). In what follows, we review these parallels as well as some differences between the two categories.

Argument structure

Early in the history of generative grammar (Lees 1960), it was observed that sentences like (1a) and noun phrases like (1b) share several important properties.

- (1) a. The army destroyed the city.
- b. the army's destruction of the city

The semantically central element of the sentence in (1a) is the verb *destroyed*, and its semantic arguments, the **agent** *the army* and the **theme** *the city*, are both expressed as syntactic arguments of the sentence. In a parallel way, the semantically central element in the noun phrase in (1b) is the **nominal** counterpart of *destroy*, the noun *destruction*. Like the verb, the noun is associated with an agent argument and a theme argument that are both overtly expressed—in this case, as the possessive expression *the army's* and the prepositional phrase *of the city*.

The correspondence in (1) is supported by that between the passive sentence in (2a) and its passive-like noun phrase counterpart in (2b).

- (2) a. The city was destroyed (by the army).
- b. the city's destruction (by the army)

In both of these examples, the argument preceding the head is now the theme *the city*(*'s*), and the agent argument is expressed by an optional *by* phrase.

Modification

A further parallel between sentences and noun phrases is that in both categories, the semantically central element—the verb or the noun—can be modified in similar ways, as illustrated in (3) and (4).

- (3) Adverb: She *regularly* gives money to the organization.
 Prepositional phrase: She gives money to the organization *on a regular basis*.
- (4) Adjective: her *regular* gifts of money to the organization.
 Prepositional phrase: her gifts of money to the organization *on a regular basis*

Some cross-categorical differences

Sentences and noun phrases also exhibit certain differences. First, arguments and modifiers are not always expressed in exactly the same way across the two categories. For instance, the agent argument is expressed as an ordinary noun phrase in a sentence like (1a), but as a possessive noun phrase in a noun phrase like (1b). In a sentence, the theme argument is expressed as a noun phrase, but in a noun phrase, it must be part of a prepositional phrase, usually an *of* phrase. Finally, although verbs and nouns can both be modified by prepositional phrases, verbs are modified by adverbs, whereas nouns are modified by adjectives (with some exceptions in both directions). In connection with this last difference, notice that adverbs can precede or follow the verb they modify, whereas adjectives (in English) are ordinarily restricted to prenominal position.

- (5) Adverb
 a. The kids *regularly* donate their old toys.
 b. The kids donate their old toys *regularly*.
- (6) Adjective
 a. the kids' *regular* donation of their old toys.
 b. *The kids' donation their old toys *regular*.

A further and even more fundamental difference between sentences and noun phrases concerns the subject requirement. As we saw in Chapter 3, all sentences require a syntactic subject, even when it does not correspond to a semantic argument, as is evident from the contrast between (7) and (8).

- (7) a. ✓ *It* appears that the manuscript has been found.
 b. ✓ *There* exists a solution.
- (8) a. *Appears that the manuscript has been found.
 b. *Exists a solution.

By contrast, noun phrases never require a subject. For instance, the agent argument of a noun can be expressed, but it needn't be, as shown in (9).¹

- (9) a. ✓ the committee's criticism of the proposal
 b. ✓ the criticism of the proposal

What is even more striking is that sentences with expletive subjects have no noun phrase counterparts. As (10) shows, the very expletive expressions that are obligatory in (7) are ungrammatical in noun phrases.²

- (10) a. * *it(s)* appearance that the manuscript has been found
 b. * *there('s)* existence of a solution

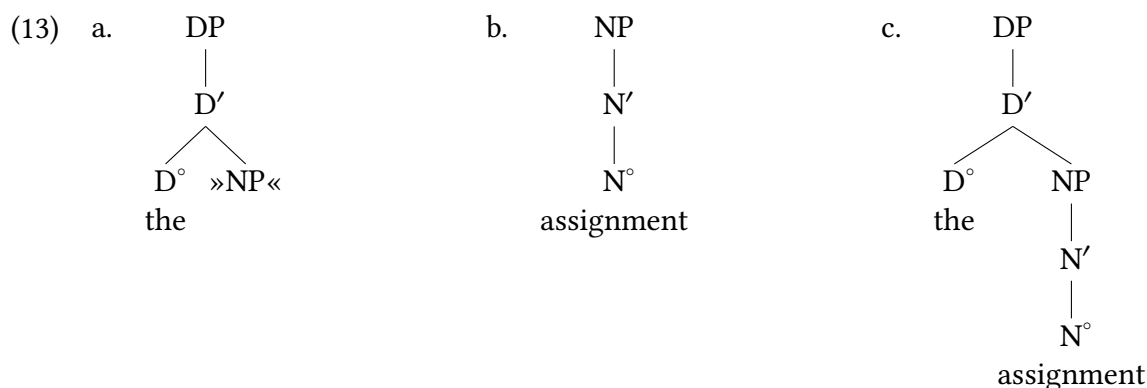
In summary, noun phrases resemble sentences in that their core categories—nouns and verbs, respectively—have semantic arguments that can be expressed as syntactic arguments in partly similar ways. Nouns and verbs can also be modified in largely similar fashion. We do not deny that the two categories differ fundamentally with respect to the subject requirement. However, in the remainder of this part of the chapter, our focus will be on how to represent the parallel aspects of noun phrases and sentences.

1.2 Noun phrases as DPs

A striking fact about nouns is that, in many constructions in many languages, they cannot in general function as arguments on their own, but must be accompanied by a **determiner**.

- (11) a. * *Assignment* is not difficult.
 b. * You should hand in *assignment*.
 (12) a. { *The, this, that* } *assignment* is not difficult.
 b. You should hand in { *the, this, that* } *assignment*.

We conclude from this that noun phrases are the result of composing two projections, one headed by the noun and the other by the determiner, as shown in (13).

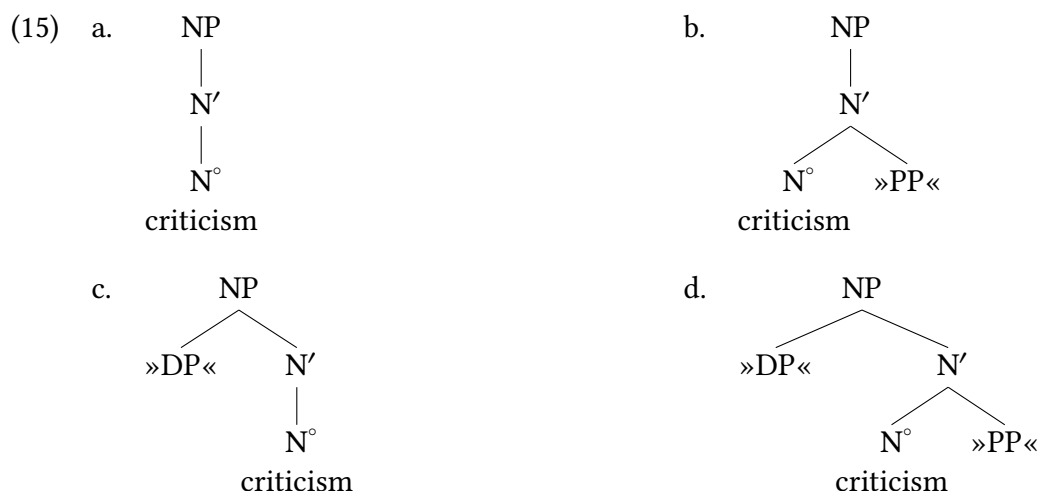


Take Note

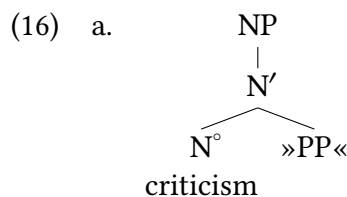
Given the structure in (13c), the traditional term ‘noun phrase’ is a misnomer since noun phrases are maximal projections of D rather than of N. Because the term ‘noun phrase’ is firmly established in usage, we continue to use it as an informal synonym for ‘DP’. However, in order to avoid confusion, we will use the term ‘NP’ only to refer to the sub-constituent of a noun phrase that is the complement of a determiner. We will never use ‘NP’ to refer to an entire noun phrase (that is, a DP).

In the simplest case, the elementary tree for a noun consists of just a spine, as in (13b). But as we have just seen, nouns, like verbs, can have both complements and specifiers. For instance, depending on which of the noun phrases in (14) it appears in, *criticism* is associated with one of the elementary trees in (15).

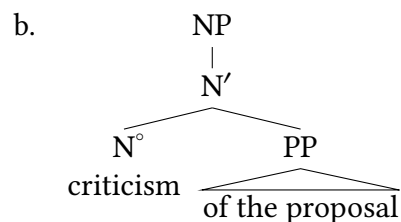
- (14) a. They refuted *the criticism*.
 b. They refuted *the criticism of the proposal*.
 c. They refuted *the committee’s criticism*.
 d. They refuted *the committee’s criticism of the proposal*.



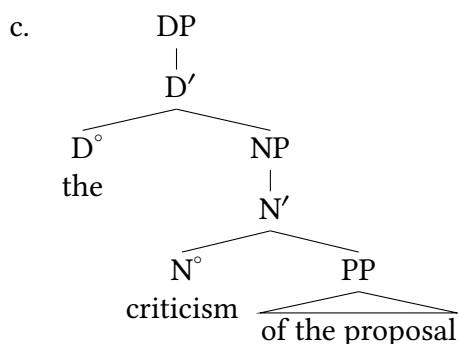
In (14a), the phrase *the criticism* is derived in exactly the same way as *the assignment* in (13)—by substituting the NP in (15a) as the complement of the determiner. In (15b), the noun phrase containing *criticism* is derived as in (16). (The internal structure of PPs is covered later on in the chapter; for the moment, we ignore it.)



Elementary tree for N (15b)

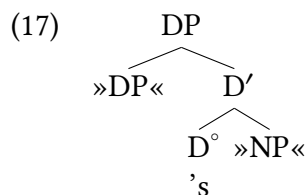


Substitute theme argument



Substitute (16b) in elementary tree for D

Noun phrases containing possessive noun phrases, like (14c), require a possessive head 's, which contains two argument positions. The elementary tree for this head is shown in (17).

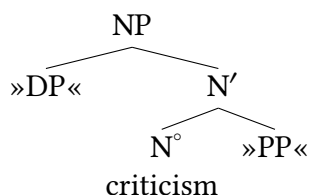


Notice that the possessive head is not a free morpheme. Recall from Chapter 4 that we posited elementary trees headed by silent bound tense morphemes in order to allow us to represent English past and present tense sentences analogously to their future tense counterparts. In the same spirit, we allow elementary trees headed by overt bound morphemes like 's. In general, modern syntactic theory is not terribly concerned with whether the heads of elementary trees are bound or free morphemes, or silent or overt, as long as the trees allow us to provide maximally similar representations for linguistically related phenomena.

The derivation of the entire noun phrase proceeds as shown in (18). The elementary tree for the noun is given in (18a). The agent argument substitutes into that tree's specifier position. To simplify the representation, we omit the argument's internal structure, which is analogous to (13c). The resulting NP then substitutes into the complement position of the possessive head, and

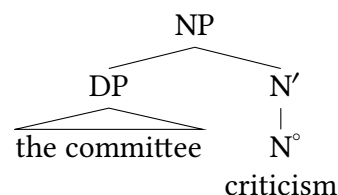
finally, the argument in Spec(NP) moves to Spec(DP) in a manner analogous to subject movement in sentences.

(18) a.



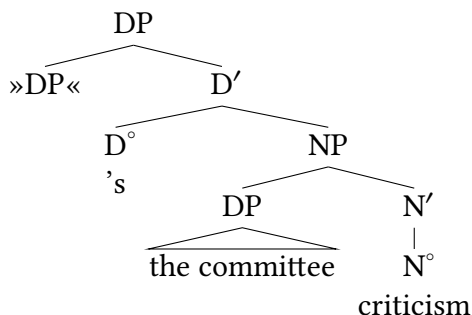
Elementary tree for N (15c)

b.



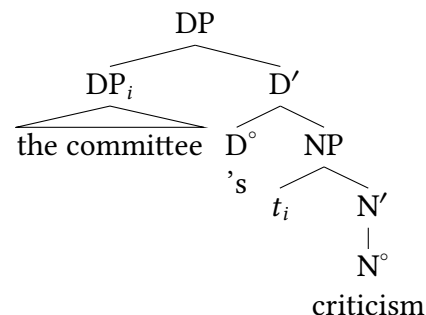
Substitute agent argument

c.



Substitute (18b) in (17)

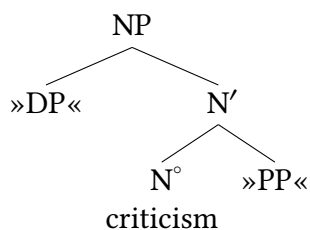
d.



Move specifier from Spec(NP) to Spec(DP)

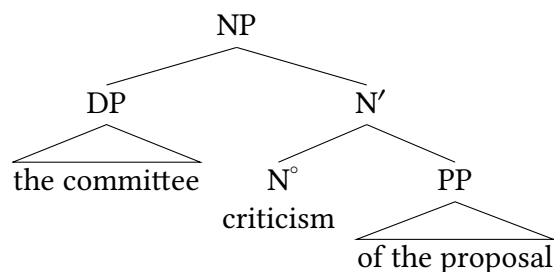
Finally, deriving (14d) involves substituting both the agent and theme arguments in the elementary tree in (15d). The remainder of the derivation is identical to that of (14c) and is shown in (19).

(19) a.

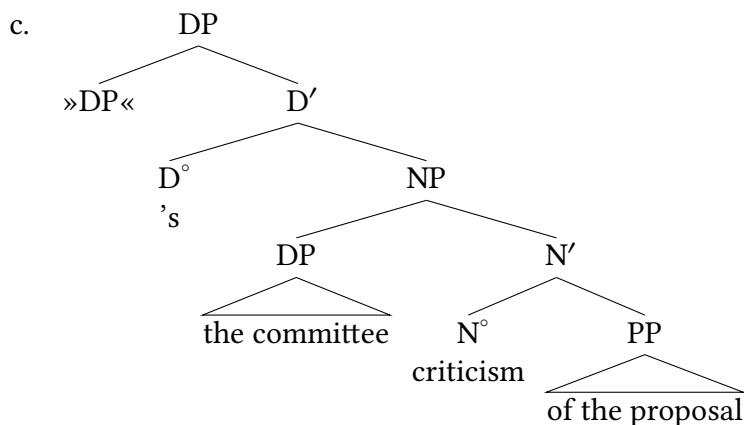


Elementary tree for N (15d)

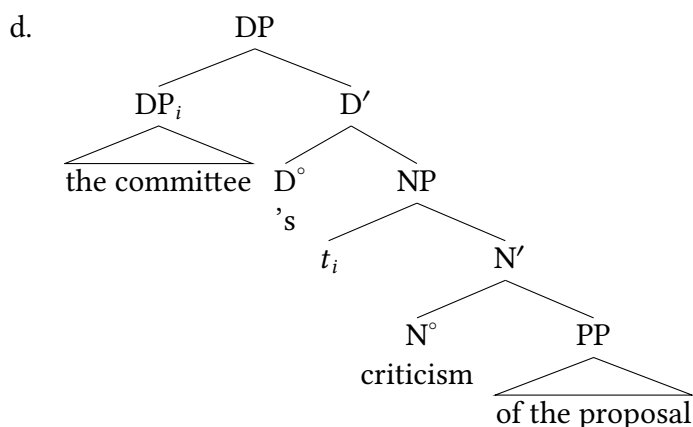
b.



Substitute agent and theme arguments



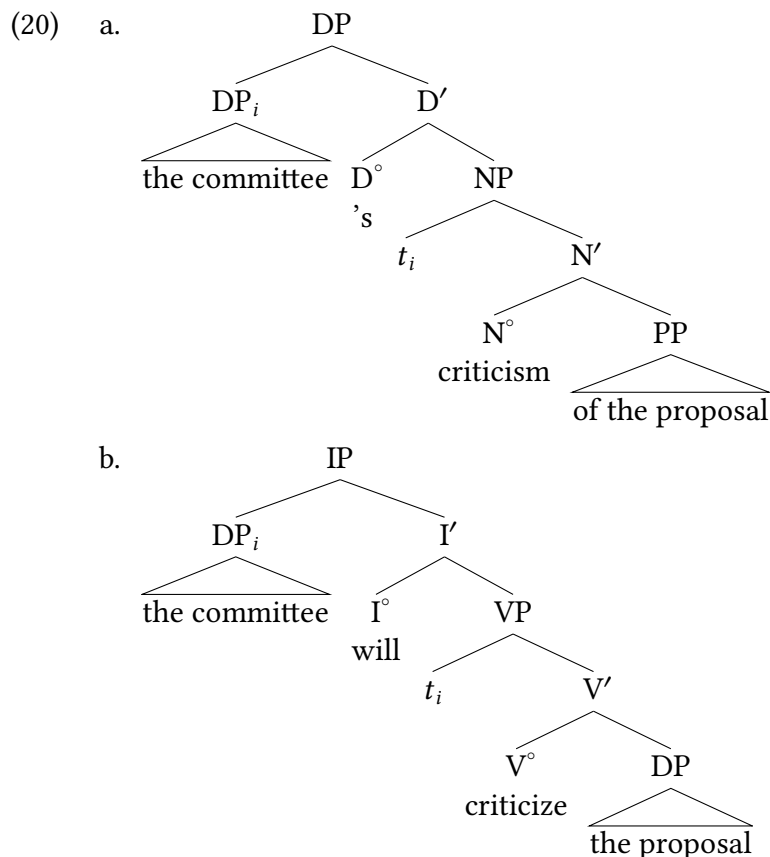
Move specifier from Spec(NP) to Spec(DP)



Substitute (18c) in (17)

Before proceeding, we draw attention to the fact that the orthographic word *committee's* is not a constituent in the syntactic structures in (18) and (19). It is not easy to determine whether this mismatch can be eliminated for all possessive noun phrases. If not, then we have an additional mismatch between syntax and morphology on a par with the syntax-prosody and syntax-semantics mismatches discussed in Chapter 2. We will see undoubted syntax-morphology mismatches in Chapters 10 and 11. Until then, we put the issue aside.

In (20), we repeat the tree for the noun phrase in (18d) followed by the tree for a sentential counterpart. We maximize the parallel by choosing overt heads for both D and I, and we omit the internal structure of DPs and PPs in order to highlight the topological parallel between the two trees. As is evident, apart from the labels for the syntactic categories, the two-layered structure for noun phrases (NP, DP) presented here is analogous to the two-layered structure for sentences from Chapter 4 (VP, IP).

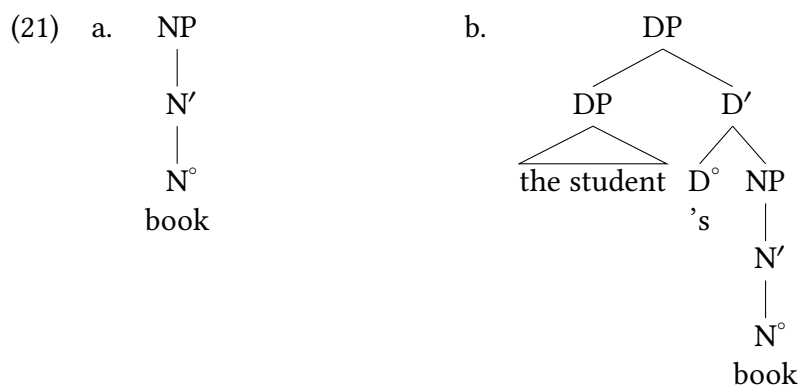


Given the structural parallels between (20a) and (20b), it is convenient to generalize the notion of subject to include both Spec(IP) and Spec(DP). Accordingly, we will use the term ‘subject movement’ to subsume both movement from Spec(VP) to Spec(IP) and movement from Spec(NP) to Spec(DP).

The structural parallel between the two trees in (20) is further supported by the following semantic parallel. In a formal semantics that is simple but sufficient for our purposes, an NP constituent denotes a set of individuals. For instance, the NP dominating *woman* denotes the set of all women, and the NP dominating *president of the United States* denotes the set of all presidents of the United States—past, present, and future. Combining an NP with a determiner like *this* or *those* has the syntactic effect of yielding a DP and the semantic effect of picking out a particular individual (or individuals, in the case of a plural noun) from the set denoted by the NP. Which particular individuals are actually picked out depends not just on the meaning of the NP and the determiner, but also on the particular discourse context in which the DP is used. This is what allows a noun phrase like *the cat* to refer to different cats in different discourse contexts. In a similar way, we can think of VPs as denoting situations. For instance, a VP like *these cats jump onto the dresser* denotes the set of all situations in which the individuals denoted by *these cats* jump onto the piece of furniture denoted by *the dresser*. Combining a VP with a tense morpheme in I then picks out one of these situations. For instance, the tensed IP *These cats jumped onto the dresser* picks out one of the situations that occurred before the time of speaking (how the past tense morpheme combines with the verb to yield *jumped* is discussed in detail in Chapter 10). Once again, the particular situation picked out depends in part on the discourse

context, so that the same sentence can be used to refer to more than one situation. In the future tense counterpart, *The cats will jump onto the dresser*, the future tense morpheme *will* doesn't combine morphologically with *jump* into a single word, but the semantic effect of substituting the VP into the elementary tree for *will* continues to be picking out a particular situation from a set—only in this case, situation being picked out is after the time of speaking. Roughly speaking, we can think of the difference between past and future as analogous to the difference between the determiners *this* and *that*.

In concluding this section, let us draw attention to the fact that in the noun phrases that we have considered so far, any constituents in Spec(DP) have expressed arguments of the noun and have hence undergone subject movement. But subjects of noun phrases don't necessarily originate in the NP projection. Many nouns, notably ones referring to objects or entities rather than to events, are best treated as lacking semantic arguments. The elementary trees for such nouns will therefore not contain any substitution nodes. This is illustrated for the noun *book* in (21a). When such nouns co-occur with a possessor, the possessor is best treated as substituting directly into Spec(DP), rather than moving there from Spec(NP). This is illustrated for the noun phrase *the student's book* in (21b). (For simplicity, we omit the internal structure of the possessor DP, which again is analogous to (13c).)



1.3 More on determiners

Subcategories of determiners

Like verbs and nouns, determiners have different degrees of transitivity. For instance, the definite article *the* and the indefinite article *a(n)* are obligatorily transitive, whereas the demonstratives *this* and *that* are optionally so.

- (22) a. I'll buy { the, a } book.
b. *I'll buy { the, a }.

- (23) a. I'll buy { this, that } book.
b. I'll buy { this, that }.

Certain ordinary pronouns pattern just like demonstratives, as shown in (24), and so we will treat them, too, as optionally transitive determiners.

- (24) a. we Americans, you fool(s)
b. we, you

Finally, some ordinary pronouns behave like obligatorily intransitive determiners, as shown in (25).

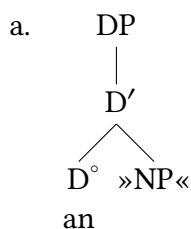
- (25) a. I, he, she, it, they
b. *I idiot, he fool, she linguist, it piece of junk, they traitors

In this connection, recall [the warning](#) in Chapter 1 that the term ‘pronoun’ is potentially misleading. It suggests that pronouns are a subclass of nouns. If that were so, then pronouns should combine with articles and demonstratives in the same way that other nouns do. In fact, however, pronouns behave exactly like complete noun phrases in this regard, as shown in (26). The facts in (26) thus provide strong evidence for the analysis of pronouns as determiners just presented.

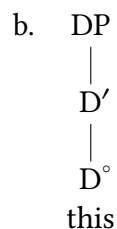
- (26) a. D + noun: the people, this woman, that addressee
b. D + noun phrase (= DP): *the these people, this the woman, that the addressee
c. D + pronoun (= pro-DP): *the they, this she, that you

Elementary trees for the various types of determiners that we have just discussed are given in (27).

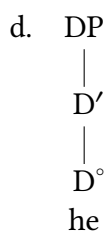
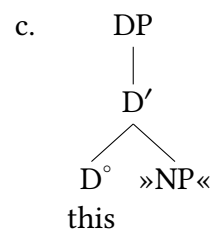
(27)



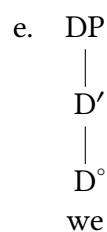
Obligatorily transitive D



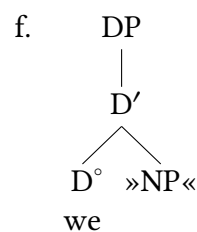
Optionally transitive D



Obligatorily intransitive D



Optionally transitive D

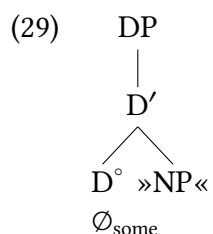


Silent determiners

As shown in (28), plural indefinite count nouns and indefinite mass nouns are apparently not accompanied by an article in English, in contrast to their singular or definite counterparts.

- (28) a. ___ cars, ___ apples; ___ rice
 b. a car, an apple; the rice

However, we assume for conceptual reasons that the examples in (28a) contain a silent article that is semantically roughly comparable to the unstressed *some* in *I would like some apples and some rice*. The elementary tree is shown in (29). We will sometimes also use *indef(inite)* for this silent determiner.



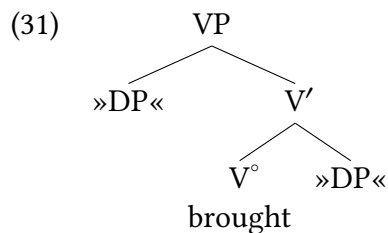
We have two reasons for assuming the existence of silent determiners. First, this assumption allows us to minimize the difference between English and a language like Spanish, where the indefinite article is overt. The resulting correspondence between English and Spanish determiners is shown in Table 5.1; the plural indefinite articles are in boldface. For simplicity, we give only the masculine forms of the Spanish determiners.

	English		Spanish	
	SG	PL	SG	PL
Demonstrative	this	these	este	estos
	that	those	ese	esos
Definite article	the	the	el	los
Indefinite article	a(n)	$\emptyset_{\text{INDF.PL}}$	un	unos

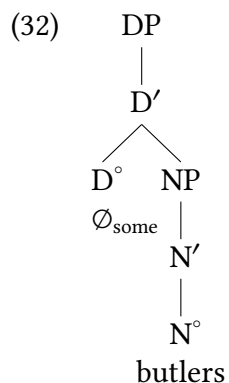
Table 5.1: English and Spanish determiners

Second, assuming the silent determiner allows us to maintain that all noun phrases are DPs. Sentences like (30) can then all be derived using the single elementary tree for *brought* in (31).

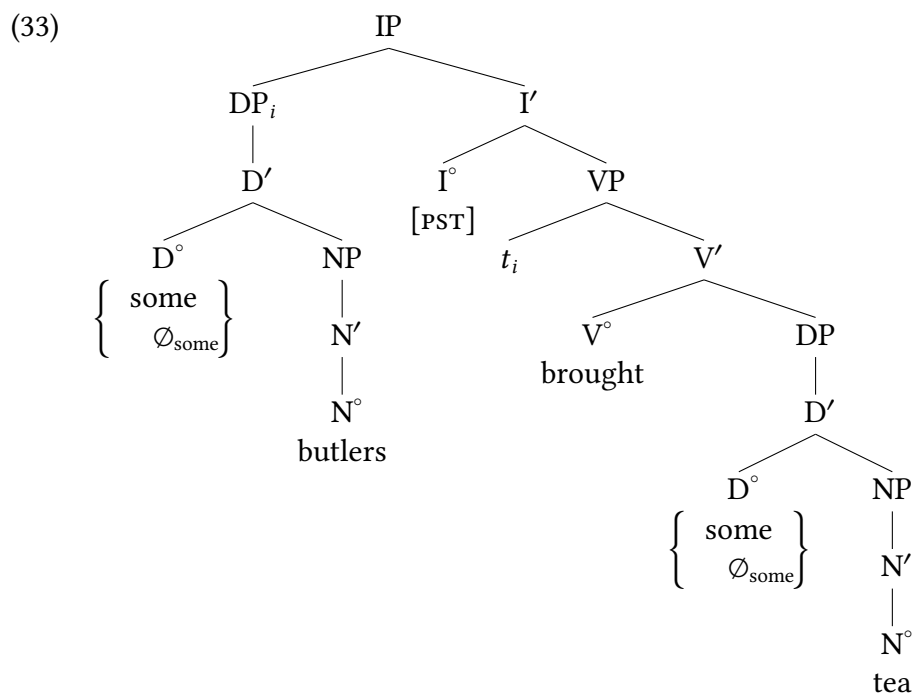
- (30) a. Some butlers brought some tea.
 b. Some butlers brought tea.
 c. Butlers brought some tea.
 d. Butlers brought tea.



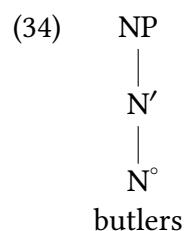
We show the full structure for the apparently articleless noun phrase *butlers* in (32). The structure for *tea* is analogous.



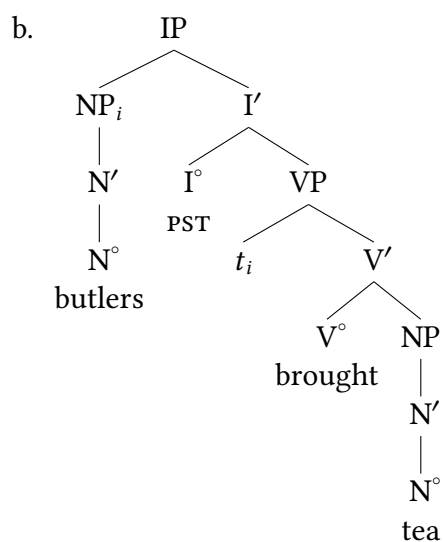
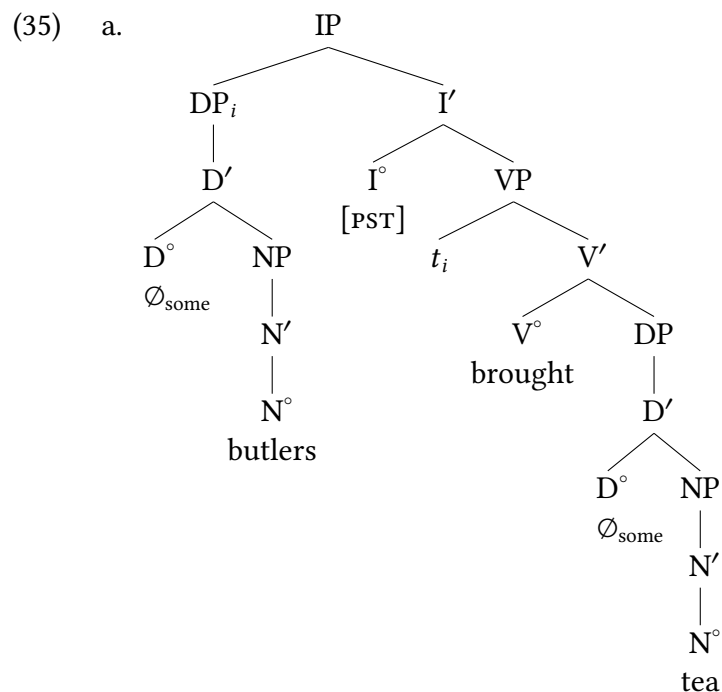
(33) combines the trees for all four sentences in (30) into a single representation.



In principle, we could take an alternative tack. If it were our goal to assign the least possible amount of structure (that is, the structures with the fewest nodes) to each sentence in (30), we would reject the silent determiner in (29) and represent *butlers* as a bare NP, as in (34) (and analogously for *tea*).

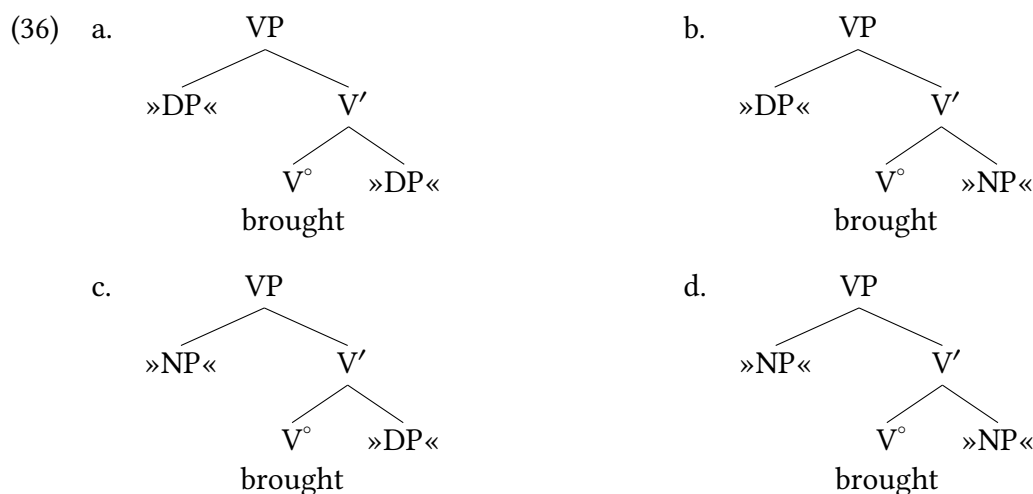


The alternative structures under discussion for (30d) are given in (35). (35a) simply repeats the appropriate variant from (33).



Clearly, the tree in (35b) is simpler than its counterpart in (35a) in the sense of containing fewer nodes. However, this simplicity comes at the price of a veritable explosion in the number

of elementary trees in the grammar, since every argument position that can be filled by a noun phrase would need to be associated with two elementary trees (one with a DP substitution node, and one with an NP substitution node). For instance, instead of the single elementary tree for *brought* in (36a), we would need the three additional trees in (36b–36d).



More generally, obligatorily intransitive verbs would require two elementary trees rather than one, obligatorily transitive verbs—the case just illustrated—would require four (2×2) rather than one, and optionally transitive verbs would require six ($4 + 2$) rather than two ($1 + 1$). This result seems unappealing on computational grounds. But more fundamentally, the whole idea of simplifying the representations of individual sentences is inconsistent with the Chomskyan paradigm of language. Why? From a Chomskyan perspective, what syntactic theory attempts to model and understand is the mental capacity to generate sentences. A reasonable working hypothesis is that the best model for this capacity is the simplest possible grammar. So striving to cut down on the numbers of nodes in the representations of sentences at the expense of complicating the grammar itself is missing the whole point of generative grammar in the first place!

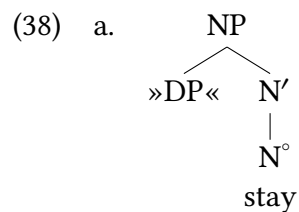
1.4 Modification and related issues

N' as target of adjunction

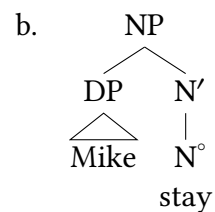
As we noted in our introductory review of the parallels between noun phrases and sentences in §1.1, nouns and verbs can be modified in similar ways. In (37), for instance, the same prepositional phrase *in the hospital* modifies the noun *stay* and the morphologically related verb *stayed*.

- (37) a. Mike's stay *in the hospital*
 b. Mike stayed *in the hospital*.

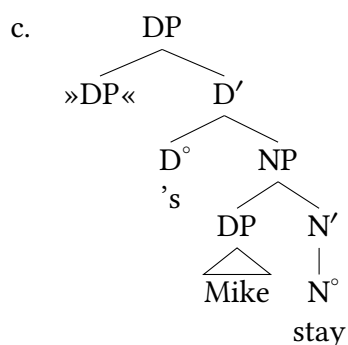
Extending the approach to representing modification introduced in Chapter 4, (§ 3.1) we can derive the structure for the noun phrase in (37a) as in (38). (For simplicity, we omit the internal structure of the possessive proper noun in the specifier (see §1.2 for discussion).



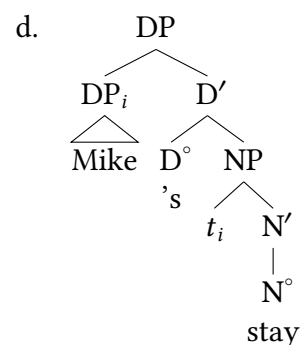
Elementary tree for N 'stay'



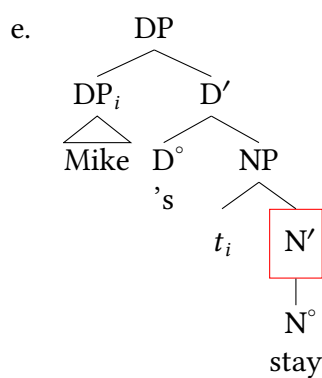
Substitute argument



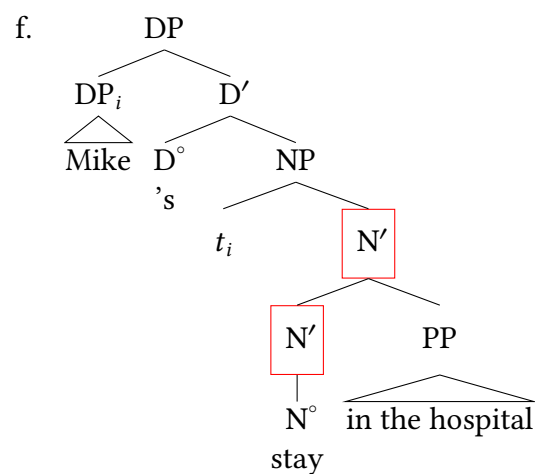
Substitute (38b) in elementary tree for possessive 's



Move subject

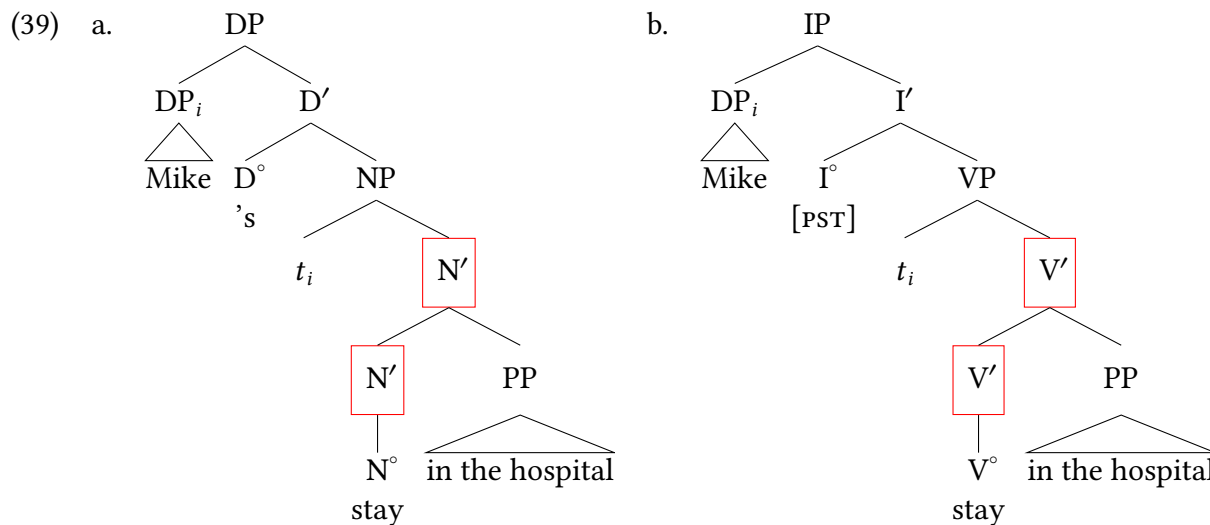


Select N' as target of adjunction



Adjoin PP at target of adjunction in (38e)

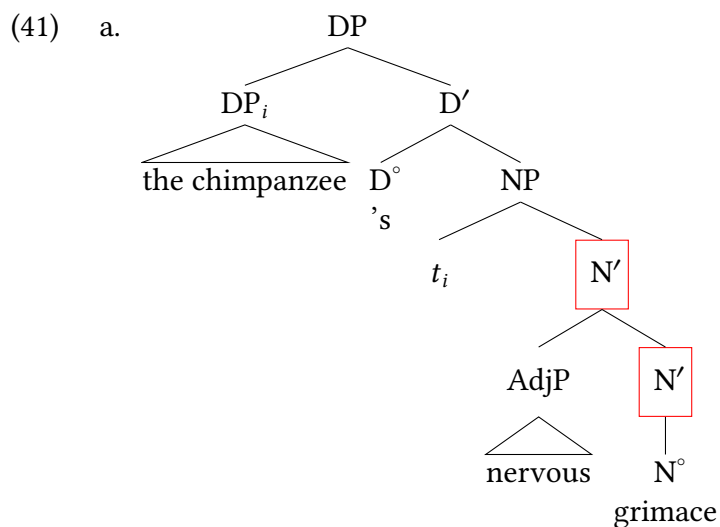
Apart from the category labels, the resulting structure in (38f), repeated for convenience as (39a), is analogous to the structure for the corresponding sentence in (39b).

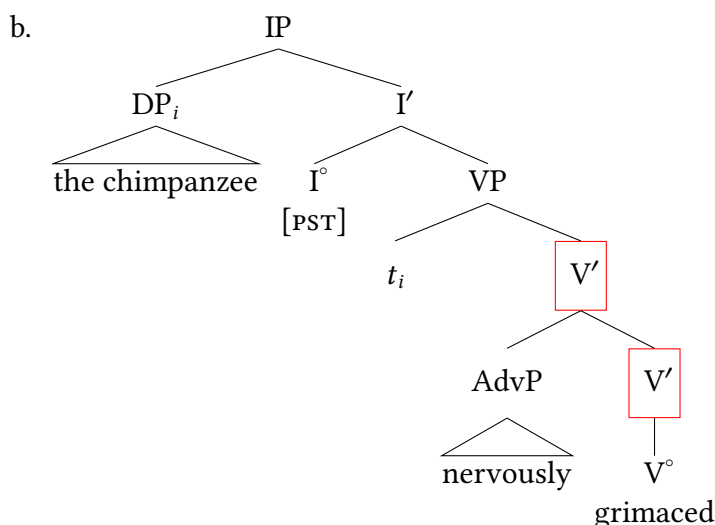


Leftward adjunction

So far, we have discussed modifiers that follow the head, whose representation involves rightward adjunction. Structures for examples like (40), where the modifier precedes the head it modifies, can be derived by leftward adjunction, as shown in (41).

- (40) a. the chimpanzee's *nervous* grimace
 b. The chimpanzee *nervously* grimaced.



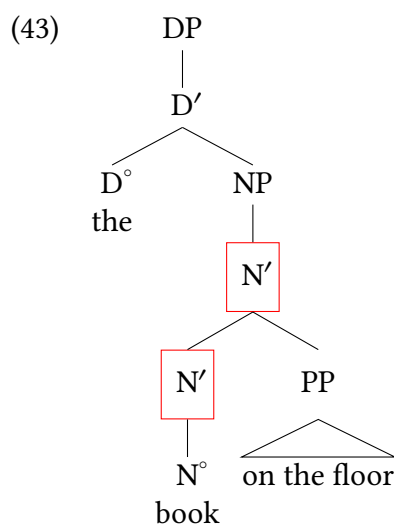


One substitution

As discussed in Chapter 4, *do so* substitution allows us to distinguish between complements and adjuncts in the verbal system. A similar diagnostic is available in the nominal system—*one* substitution, which is illustrated in (42).

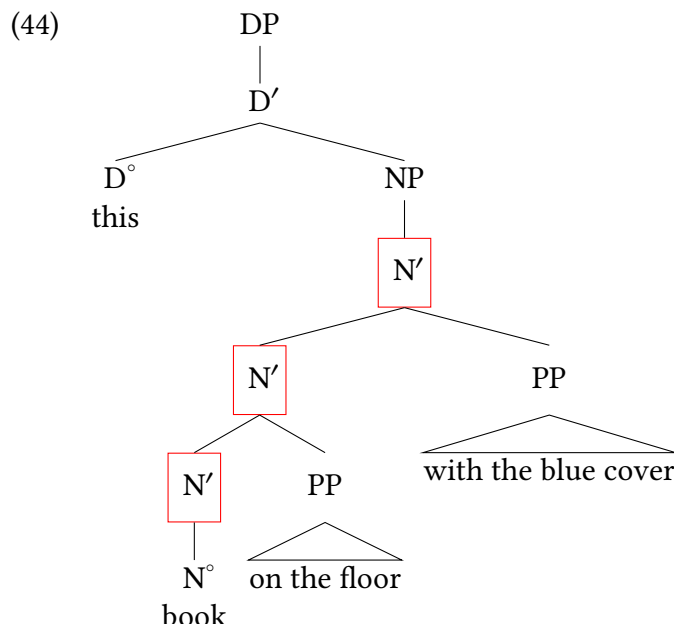
- (42) a. this book on the floor and that one
 b. this book on the floor and that one on the table

In the most natural interpretation of (42a), *one* is interpreted as *book on the floor*. In (42b), on the other hand, *one* is interpreted as simply *book*. We can represent these facts by assuming that the first conjunct in both cases has the structure in (43).



According to (43), the noun *book* has no complement, and the PP *on the floor* is an adjunct. The pro-form *one* substitutes for instances of N', just as *do so* substitutes for instances of V'. *One* substitutes for the higher N' in (42a), and for the lower N' in (42b).

As in the case of V', adjunction to N' can apply more than once, yielding multiply recursive structures like (44).



Restrictions on *one* substitution

A cautionary note is in order about *one* substitution. Although in principle *one* can substitute for any instance of N', it is subject to two restrictions, which are important to keep in mind when using *one* substitution as a diagnostic for syntactic structure. The first restriction, which makes sense given the etymological connection of the pro-form to the homonymous number word, is that *one* can substitute only for **count nouns**, as illustrated in (45).

- (45) a. I prefer this { bed, chair, sofa, table }, and you prefer that one.
 b. *I prefer this furniture, and you prefer that one.

A second restriction is that *one* cannot immediately follow the indefinite article, a cardinal number, a possessive noun phrase, or (for many speakers) the plural demonstratives *these* and *those*. Whatever the exact source of this restriction is (in some cases it is difficult to derive from the etymological connection just mentioned), the restriction is very superficial, since an intervening word renders the ungrammatical (a) examples in (46)–(49) grammatical.³

(46) Indefinite article

- a. *I bought a book, and you bought a one, too.
 b. I bought a blue book, and you bought a red one.

(47) Cardinal number

- a. *I bought { two, ten } books, and you bought { two, ten } ones, too.
 b. I bought { two, ten } blue books, and you bought { two, ten } red ones.

- (48) Possessive
- a. * I like { Mary's, her } book, and you like { John's, his } one.
 - b. I like { Mary's, her } blue shirt, and you like { Mary's, her } red one.
- (49) Plural demonstrative
- a. * I like these books, and you like those ones.
 - b. I like these blue books, and you like those red ones.

Structural ambiguity

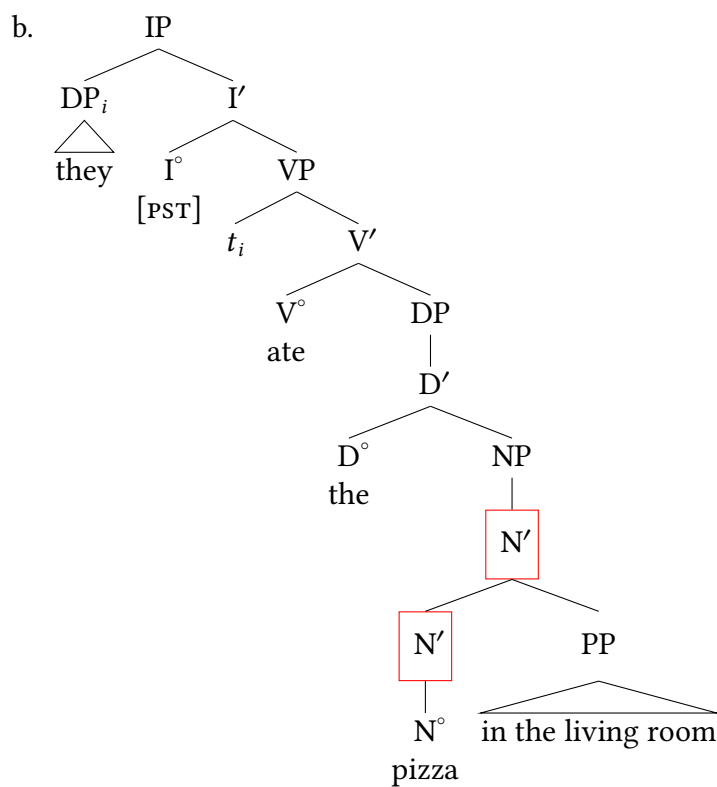
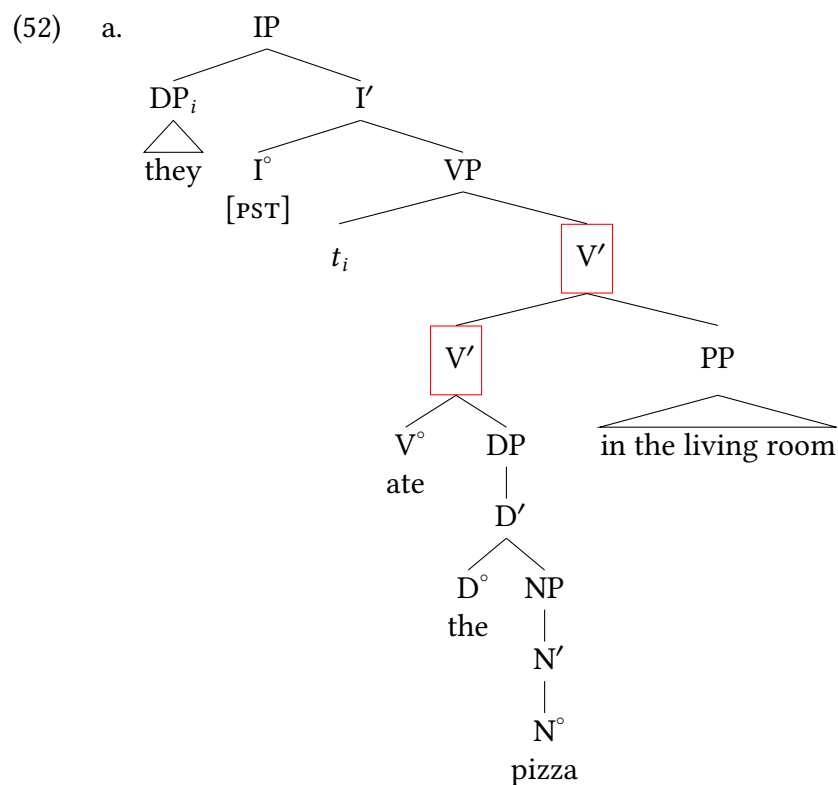
Having introduced N' as a possible target of modification, we are now in a position to associate structurally ambiguous sentences like (50) with two distinct syntactic representations.

- (50) They ate the pizza in the living room.

(50) has two interpretations, which can be paraphrased as in (51).

- (51) a. Verbal modifier interpretation:
It was in the living room that they ate the pizza (though the pizza may have started out elsewhere).
- b. Nominal modifier interpretation:
It was the pizza in the living room that they ate (though perhaps they then took it and ate it elsewhere).

On the interpretation in (51a), the prepositional phrase *in the living room* modifies the verb *ate*, and (50) has the structure in (52a). On the interpretation in (51b), the prepositional phrase modifies the noun *pizza*, and the sentence has the structure in (52b).



The structures in (52) are consistent with the results of relevant constituenthood tests. For instance, substituting the ordinary pronoun *it* for *the pizza* and substituting *did so* for *ate the pizza* yields (53a) and (53b), respectively.

- (53) a. They ate it in the living room.
b. They did so in the living room.

In both sentences, the prepositional phrase is unambiguously interpreted as a verbal modifier, as expected given that *the pizza* and *ate the pizza* are represented as constituents in (52a), but not in (52b).

Conversely, in the question-answer pair in (54), the prepositional phrase is unambiguously associated with a nominal modifier interpretation. Again, this is expected, since *the pizza in the living room* is represented as a constituent in (52b), but not in (52a).

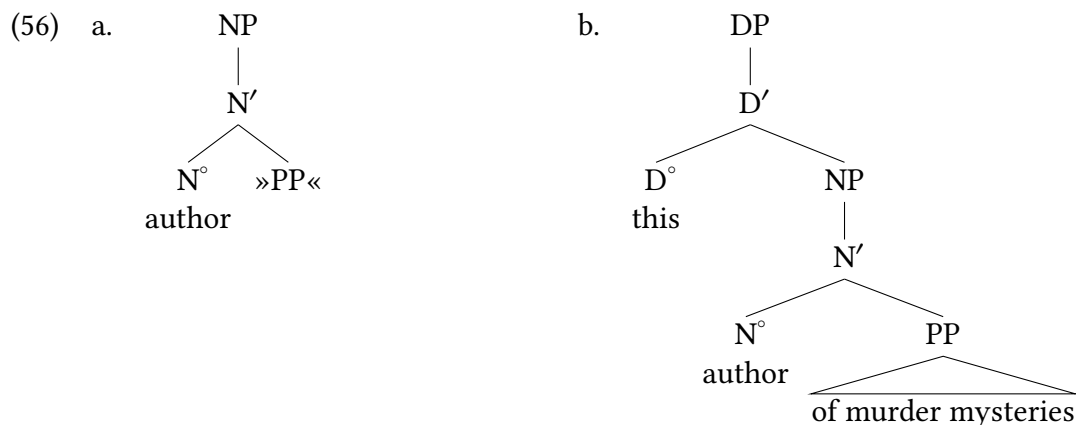
- (54) What did they eat? The pizza in the living room.

The complement-adjunct distinction in the nominal system.

Given the semantic parallel between the sentence in (55a) and the noun phrase in (55b), it is reasonable to treat the *of* phrase in (55b) as a complement of the noun *author*.

- (55) a. This woman *authors* murder mysteries.
b. this *author* of murder mysteries

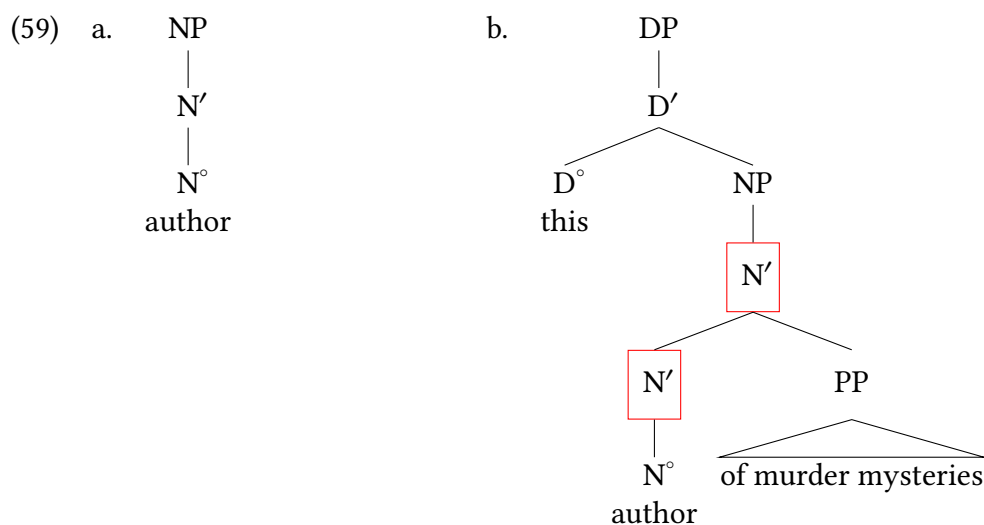
That is, the elementary tree for *author* needed to derive (55b) is as in (56a), and the structure for the entire noun phrase is (56b).



Since *one* is analogous to *do so* in substituting for intermediate rather than for lexical projections, we expect the contrast between (57) and (58), and this accurately reflects the judgment of many speakers.

- (57) a. ✓ This woman *authors murder mysteries*, and that man *does so*, too.
b. ✓ this *author of murder mysteries* and that *one*
- (58) a. * This woman *authors* murder mysteries, and that man *does so* nature guides.
b. * this *author* of murder mysteries and that *one* of nature guides

Some speakers, however, accept (58b), or at least do not completely reject it. How can we make sense of this variation among speakers' judgments? Recall that complements of nouns, unlike those of verbs, are always expressed as prepositional phrases. This means that the evidence whether a particular phrase is a complement or an adjunct is murkier in the case of nouns than in the case of verbs, both for children acquiring the language and for adult speakers. A further, probably related, complication is that even nouns that are morphologically derived from obligatorily transitive verbs are themselves optionally intransitive (for instance, compare *consume*, *destroy*, *employ* with *consumer*, *destroyer*, *employer*). Moreover, the intransitive use of these nouns might be more frequent than their transitive use. As a result, the mental grammar of some speakers might include only the intransitive elementary tree in (59a), and not the transitive elementary tree in (56a). Such speakers would have no way of deriving the structure in (56b), but they would be able to derive the alternative structure in (59b) by adjoining the *of* phrase, rather than by substituting it.



For such speakers, *author* in (58b) would be an N', rather than an N, and so they would accordingly accept (58b).

Notice furthermore that the intransitive elementary tree in (59a) is available even for speakers whose mental grammar includes the transitive elementary tree in (56a), since all speakers of English accept (60).

(60) ✓ *this author* and *that one*

If some of these speakers allow the *of* phrase to adjoin into the intransitive elementary tree in addition to substituting into the transitive one, then they, too, would judge (58b) to be acceptable (at least marginally so).

Both complements and adjuncts function semantically as restrictors, that is, content that constrains what/who the DP refers to (the set of authors of murder mysteries is a subset of the set of authors). Therefore, there won't be an obvious semantic clue for speakers whether their grammar differs from that of other speakers. The only clue will come from the difference with respect to *one* substitution judgments, and any such differences are not going to be salient in everyday life. It's only in syntax classes that they are the focus of attention!

Adjective phrases

2

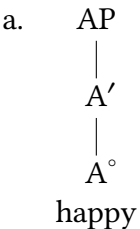
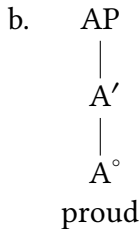
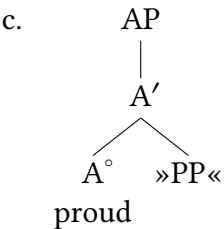
In this section, we discuss the structure of adjective phrases, beginning with examples like those in (61) and (62), where the prepositional phrase following the adjective is optional.

- (61) a. They are proud.
b. They are proud of their grandchild.
- (62) a. They are happy.
b. They are happy with their car.

Recall from Chapter 2 that the pro-form *so* substitutes for adjective phrases. More specifically, examples like those in (63) and (64) allow us to conclude that the *of* phrase is a complement of *proud* in (63), but that the *with* phrase is an adjunct of *happy* in (64).

- (63) a. ✓ They are *proud*, and we are *so*, too.
b. ✓ They are *proud of their grandchild*, and we are *so*, too.
c. * They are *proud* of their grandchild, and we are *so* of him, too.
- (64) a. ✓ They are *happy*, and we are *so*, too.
b. ✓ They are *happy with their car*, and we are *so*, too.
c. ✓ They are *happy* with their car, and we are *so* with our bikes.

We can represent these facts by associating the two adjectives with the elementary trees in (65) and by stating that *so* substitutes for instances of A'. (We generally use 'A' for 'adjective'. We always use 'Adv' for 'adverb', and we use 'Adj' where the distinction between the two categories is at issue.)

- (65) a.  b.  c. 

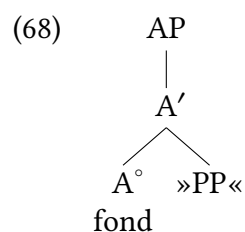
Obligatorily intransitive

Optionally transitive

Most adjectives in English, like the two just discussed, are optionally or obligatorily intransitive. A rare case of an obligatorily transitive adjective is *fond*.⁴ The contrast in (66) is evidence for the complement status of the *of* phrase (recall from Chapter 4 that [obligatory syntactic dependents are complements](#)), and that status is confirmed by the results of *so* substitution.

- (66) a. * They are fond.
 b. ✓ They are fond of their grandchild.
- (67) a. * They are *fond* of their grandchild, and we are *so* of him, too.
 b. ✓ They are *fond of their grandchild*, and we are *so*, too.

In view of the facts in (66) and (67), *fond* is associated with the single elementary tree in (68).



Obligatorily
transitive

Prepositional phrases

3

The syntactic category P corresponds closely to the traditional part of speech of preposition, but is not identical to it. We address two differences between the syntactic category and the traditional part of speech in the next two subsections.

Take Note

Following standard usage in the syntax literature, we sometimes use the term ‘preposition’ to refer to the syntactic category P in contexts where the difference is either clear or immaterial.

3.1 Transitivity

The etymology of the term ‘preposition’ (< Latin *prae* ‘before’ and *positio* ‘position’) implies that all prepositions should precede a complement, and English does in fact have a number of obligatorily transitive Ps, some of which are illustrated in (69). The asterisk (*) outside the parenthesized material is a convention to indicate that the parenthesized material is obligatory.

- (69) a. They drove from *(Boston).
 b. He’s the inventor of *(that gizmo).
 c. She dove into *(the water).
 d. They jumped onto *(the bandwagon).

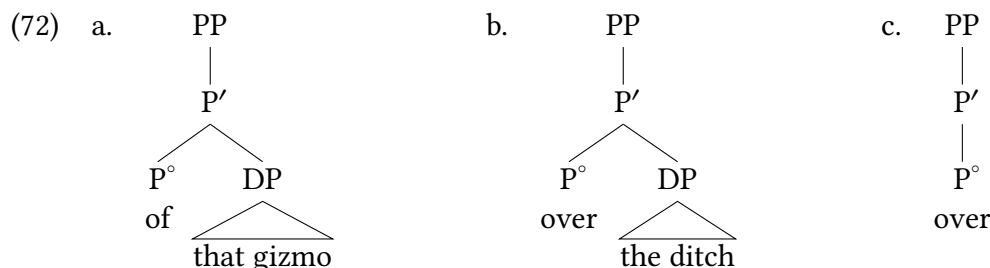
But X' theory leads us to expect that there should also be intransitive Ps, and as the examples in (70) show, this expectation is fulfilled.

- (70) a. I’ve never seen him *before* (this meeting).
 b. Are you *for* (the proposal) or *against* (it)?
 c. The bird flew { *in*, *out* } (the window).
 d. It’s time to get { *off*, *on* } (the train).
 e. They jumped *over* (the ditch).
 f. We’ve been fast friends ever *since* (that time).
 g. She came *to* (her senses).
 h. Have you looked *underneath* (the sombrero)?

In traditional grammar, Ps that are used intransitively are known as adverbs or particles, rather than as prepositions, but this terminology goes against the spirit of X' theory, which seeks to maximize the parallels among categories. From our point of view, there is as little reason for the syntactic category of a lexical item to depend on its transitivity in the case of a P like *since* as there is in the case of a V like *eat*. In both cases, the intransitive variant has a semantic argument that is not expressed in the syntax, but is supplied in the course of interpretation, based on the discourse context.

The elementary trees for *of* and *over* are shown in (71), and the full structures for the PPs headed by them in (69) and (70) are shown in (72). (72c) comes out as identical to (71c).

- (71) a.
 PP
 |
 P'
 / \
 P° »DP«
 of
- b.
 PP
 |
 P'
 / \
 P° »DP«
 over
- c.
 PP
 |
 P'
 |
 P°
 over



3.2 Clausal complements of prepositions

As we saw in Chapter 4, verbs can take either noun phrase complements or clausal complements. (73) gives a further example.

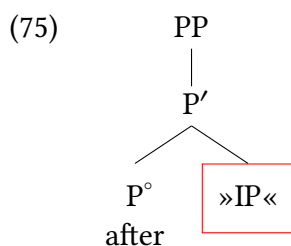
- (73) a. They reported the monkey's dislike of camphor.
 b. They reported that the monkey dislikes camphor.

The examples of transitive Ps discussed so far have all had noun phrase complements, but given the parallel between verbs and prepositions concerning transitivity, we might expect Ps to allow clausal complements as well. Once again, this expectation is borne out, as shown in (74).

- (74) a. Noun phrase complement: { *after*, *before*, *since* } the war
 b. Clausal complement: { *after*, *before*, *since* } the war ended

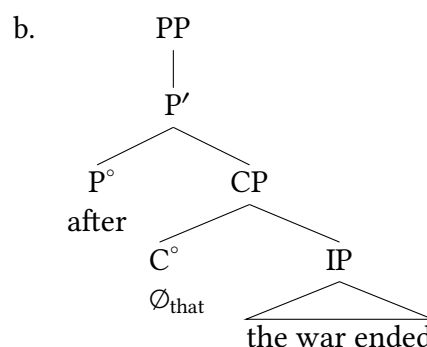
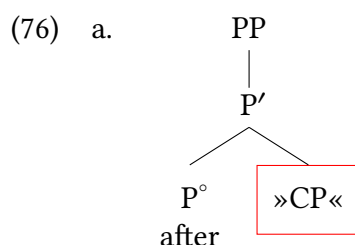
In traditional grammar, Ps that take clausal complements are classified as subordinating conjunctions (along with *if* and *that*), but as in the case of intransitive Ps, we again reject the traditional approach. First, it is conceptually uneconomical. Specifically, it expresses the difference between (74a) and (74b) in terms of the syntactic category of the heads (preposition versus subordinating conjunction), which redundantly encodes the difference in the syntactic category of the complement (noun phrase versus clause). Second, the items in (74) share roughly the same semantic content, regardless of the categorial status of their complement. In contrast, *if* and *that* are relatively contentless and give the impression of functioning purely as 'grammatical glue'. In the approach that we are advocating, the distinction between P and C corresponds to the distinction between contentful and contentless subordinating conjunctions.

The question now arises of what syntactic category clausal complements of prepositions belong to. At first glance, examples like (74b) suggest that the answer to this question is IP. The elementary tree for *after* in (74b) would then be as in (75), and the elementary trees for *before* and *since* would be analogous.



Not like this!

There is good reason to believe, however, that clausal complements (specifically, finite clausal complements) of P are CPs rather than IPs. As illustrated in (76a), the clausal complement of *after* and prepositions like it would be headed by a silent counterpart of the complementizer *that*, resulting in (76b) as the structure for *after the war ended* (for simplicity, the internal structure of IP is omitted).



There are several empirical arguments for preferring the elementary tree in (76a) over the one in (75). First, at least one preposition in English allows—indeed, requires—CP complements headed by an overt complementizer, as shown in (77).

(77) They differ *in* *(that) they hold sharply opposing views on educational reform.

A second reason for preferring (76a) over (75) is that sentences like (78), with an overt complementizer, occurred freely in Middle English (and are still acceptable for some speakers of Modern English). Some naturally-occurring examples are given in (79).

Extra Info

The thorn character (þ) was borrowed from Old Norse (it is still used in Icelandic) and used in Old and Middle English where we use 'th' today. The yogh character (ȝ) was used in Middle English where we use 'g' or 'y'.

(78) * { after, before, since } that the war ended

(79) a. And *after þat* þis bataile was done, þe Britons assemblede ham
'and after this battle was over, the Britons assembled (themselves)'

([PPCME2](#), cmbrut3,100.3080)

- b. *ȝit bifore that* Dauith cam to Jerusalem, a new debate roos bitwixe the men of Israel and the men of Juda
 ‘Yet before David came to Jerusalem, a new debate arose between the men of Israel and the men of Judah’ (PPCME2, cmpurvey,I,11.415)
- c. Now, *sith that* i have toold yow of which folk ye sholde been conseilled, now wol I teche yow which conseil ye oghte to eschewe.
 ‘Now, since I have told you what kind of people you should be counseled by, now I will teach you which advice you ought to eschew’ (PPCME2, cmctmeli,223.C1.247)

Finally, analyzing clausal complements of prepositions as CPs allows us to treat prepositions in English in the same way as prepositions in other languages such as French, where it is clear that the clausal complements are CP complements.⁵

- (80) a. ✓ { *après, depuis, pendant* } la danse
 after since during the dance
 ‘{ after, since, during } the dance’
- b. ✓ { *après, depuis* } que l’ enfant a dansé; *pendant* que l’ enfant dansait
 after since that the child has danced while that the child was dancing
 ‘{ after, since } the child danced; while the child was dancing’
- c. * { *après, depuis* } l’enfant a dansé; *pendant* l’enfant dansait

Crosslinguistic variation in headedness

4

4.1 Head-final vs. head-initial patterns

As illustrated in (81)–(87), heads in English precede their complements, and English is therefore said to be a **head-initial** language. The **headedness** of a lexical item (or a category or an entire language) always refers to the order of heads and complements. In other words, headedness is determined with respect to the intermediate projection of elementary trees, not with respect to the maximal projection. For instance, English determiners can be medial in their maximal projection (the possessive morpheme *’s* must be preceded by a DP in Spec(DP)), and English verbs and modals must be medial in their maximal projections, but they all count as head-initial because they are the leftmost elements in the intermediate projections of their elementary trees.

- (81) English head-initial verbs
- They [_{V'} **pursued** [_{DP} their goal]].
 - She [_{V'} **submitted** [_{DP} her application]].

- (82) English head-initial Infl

- a. They [_{I'} **should** [_{VP} pursue their goal]].
 - b. She [_{I'} **could** [_{VP} submit her application]].
- (83) English head-initial complementizers
- a. They agreed [_{C'} **that** [_{IP} they should pursue their goal]].
 - b. She wondered [_{C'} **if** [_{I'} she could submit her application]].
- (84) English nouns precede their complements
- a. the [_{N'} **pursuit** [_{PP} of their goal]]
 - b. the [_{N'} **submission** [_{PP} of her application]]
 - c. Lisa's [_{N'} **pride** [_{PP} in her work]]
- (85) English determiners precede associated NPs
- a. [_{D'} **the** [_{NP} pursuit of their goal]]
 - b. [_{D'} **the** [_{NP} submission of her application]]
 - c. Lisa [_{D'} 's [_{NP} pride in her work]]
- (86) English adjectives precede their complements
- a. She is [_{A'} **proud** [_{PP} of her work]].
 - b. He is [_{A'} **fond** [_{PP} of his children]].
- (87) English prepositions precede their complements
- a. [_{P'} **over** [_{DP} the next five years]]
 - b. [_{P'} **with** [_{DP} great fanfare]]

Universal Grammar by no means prescribes head-initial phrase structure. Rather, many languages exhibit consistently **head-final** phrase structure; two such languages are Japanese and Korean. The examples in (88)–(93) are from Korean. In order to avoid using ‘head-final preposition’, which is an etymological contradiction in terms, linguists have coined the term **postposition** for the Ps in (93). The term **adposition** is a cover term for prepositions and postpositions (that is, for Ps regardless of headedness). Examples for I and D are missing because Korean has neither overt modals of the English sort nor overt articles; the abbreviations in the glosses are explained in the notes,⁶ but are not crucial for present purposes.

- (88) Korean head-final verb phrases
- a. 그들 -은 목적 -을 추구하 -였 -다
 kutul -un [_{V'} [_{DP} mokcek -ul] **chukwuha -yess -ta**] .
 they -TOP goal -ACC pursue -PST -DECL
 ‘They pursued their goal.’
 - b. 그 -는 지원서 -를 제출하 -였 -다
 ku -nun [_{V'} [_{DP} ciwonse -lul] **ceychwulha -yess -ta**] .
 3.SG -TOP application -ACC submit -PST -DECL
 ‘They.SG submitted their.SG application.’

- (89) Korean head-final complementizer

그들 -은 목적 -을 추구해야 한 다고 통의하 -였 -다.
 [C' [IP kutul -un mokcek -ul chukwuhayya ha-n] **tako**] tonguyha -yess -ta.
 they -TOP goal -ACC pursue must-PRS that agree -PST -DECL
 'They agreed that they should pursue their goal.'

- (90) Another Korean head-final complementizer

그 -는 지원서 -를 제출해도 되 는지 궁금하 -였 -다.
 ku -nun ciwonse -lul ceychwulhayto toy **nunci** kwungkumha -yess -ta
 3.SG -TOP application -ACC submit be-able if wonder -PST -DECL
 'They.SG wondered if they.SG could submit their.SG application.'

- (91) Korean nouns following complements

- a. 그들 -의 목적의 추구
 kutul -uy [N' [DP mokcek -uy] chukwu]
 they -GEN goal.GEN pursuit
 'their pursuit of their goal'
- b. 그 -의 지원서 -의 제출
 ku -uy [N' [DP ciwonse -uy] **ceychwul**
 3.SG -GEN application -GEN submission
 'their.SG submission of their.SG application'
- c. 경림 -의 일 -에 대한 자부심
 kyenglim -uy [N' [PP il -ey tayhan] **capwusim**]
 Kyenglim -GEN work -in regarding pride
 'Kyenglim's pride in their.SG work'

- (92) Korean head-final PPs

- a. 다음 오 년 동안
 [P' [DP taum o nyen] **tongan**]
 next five years over
 'over the next five years'
- b. 대 팡파르 -와 함께
 [P' [DP tay phangphalu -wa] **hamkkey**]
 big fanfare-with with
 'with big fanfare'

- (93) Korean adjectives following head nouns

- a. 일 -이 자랑스러 -운 사람
 [A' [DP il -i] **calangsule -un**] saram
 work -NOM proud -MOD person
 'a person proud of their.SG work'

- b. 아이들 -이 좋 -은 사람
 [_{A'} [_{DP} aitul -i] **coh** -**un**] saram
 children -NOM fond -mod person
 ‘a person fond of their.sg children’

4.2 Harmonic and disharmonic headedness

Languages tend to be **harmonic** with respect to headedness; that is, they tend to be consistently head-initial or head-final across syntactic categories. This is what is exemplified by the English and Korean examples above, and it is very common for languages to pattern like this. However, in certain languages, some syntactic categories project head-initial trees and others project head-final ones.

Mixed headedness in Tunen

Such mixed phrase structure is found, for instance, in many languages in West Africa. One example is Tunen, a Bantu language spoken in Cameroon (Zone A).⁷

- (94) *Context: You enter the room and see a broken window. Someone announces...*
- Biále a ná [_{VP} etúbá sana] Tunen
1.Pierre SBJ.AGR PST window break
'Pierre broke the window.' (Kerr 2023)

Even this single example gives a very good illustration of mixed-headedness. We have bracketed the verb phrase in the example above. If we assume that the inflection of past tense emerges on Infl, we can see that the verb phrase follows tense: that is, Infl is head-initial, where the head (bearing tense) precedes its complement (the verb phrase).

- (95)
-
- ```
graph TD
 IP --> DPi[DPi]
 IP --> I_prime[I']
 DPi --> Biale[Biale]
 I_prime --> I_deg[I°]
 I_prime --> VP[VP]
 I_deg --> a[a]
 VP --> na[na]
 VP --> Triangle1[△]
 Triangle1 --> ti[ti]
 Triangle1 --> etiube[etiube]
 Triangle1 --> sana[sana]
```

At the same time, the story is different inside the verb phrase. Clearly in (94), the head (the verb *sana* ‘break’) follows its complement (the object *etúbá* ‘window’). The Tunen verb phrase therefore appears to be head-final:

- (96)
- VP
- $t_i$  V'
- DP V° sana
- ετύβέ

Future tense illustrates the same pattern, with the future tense morpheme preceding its VP complement.

- (97) Samuélé a ηο [VP ɔ-lésa néá-aka ] Tunen  
 1.Samuel AGR FUT 3-rice eat-DUR  
 'Samuel will eat rice tomorrow.' (this future tense is the 'tomorrow' future)  
 (Kerr 2023)

Both demonstratives and prepositions precede their respective complements, so we see Dem-N word order (98) and P-DP word order (99).

- (98) tóoye tɔ-banána tɔ-têtéá tɔ-fítitiə tɔ-<sup>H</sup>fandɛ  
 DEM NC-banana AGR-small AGR-black AGR-two  
 'these two small black bananas' (Kerr 2023)

- (99) *Context: Where are you?*  
 mɛ léá [PP ɔ nɛ-oní ]  
 AGR be PREP NC-market  
 'I am at the market.' (Kerr 2023)

Head nouns, however, tend to precede modifiers of those nouns, as we can see in (98). Head nouns likewise precede their complements in Tunen, distinct from verbs following their complements.

- (100) *Context: "They - they are - I see three people here."*  
 mmh bá léá ɔ ɛ-ndíná yɛ bɔ-lɛa  
 mmh AGR be PREP NC-foot ASSOC NC-tree  
 'Mmh. They're at the foot of the tree.' (Elizabeth Kerr, personal communication)

Complement clauses introduce some additional complexity. Inside the complement clause, we see the familiar head-initial Infl and head-final VP. But in the main clause, the CP complement of *manyá* 'know' follows the verb, in an exception to the head-final VP pattern we saw above.

- (101) mɛ <sup>H</sup>ndɔ **manyá** [CP ɔwá Maténɛ a ka hɛ-əfulə **fana-aka** ]  
 SM.1SG PRES know COMP Martin AGR PAST book read-DUR  
 'I know that Martin has read the book.' (Kerr 2023)

And in the embedded CP itself (bracketed in (101)), we see that the complementizer precedes the InflP it is associated with, suggesting that CP itself is head initial, in contrast to Korean CPs in (89) and (90) above.

Tunen shows much more complexity in word order based on what is being emphasized and de-emphasized in a sentence (as is the case for many languages). But as an initial description, it is clear that headedness need not be completely harmonic among all categories in a language. It is certainly common to see patterns like Korean or English that are relatively consistent in their headedness, but it is also not surprising among human languages to find patterns like in Tunen, where some projections are head-initial but others are head-final.

### Mixed headedness in Germanic languages

Two other languages with mixed headedness are Dutch and German. The examples in (102)–(107) are from German. (The reason that they are all subordinate clauses is that finite verbs in main clauses move away from their basic position in German (and indeed in all Germanic languages other than modern English); we discuss this so-called verb-second phenomenon in Chapter 12.) As the examples show, V and A are head-final in German, whereas N, P, D, and C are head-initial. I is missing from the examples because German lacks modals of the English type, so that the position of I is difficult to establish.

(102) V

- a. dass sie [<sub>V'</sub> [<sub>DP</sub> ihr Ziel ] **verfolgten** ]  
that they their goal pursued  
'that they pursued their goal'
- b. ob sie [<sub>V'</sub> [<sub>DP</sub> ihre Bewerbung ] **einreichte** ]  
if she her application submitted  
'if she submitted her application'

(103) A

- a. [<sub>A'</sub> [<sub>DP</sub> seinen Prinzipien ] **treu** ]  
his principles loyal  
'loyal to his principles'
- b. [<sub>A'</sub> [<sub>PP</sub> auf die Kinder ] **stolz** ]  
on the children proud  
'proud of the children'

(104) N

- a. die [<sub>N'</sub> **Verfolgung** [<sub>DP</sub> ihr-es Ziel-s ] ]  
the pursuit their-GEN goal-GEN  
'the pursuit of their goal'
- b. diese [<sub>N'</sub> **Treue** [<sub>PP</sub> zu seinen Prinzipien ] ]  
this loyalty to his principles  
'this loyalty to his principles'

(105) P

- a. [<sub>P'</sub> **über** [<sub>DP</sub> die nächsten fünf Jahre ] ]  
over the next five years  
'over the next five years'
- b. [<sub>P'</sub> **mit** [<sub>DP</sub> grossem Trara ] ]  
with great fanfare  
'with great fanfare'

(106) D

- a. [<sub>D'</sub> **die** [<sub>NP</sub> Verfolgung ihr-es Ziel-s ] ]  
     the       pursuit       their-GEN goal-GEN  
     'the pursuit of their goal'
- b. [<sub>D'</sub> **diese** [<sub>NP</sub> Treue zu seinen Prinzipien ] ]  
     this       loyalty to his       principles  
     'this loyalty to his principles'
- (107) C
- a. [<sub>C'</sub> **dass** [<sub>IP</sub> sie ihr Ziel verfolgten ] ]  
     that       they their goal pursued  
     'that they pursued their goal'
- b. [<sub>C'</sub> **ob** [<sub>IP</sub> sie ihre Bewerbung einreichte ] ]  
     if       she her application submitted  
     'if she submitted her application'

To complicate matters yet further, German allows postpositions, as in (108).

- (108) [<sub>P'</sub> [<sub>DP</sub> den Fluss ] **entlang** ]  
        the river   along  
        'along the river'

And finally, to really liven things up, certain adpositions in Dutch and German can either precede or follow their complements. This is illustrated in (109) and (110), again for German; the (a) and (b) examples share the same meaning.

- (109) a. [<sub>P'</sub> **wegen** [<sub>DP</sub> des Wetter-s ] ]  
        because.of   the.GEN weather-GEN  
        'because of the weather'
- b. [<sub>P'</sub> [<sub>DP</sub> des Wetters ] **wegen** ]
- (110) a. [<sub>P'</sub> **gegenüber** [<sub>DP</sub> der Kirche ] ]  
        across.from   the church  
        'across from the church'
- b. [<sub>P'</sub> [<sub>DP</sub> der Kirche ] **gegenüber** ]

Dutch, too, allows such variation between head-initial and head-final adpositions, and in that language, it is even accompanied by a systematic meaning difference. Specifically, when adpositions with variable headedness are postpositions, their meaning is always directional, but when they are prepositions, their meaning is generally locative. This is illustrated in (111) and (112) (Kroch 1994).

- (111) a. Ik fiets **in** de straat.  
        I   bike in the street  
        'I ride my bike in the street.' (locative)

- b. Ik fiets de straat **in**.  
 I bike the street in  
 'I ride my bike into the street.' (directional)
- (112) a. Ik klim **in** de boom.  
 I climb in the tree  
 'I climb in(to) the tree.' (locative or directional)
- b. Ik klim de boom **in**.  
 I climb the tree in  
 'I climb into the tree.' (only directional)

In case the German and Dutch examples just discussed sound exotic, it is worth noting that English sports two postpositions of its own, as illustrated in (113).<sup>8</sup>

- (113) a. They searched the whole world **over**.  
 b. They work the whole week **through**.

It is not uncommon for languages to undergo phrase structure change. For instance, the phrase structure of Old English (ca. 800–ca. 1100 C.E.) is reminiscent of that of modern German and Dutch; in particular, verbs were head-final for most of the Old English period. (The three languages are closely related historically, so the syntactic similarity is not surprising.) The first instances of verb-initial phrase structure appeared in late Old English. Early Middle English was characterized by rampantly variable headedness in the verb phrase (Kroch and Taylor 2000b), but by ca. 1350, the change from head-final to head-initial verb phrases was essentially complete in all dialects of Middle English. Since Chaucer lived from 1342 to 1400, his language is already modern in this respect, though his syntax differs quite strikingly from that of the modern language in other ways, as we will discuss in Chapters 10 and 12. In the modern language, only isolated relics of the old verb-final phrase structure survive, like the saying *Indictments do not a conviction make*.<sup>9</sup>

### 4.3 Final thought

In conclusion, we note that this section has focused on the order of heads and complements in the X'. Languages also display variation with respect to the order of specifiers and the intermediate projection. It is very much more common for Spec(XP) to precede its X' than to follow. This contrasts with the variation one level down, where head-final order prevails over head-initial order by approximately 60% to 40%.

## Notes

## 5

1. It is not just the expression of agent arguments that is freer in noun phrases than in sentences. As the contrast between (i) and (ii) shows, the same is true of theme arguments.

- (i) a. ✓ The mills employed thousands; their practices damaged the environment.  
b. \* The mills employed; their practices damaged.
- (ii) a. ✓ an employer of thousands; the damage to the environment  
b. ✓ an employer; the damage

This has potential consequences for the acquisition of *one* substitution, as we discuss [later on](#) in the chapter.

2. Notice also the related contrast in (i); the construction in (i.a)—so-called raising—is discussed in Chapter 9.

- (i) a. ✓ The manuscript appears to have been found.  
b. \* the manuscript's appearance to have been found.

3. More evidence for the idiosyncratic character of the constraint against (52a) comes from the acceptability of (5) (at least in formal registers) (thanks for Sonali Mishra for drawing our attention to such examples).

- (i) such a one

4. Strictly speaking, this statement is true only of *fond* in predicative position, not in prenominal position.

- (i) Predicative: \*Their parents are fond.
- (ii) Prenominal: ✓their fond parents

5. In (78), some French speakers prefer or require the subjunctive form of the auxiliary (*ait*) rather than the indicative form (*a*). For present purposes, this variation, which is comparable to that found in English between *If I was a rich man* and *If I were a rich man*, is irrelevant.

6. ACC = accusative (case of direct object),  
GEN = genitive (possessive case),  
DECL = declarative clause,  
MOD = modifier,  
PRS = present tense,  
PS = person,  
SG = singular,  
TOP = topic of sentence.

7. The data discussed in this section come from Kerr (2023), with the foundational work on Tunen coming from Dugast (1971) and Mous (1997), Mous (2003), Mous (2005), and Mous (2014). Additional overview discussion of the word order of languages of this region can be found in Sande, Baier, and Jenks (2019). Glosses have been simplified for expository purposes; see original sources for more precise glossing. The pattern reported here was first addressed in the generative literature by Hilda Koopman for Vata and other Kru languages (Koopman 1984).

8. A further apparent instance of a postposition in English is *ago*. Although its synchronic status is unclear, *ago* did not originate as a preposition.



9. Cf. the parallel token in (i).

- (i) There had appeared to him something rather fine in his policy of refusing to identify himself in any way with Sedleigh, a touch of the stone-walls-do-not-a-prison-make sort of thing.

(P.G. Wodehouse. 1974. *The world of Psmith*. London: Barrie & Jenkins. 114.)

## Exercises and problems

6

### Exercise 5.1

- A. What is the syntactic difference between mainstream U.S. English *them* and the variant illustrated in (1), which is a part of many varieties of English?

- (1) This is definitely one of *them* jobs, man, if you're one of *them* worriers...  
(Overheard on the southwest corner of 34th Street and Walnut Street, Philadelphia, PA, 31 August 1999)

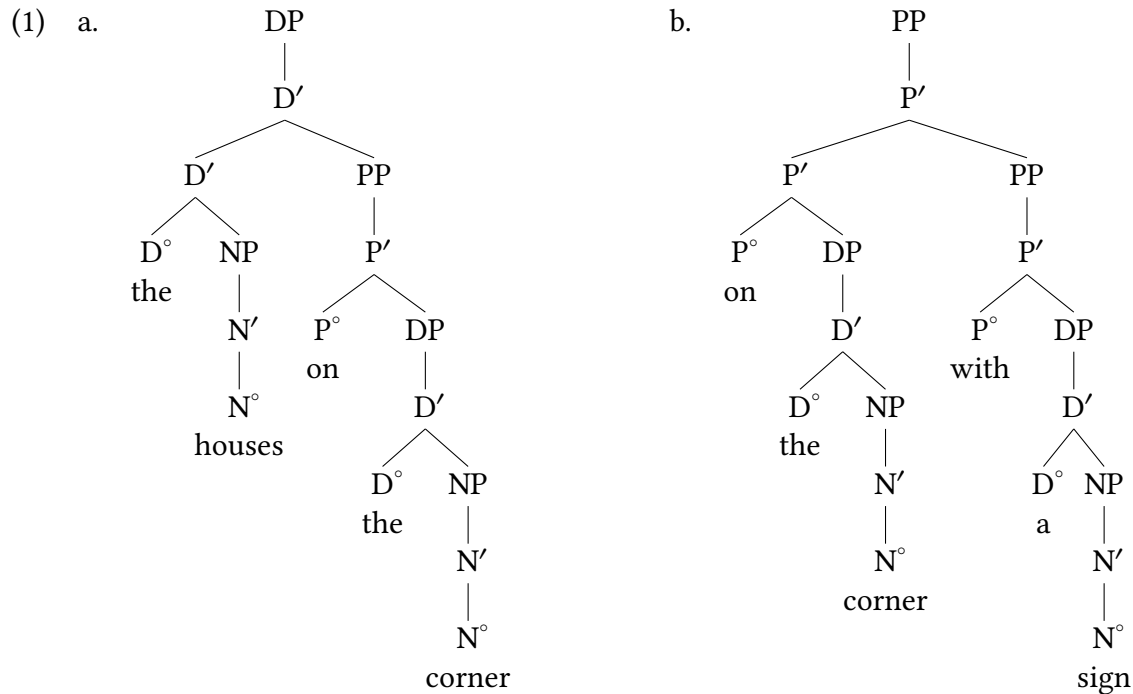
- B. Can you think of obligatorily transitive adjectives other than *fond*?
- C. Can you think of plausible candidates for obligatorily intransitive prepositions?
- D. What is the syntactic difference between the prepositions in (2a) and (2b)? A syntactic difference, not a semantic one.
- (2) a. at, despite, from, of  
b. along, besides, between, by, under
- E. Does *with* belong with the prepositions in (2a) or in (2b)? (For fun, you might ask a few of your friends whether they agree with you. Make sure to pick native speakers of English!)

### Exercise 5.2

Formally, the structures in (1) are consistent with X' theory. Empirically, however, they are unsatisfactory representations because they are inconsistent with certain linguistic judgments. What are those judgments?

#### Take Note

In the evidence that you provide, you should feel free to replace *the* with other determiners and plural nouns with singular nouns.



### Exercise 5.3

A. Build structures for the (a) examples in (1)–(3). The other examples are there to guide you; you're not being asked to build separate structures for them.

- (1)
  - a. the monster's mother's lair
  - b. the monster
  - c. the monster's mother
- (2)
  - a. the hero of the poem's name
  - b. the hero
  - c. the hero of the poem
- (3)
  - a. the mother of the monster's dislike of the poem's hero
  - b. the monster
  - c. the mother of the monster
  - d. the poem
  - e. the poem's hero

B. Build structures for the noun phrases in (4).

- (4)
  - a. yesterday's lecture
  - b. this week's unseasonably high temperatures

C. Build structures for the noun phrases in (5), and indicate the recursive nodes. (Treat *my* as *I* plus 's.)

- (5) a. the neighbor's doctor's dog  
b. my father's mother's watch

#### Exercise 5.4

- A. What is the syntactic category of *hiring* in (1a) and (1b)? Provide evidence for your conclusions.

- (1) a. We dislike Jess's impulsive hiring of incompetents.  
b. We dislike Jess's impulsively hiring incompetents.

- B. Build structures for the underlined gerund phrases in (1). Give the full structure for *incompetents*, but feel free to use triangle notation for the proper noun *Jess*. If you're curious about the internal structure, see §1.2 of Chapter 2.

#### Exercise 5.5

- A. The noun phrase in (1) has two distinct interpretations, which can be paraphrased as in (2).

- (1) the houses on the corner with a sign  
(2) a. the houses on the corner that have a sign  
b. the houses on the corner that has a sign

Build two structures for (1), clearly indicating which structure goes with which interpretation in (2).

- B. Give paraphrases for (or otherwise distinguish between) the two interpretations available for (3), and then build the relevant structures, clearly indicating which structure goes with which interpretation.

- (3) I enthusiastically recommend this candidate with no qualifications.

- C. Repeat (B) for (4).

- (4) the mother of the bride's father

#### Exercise 5.6

Thanks to Amy Forsyth for the template for the examples in Exercise 5.6.

- A. The sentences in (1) are many-ways ambiguous. Find as many interpretations as you can, clearly describing the relevant situations you have in mind (see (2) for example descriptions). Build trees for each interpretation that you find, clearly indicating which tree is associated with which interpretation.

**Hint:** Work backwards. First construct possible trees, and then figure out the interpretation from the syntactic structure.

- (1) a. The trainer tapped the seal with the ball on its nose.  
b. The woman chased the cat with the mouse on the bicycle.
- B. Many-ways ambiguous though the sentences in (1) are, they cannot be used to describe the situations in (2), respectively.
- (2) a. There is a seal balancing on its nose, and the trainer uses a ball to tap this seal.  
b. There is a cat riding a bicycle, and the woman is using a mouse to chase this cat.

### Exercise 5.7

This exercise harks back to Exercise 1.6 from Chapter 1. Relying on your now more sophisticated knowledge of phrase structure, build structures for the possible interpretations of the sentences in (1).

- (1) a. Charis will answer the question precisely at noon.  
b. Laila will watch the man from across the street.  
c. They should decide if they will come tomorrow.

### Exercise 5.8

Build subtrees for the matrix and the subordinate clauses in (1), and indicate how they fit together.

- (1) a. The students will solve the problem, though it seems difficult.  
b. The students will solve the problem, though we acknowledge that it seems difficult.

### Exercise 5.9

As noted at the end of this chapter, English has undergone a phrase structure change in the course of its history. In early Old English, V and I were both consistently **head-final**. Over the course of Old English, I became head-initial. In other words, in addition to old structures in which I followed VP, new ones became available in which I preceded VP. By the beginning of Middle English (about 1100), I had become exclusively head-initial, but V continued to be variably head-final or head-initial. Finally, by about 1350, V had become consistently head-initial.

Given this historical sketch, build trees for all of the phrase structure variants of (1) that were possible during the course of the history of English. (For the non-modern stages, just use modern vocabulary items, but arranged according to the relevant parameter settings.)

#### Take Note

For simplicity, assume that the elementary trees for the nouns in the sentences below have no substitution nodes.

Ignore the internal structure of proper nouns; just represent them using triangle notation. If you are curious about the internal structure, see §1.2 of Chapter 2.

- (1) a. Beowulf will slay Grendel.
- b. The hero will slay the monster.
- c. The hero of the poem will slay the monster's mother.

### Exercise 5.10

This exercise assumes that you are familiar with the terms 'relative clause' and 'noun complement clause'. If not, see the end of the exercise for a tutorial.

- A.** Provide evidence whether relative clauses, illustrated in (1), are arguments or adjuncts of the noun they modify.

(1) Relative clauses

- a. The **idea** that Columbus was working with was incorrect.
- b. The **fact** that they have discovered is important.

- B.** Subordinate clauses of the type illustrated in (2) are traditionally called noun complement clauses.

(2) Noun complement clauses

- a. The **idea** that Columbus was the first European to discover America is incorrect.
- b. The **fact** that they are wrong is lost on them.

Provide evidence whether noun complement clauses are syntactic arguments of the noun or adjuncts. In other words, given the way that the term 'complement' is used in X' theory, is the term 'noun complement clause' for these clauses a misnomer?

## Background Info

If you are not familiar with the distinction between noun complement clauses and *that* relative clauses, here are two simple diagnostics for distinguishing between them. Our baseline examples of noun complement clauses and relative clauses are listed here:

(i) Relative clauses

(3) The **idea** that Columbus was working with was incorrect.

(4) The **fact** that they have discovered is important.

(ii) Noun complement clauses

(5) The **idea** that Columbus was the first European to discover America is incorrect.

(6) The **fact** that they are wrong is lost on them.

- First, stripping away the complementizer *that* leaves a complete sentence in the case of a noun complement clause, but something incomplete in the case of a relative clause (it feels like there is a gap, as indicated by the underlining).

(iii) a. ✓ Columbus was the first European to discover America.

b. ✓ They are wrong.

(iv) a. \* Columbus was working with \_\_\_\_.

b. \* They have discovered \_\_\_\_.

- Second, the complementizer *that* can generally be replaced by a *wh*- word in a relative clause, but never in a noun complement clause.

(v) a. \* The idea which Columbus was the first European to discover America is incorrect.

b. \* The fact which they are wrong is lost on them.

(vi) a. ✓ The idea which Columbus was working with was incorrect.

b. ✓ The fact which they have discovered is important.

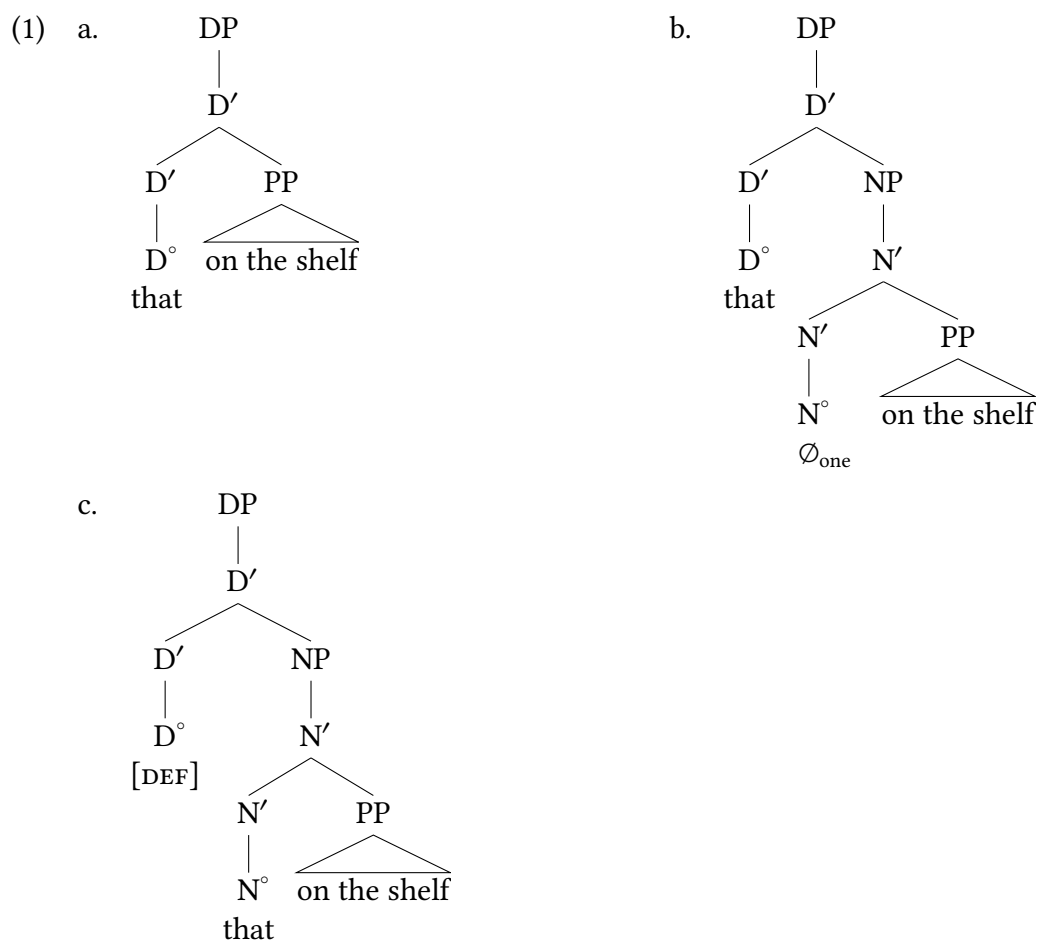
**Problem 5.1**

If a given string is structurally ambiguous (that is, it has more than possible structural representation), is it necessarily associated with more than one meaning? Explain, giving examples.

**Hint:** Exercise 5.5, B.

**Problem 5.2**

The structures in (1) are intended to represent the second conjunct in (2). DEF in (1c) stands for 'definite'.

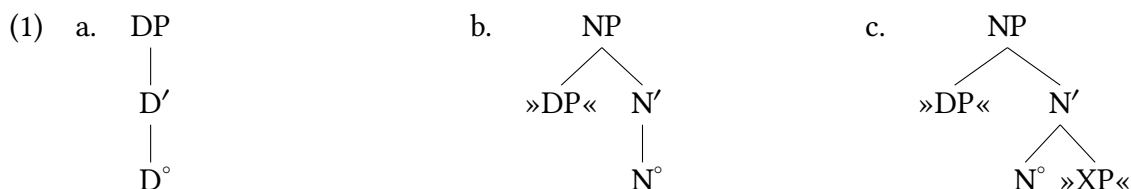


(2) the book on the table, and that on the shelf

Discuss the relative merits of the three structures in (1). In other words, what considerations (whether empirical or conceptual) make each of the structures attractive or unattractive?

### Problem 5.3

In (55) of Chapter 1, we mentioned an alternative approach to noun phrase structure than the one presented in this chapter. According to the alternative approach (updated to be in accordance with the X' schema), all determiners are intransitive, and all nouns have substitution nodes in the specifier position for (possibly silent) determiners, as shown in (1).



Discuss the relative merits of this approach compared to the one presented in the text. In other words, what considerations (whether empirical or conceptual) would lead you to adopt or reject this alternative approach to noun phrase structure?

### Problem 5.4

Wouldn't it be simpler to say that determiners (and possessive pronouns) are modifiers, just like adjectives? Then we could continue say that noun phrases are the maximal projections of nouns, just like in the olden days. What do you think?

### Problem 5.5

For all speakers of English, the sentence in (1) can have either of the interpretations in (2).

- (1) Jane has a big black dog, and Jean has a small *one*.
- (2) a. Jane has a big black dog, and Jean has a small *dog*.  
b. Jane has a big black dog, and Jean has a small *black dog*.

On the other hand, (3) means only (4a) for most speakers of English. However, some speakers are able to interpret (3) as (4b) (Radford 1988) (such variable judgments among different speakers are conventionally indicated by a *percent symbol*).

- (3) Jane has a big black dog, and Jean has a brown *one*.
- (4) a. Jane has a big black dog, and Jean has a brown *dog*.  
b. % Jane has a big black dog, and Jean has a *big* brown *dog*.

A. Which of the interpretations of (1) and (3) is problematic? Explain.

B. Can you think of a way of resolving the problem you laid out in your answer to (A)?



# Wh- movement

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## Chapter outline

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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 *wh*- phrase; in the topicalization, it is not. Despite this difference, the syntax literature often follows Chomsky (1977) in using the term *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 *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

### 1.1 Yes-no versus *wh*- questions

Questions can be divided into **yes-no questions** (also known as polar questions) and ***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, *wh*- questions begin with a *wh*- expression (*who*, *what*, *which*, *where*, *when*, *why*). *How* counts as a *wh*- expression by virtue of its meaning, even though it doesn’t begin with *wh*-.

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

- (1) Yes-no question:
  - Q: Has he called?
  - A: { Yes, no }.
- (2) *Wh*- question:
  - a. Q: Who just came in?  
A: The boy from next door.
  - b. Q: Who(m) did you invite?  
A: All my friends.
  - c. Q: When did she call?  
A: After dinner.
  - d. Q: Why did he do that?  
A: Out of ignorance.
  - e. Q: How did you fix it?  
A: With the right tool.

## 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? (information question)  
your son he reads what  
'What does your son read?'  
B: Des bandes dessinées.  
of.the comics  
'Comics.'
- b. A: Mon fils, il lit [inaudible]?  
my son he reads  
'My son reads ...'  
B: Il lit quoi? (echo question)  
he reads what  
'He reads what?'

## A movement analysis of questions

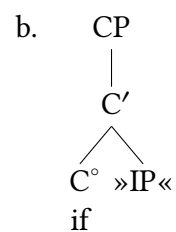
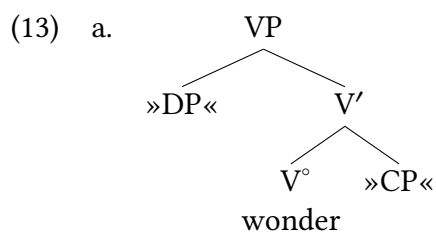
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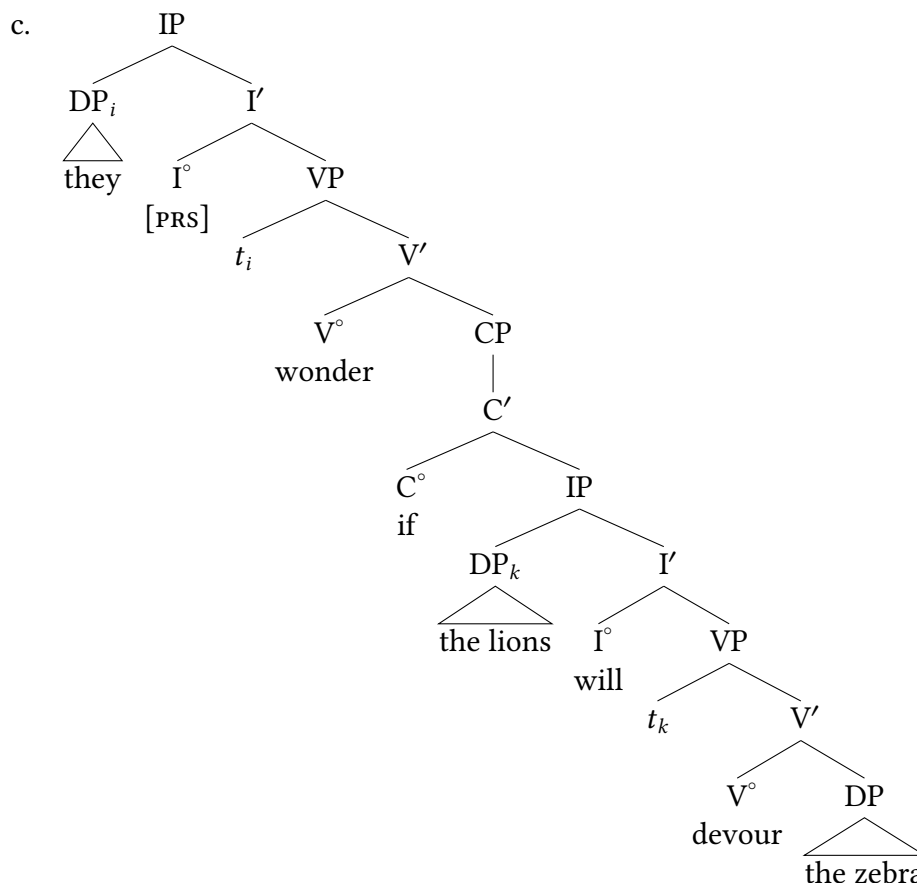
### 2.1 Indirect questions

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).

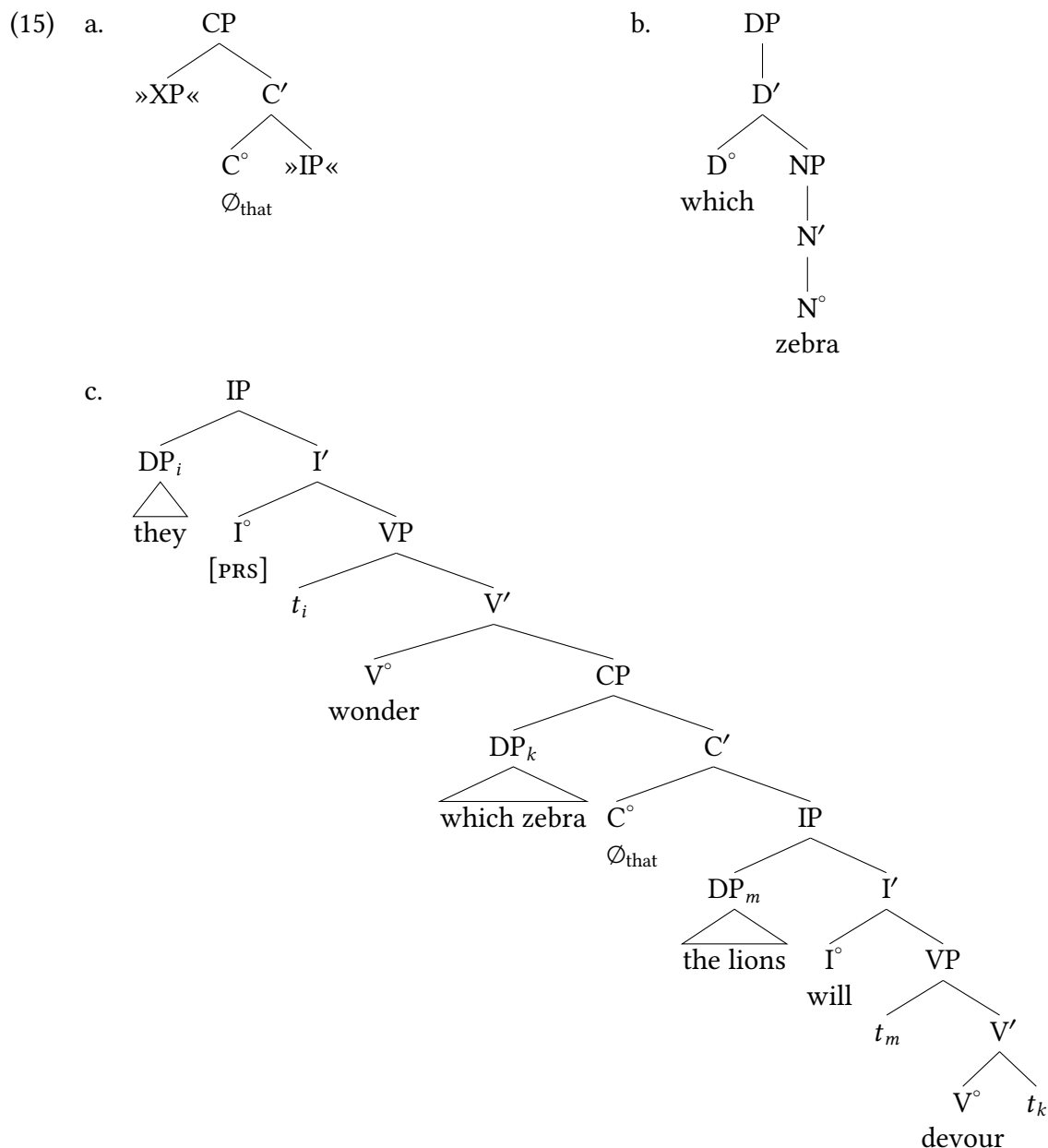




Now consider the indirect question in (14), which begins with a *wh*-phrase (a maximal projection) rather than with a complementizer (a head).

- (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).

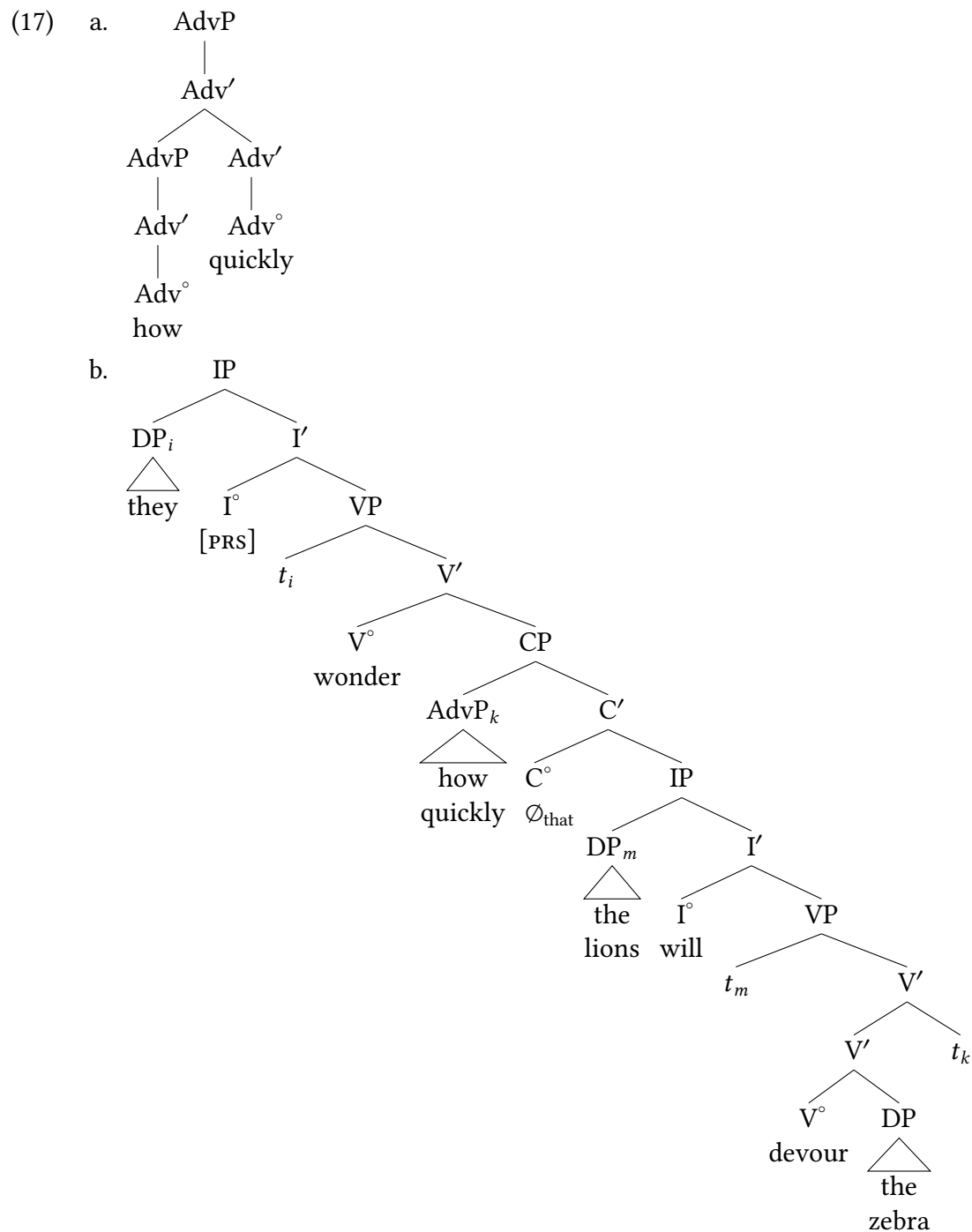


The argument just presented is based on the obligatorily transitive character of *devour*, but it extends straightforwardly to other syntactic relations—for instance, modification. Recall that the way that we have chosen to represent the modification relation is to adjoin the modifier at the intermediate 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.





### 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 answer (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 knowe *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 encreesseth 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.  
       (Clara Orsitti, interviewed by Vicky Barker, World Update, National Public Radio, 25 January 1999)
- b. Most of my colleagues were amazed *how quickly that* I recovered.

(advertisement for Temple University Hospital, WRTI, 24 November 1999)

- c. “These recounts will determine *how much of a pick-up that* we will have”, said Democratic National Committee Chairman Joe Andrew.

(<https://www.cnn.com/2000/ALLPOLITICS/stories/11/08/house.races/>)

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 kumt.  
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. [<sub>DP</sub> Which zebra ] will the lions devour?  
b. [<sub>AdvP</sub> How quickly ] will the lions devour the zebra?  
c. [<sub>AdjP</sub> How experienced ] should they be?  
d. [<sub>PP</sub> Under which shell ] will they hide the pea?

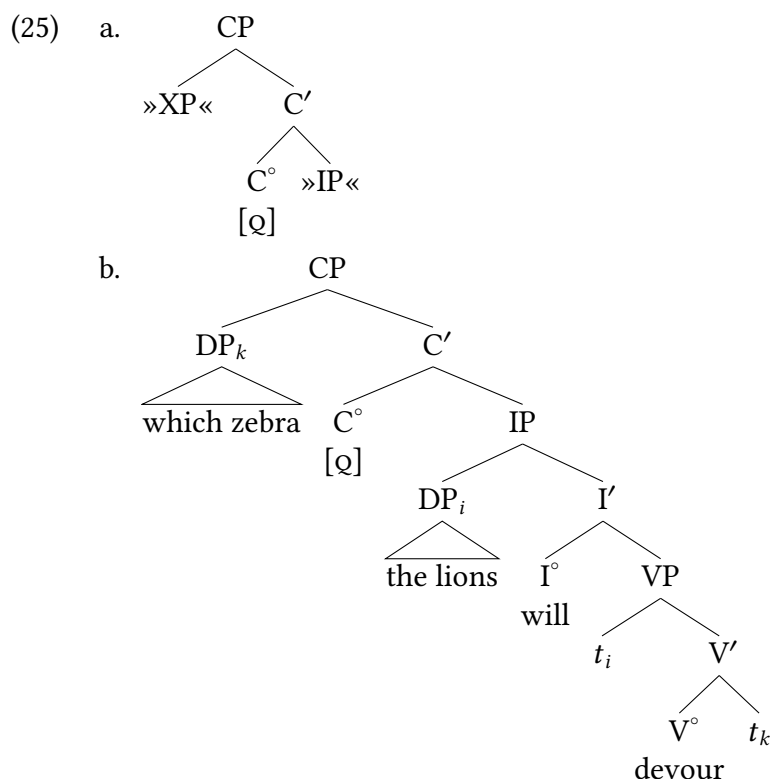
As is evident from comparing the direct questions in (23) with their indirect question counterparts, *wh-* movement in direct questions is accompanied by movement of the modal from its ordinary position after the subject to a position immediately preceding the subject. For obvious reasons, we will refer 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.)

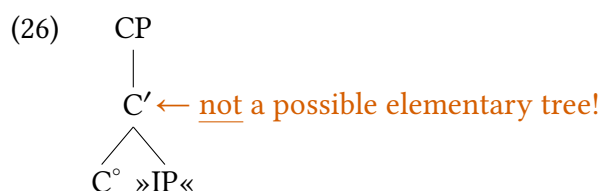
- (24) 誰が      寿司を    食べました か？  
 Dare-ga    sushi-o    tabe-mashi-ta ka?  
 who-NOM sushi-ACC eat-POL-PST    Q  
 ‘Who ate sushi?’

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.

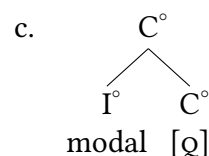
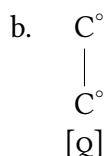
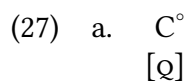


## Head movement

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.



As a result of these considerations, we will implement movement of the modal to the pre-subject 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.

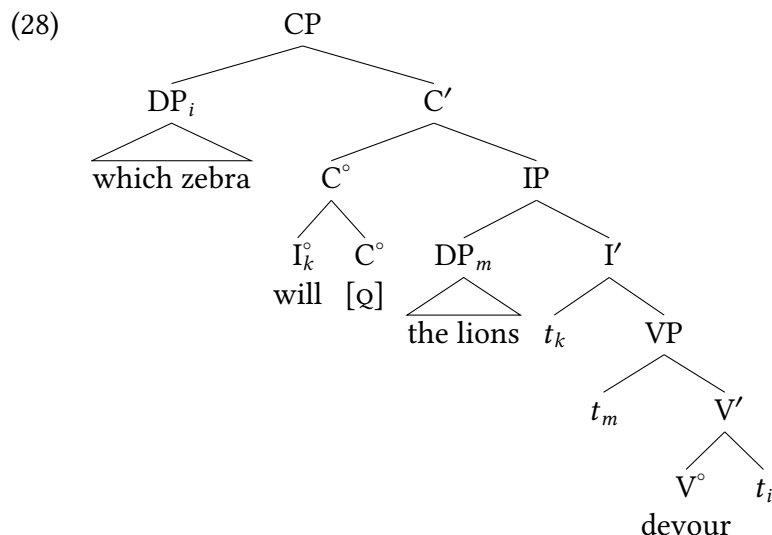


Select target of  
adjunction

Clone target of  
adjunction

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.



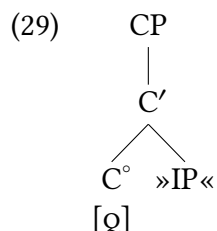
Although the formal operation of adjunction is defined in exactly the same way regardless of the use to which we put it, the two uses are associated with differences. First and foremost, the operation represents different linguistic relations in the two cases. As we already know from Chapter 4, § 3, 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-adjoints to I. By analogy, we assume that I in the case at hand left-adjoints 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.

| Use of adjunction for ...                                                   | Modification            | Head movement          |
|-----------------------------------------------------------------------------|-------------------------|------------------------|
| <b>Adjunction structure represents ...</b>                                  | semantic restriction    | morphological relation |
| <b>Target of adjunction</b>                                                 | intermediate projection | head                   |
| <b>Adjoining node</b>                                                       | maximal projection      | head                   |
| <b>Adjoining node already part of structure?<br/>(= Movement involved?)</b> | no                      | yes                    |

Table 6.1: Comparison of adjunction in modification and head movement

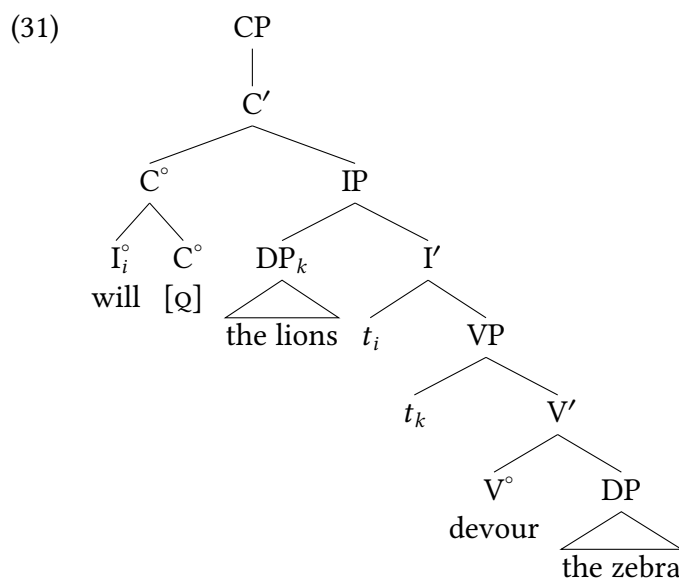
### Yes-no questions

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).



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?



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

### 3

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

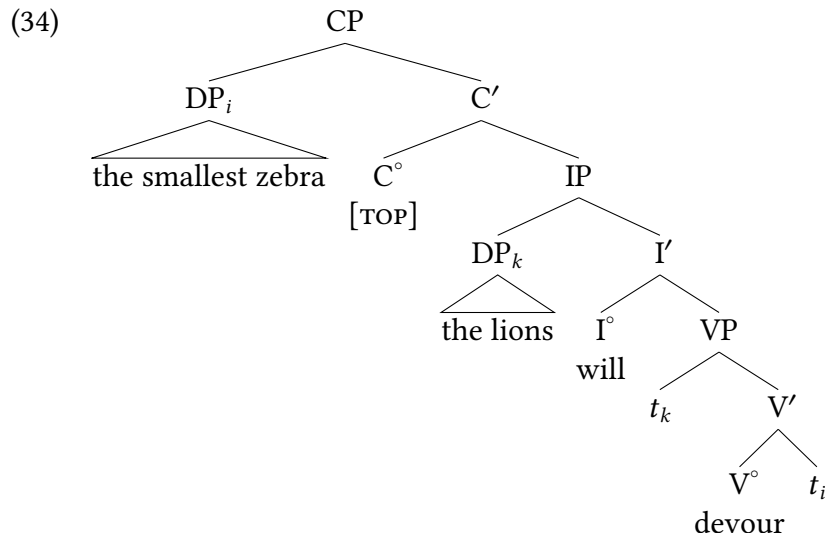
- (32) a. [<sub>DP</sub> The smallest zebra, ] the lions will devour.  
       b. [<sub>AdvP</sub> Unbelievably quickly, ] the lions will devour the zebra.  
       c. [<sub>AdjP</sub> Quick as a wink, ] the cat hid under the covers.  
       d. [<sub>PP</sub> Over the next few days, ] the snow will melt.

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) a. 子供は りんごを 食べました。  
       Kodomo-wa ringo-o tabe-mashi-ta.  
       child-TOP apple-ACC eat-POL-PST  
       ‘As for the child, it ate the apple.’  
       b. りんごは 子供が 食べました。  
       Ringo-wa kodomo-ga tabe-mashi-ta.  
       apple-TOP child-NOM eat-POL-PST  
       ‘As for the apple, the child ate it.’

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 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

### 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:

- We can't remember *who* moved in next door.
- We can't remember *who(m)* you met.
- We can't remember *where* you met them.
- We can't remember *which* you prefer.
- We can't remember *whose parents* you met.

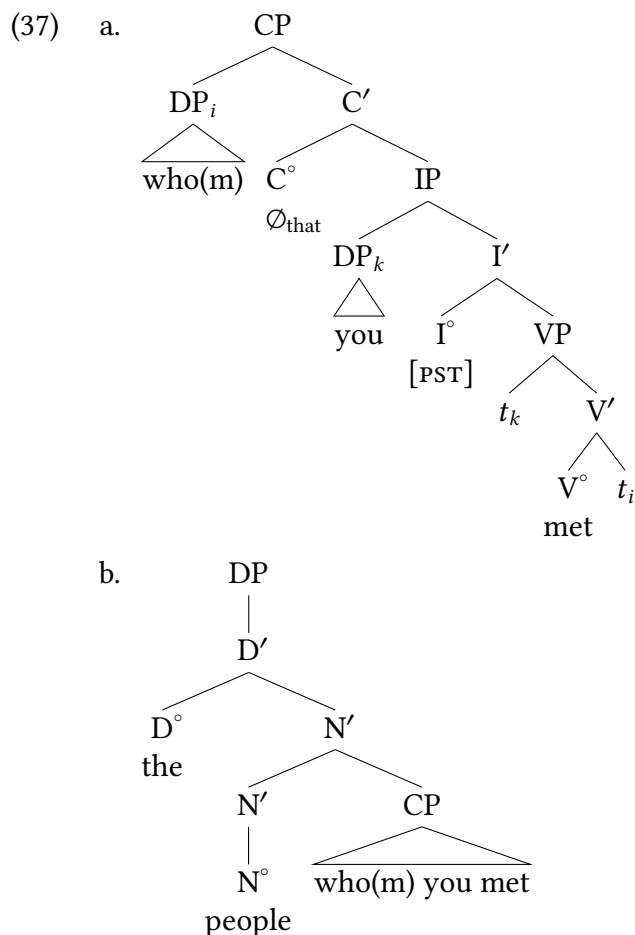
(36) Relative clause:

- the people *who* moved in next door.
- the people *who(m)* you met.
- the place *where* you met them.
- the movie *which* you prefer.



- e. the friend *whose parents* you met.

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).



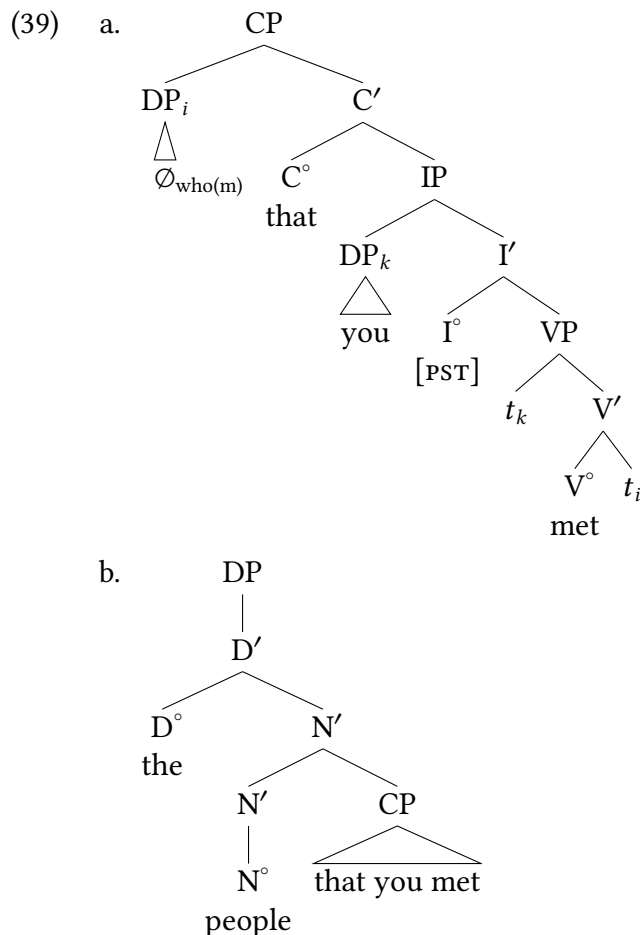
## 4.2 *That* relative clauses

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

- (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).



### 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).<sup>2</sup>

- (40) a. the people \_\_\_\_ you met.  
 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.

- 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 law 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

5

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

6

### 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? (pied piping)
  - b. Which house do you live in? (preposition stranding)

- 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. [<sub>AdvP</sub> Unbelievably quickly ] the lions will devour the zebra.  
 b. [<sub>AdjP</sub> Quick as a wink ], the cat hid under the covers.  
 c. [<sub>PP</sub> 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 22<sup>nd</sup> Street, Philadelphia, PA, 26 September 1998)
  - b. What you bought tickets for?  
(overheard at 30<sup>th</sup> 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 36<sup>th</sup> 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*.

# Case theory

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## Chapter outline

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This chapter is devoted to **case**, a more or less abstract property of noun phrases. Not every human language expresses this property visibly in terms of morphological distinctions, and so its existence in the world's languages is a bit of a mystery. However, in languages with rich morphological case systems, it is clear that case signals (or at least helps signal) a noun phrase's **grammatical relation** to the rest of the sentence (for instance, whether a noun phrase is a subject or object). In languages with relatively poor case morphology, like English, this guidepost function of case is less evident; case carries out its function indirectly by regulating the surface order of noun phrases (specifically, which links in a noun phrase chain can be expressed overtly). The role of case in these languages is reminiscent of the rules of a board game, which have no intrinsic meaning, and can seem mechanical to the point of being downright unsatisfying. Nevertheless, we will see that case is useful in describing and understanding the phenomena covered in the next two chapters (**passive** and **raising versus control**).

As we have just said, English is a language with few visible case distinctions, and so we set the stage by reviewing the richer system of Indo-European, the ancestor language of English and many other (though by no means all) languages of Europe and parts of Asia. The older de-

scendants of Indo-European tended to express case **synthetically** as affixes on words, whereas the more modern languages tend to express case **analytically**, by co-opting relatively contentless prepositions as case markers or by signalling function via word order (as just mentioned). Languages are not necessarily “pure” in the use of these strategies; it is common to find case expressed synthetically on pronouns, but analytically on full noun phrases (as is true for English). In order to make it easier to think about case independently of these two case-marking strategies, we introduce the notion of **case feature**. We then describe the distribution of case forms in terms of heads **assigning** these case features to noun phrases in three well-defined **case configurations**. The chapter concludes with some issues raised by the discussion in the main text but not central to an understanding of it.

## A first look at case

1

### 1.1 The basic purpose of case

In order to understand the role of case in human language, it is useful to consider languages in which constituent order is not as fixed as it is in English. In German, for instance, unlike English, the subject of an ordinary declarative clause doesn’t need to precede the verb, as shown in (1) and (2) (we discuss the structure of German sentences in more detail in Chapter 12; for now, only the variable constituent order is of interest). In the examples, boldface indicates the subject, and italics indicates the object.

- (1) German:
- a. **Der Mann** sieht *den Hund*.  
the man sees the dog  
‘The man sees the dog.’
  - b. *Den Hund* sieht **der Mann**.  
the dog sees the man  
same as (1a), not the same as (2a)
- (2)
- a. **Der Hund** sieht *den Mann*.  
the man sees the dog  
‘The dog sees the man.’
  - b. *Den Mann* sieht **der Hund**.  
the man sees the dog  
same as (2a), not the same as (1a)

Since German speakers can’t rely on constituent order to identify subjects and objects, how is it possible for them to keep track of which noun phrase expresses which **grammatical relation** (and more generally, which sentence expresses which meaning)? The answer is that grammatical

relations are encoded in German by various morphological case forms. In particular, the subjects of **finite clauses** in German appear in a particular form called the **nominative** case, whereas objects generally appear in the **accusative**. (3) gives a morphological analysis of the noun phrases in (1) and (2).

- (3) a. d -er Mann, d -er Hund  
the -NOM man the -NOM dog  
b. d -en Mann, d -en Hund  
the -ACC man the -ACC dog

Notice that in (3), the distinction between nominative and accusative case is marked once: on the head of the noun phrase (the determiner).

In certain exceptional cases in German, case distinctions are marked redundantly: on the determiner as well on the noun. This is illustrated in (4). The empty set symbol 'Ø' explicitly indicates a zero (unpronounced) nominative suffix; *-(en)* is the accusative suffix that we know from (3), but here, on the noun, it is optional, as indicated by the parentheses.

- (4) a. d- er Bär -Ø, d -er Student -Ø (nominative)  
the -NOM bear -NOM, the -NOM student -NOM  
b. d -en Bär (-en), d -en Student (-en) (accusative)  
the -ACC bear (-ACC) the -ACC student (-ACC)

The redundant case marking in (4) is a historical relic from an earlier stage of German where this pattern was more extensive. In some languages, redundant case marking on the determiner and the noun is the norm. This is illustrated for modern Greek in (5).

- (5) Modern Greek:  
a. O άνδρ-ας βλέπει τ-ο σκύλο.  
O andr-as vlepí t-o skil-o  
the.NOM man-NOM sees the-ACC dog-ACC  
'The man sees the dog.'  
b. O σκύλ-ος βλέπει τ-ον άνδρ-α.  
O skil-os vlepí t-on andr-a  
the.NOM dog-NOM sees the-ACC man-ACC  
'The dog sees the man.'

Finally, case can be marked solely on the noun. This is the case for Latin, as shown in (6), for the simple reason that Latin had no articles.

- (6) Latin:  
a. Fēmin-a can-em videt.  
woman-NOM dog-ACC sees  
'The woman sees the dog.'  
b. Can-is fēmin-am videt.  
dog-NOM woman-ACC sees  
'The dog sees the woman.'

To summarize the discussion in this section: noun phrases can be case-marked either on the determiner, or on the noun, or redundantly on both. But regardless of the particular pattern, case marking has the same basic purpose: it visibly expresses a noun phrase's grammatical function in a sentence.

## 1.2 Case government

In many languages, a noun phrase's morphological case depends not only on its function in the entire sentence, but also on the head that it is most closely associated with. For instance, in German, the object in a sentence can appear in the accusative, as we have already seen, or in the dative,<sup>1</sup> depending on the verb. Some examples are shown in (7) and (8).

- (7) a. ✓ { d-en Hund, d-ie Frau } unterstützen (accusative)  
           the-ACC dog the-ACC woman support  
           'to support the { dog, woman }'  
       b. \* { d-em Hund, d-er Frau } unterstützen (dative)  
           the-DAT dog the-DAT woman support
- (8) a. \* { d-en Hund, d-ie Frau } helfen (accusative)  
           the-ACC dog the-ACC woman help  
           'to support the { dog, woman }'  
       b. ✓ { d-em Hund, d-er Frau } helfen (dative)  
           the-DAT dog the-DAT woman help

In traditional grammar, the verb is said to **govern** the case of the object. So in the examples, *unterstützen* 'support' governs the accusative, whereas *helfen* 'help' governs the dative.

Case government in Latin is illustrated in (9). As in German, each particular verb governs the case of its object, but in Latin, the choice of case ranges over three cases—dative, accusative, and ablative.

- (9) a. { fēmin -ae, \*fēmin -am, \*fēmin -ā } { sub- venīre, suc- currere } (dative)  
           woman -DAT -ACC -ABL under- come under- run  
           'to help the woman'  
       b. { fēmin -am, \*fēmin -ae, \*fēmin -ā } ad- iuvāre (accusative)  
           woman -ACC -DAT -ABL to- support  
           'to support the woman'  
       c. { fēmin -ā, \*fēmin -ae, \*fēmin -am } fruī (ablative)  
           woman -ABL -DAT -ACC enjoy  
           'to enjoy the company of the woman'

In both German and Latin, prepositions resemble verbs in governing the case of their complement. In German, prepositions govern the accusative, the dative, or (rarely) the genitive; in Latin, they govern the ablative or the accusative.

- (10) a. German:

durch d-ie Tür, bei d-er Kirche, während d-es Krieges  
 through the-ACC door, by the-DAT church, during the-GEN war  
 ‘through the door, by/near the church, during the war’

b. Latin:

dē sapienti-ā, ad rīp-am  
 about wisdom-ABL, to shore-ACC  
 ‘about wisdom, to the shore’

Finally, in both German and Latin, certain prepositions can govern more than one case. In such cases, the accusative marks direction, and the other case (dative in German, ablative in Latin) marks location.

(11) German:

- a. in { d-ie, \*d-er } Bibliothek schicken  
 in the-ACC the-DAT library send  
 ‘to send into the library’
- b. in { d-er, \*d-ie } Bibliothek arbeiten  
 in the-DAT the-ACC library work  
 ‘to work in the library’

(12) Latin:

- a. in { bibliothēc -am, \*bibliothēc -ā } mittere  
 in library -ACC -ABL send  
 ‘to send into the library’
- b. in { bibliothēc -ā, \*bibliothēc -am } labōrāre  
 in library -ABL -ACC work  
 ‘to work in the library’

### 1.3 Synthetic versus analytic case marking

Proto-Indo-European (PIE) is a language that was spoken thousands of years ago before the invention of writing; it has been reconstructed through a painstaking comparison of languages for which there are written records or which are still spoken today. It is the ancestor of the **Indo-European language family**, which includes many (though not all) of the languages of parts of Asia and Europe, including English. The nominative marked the subject of **finite clauses**, the accusative and dative (and perhaps other cases) marked objects (depending on the head, as just discussed), and the genitive indicated possession. The PIE ablative indicated the source of movement (as in *I drove from Chicago*), the locative was used for locations (as in *I used to live in Chicago*), and the instrumental marked instruments or means (as in *They cut it with a pocketknife*). Finally, the vocative was used to address persons (as in *Hey, Chris, come on over here*).

The original PIE case system is essentially preserved in Sanskrit, although the distinction between the ablative and the genitive is somewhat obscured because the relevant forms were often homophonous in Sanskrit. Such **homophony** among two or more case forms is called **case syncretism**. Among living languages, the PIE system is best preserved in the Baltic languages (Latvian and Lithuanian) and some Slavic languages (Czech and Ukrainian). In these languages,



the genitive and the ablative have merged completely, leaving seven cases. In other words, in the history of these languages, case syncretism extended to all forms of the genitive and the ablative, not just to some of them, and so children learning the language no longer had any evidence anywhere in the language for distinguishing between the two cases. Several other Slavic languages, including Russian, have in addition almost completely lost the vocative, leaving six cases. In Latin, the PIE ablative, instrumental, and locative merged into a single case, called the ablative, which serves all three functions. With a few exceptions, the vocative is mostly merged with the nominative, so this also leaves six cases. In Ancient Greek, the ablative, instrumental, and locative were lost, but the vocative was not (it persists into modern Greek), leaving five cases. Old English had five cases as well, having lost the ablative, locative, and vocative; in addition, the instrumental had mostly merged with the dative. Another Germanic language, modern German, retains four cases: nominative, dative, accusative, and an increasingly moribund genitive. These developments are summarized in Tables 7.1 and 7.2.

|                                 | PIE, Sanskrit | Baltic,<br>some Slavic | Other Slavic          | Latin                               |
|---------------------------------|---------------|------------------------|-----------------------|-------------------------------------|
| <b>Nominative</b>               | retained      | retained               | retained              | retained                            |
| <b>Dative</b>                   | retained      | retained               | retained              | retained                            |
| <b>Accusative</b>               | retained      | retained               | retained              | retained                            |
| <b>Genitive</b>                 | retained      | merged as<br>genitive  | merged as<br>genitive | retained                            |
| <b>Ablative</b>                 | retained      |                        |                       | merged as<br>ablative               |
| <b>Locative</b>                 | retained      | retained               | retained              |                                     |
| <b>Instrumental</b>             | retained      | retained               | retained              | mostly<br>merged with<br>nominative |
| <b>Vocative</b>                 | retained      | retained               | lost                  |                                     |
| <b>Number of distinct cases</b> | 8             | 7                      | 6                     | 6                                   |

Table 7.1: Summary of historical case developments in Indo-European languages

|                                 | Ancient Greek | Old English               | German   |
|---------------------------------|---------------|---------------------------|----------|
| <b>Nominative</b>               | retained      | retained                  | retained |
| <b>Dative</b>                   | retained      | retained                  | retained |
| <b>Accusative</b>               | retained      | retained                  | retained |
| <b>Genitive</b>                 | retained      | retained                  | retained |
| <b>Ablative</b>                 | lost          | lost                      | lost     |
| <b>Locative</b>                 | lost          | lost                      | lost     |
| <b>Instrumental</b>             | lost          | mostly merged with dative | lost     |
| <b>Vocative</b>                 | retained      | lost                      | lost     |
| <b>Number of distinct cases</b> | 5             | 5                         | 4        |

Table 7.2: Continued summary of historical case developments in Indo-European languages

Table 7.3 shows the complete case paradigms for the Latin nouns *fēmina* ‘woman’ and *avus* ‘grandfather’. These two nouns are each representative of two distinct **declensions**, or word classes. Latin had a total of five such word classes, each of which was characterized by unique endings for combinations of case and number. For instance, dative singular is marked by *-ae* on *fēmina* and by *-ō* on *avus*. In the remaining three declensions, this combination happens to be marked by the same suffix, namely *-ī* (but there are other distinctions in the paradigms that motivate distinguishing the declensions, rather than collapsing them into one).

| Latin             | <i>a</i> -declension<br>‘woman’ |            | <i>o</i> -declension<br>‘grandfather’ |         |
|-------------------|---------------------------------|------------|---------------------------------------|---------|
|                   | SG                              | PL         | SG                                    | PL      |
| <b>Nominative</b> | fēmin-a                         | fēmin-ae   | av-us                                 | av-ī    |
| <b>Genitive</b>   | fēmin-ae                        | fēmin-ārum | av-ī                                  | av-ōrum |
| <b>Dative</b>     | fēmin-ae                        | fēmin-īs   | av-ō                                  | av-īs   |
| <b>Accusative</b> | fēmin-am                        | fēmin-ās   | av-um                                 | av-ōs   |
| <b>Ablative</b>   | fēmin-ā                         | fēmin-īs   | av-ō                                  | av-īs   |
| <b>Vocative</b>   | fēmin-a                         | fēmin-ae   | av-e                                  | av-ī    |

Table 7.3: Complete case paradigms for Latin *fēmina* ‘woman’ and *avus* ‘grandfather’

As Table 7.3 shows, Latin exhibited some case syncretism. In particular, the genitive and the dative singular are homophonous for *fēmina* ‘woman’, the dative and ablative singular are homophonous for *avus* ‘grandfather’, and the dative and the ablative plural are homophonous for both nouns.

In the descendants of Latin, the Romance languages, case continues to be expressed synthetically on pronouns. For instance, the distinction between dative and accusative pronouns is

illustrated for French in (13). Note that unstressed pronouns in French are clitics; unlike full noun phrases, they precede the verb they are construed (= belong) with.

- (13) a. Je veux *leur* parler.  
           I want 3PL.DAT talk  
           ‘I want to talk to them.’  
       b. Je veux *les* voir.  
           I want 3PL.ACC see  
           ‘I want to see them.’

With full noun phrases, however, the same distinction is expressed analytically by the presence or absence of the dative case marker *à*.

- (14) a. Je veux parler *à* vos voisins.  
           I want talk DAT your neighbors  
           ‘I want to talk to your neighbors.’  
       b. Je veux voir vos voisins.  
           I want see your neighbors  
           ‘I want to see your neighbors.’

This case marker has its historical origin in the spatial preposition *à* ‘to’, but is distinct from it in the modern language. This is evident from the fact that the pro-form for phrases where *à* is a spatial preposition is not *leur*, as in (13a) (or *lui* in the singular), but *y*, just as it is for other spatial prepositions like *dans* ‘in’ or *sur* ‘on’.

- (15) a. Nous avons envoyé le vin *à* Toulouse; mon amie habite *à* Paris.  
           we have sent the wine to Toulouse my friend lives in Paris  
           ‘We sent the wine to Toulouse; my friend lives in Paris.’  
       b. Nous *y* avons envoyé le vin; mon amie *y* habite.  
           we there have sent the wine my friend there lives  
           ‘We sent the wine there; my friend lives there.’  
       (16) a. Le cadeau se trouve *dans* mon sac; nous avons mis le cadeau *sur* la table.  
               the present REFL finds in my bag we have put the present on the table  
               ‘The present is (literally, ‘finds itself’) in the bag; we put the present on the table.’  
           b. Le cadeau s’ *y* trouve; nous *y* avons mis le cadeau.  
               the present REFL there finds we there have put the present  
               ‘The present is there; we put the present there.’

As mentioned earlier, Old English had five cases, which are illustrated in Table 7.4 for three declensions. As is evident, case syncretism is more extensive in Old English than in Latin.

| Old English         | M<br>‘fox’ |        | F<br>‘learning’ |        | N<br>‘animal’ |                   |
|---------------------|------------|--------|-----------------|--------|---------------|-------------------|
|                     | SG         | PL     | SG              | PL     | SG            | PL                |
| <b>Nominative</b>   | fox        | fox-as | lar             | lar-a  | deor          | deor <sup>2</sup> |
| <b>Genitive</b>     | fox-es     | fox-as | lar-e           | lar-a  | deor-es       | deor-a            |
| <b>Dative</b>       | fox-e      | fox-e  | lar-e           | lar-um | deor-e        | deor-um           |
| <b>Instrumental</b> | fox-e      | fox-e  | lar-e           | lar-um | deor-e        | deor-um           |
| <b>Accusative</b>   | fox        | fox-as | lar-e           | lar-a  | deor          | deor              |

Table 7.4: Complete case paradigms for OE *fox* ‘fox’, *lar* ‘learning’, and *deor* ‘animal’

In the course of Middle English (1150–1500), the old genitive case suffixes were lost, and their function was taken over by a syntactic head—the possessive determiner *’s* (in the plural, the possessive is spelled out as a silent determiner that is orthographically represented as an apostrophe). The old synthetic genitive case is illustrated in (17). Recall that the thorn character (þ) corresponds to modern English ‘th’.

- (17) þe king-es suster of France (cmpeterb, 59.593)  
the king-GEN sister of France  
‘the king of France’s sister’

Although the change itself is not yet fully understood, it is clear that the modern possessive marker is no longer a synthetic case suffix on a noun (N) (*king*), as it is in (17), but rather analytically case-marks an entire noun phrase (DP) (*the king of France*). This is clear from the fact that it follows postnominal material like the prepositional phrase *of France* in modern English (cf. the translation of (17)). The difference between the synthetic and analytic strategies emerges even more sharply from the contrast in (18), where the possessive determiner obligatorily follows an element that is not even a noun. For clarity, the noun phrase that is case-marked by the possessive determiner is underlined in (18b); the entire sequence in (18b) from *the* to *cat* is of course also a noun phrase.

- (18) a. \* the guy’s that I used to go out with cat  
b. the guy that I used to go out with’s cat

### Word of Caution

It is tempting to think of the Modern English ending *’s* on singular noun phrases as an instance of synthetic case marking. But that can’t be, since (17) is no longer grammatical. Under the analysis just given, the nominative, possessive, and objective case forms of full noun phrases are all homophonous in Modern English, and *’s* in *the king’s* is an analytic case marker on a par with the preposition *of* in *of the king* (though unlike the preposition, it is a bound morpheme).

Beginning in late Old English (ca. 1000 CE), the distinction between the dative and the accusative weakened, and the distinction was lost completely in the course of Middle English

(1150–1500). In what follows, we will refer to the case that resulted from the merger as the **objective**.

As in French, case is no longer visibly marked on full noun phrases in Modern English, but continues to be marked synthetically on pronouns. This is evident from Table 7.5. The original forms for second person singular were replaced in early Modern English by the corresponding plural form; we include the old forms for completeness.<sup>3</sup>

|   |            | Nominative  | Objective    | Possessive    |
|---|------------|-------------|--------------|---------------|
| 1 | SG         | I           | me           | my            |
| 2 | SG         | thou        | thee         | thy           |
| 3 | SG M, F, N | he, she, it | him, her, it | his, her, its |
| 1 | PL         | we          | us           | our           |
| 2 | PL         | you         | you          | your          |
| 3 | PL         | they        | them         | their         |

Table 7.5: Synthetic case in Modern English pronouns

As the table shows, *you* and *it* have lost the distinction between nominative and objective, so in this respect these pronouns resemble full noun phrases. Finally, it is worth noting that despite the efforts of prescriptive grammarians to keep a distinction alive between nominative *who* and objective *whom*, the two forms have merged as *who* in the vernacular (with *whom* surviving marginally and used for stylistic rather than grammatical reasons). James Thurber has a [diabolically witty essay on the topic](#).

## Case features

## 2

The next two sections introduce some general concepts and conditions that enable us to derive the distribution of case forms in English (which we focus on) and other languages. We begin by introducing the notion of **case feature**.

Consider the contrast between (19) and (20).

- (19) a. ✓ They will help her.  
       b. ✓ She will help them.
- (20) a. \* Them will help she.  
       Intended meaning: (19a)  
       b. \* Her will help they.  
       Intended meaning: (19b)

Why are the sentences in (20) ungrammatical? The answer is that noun phrases in English are subject to the requirements in (21).

- (21) a. Subjects of **finite clauses** appear in the nominative.  
b. Objects appear in the objective.

As is evident, both of the subjects in (20) are objective forms, and both of the objects are nominative forms. Each of the sentences in (20) therefore maximally violates the requirements in (21).

Now compare the examples in (19) and (20) with those in (22).

- (22) a. You will help her.  
b. She will help you.

As we saw in Table 7.5, *they* and *she* exhibit distinct forms for the nominative and objective, whereas *you* doesn't. But because case syncretism between the nominative and the objective is not complete in English (in other words, because at least some pronouns still have distinct forms for the two cases), we will treat *you* as a nominative form in (22a), equivalent to *they* and *she*, but as an objective form in (22b), equivalent to *them* and *her*. Moreover, we will treat the noun phrase *my big brother* as a nominative form in (23a) and as an objective form in (23b) for exactly the same reason.

- (23) a. My big brother will help her.  
b. She will help my big brother.

In order to disambiguate instances of case syncretism like *you* and *my big brother*, it is useful to associate noun phrases with **case features**. Each case feature has a value that is selected from among all of the various case forms in that language (regardless of whether the case forms are expressed synthetically or analytically). In English, for instance, a case feature can assume one of three values (nominative, objective, possessive). In Russian, a case feature has a choice among six values (nominative, genitive, dative, accusative, locative, instrumental). If we need to explicitly represent a noun phrase's case feature, we can do so by means of labels as in (24) and (25).

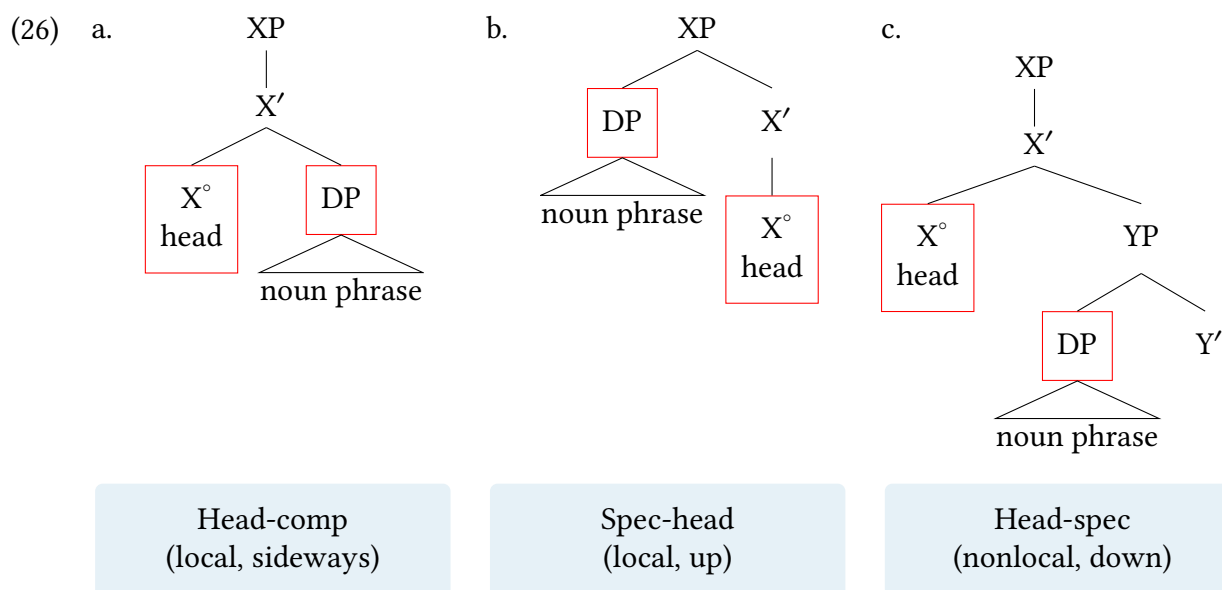
- (24) a. [<sub>DP-NOM</sub> They ] will help [<sub>DP-OBJ</sub> her ].  
b. [<sub>DP-NOM</sub> You ] will help [<sub>DP-OBJ</sub> her ].  
c. [<sub>DP-NOM</sub> My big brother ] will help [<sub>DP-OBJ</sub> her ].  
(25) a. [<sub>DP-NOM</sub> She ] will help [<sub>DP-OBJ</sub> them ].  
b. [<sub>DP-NOM</sub> She ] will help [<sub>DP-OBJ</sub> you ].  
c. [<sub>DP-NOM</sub> She ] will help [<sub>DP-OBJ</sub> my big brother ].

## Case assignment configurations

3

Earlier, we said that the purpose of case is to encode a noun phrase's function in the sentence. In order to implement this insight in structural terms, we will require each noun phrase (or more precisely, each noun phrase chain) to be associated with a syntactic head that **assigns** a case feature to it.<sup>4</sup> In English, case assigners are either verbs or prepositions (with very few exceptions), but there are languages (usually ones with rich overt case morphology) where the set of case-assigning heads includes adjectives and nouns. We can imagine the case feature originating on the head and being transferred to the noun phrase in the course of the derivation. This fits nicely with the idea of different heads governing different cases. It also immediately raises the question (at least for a syntactician!) of whether the paths that case features take on their journey from head to noun phrase are constrained in any way. Below, we will answer this question in the affirmative and present three licit paths, or **case assignment configurations**: the **head-comp** configuration, the **spec-head** configuration, and the **head-spec** configuration. Recall from Chapter 4 that 'spec' (read as 'speck') refers to the specifier node in the X' schema of phrase structure. By analogy, we abbreviate 'complement' as 'comp'.

The configurations are illustrated in schematic form in (26); nodes that are irrelevant for case assignment are omitted.



The remainder of the section discusses concrete examples. The linear order of 'spec' and 'head' in the last two configurations correlates (we hope, mnemonically) with their height in the tree. We draw your attention to the fact that the case-assigning head and the noun phrase belong to the same maximal projection in the first two configurations, but not in the third. (More precisely, no maximal projection intervenes between the case-assigning head and the noun phrase

in the first two structures, but there is such an intervening node in the third.) In this sense, case assignment in the first two configurations, but not in third, is **local**. Finally, if you don't find our technical names mnemonic, you can think of the configurations as the head assigning case sideways, up, or down.

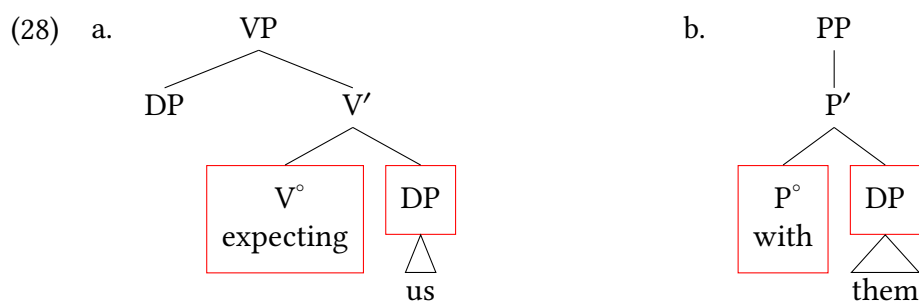
Before proceeding, we briefly note that from the 1990s on, proposals have been made to simplify the theory of case assignment by identifying a single configuration (in other words, by reducing the set of three configurations in (26) to one). We touch on a relevant issue under § 4.1 [Subject movement](#), but refrain from reviewing this work in detail, since some of it assumes abstract syntactic heads not covered in this book. In this connection, it is important to keep in mind that simplifications to case theory do not necessarily come for “free”, but may have to be “bought” at the “cost” of complications elsewhere in the grammar, so that they may not in fact turn out to be as much of a conceptual bargain as they seem at first.

### 3.1 Head-comp

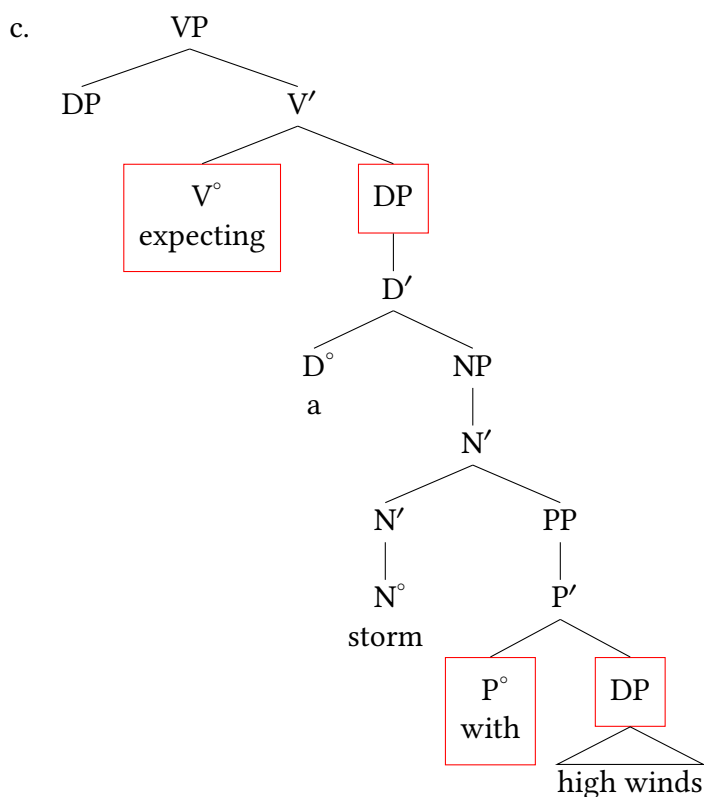
The first case assignment configuration is the one that corresponds to the traditional notion of case government. It is also the simplest in the sense that it contains the fewest number of nodes. In English, it is used in connection with the assignment of objective case by P or V, as in (27). The first two examples are simple. The third shows a more complex structure with two heads, each of which assign case to its DP complement.

- (27) a. expecting us  
 b. with them  
 c. expecting a storm with high winds

(28) gives the associated structures, with the endpoints of the path highlighted. (The higher DP positions in (28a), (28c) are irrelevant here.)







### 3.2 Spec-head

As we have just seen, heads can assign case to their complements. Given the X' schema, we might expect heads to also assign case to the other argument position—in the spec-head configuration.<sup>5</sup> Indeed, since subjects of sentences start out life as specifiers of verbs, this seems at first blush like an attractive way to assign case to the subject of sentences. According to this idea, what assigns nominative case to *They* (or more precisely, to its trace in Spec(VP)) in sentences like (29) is the finite verb *laughed* in (29a) and its nonfinite counterpart *laugh* in (29b).

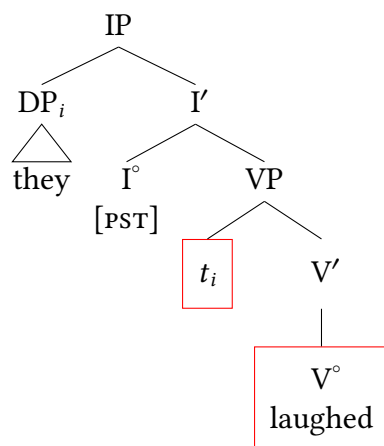
#### Word of Caution

In what follows, it is important to distinguish carefully between finite clauses and finite verbs. See the appendix to Chapter 2 (§8: [Appendix: Finiteness in English](#)) for detailed discussion.

- (29) a. ✓ They laughed. (finite clause, finite verb)  
 b. ✓ They will laugh. (finite clause, nonfinite verb)

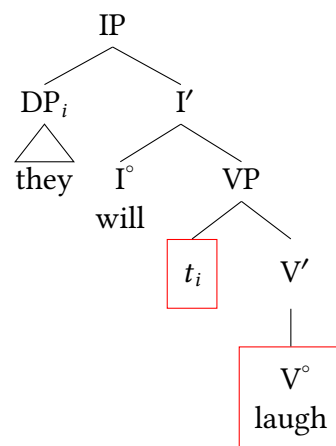
Although we will end up rejecting this approach, let us play it out for the moment in order to show why it is unsatisfactory. (30) shows the structures just described. (We assume that DPs are free to move on after being assigned case to other positions in the sentence.)

(30) a.



Finite clause, finite verb  
(to be revised!)

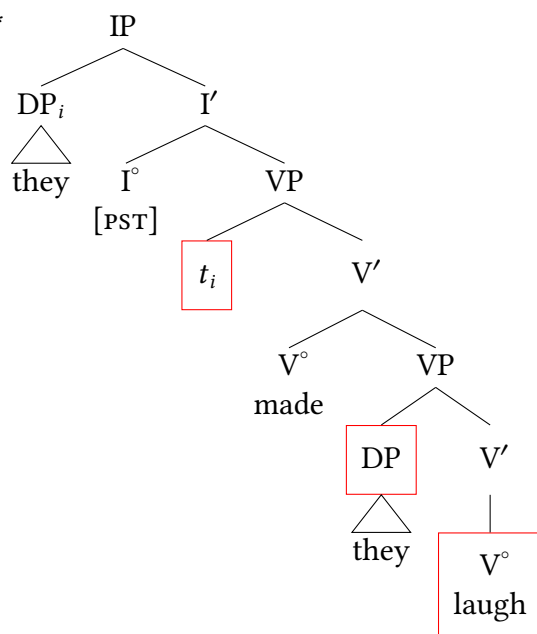
b.

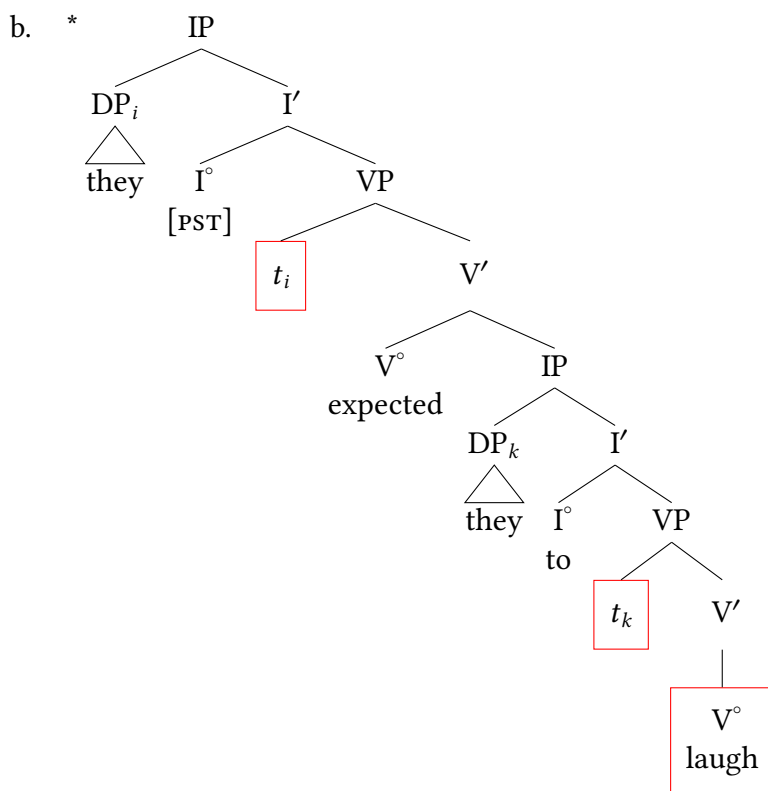


Finite clause, nonfinite verb  
(to be revised!)

Now if verbs were able to assign nominative case regardless of their finiteness, nonfinite *laugh* should be able to do so to *they* in the structures in (31). (In (31b), the lower subject moves on from Spec(VP) to Spec(IP), but that can't be the reason for the ungrammaticality, because that movement is grammatical in (30).)

(31) a. \*

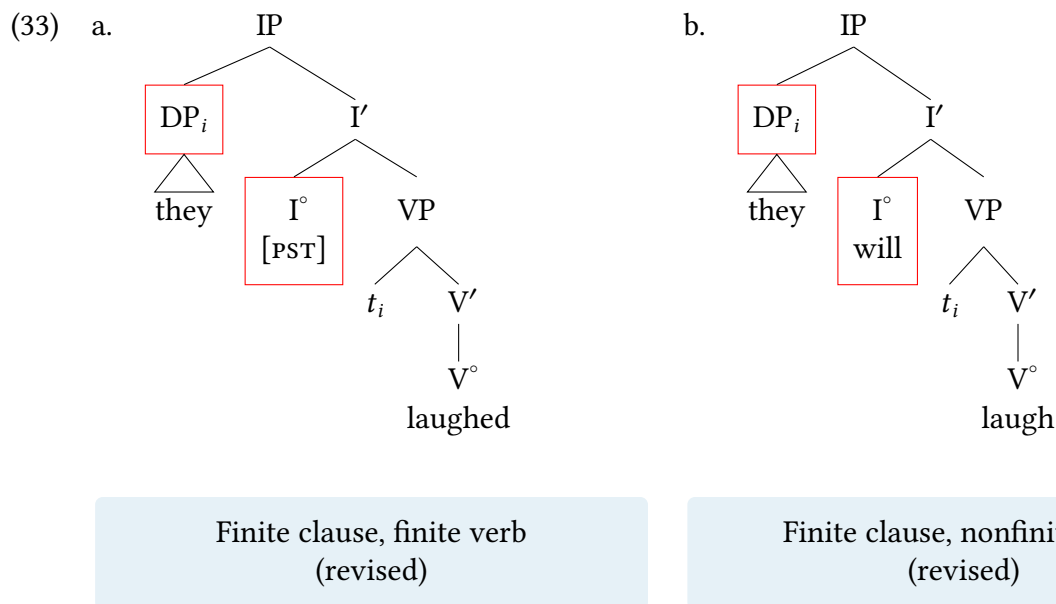




But these structures are completely ungrammatical, a fact impossible to attribute to semantic anomaly, since the intended meaning can be expressed grammatically by simply replacing the nominative by the objective, as in (32).

- (32) a. \* We made [ they laugh ]. (small clause)  
           Intended meaning: We made them laugh.
- b. \* We expected [ they to laugh ]. (to clause)  
           Intended meaning: We expected them to laugh.

We must therefore reject the idea that it is V that assigns nominative case. However, we don't have to give up the idea that nominative case is assigned in the spec-head configuration. All we need to do is revise our idea about which head it is that assigns case head and have finite I be the case-assigner. This then gives (33), which supersedes (30).

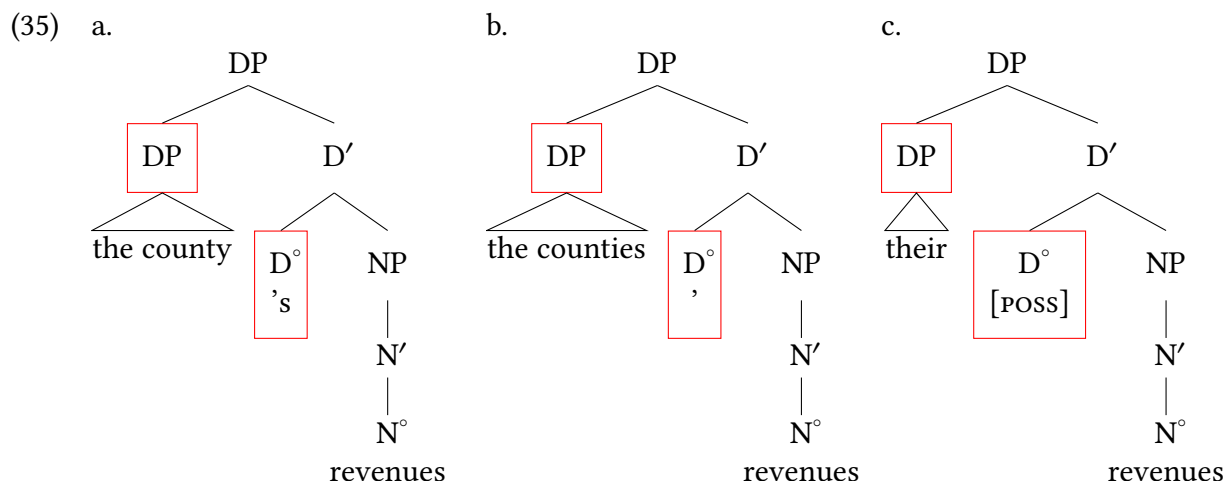


The contrast between (29) and (32) now follows straightforwardly since *I* is finite in (29), but missing or nonfinite in (32)<sup>6, 7</sup>.

At the beginning of this chapter, we said that case is assigned to noun phrases and that every noun phrase needs case. Here, we are at a convenient point to make that formulation more precise. What actually gets and case is a noun phrase chain, and case-assigning heads and chains stand in a one-to-one relationship. This fact will become more salient when we put our theory of case assignment to work in order to describe the grammatical phenomena under discussion in the next two chapters.

Nominative case is not the only case in English to be assigned in the spec-head configuration. So is possessive case. Here, the case-assigning head is the possessive determiner ('s or its silent plural variant). Three examples, along with their structures, are given in (34) and (35). For the possessive pronoun, we have to assume that the specifier and the head combine in the morphology as the synthetic form *their*.

- (34) a. the county's revenues  
 b. the counties' revenues  
 c. their revenues



### Extra Info

In possessive constructions, there are two DPs: a lower one (the possessor) and a higher one (the entire noun phrase containing both the possessor and the thing possessed). (35) highlights case assignment to the possessor DP. The containing DP gets case from some other head.

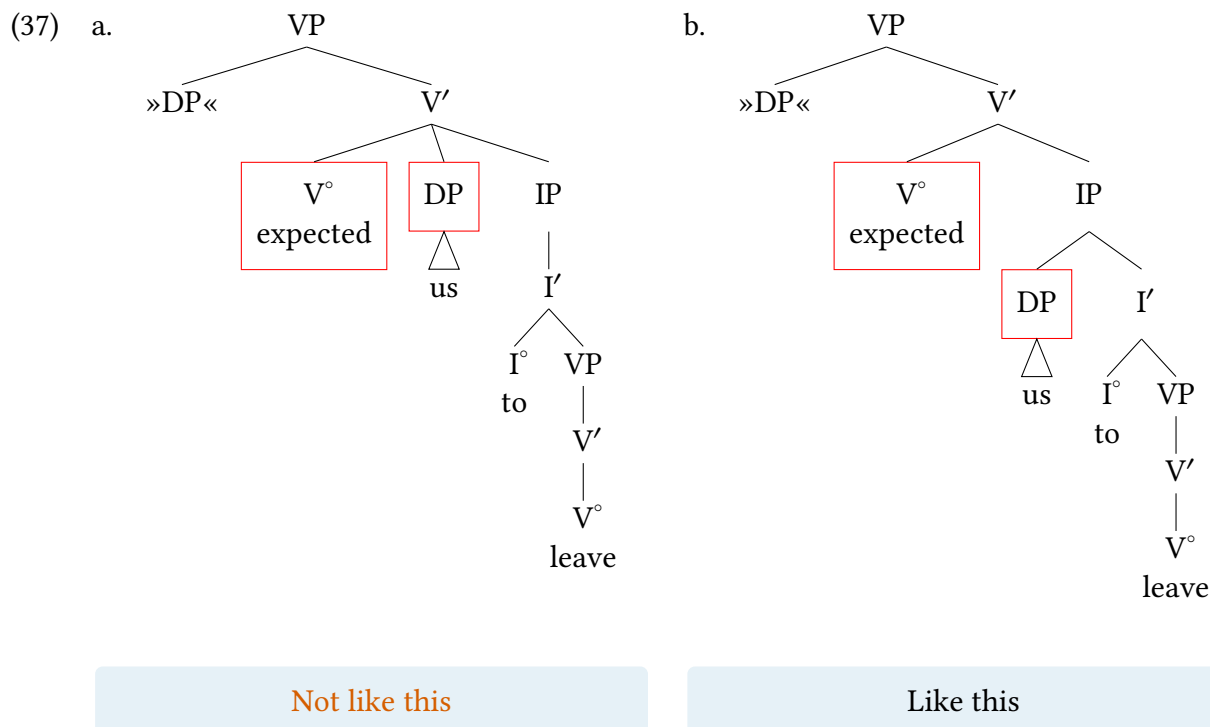
## 3.3 Head-spec

The final case assignment configuration is the **head-spec configuration**. It is more unusual than the first two in two respects. First, as already mentioned in connection with (26), it is the only configuration in which a maximal projection intervenes between the case-assigning head and the noun phrase. Second, in English, it allows V to assign objective case to a directly following noun phrase in sentences like (36).

(36) They expected us to leave.

Sentences of this type are not very common cross-linguistically and were for this reason at one time called **Exceptional Case-Marking (ECM)** sentences. Over time, opinions have gone back and forth over exactly how exceptional Exceptional Case-Marking is. Perhaps as a result of this, or perhaps only because it is shorter, the abbreviation is favored nowadays.

At first glance, it seems like we could avoid having to postulate this third configuration by giving (36) the structure in (37a) rather than that in (37b). We treat *to* as a nonfinite counterpart of *would* (cf. the paraphrase in (38)). For expository reasons, we omit the higher I projection.



But there are several reasons to reject (37a). First, (36) has roughly the same meaning as (38).

- (38) They expected that we would leave.

In both sentences, what is expected is a proposition (a state of affairs). This proposition is expressed as a single IP in (38), as indicated by the underlining, so that there is a direct correspondence between semantic and syntactic constituency. This parallel is preserved in (37b), but not in (37a).

A second, related, argument for rejecting (37a) comes from sentences containing expletive *there*. Recall from Chapter 3, § 3.3 that expletive *there* is licensed as the subject of a clause containing a verb of (coming into) existence. If we treat the DP following *expect* in ECM sentences as a subject, as we do in (37b), then (39a) is expected to be grammatical on a par with (39b).

- (39) a. They expect there to be a recession.  
b. They expect that there will be a recession.

By contrast, treating that same DP as a complement of the matrix verb, as in (37a), would require complicating the licensing condition on expletive *there*. And of course, even if we were successful in revising the licensing condition, we would still forfeit the simple representation of the parallel between (36) and (38) just discussed.

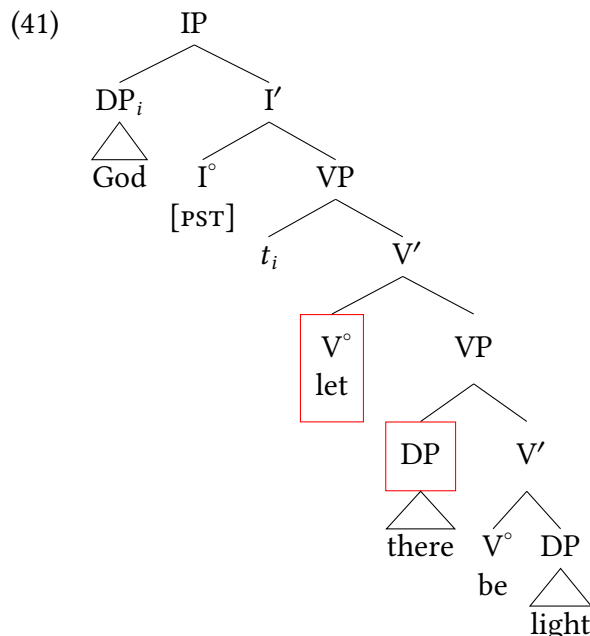
There is a third objection against (37a), which we invite you to find in Exercise 7.3.

As you may have noticed, the structure in (37a) violates the X' schema and hence the binary branching hypothesis, and so you might wonder why we have not adduced this as an argument

against the structure. Such an argument would not be based on evidence as we are using the term in this book, but it would still be a valid conceptual argument. For the moment, however, we have preferred to think of the X' schema and the binary branching hypothesis as following from facts like those just discussed, rather than as treating them as axiomatic.

The term 'ECM' is often restricted to sentences like (36), where the complement of the case-assigning head is a nonfinite IP. In a slightly wider sense, the term can be used in connection with small clauses like (51a) from Chapter 3, repeated here as (40) and given the structure in (41).

(40) God let [ *there be light* ].



In this wider sense, 'ECM' is essentially synonymous with 'case assignment in the head-spec configuration'.

We have now reached the point where we have covered all of the case assignment configurations necessary for cross-linguistic description, and have also covered most of the case-assigning heads necessary for English. At this point, it would be convenient to include a summary table for reference. For pedagogical purposes, we invite you to produce such a summary table yourself in Exercise 7.1, A. Further refinements are the topic of Exercise 7.8 and Problem 7.1.

## Further issues

4

### 4.1 Subject movement

Earlier, we concluded that nominative case is assigned by finite I in the spec-head configuration. If this conclusion is correct, then subject movement in English follows from considerations of case assignment. In other words, the subject moves from Spec(VP) to Spec(IP) because it needs case but can't get it in its original position from either V or finite I. But given the possibility of case assignment in the head-spec configuration, there is nothing in principle to stop finite I from assigning nominative case downwards to Spec(VP). If this possibility could be generalized to other cases of head-spec case assignment, then at least the number of case assignment configurations could be reduced from three to two—a step in the direction of simplifying the theory of case assignment.

Subject movement would then have to be derived in some other way—from some other principle. A possible candidate is [predication](#) (that is, the subject requirement), if it is understood as requiring subjects to be realized outside of their Aristotelian predicates. Given the word order facts of English, it is very difficult to decide between the two case assignment alternatives. We do know that nominative case assignment in the head-spec configuration is possible because of languages like Irish, where finite verbs are clause-initial, preceding the subject, yielding VSO order. But then it is not clear how predication as just defined is satisfied in languages of this type. It might be suggested that predication is satisfied at the VP level in Irish and at the IP level in English (that is, what counts as an Aristotelian predicate differs between the languages—V' in Irish versus I' in English. But that is actually just a restatement of the problem and begs the question of why predication can't be satisfied at the VP level in English also. What's even worse is that predication is satisfied at the VP level in English in small clauses headed by V (recall [\(36\)](#) and especially [\(39a\)](#)).

As a result of these considerations, we continue to assume that case can be assigned in the head-spec configuration.

## Notes

5

1. A very few German verbs govern a third case, the genitive. These are felt to be archaic by present-day speakers, so we ignore them here.
2. The -s-less plural of *deer*, which is exceptional in modern English, goes back to Old English, where it was simply the ordinary plural form for the declension to which *deor* 'animal' belonged.



3. There is currently a shift occurring in American English where singular *they* is being extended and popularized as a singular (ungendered) animate pronoun, leveling the distinctions between singular and plural, but retaining case-related distinctions (*they* vs. *them*).
4. In addition to case government, which holds between a head and a noun phrase, there is also the phenomenon of case agreement, where constituents within a noun phrase all share the same case. If case agreement exists in English, it is invisible, but we know it exists in other languages from examples like (4) and (5). The mechanisms for case assignment that we discuss below would have to be extended to cover case agreement. In this book, however, we will put the issue aside.
5. The spec-head configuration is sometimes referred to as spec-head agreement on the grounds that subjects and verbs of sentences, which are in the spec-head configuration in the VP, agree in number (*the dog runs*/\**run*; *the dogs run*/\**runs*). We avoid the term because there is no one-to-one correspondence between the topological configuration and agreement morphology. For instance, neither Spec(DP) nor Spec(NP) exhibit agreement with their heads. Conversely, determiners do agree with the head of their NP complement. Moreover, in many languages, adjectives agree with the nouns they modify and with the subjects that they are predicated of.

(i) { that, \*those } house; { those, \*that } houses

(ii) a. un-e maison { grand -e, \*grand -∅ } (French)  
 a-F house.F big -F -M  
 'a big house'

b. ένα { μεγάλ -o, \*μεγάλ -os, μεγάλ -η } σπίτι (modern Greek)  
 en-a { megal -o, \*megal -os, \*megal -i } spiti  
 a-N big -N -M -F house  
 'a big house'

(iii) a. La maison est { grand -e, \*grand -∅ } . (French)  
 the.F house.F is big -F -M  
 'The house is big.'

b. Το σπίτι είναι { μεγάλ -o, \*μεγάλ -os, μεγάλ -η } (modern Greek)  
 To spiti ine { megal -o, \*megal -os, \*megal -i } .  
 the.N house.N is big -N -M -F  
 'The house is big.'

But the configurations between the trigger of agreement (noun) and the agreeing constituent (determiner, adjective) is different for each of these three phenomena and far from being the spec-head configuration.

6. The higher finite I in the clauses in (31) can't assign case to the lower subject, since the path connecting the two is nothing like the requisite spec-head configuration. Instead, it assigns nominative to the higher subject (its "own" subject, as it were).
7. One might attempt to salvage part of the original proposal by replacing the current licensing condition in (i.a) with the logically possible alternative in (i.b).

- (i) a. Nominative case is assigned by finite I.  
 b. Nominative case is assigned by finite V where possible and by finite I otherwise.

Although there is no empirical argument against (i.b), we reject it because it violates conceptual economy (or *Occam's razor*). Our reasoning is as follows. Finite V implies finite I (in the form of a silent tense morpheme), but finite I is consistent with either finite or nonfinite V (as exemplified in (30)). The set of clauses with finite I is therefore a proper superset of the set of clauses with finite V. As a result, (i.a) and (i.b) are empirically equivalent (the "otherwise" clause in (i.b) is guaranteed to kick in). But then the statement in (i.b) is redundant and therefore less preferable.

## Exercises and problems

### 6

#### Exercise 7.1

- A. Table 7.6 summarizes the case assignment facts for English discussed in the chapter. A few values remain to be filled in based on the evidence in (1).

| Head                       | Case | Configuration        |
|----------------------------|------|----------------------|
| Adj                        | N/A  |                      |
| D, possessive              | POSS | spec-head            |
| I, finite                  | NOM  | spec-head            |
| I, nonfinite ( <i>to</i> ) |      |                      |
| N                          | N/A  |                      |
| P                          | OBJ  | head-comp            |
| V                          | OBJ  | head-comp, head-spec |

Table 7.6: Incomplete summary of case assignment

- (1) a. \*{ Us, we, our } to leave now would not be helpful.  
 b. For { ✓ us, \*we, \*our } to leave now would not be helpful.

- B. Why is there no entry (not even a “N/A” entry) for ordinary (= nonpossessive) D?

#### Exercise 7.2

According to the analysis in the text, why are the sentences in (1) ungrammatical? You don't need to be concerned with the structure of the entire sentence; just treat the underlined part as an IP headed by nonfinite I.

- (1) a. \* They claim to they understand Hegel.  
 b. \* They claim they to understand Hegel.

**Exercise 7.3**

How is the thematic relation between *leave* and its argument *us* represented in (37b)? How about in (37a)?

**Exercise 7.4**

- A. Build structures for the sentences in (1). You can use triangle notation for all DPs. Assume that *for* can take IP complements. Assume further that *for* clauses can be subjects of sentences; in other words, PPs can substitute in Spec(VP) and move to Spec(IP).

- (1) a. That should be them now.  
 b. They waited for us.  
 c. We waited for there to be a sale.  
 d. For daycare to be available for the children would be convenient.  
 e. For daycare to be available would be convenient for the parents.  
 f. I suspect the class to be difficult.

- B. How do each of the DPs in (1) get case? Which case is assigned by what head in what configuration? Group similar cases.

**Exercise 7.5**

Can you think of a way of assigning objective case to the adjuncts in (1), without introducing a new case assignment configuration?

- (1) a. We discussed the proposal the very next week.  
 b. We kept their books five years.  
 c. We don't read the Times every single day

**Exercise 7.6**

In the chapter, we stated that nouns and adjectives aren't case-assigners in English. Provide evidence for that statement. One piece of evidence for each category is sufficient.

**Exercise 7.7**

This exercise extends Exercise 5.4.

- A. If you have not already done so for Exercise 5.4, build structures for the underlined DPs in (1). Here, you can use triangle notation for both constituent DPs (*Kim* and *incompetents*).

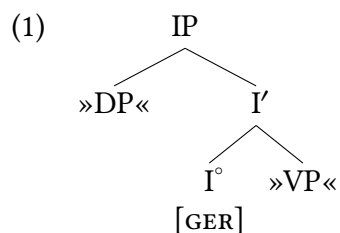
- (1) a. We dislike Kim's impulsive hiring of incompetents.  
 b. We dislike Kim's impulsively hiring incompetents.

- B. How do the constituent DPs get case? Which case is assigned by what head in what configuration?

## Exercise 7.8

This exercise extends Exercise 7.1, A.

- A. English has a silent nonfinite gerund head ([GER]) with the elementary tree in (1).

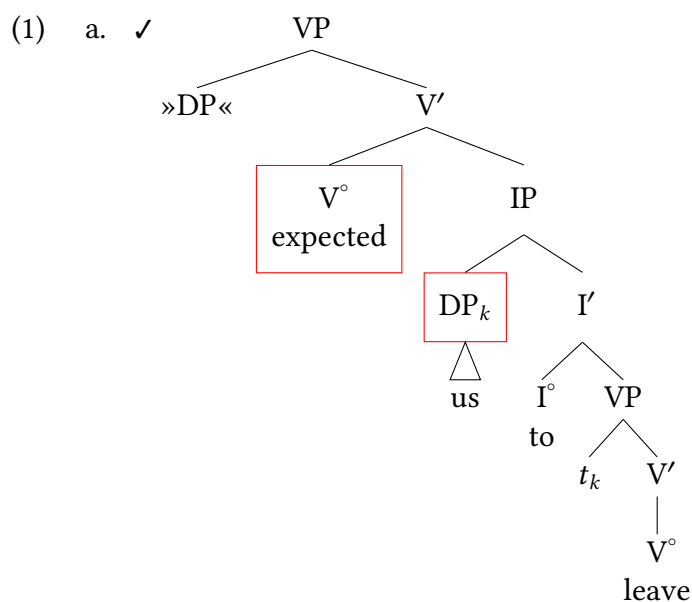


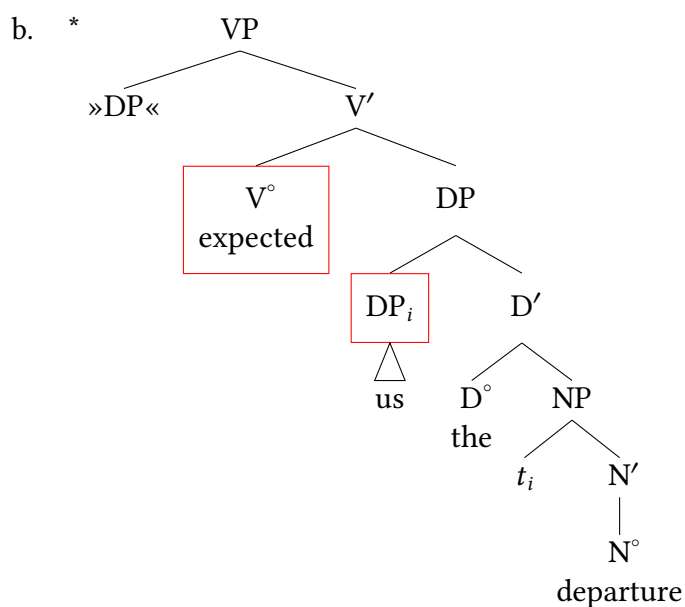
The VP complement of this head must be headed by a verb form in *-ing*. Based on the evidence in (2), determine this head's case assignment properties.

- (2) { ✓Them, \*they, \*their } being late, we cancelled the meeting.

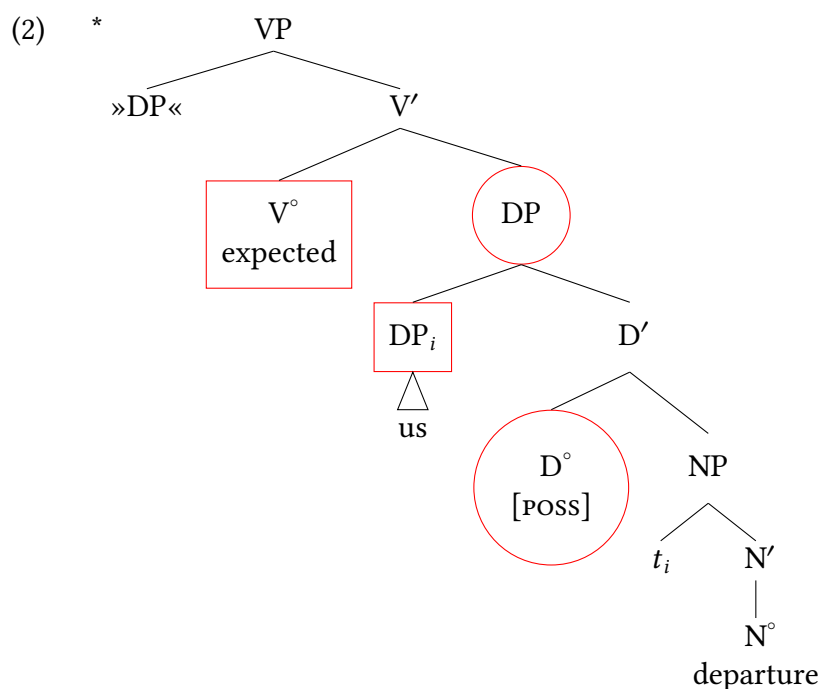
## Exercise 7.9

- A. The verb assigns case to *us* in the head-spec configuration in both (1a) (= (37b)) and (1b), but (1b) is completely ungrammatical. Why is that? The intended meaning of (1b) is *expected our departure*.





- B.** In (2), V assigns objective case to the lower DP *us* in the head-spec configuration, as indicated by the boxes, and the possessive head assigns possessive case to the higher DP, as indicated by the circles. Recall that possessive case is invisible on full DPs. Again, the intended interpretation is *expected our departure*. But again, as in (1b), the result is completely ungrammatical. What has gone wrong?



**Problem 7.1**

This exercise extends Exercise 7.1, A.

English has (now very archaic) PPs of the type in (1). Assume that *there* is a DP, just like expletive *there* (even though the *there* at issue here is referential).

- (1) thereafter (= after that), therefrom (= from that), therewith (=with that)

What would you suggest as the elementary tree shared by all of the relevant prepositions, and in what configuration do they assign case to *there*?

**Note:** There are several solutions.

**Problem 7.2**

In English, there are no case-assigning determiners without a specifier. Is such a determiner possible in principle?

**Problem 7.3**

From a purely graph-theoretical point of view, the head-spec configuration is a mirror image of the spec-head configuration in the following sense. In both, a case feature travels from a head  $X$  to  $X'$ . At  $X'$  it either moves up a node to  $XP$  or down a node to  $\text{Comp}(XP)$ . In both cases, it then continues down a node, arriving at either  $\text{Spec}(XP)$  or  $\text{Spec}(\text{Comp}(XP))$ . Given this relation, the mirror image of the head-comp configuration might be expected to be a fourth case assignment configuration. In the head-comp configuration, the head feature travels from  $X$  up to  $X'$  and then down to  $\text{Comp}(XP)$ . In the mirror image, it would move up to  $XP$  instead. Why is this expectation not actually sensible?

**Problem 7.4**

In the examples discussed in the text, there is always a one-to-one correspondence between case-assigning heads and noun phrases. What would happen if we relaxed this condition?

- A. In particular, give an example of a linguistic expression that would be grammatical if we allowed a single head (say,  $V$ ) to assign case to two noun phrases in the configurations that we have discussed?
- B. Conversely, give an example of a linguistic expression that would be grammatical if we allowed a single noun phrase (or more precisely, a single chain) to get case from more than one head?

# Passive

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## Chapter outline

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In this chapter, we first present some general characteristics of the passive. We then motivate a movement analysis of it based on considerations of **selectional restrictions** and **object idiom chunks**, beginning with simple sentences and then covering the ECM sentences that we introduced in the previous chapter in connection with **spec-head** case assignment. We conclude with a quick look at impersonal passives, which are available in languages with richer case morphology than English.

## Characteristics of the passive

### 1

In English, as in many other languages, active sentences like (1a) have passive counterparts like (1b).

## Background Info

In the remainder of this section, grammatical functions are indicated above the boxed element and thematic roles are indicated below. The following abbreviations are used:

SBJ - subject, OBJ - (direct) object, A - agent, THM - theme

- (1) a.  $\left[ \begin{array}{c} \text{SBJ} \\ \text{We} \\ \text{A} \end{array} \right]$  approved  $\left[ \begin{array}{c} \text{OBJ} \\ \text{them} \\ \text{THM} \end{array} \right]$ .
- b.  $\left[ \begin{array}{c} \text{SBJ} \\ \text{They} \\ \text{THM} \end{array} \right]$  were approved  $\left[ \begin{array}{c} \text{PP} \\ (\text{by us}) \\ \text{A} \end{array} \right]$ .

Passivization has a number of effects. First and foremost, the agent argument, which is expressed as the subject of the active sentence, appears in the passive as an optional *by* phrase. Second, the now vacant subject position is taken over by the theme argument. In other words, the agent and theme arguments are linked to different **grammatical relations** in the passive than in the active. If we think of subject as outranking object on a hierarchical scale of grammatical relations (as is often assumed), then the passive demotes the agent argument and promotes the theme argument. Third, passive past participles, unlike their homonymous active counterparts, can't assign objective case.

- (2) a. ✓ We approved them. (active)
- b. \* It<sub>EXPL</sub> was approved them (by us). (passive)
- Intended meaning: 'They were approved (by us).'

## Word of Caution

English has a class of verbs called inchoative verbs, discussed in Chapter 11 and illustrated in (i), that have a passive flavor, but are not passive verbs.

- (i) The vase dropped.

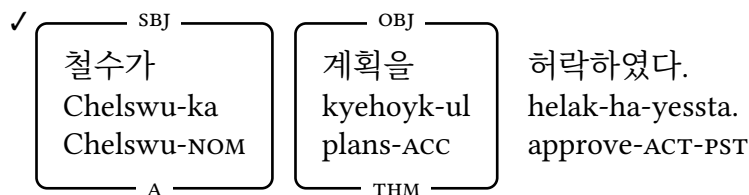
As with passive sentences, sentences containing these verbs have subjects that are themes rather than agents. However, unlike passives, they do not allow the expression of an agent, as shown in (ii).<sup>1</sup>

- (ii) \* The vase dropped by the child. (ungrammatical on agentive reading of *by*-phrase)

In English, the passive is expressed analytically by a combination of the **past participle** and auxiliary *be*. Other languages allow the passive to be expressed synthetically, as illustrated in (3) for Korean and in (4) for Latin.

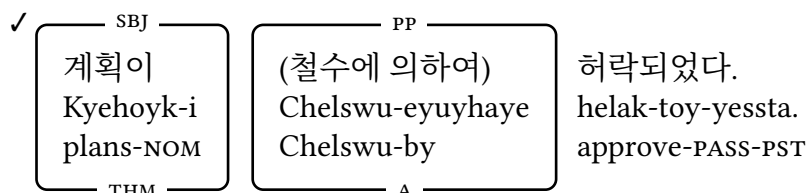
- (3) a. Active:





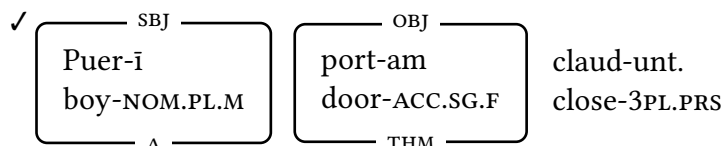
‘Chelswu approved the plans.’

b. Passive:



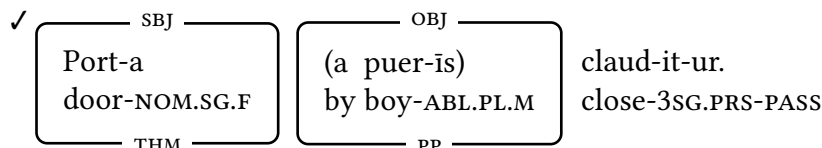
‘The plans were approved (by Chelswu).’

(4) a. Active:



‘The boys are closing the door.’

b. Passive:



‘The door is being closed (by the boys).’

In these languages, it is the bound morphemes *-toy-* and *-ur* that result in the effects of passivization mentioned above. As in English, the grammatical relations of the agent and theme arguments differ in the active and the passive, and passive verb forms cannot assign the case that active verb forms can.

- (5) a. \* 계획을 (철수에 의하여) 허락되었다.  
           Kyehoyk-ul (Chulswu-eyuyhaye) helak-toy-essta.  
           plans-ACC Chulswu-by approve-PASS-PST  
           Intended meaning: ‘The plans were approved (by Chulswu).’
- b. \* Port-am (a puer-īs) claud-it-ur.  
           door-ACC.SG.F by boy-ABL.PL.M close-3SG.PRS-PASS  
           Intended meaning: ‘The door is being closed by the boys.’

Latin (among other languages) also uses the analytic strategy for the passive in certain linguistic contexts. In particular, the passive voice in the so-called perfect tenses is formed by combining the passive participle (PTCP.PASS) with the appropriate form of *esse* ‘be’, as illustrated in (6).

- (6) ✓
- |                                       |                                             |                                     |                                       |
|---------------------------------------|---------------------------------------------|-------------------------------------|---------------------------------------|
| SBJ<br>Port-a<br>door-NOM.SG.F<br>THM | OBJ<br>(a puer-īs)<br>by boy-ABL.PL.M<br>PP | claus-a<br>close-PTCP.PASS.NOM.SG.F | { est, erat, erit }<br>is was will.be |
|---------------------------------------|---------------------------------------------|-------------------------------------|---------------------------------------|
- ‘The door { has, had, will have } been closed (by the boys).’

It is worth noting that the synthetic passive form in (4b) agrees with the subject in number, but that the participle in the analytic form in (6) shows additional case and gender agreement. Case and gender are ordinarily features of the nominal system (nouns and their canonical modifiers, adjectives), so participles share features of both verbs and adjectives. Indeed, the term ‘participle’, derived from Latin *particeps* ‘sharing’, implies as much.

## A movement analysis of the passive

2

### 2.1 Selectional restrictions

Before proceeding, we need to introduce the concept of **selectional restriction**. Selectional restrictions are conditions that a (Fregean) predicate imposes on one or more of its arguments, depending on its meaning. For instance, *drink* imposes a selectional restriction on its theme argument to the effect that the theme argument must refer to a kind or amount of liquid.

- (7) a. Amy drank the { lemonade, #sandwich }.  
 b. Lukas drank a whole { quart, #piece }.

The predicate *elapse* selects a subject that refers to an amount of time.

- (8) { Two hours, the remainder of the shift, #two liters, #Larry } elapsed without further incident.

The felicitous use of the verb *murder* requires (among other conditions) that both the agent and the theme arguments refer to humans (and arguably, also other species—see below for related discussion). By contrast, *kill* imposes weaker selectional restrictions, requiring only that the theme argument refer to a living being.

- (9) The { ✓paramilitary, #bomb, #avalanche } murdered { ✓their parents, #the olive tree, #their house }.  
 (10) The { ✓paramilitary, ✓bomb, ✓avalanche } killed { ✓their parents, ✓the olive tree, #their house }.

Two points are important to keep in mind concerning selectional restrictions. First, notice that we are using pound signs, rather than asterisks, in (7)–(10); in other words, we are treating the

ill-formedness of sentences that violate selectional restrictions as semantic/pragmatic deviance, not as ungrammaticality. This approach is consistent with the fact that selectional restrictions can be **flouted** for special effect. For example, the ordinary (literal) meaning of *lap up* is ‘to drink, usually eagerly, using the tongue, hence especially of animals’. Based on this meaning, we would expect *lap up* to select a nonhuman animate agent and a liquid theme. But although both restrictions are violated in (11), the sentence does not come across as deviant.

- (11) The students lapped up their teacher’s praise.

Rather, the violation of the selectional restrictions signals to the hearer that the sentence is intended to be taken not literally, but figuratively—as an instance of metaphor. (12) summarizes the kind of reasoning that a hearer of (11) would go through; the reasoning process itself is ordinarily not explicit, but subconscious and lightning-quick.

- (12) The students lapped up their teacher’s praise?? Whoa there, that’s complete nonsense! It’s only nonhuman animals that lap up things. And even then, whatever they’re lapping up has to be liquid, not something abstract like praise.  
But the speaker seems to know English and be *compos mentis*, so what could they have possibly meant by what they said?  
Oh, maybe what they mean is that the attitude of the students towards their teacher’s praise resembles the eagerness with which a thirsty animal laps up some welcome liquid.

### Word of Caution

In distinguishing figurative from literal uses of language, don’t let yourself be confused by the fact that in the vernacular, the adverb *literally* is routinely used to draw attention to a statement’s *figurative* character, as when people say things like *My boss literally hit the roof*. In other words, *literally* has come to mean *figuratively*!

Don’t, by the way, conclude from examples like (11) that selectional restrictions are in force only intermittently (in force when language is used literally, but not in force when language is used figuratively). Rather, it is precisely the fact that selectional restrictions are always in force that prompts a hearer of (11) to go through the reasoning process outlined in (12) and to come up with an interpretation in which the selectional restrictions are satisfied at the level of the metaphor.

A second point to keep in mind concerning selectional restrictions is that the criteria for set membership that the restrictions are based on are not always crystal-clear. In other words, sets like liquid things, animate beings, murderers, or murder victims, and so on, are somewhat fuzzy around the edges. Speakers might disagree, for instance, about whether the sentences in (13) are deviant; the disagreement would concern whether the selectional restrictions on *murder* might, on the basis of recent advances in the understanding of animal intelligence, be broadened to include members of species other than *Homo sapiens*.

- (13) a. The { chimpanzee, dolphin } murdered the explorer.  
b. The explorer murdered the { chimpanzee, dolphin }.

Fortunately, for our purposes in this chapter, locating the exact boundary between cases that meet selectional restrictions and ones that violate them will not be necessary. The important thing is that selectional restrictions exist, and that there are sentences in which they are clearly met and ones in which they are clearly violated.

As we have just seen in (9), subjects or objects can violate a verb's selectional restrictions. In what follows, we focus on the objects. For convenience, the relevant facts are repeated in (14).

- (14) a. The paramilitary murdered { ✓their parents, #the olive trees, #their houses }.  
b. The paramilitary killed { ✓their parents, ✓the olive trees, #their houses }.

Example (15) gives the passive versions of these sentences. As is evident, the acceptability of the subjects in (15) matches that of the objects in (14).

- (15) a. { ✓their parents, #the olive trees, #their houses } were murdered by the paramilitary.  
b. { ✓their parents, ✓the olive trees, #their houses } were killed by the paramilitary.

This fact would follow straightforwardly if the theme subject started out in  $\text{Comp}(V)$ , where it would have to satisfy the verb's selectional restrictions in the same way as in the active. Having been cleared, so to speak, it could then move to the subject position, where we hear it. This is the intuition that we will pursue below.

## 2.2 Object idiom chunks

Additional evidence pointing in the same direction comes from so-called **object idiom chunks**, which generally appear as the complements of the verbs that license them (the examples in this section are taken from or modeled on Radford 1988, pp. 422–423). Some examples are given in (16). The object idiom chunks are underlined, and the licensing verbs are *italicized in green*.

- (16) a. They { *gave*, *paid* } hardly any heed to our proposal.  
b. The Prime Minister *paid* due homage to the dead.  
c. The government *keeps* close tabs on their operations.

The restriction of object idiom chunks to the complement position of the licensing verb is thrown into striking relief by the contrast between nearly synonymous expressions, such as *heed* and *attention*. The variants with the ordinary expressions are grammatical, but those with the idiom chunks are not, since they are not licensed by the verbs **bolded in red**.

- (17) a. The younger one is always trying to **attract** my { \*heed, ✓attention }.  
b. According to the government, the situation **requires** { \*tabs on, ✓monitoring of } the activists.

Given their licensing requirements, it isn't surprising that object idiom chunks are generally ungrammatical in subject position.

- (18) a. \* More heed to maintenance would result in lower repair bills.

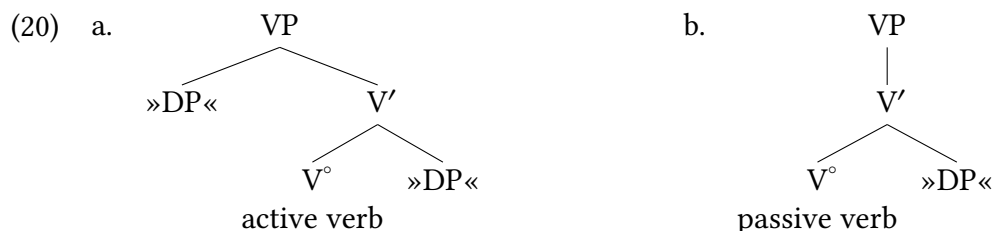
- b. \* Tabs won't affect me.

They are, however, able to occur in subject position under one condition—in passive sentences where the passive participle is that of the licensing verb. This is illustrated by the contrast between (19) and the passive counterparts of (17).

- (19) a. ✓ Hardly any heed was { *given*, *paid* } to our proposal.  
 b. ✓ Due homage was *paid* by the Prime Minister to the dead.  
 c. ✓ Close tabs were *kept* on their operations by the government.

### 2.3 Passive of simple sentences

Our analysis of the passive is based on the premise that theme arguments originate in the same structural position in both the active and the passive. This means that the elementary trees for active and passive participles both contain a complement position. However, the relevant elementary trees differ in two important ways. First, in the active, the agent argument is obligatorily **linked to** (= expressed in) Spec(VP), whereas in the passive, it is linked to an optional adjunct *by* phrase. We will visually underline this by omitting Spec(VP) in our elementary trees for passive participles. Second, passive participles in English (and passive verbs more generally) cannot assign objective case; recall the ungrammaticality of (2b). (We will generally not represent this property in the elementary tree explicitly.) The elementary trees we propose for active and passive participles are thus as shown in (20).



Active verb: assigns case

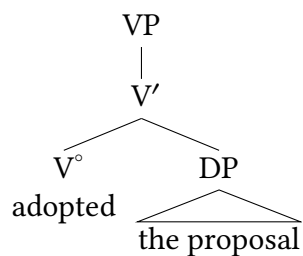
Passive verb: cannot assign case

In what follows, we illustrate the derivation of a passive sentence like (21).

- (21) The proposal was adopted.

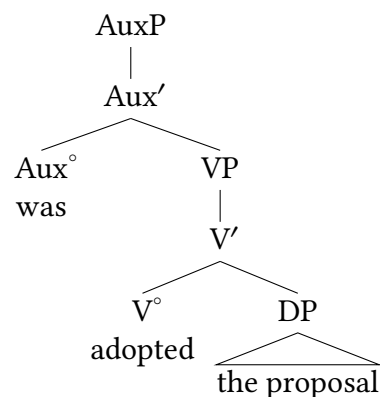
First, we substitute the theme argument *the proposal* in the elementary tree for the passive main verb in (20b). This yields (22a). Then, we substitute (22a) as the complement of the passive auxiliary verb *be*, as in (22b). In order to distinguish the auxiliary verb (*be*) from the main verb (*adopted*), we give it the syntactic category Aux, but we could just as easily treat it as another instance of V. For simplicity, we will treat auxiliary verbs as lacking specifier positions. Finally, we substitute the resulting structure as the complement of I, as in (22c).<sup>2</sup>

(22) a.



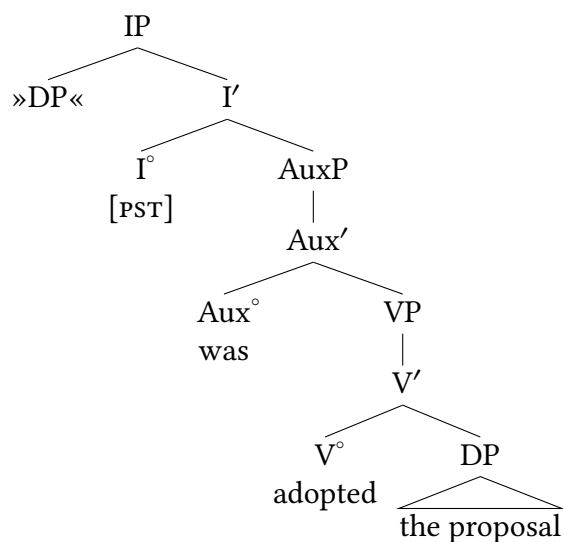
Substitute theme argument in (20b)

b.



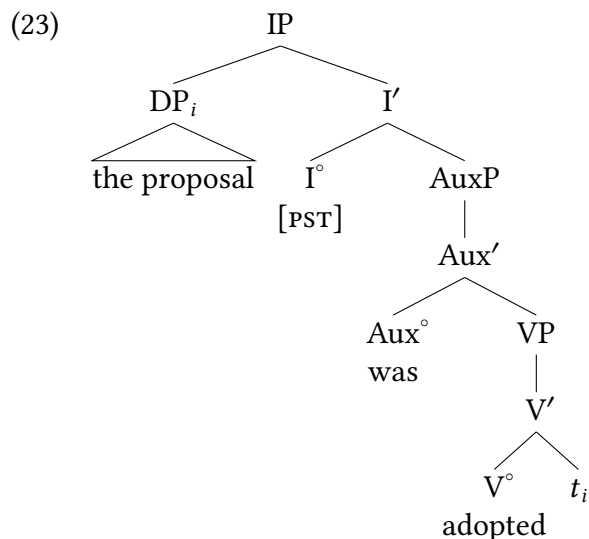
Substitute (22a) as complement of passive auxiliary

c.



Substitute (22b) as complement of I

Because of the inability of the passive participle to assign objective case, the theme argument cannot receive case in the complement position. Since every DP must receive case, the theme argument must move to the closest position to which case can be assigned. This position is Spec(IP), where it is possible for the theme argument to receive nominative case from finite I. The resulting final structure is shown in (23).

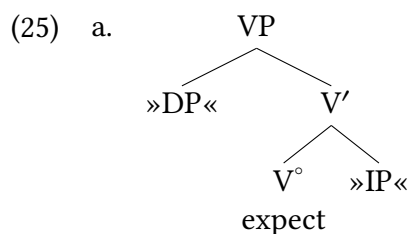


## 2.4 Passive of ECM sentences

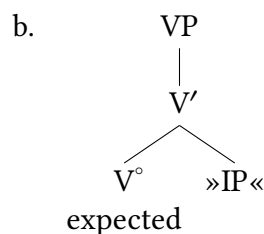
This section focuses on the passive of ECM verbs like *expect*, which were introduced in Chapter 7 in connection with [head-spec licensing](#). (24a) shows an active ECM verb sentence, and (24b) shows the corresponding passive.

- (24) a. ✓ Your folks expect you to call.  
 b. ✓ You are expected to call.

The elementary tree for *expect* in (24a) is given in (25a). In accordance with the previous discussion, the elementary tree for the passive participle *expected* is as in (25b). The difference between the two trees is analogous to that between the trees in (20); the only difference is the syntactic category of the complement (DP in the case of ordinary verbs, IP in the case of ECM verbs). As in (20b), the elementary tree (25b) is missing a specifier position, and the verb lacks the ability to assign objective case.



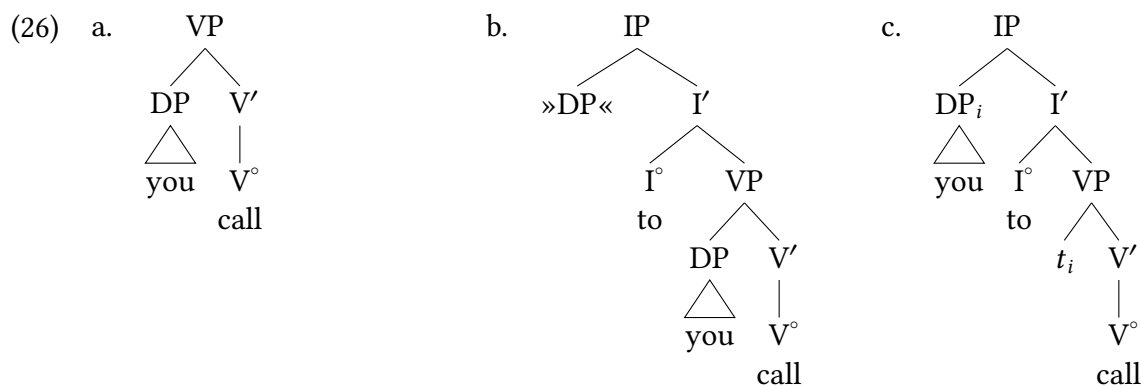
Active ECM verb:  
assigns case



Passive ECM verb: cannot assign  
case

In what follows, we illustrate the derivation of (24b). The derivation of the complement clause is shown in (26); we assume that the complement subject moves from Spec(VP) to Spec(IP)

to provide the complement clause with a subject (recall the [subject requirement](#) discussed in Chapter 3).

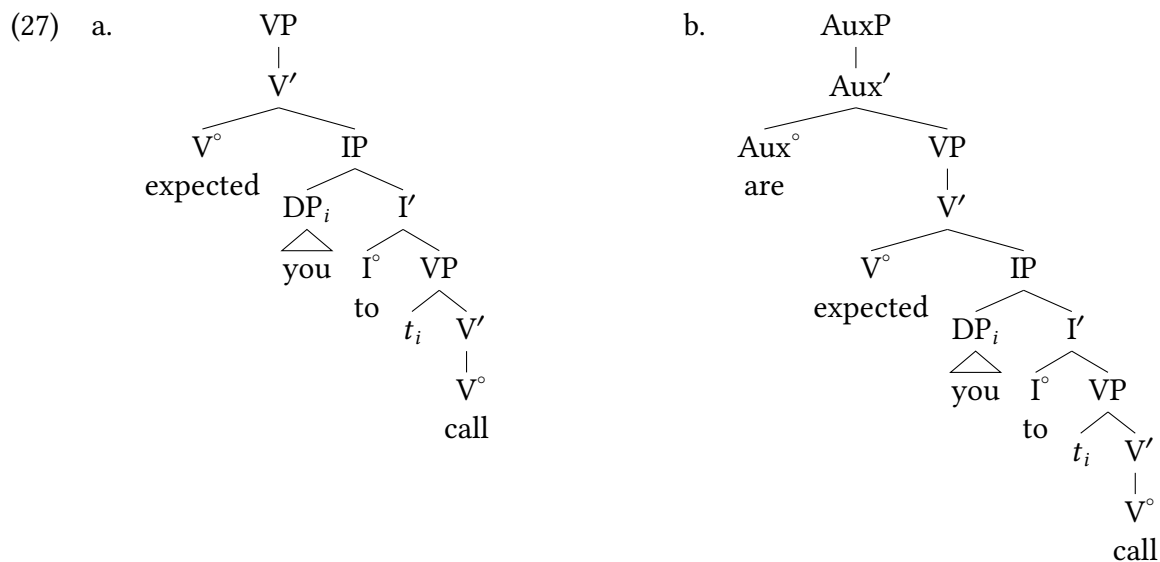


Complement VP

Substitute (26a) as  
complement of  
nonfinite I

Move subject of  
complement clause

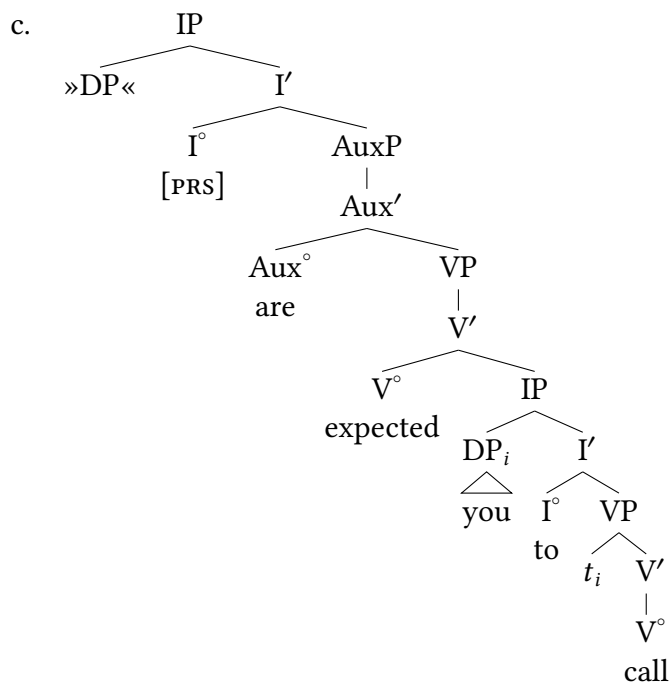
The subsequent steps of the derivation involving the matrix clause are as shown in (22).



Substitute (26c) as complement of  
passive participle of ECM verb

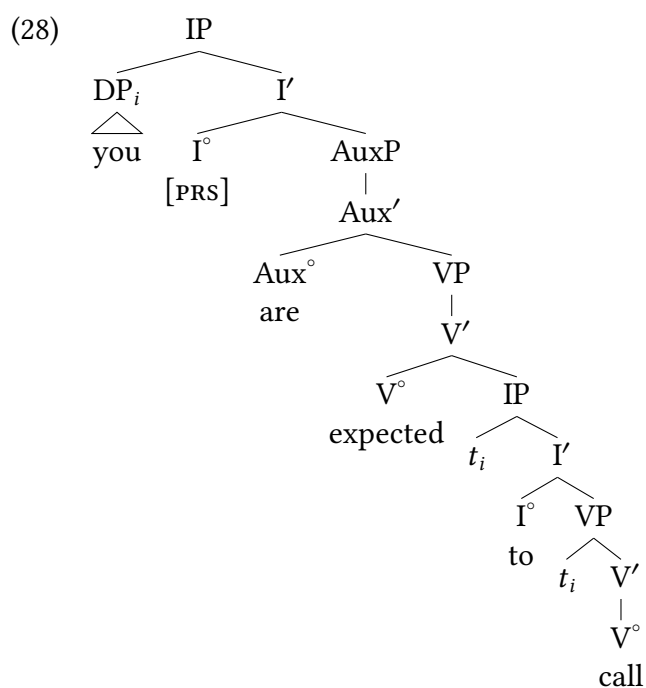
Substitute (27a) as complement of  
passive auxiliary





Substitute (27b) as complement of matrix I

In (26c), the passive participle of the ECM verb, being passive, cannot assign case to the subject of the complement clause, which must therefore move to the nearest case position. This is the matrix Spec(IP), where it receives nominative case from finite I. The resulting structure is shown in (28).



## Further issues

### 3

### 3.1 Impersonal passive

In languages with morphologically richer case systems than English, there is evidence for a distinction between two types of case: **structural** and **inherent**. For instance, the following German examples show that the active participle *unterstützt* ‘supported’ assigns accusative case, but that the homonymous passive participle cannot. Instead, in the passive, finite I assigns nominative case to the theme argument in subject position, as in English.

#### Extra Info

The ß character (known as ‘sharp s’) represents ‘ss’ in certain contexts.

As usual, the German examples are in the form of subordinate clauses in order to avoid the complications associated with the verb-second phenomenon covered in Chapter 12.

(29) Active:

✓ daß wir dies-en Kandidat-en unterstützt haben  
that we this-ACC candidate-ACC supported have  
‘that we have supported this candidate’

(30) Passive:

- a. ✓ daß dies-er Kandidat unterstützt wurde  
that this-NOM candidate.NOM supported became  
‘that this candidate was supported’
- b. \* daß dies-en Kandidat-en unterstützt wurde  
that this-ACC candidate-ACC supported became  
Intended meaning: ‘that this candidate was supported’

As we know from Chapter 7, there are also German verbs that assign the dative. Such verbs—for instance, *helfen* ‘help’—continue to assign the dative even in passive sentences, as shown in (31) and (32).<sup>3</sup>

(31) Active:

✓ daß wir dies-em Kandidat-en geholfen haben  
that we this-DAT candidate-DAT helped have  
‘that we have helped this candidate’

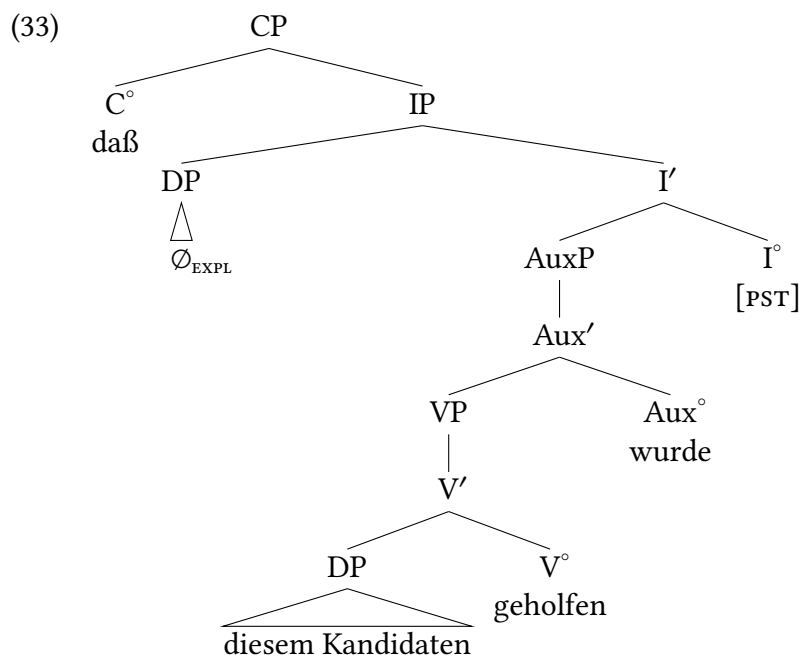
(32) Passive:

- a. \* daß dies-er Kandidat geholfen wurde  
that this-NOM candidate.NOM helped became  
Intended meaning: ‘that this candidate was helped’

- b. ✓ daß dies-em Kandidat-en geholfen wurde  
 that this-DAT candidate-DAT helped became  
 ‘that this candidate was helped’

The accusative and the dative are both assigned in the head-comp configuration by the verbs *unterstützen* ‘support’ and *helfen* ‘help’, respectively, but they differ in that the accusative **alternates** with the nominative, whereas the dative doesn’t. What we mean by ‘alternate’ is simply that an accusative object in the active corresponds to a nominative subject in the passive, whereas a dative object in the active remains dative in the passive. The alternating cases (nominative, accusative) are known as **structural** cases (because which one occurs depends on the structural position of the argument bearing the case), whereas the nonalternating case (dative) is known as an **inherent** case.

The grammaticality of (32b) raises the question of what element receives nominative case from finite I. It is generally assumed that German has a silent expletive element ( $\emptyset_{\text{EXPL}}$ ), corresponding to English expletive *it* or *there*, that occupies Spec(IP) and receives case there. The structure of (32b) is then as in (33). (The structure in (33) ignores that the Aux moves and adjoins to I; that movement, described in Chapter 10, is irrelevant for present purposes.)



Just like its overt counterpart *es* ‘it’,<sup>4</sup> the silent expletive bears a number feature with the default value ‘singular’. Evidence for this comes from the number agreement pattern in (34): the overt plural subject in (34a) agrees with a plural verb form, whereas the silent expletive in (34b) agrees with the corresponding singular verb form.

- (34) a. daß dies-e Kandidat-en unterstützt { wurd-en, \*wurd-e }  
 that these-NOM.PL candidates-NOM.PL supported became-PL became-SG  
 ‘that these candidates were supported’

- b. daß  $\emptyset_{\text{EXPL}}$  dies-en Kandidat-en geholfen { wurd-e, \*wurd-en }  
 that these-DAT.PL candidates-DAT.PL helped became-SG became-PL  
 ‘that these candidates were helped’

Like German, Latin is a verb-final language with rich morphological case, and it patterns like German with regard to structural versus inherent case. As in German, the structural cases are nominative and accusative. The inherent cases include the remaining cases (apart from the vocative)—that is, the dative, genitive, and ablative. (35)–(38) illustrate the parallel with German, using the dative as a representative for the inherent cases.

(35) Active:

- ✓ Avuncul-us puer-ōs adiuva-t.  
 uncle-NOM boys-ACC help-3SG.PRS  
 ‘The uncle is helping the boys.’

(36) Passive:

- a. ✓ Puer-ī adiuva-nt-ur.  
 boys-NOM help-3PL.PRS-PASS  
 ‘The boys are being helped.’  
 b. \*Puer-ōs adiuva-nt-ur.  
 boys-ACC help-3PL.PRS-PASS  
 Intended meaning: ‘The boys are being helped.’

(37) Active:

- ✓ Avuncul-us puer-īs subveni-t.  
 uncle-NOM boys-DAT help-3SG.PRS  
 ‘The uncle is helping the boys.’

(38) Passive:

- a. \*Puer-ī subveni-unt-ur.  
 boys-NOM help-3PL.PRS-PASS  
 Intended meaning: ‘The boys are being helped.’  
 b. ✓ Puer-īs subvenī-t-ur.  
 boys-DAT help-3SG.PRS-PASS  
 ‘The boys are being helped.’

Passives with alternating case are sometimes called **personal passives**, and ones with inherent case, **impersonal**. German allows even more radical impersonal passives than the ones with *helfen* just presented, going so far as to allow passives of intransitive verbs like *tanzen* ‘dance’ and others, as illustrated in (39).

- (39) daß  $\emptyset_{\text{EXPL}}$  { getanzt, gelaufen, gefochten } wurde  
 that danced run fought became  
 ‘that there was dancing, running, fencing (*lit.* fighting)’

This is also the case in Latin (Allen and Greenough 1903, § 207).

- (40) Curre-ba-t-ur, pugna-ba-t-ur 'There was { running, fighting }.'  
 run-PST-3SG-PASS fight-PST-3SG-PASS

It is striking, however, that not every intransitive verb can be passivized. Verbs with subjects that are already themes, like the inchoative verbs mentioned at the beginning of the chapter, cannot. We give examples for German only; we have no native speakers of Latin to consult, and the examples, being ungrammatical, would of course be unattested in the texts that have come down to us. Note that *gefallen* is lexically ambiguous between 'fall' and 'please'; both meanings are relevant here.

- (41) \* daß Ø<sub>EXPL</sub> { aufgefallen, gefallen, gefallen } wurde  
 that been.noticeable fallen pleased became  
 Intended meaning: 'that there was being noticeable, falling, pleasing'

## Notes

### 4

1. By the criterion just mentioned, participial constructions as in (i) are true passive constructions, despite the absence of a passive auxiliary.

- (i) a. The shrubs planted next to the fence (by our neighbors) are azaleas.  
 b. Planted in the shade (by an ignorant gardener), the cactus failed to thrive.

Note the close parallel with the constructions in (ii), which do contain a passive auxiliary.

- (ii) a. The shrubs that were planted next to the fence (by our neighbors) are azaleas.  
 b. Having been planted in the shade (by an ignorant gardener), the cactus failed to thrive.

2. As we will see in Chapter 10, auxiliary *be* and *have* move from their original position to I, where they form a complex verb with the tense morpheme. As this movement is irrelevant for present purposes, we ignore it here and throughout the chapter.

3. Certain archaic German verbs govern the genitive, which patterns as an inherent case, as shown in (i) and (ii), which are parallel to (31) and (32).

- (i) Active:

✓ daß wir der Ahn-en gedenken  
 that we the.GEN.PL ancestors-GEN.PL commemorate  
 'that we commemorate the ancestors'

- (ii) Passive:

- a. \* daß die Ahn-en gedacht werd-en  
 that the.NOM.PL ancestors-NOM.PL commemorated become-PL  
 Intended meaning: 'that the ancestors are commemorated'

- b. ✓ daß der Ahn-en gedacht wird  
 that the.GEN.PL ancestors-GEN.PL commemorated becomes.SG  
 'that the ancestors are commemorated'

4. In case you are wondering whether the silent expletive in the impersonal passive can be replaced with the overt one, the answer is 'no'. The fact is clear, but the reason for it is not yet fully understood.

## Exercises and problems

5

### Exercise 8.1

Which, if any, of the following sentences are true? Support your conclusions with evidence.

- (1) a. All subjects are agents.  
 b. All agents are subjects.  
 c. All subjects get nominative case.  
 d. All noun phrases that get nominative case are subjects.

### Exercise 8.2

Build structures for the sentences in (1).

- (1) a. The puppeteers might get arrested.  
 b. The puppeteers got arrested.

### Exercise 8.3

A. Build structures for the sentences in (1) and (2).

- (1) a. We expect them to make headway.  
 b. We expect headway to be made.  
 c. Headway is expected to be made.  
 (2) a. The media expect the guerrillas to release the journalist.  
 b. The media expect the journalist to be released by the guerrillas.  
 c. The journalist is expected to be released by the guerrillas.

B. One of the sentences in (2) is structurally ambiguous. Which one is it, and why?

### Exercise 8.4

This exercise extends Exercise 3.4.

Explain the grammaticality pattern in (1), including how expletive *there* is licensed. Do noun phrases (DPs) differ from clauses (CPs, IPs) with respect to case assignment? Assume for simplicity that expletive *it* substitutes directly into Spec(IP).

- (1) a. It was suspected that there was a problem with the O-ring.
- b. That there was a problem with the O-ring was suspected.
- c. There was suspected to be a problem with the O-ring.
- d. \* There to be a problem with the O-ring was suspected.

### Exercise 8.5

The active sentence in (1) has two conceivable passive counterparts in (2): the grammatical (2a) and the completely ungrammatical (2b) (intended to have the same meaning as (2a)). Why is (2b) ungrammatical?

- (1)       The administration will expect *us* to hire *them*.
- (2) a. ✓ *We* will be expected to hire *them*.
- b. \* { *They*, *them* } will be expected { *we*, *us* } to hire.

### Problem 8.1

Explain the following pattern of judgments.

- (1)       ✓ The carpenter measured the boards.
- (2)       ✓ The boards were measured by the carpenter.
- (3) a. ✓ The tickets cost 100 dollars.
- b. ✓ The concert lasted two hours.
- c. ✓ The carpenter measure 5'10".
- d. ✓ Louis XIV reigned 72 years.
- e. ✓ The trip took two hours.
- (4) a. \* 100 dollars are cost by the tickets.
- b. \* Two hours were lasted by the concert.
- c. \* 5'10" is measured by the carpenter.
- d. \* 72 years were reigned by Louis XIV.
- e. \* Two hours were taken by the trip.

**Problem 8.2**

Consider the following judgments for the sentences with *expect* in (1) and (2).

- (1) a. ✓ They expected there to be a solution.  
b. ✓ There was expected to be a solution.
- (2) a. \* They expected for there to be a solution.  
b. \* There was expected for to be a solution.

Now consider the corresponding judgments for sentences with *want* in (3) and (4).

- (3) a. ✓ They wanted there to be a solution.  
b. \* There was wanted to be a solution.
- (4) a. ✓ They wanted for there to be a solution.  
b. \* There was wanted for to be a solution.

- A. The judgments for the sentences with *expect* are as expected given our discussion in this and the previous chapter. The judgments for the sentences with *want* can be made to be consistent with the discussion as well. How so?
- B. For some speakers, (2a) is grammatical. The remaining judgments remain the same. Revise your answers to (A) to account for this pattern of judgments.



# Subject control versus raising

## Chapter outline

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So far in this book, we have come across three types of clausal complements, summarized in the following table. (By ‘clausal complement’, we mean any complement that contains a subject and a predicate.) The clausal complement is bracketed, and the complement’s I head, if any, is in boldface.

| Type of complement | I is...             | Matrix      | Complement                                   |
|--------------------|---------------------|-------------|----------------------------------------------|
| Finite complement  | modal or tense      | We heard    | [ that the children [ <b>PST</b> ] danced ]. |
| ECM complement     | nonfinite <i>to</i> | We expected | [ the children <b>to</b> dance ].            |
| Small clause       | absent              | We saw      | [ the children dance ].                      |

Table 9.1: Summary of clausal complements up to this point

Despite their superficial diversity, the complement clause types in Table 9.1 all have one property in common—the presence of an overt subject (here, *the children*). But English also has nonfinite complement clauses where a subject is understood, but not expressed overtly. For instance, *dance*, the verb in the apparently subjectless complement clauses in (1), has an understood agent.

- (1) a. Subject control:  
The children agreed [ to dance ].  
b. Raising:  
The children seemed [ to dance ].

In both sentences, this agent is interpreted as being identical to the **referent** of the matrix subject *the children*. Yet unlike the second row of Table 9.1, where the matrix clause and the complement clause each have their own subject (*we*, *the children*), the sentences in (1) contain only a single overt subject, the one in the matrix clause. In this chapter, we argue that the nonfinite complements in (1) contain a structural subject position, just as in Table 9.1, which is filled by a silent element, and we argue further that this silent element is not the same in the two examples. Rather, we distinguish between **subject control** and **raising** (sometimes called subject-to-subject raising), as already indicated by the labels in (1).

### Background Info

Some of the discussion here uses terms like *reference*, *refer*, and *corefer* (among others). If these are not clear from the glossary and our explanations here, you can consult §1 of Chapter 15 for a more complete exposition.

In a subject control sentence like (1a), the complement subject position is filled by a silent pronominal element PRO, which **corefers** with the referent of the matrix subject. In other words, we give (1a) the structure in (2a), by analogy to that in (2b). (The numerical subscripts on *the children*, *PRO*, and *they* represent coreference, meaning that they all refer to the same real-world entity (here, the children).)

- (2) a. [ The children ]<sub>1</sub> agreed [ ∅ PRO<sub>1</sub> to dance ].  
b. [ The children ]<sub>1</sub> agreed [ that they<sub>1</sub> would dance ].

### Extra Info

The idea behind the term ‘subject control’ is that the matrix subject fixes, or controls, the reference of PRO. Notice that the parallel between PRO and overt pronouns in (2) is not complete. PRO in (2a) must corefer with the matrix subject, whereas the overt pronoun in (2b) needn’t. This is succinctly summarized by the notation in (i).

- (i) a. [ The children ]<sub>1</sub> agreed [ ∅ PRO<sub>1,\*2</sub> to dance ].  
b. [ The children ]<sub>1</sub> agreed [ that they<sub>1,2</sub> would dance ].

It’s for this reason that only sentences where the clausal complement is nonfinite can count as instances of subject control.

Raising sentences differ from subject control sentences in that the matrix subject does not start out in the matrix clause, but rather moves there from the complement clause. Omitting unnecessary details for the moment, the derivation is illustrated in (3).

- (3) a. \_\_\_\_\_ seemed [ the children to dance ].  
 b. [ The children ]<sub>i</sub> seemed [ *t*<sub>i</sub> to dance ].

The assumption that the matrix subject position starts out empty is supported by the fact that when *seem* takes a finite counterpart, that same position is filled by expletive *it*.

- (4) It<sub>EXPL</sub> seemed [ that the children danced ].

### Extra Info

Analogously to subject control, for a sentence to count as an instance of raising, the complement clause must be nonfinite, as in (3), since it is only then that the complement subject raises into the matrix clause. (4) contains the same matrix predicate as (3), but it is not an instance of raising because the complement subject remains within its clause.

A note on terminology. We will refer to the class of (Fregean) predicates to which *agree* belongs as **subject control predicates**. Similarly, we refer to the class of predicates like *seem* as **raising predicates**. This latter term is potentially confusing. It is important to understand that it is not the predicate that is raising. Rather, as schematically indicated in (3) and as we will see in more detail below, it is the complement subject that raises. A better term for the class of predicates in question would be ‘raising triggers’. But we continue to use the term ‘raising predicate’ because it is standard in the literature.

A leading role in distinguishing raising from subject control is played by expletive *there*. We conclude the chapter by showing that expletive *there* belongs to a larger class of **nonthematic** subjects.

## Subject control

### 1

#### 1.1 Evidence for two clauses

This section relies on the notion of **selectional restrictions** introduced in the previous chapter. Here, we will use the concept to show that subject control sentences contain two separate clauses, each with their own subject. We begin by showing that in finite-complement counterparts of subject control sentences like (5), which incontrovertibly contain two clauses, both the matrix and the complement verbs (or predicates more generally) impose separate selectional restrictions on their respective subjects. (For simplicity, we omit referential indices in what follows; unless

otherwise noted, the intended interpretation is always the one where the complement subject corefers with the matrix subject.)

- (5) The children agreed that they would dance.

Consider (6), where we have taken care to satisfy the selectional requirements of the complement clause (*wet* selects some physical object as its argument, and *get* imposes no further selectional restrictions of its own). We can therefore be sure that the acceptability contrast in (6) is due to the selectional restriction imposed by the matrix verb *agree*, which selects humans as subjects.

- (6) a. The children agreed [ that they would get wet ].  
b. # The { trees, rocks } agreed [ that they would get wet ].

Conversely, in (7), we have taken care to satisfy the selectional restriction imposed by *agree*. Here, the acceptability contrast is due to the selectional restrictions imposed by the complement predicates. In particular, *elapse* selects stretches of time, and *evaporate* selects liquids. Neither selects humans.

- (7) a. The children agreed [ that they would speak Twi ].  
b. # The children agreed [ that they would { elapse, evaporate } ].

If subject control sentences contain two clauses, as we are proposing, each with their own subjects, they ought to pattern analogously to (6) and (7), and this is in fact exactly what we find in (8) and (9).<sup>1</sup>

- (8) a. The children agreed [ PRO to get wet ].  
b. # The { trees, rocks } agreed [ PRO to get wet ].  
(9) a. The children agreed [ PRO to speak Twi ].  
b. # The children agreed [ PRO to { elapse, evaporate } ].

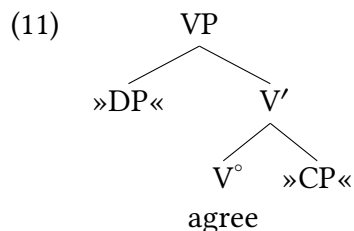
One last thing. Not all subject control predicates have a finite-complement variant.

- (10) a. The children tried [ PRO to learn Twi ].  
b. \* The children tried [ that they would learn Twi ].

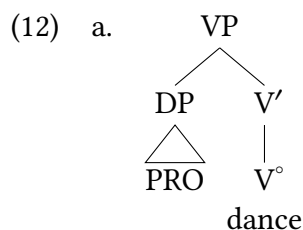
But even for such subject control predicates, we assume a biclausal structure with a PRO subject for the lower clause. This is because, just as in (8) and (9), the subject control verb and the lower predicate impose separate selectional restrictions on their respective subjects. You are invited to provide the relevant evidence in Exercise 9.1, A.

## 1.2 Deriving subject control sentences

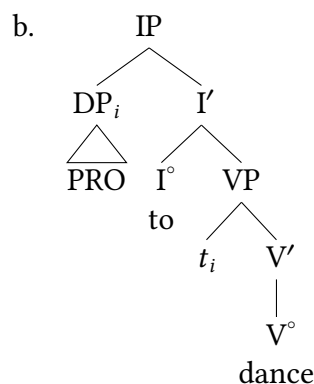
Given the facts just discussed, it comes as no surprise that the syntactic representation of subject control sentences is straightforwardly analogous to that of their finite complement counterparts. The elementary tree for *agree* is the same for both cases and is given in (11).



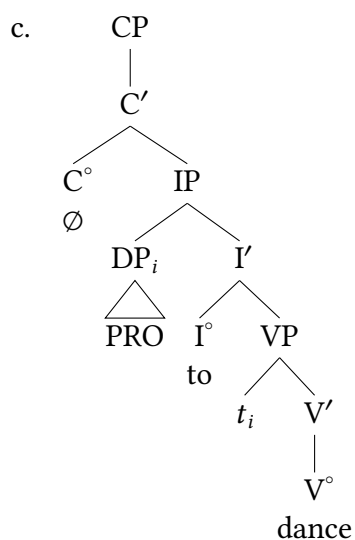
Substituting a finite CP complement headed by *that* at the CP substitution node would yield structures for sentences like (5). Substituting a nonfinite CP complement headed by a silent complementizer yields structures for subject control sentences like (1a). In what follows, we illustrate the derivation of (1a) in detail.



Substitute PRO in specifier  
position of lower verb

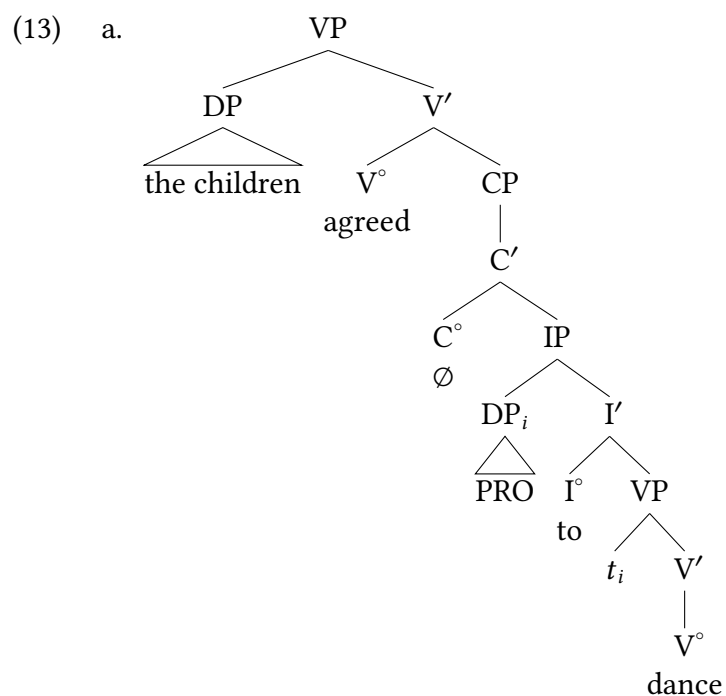


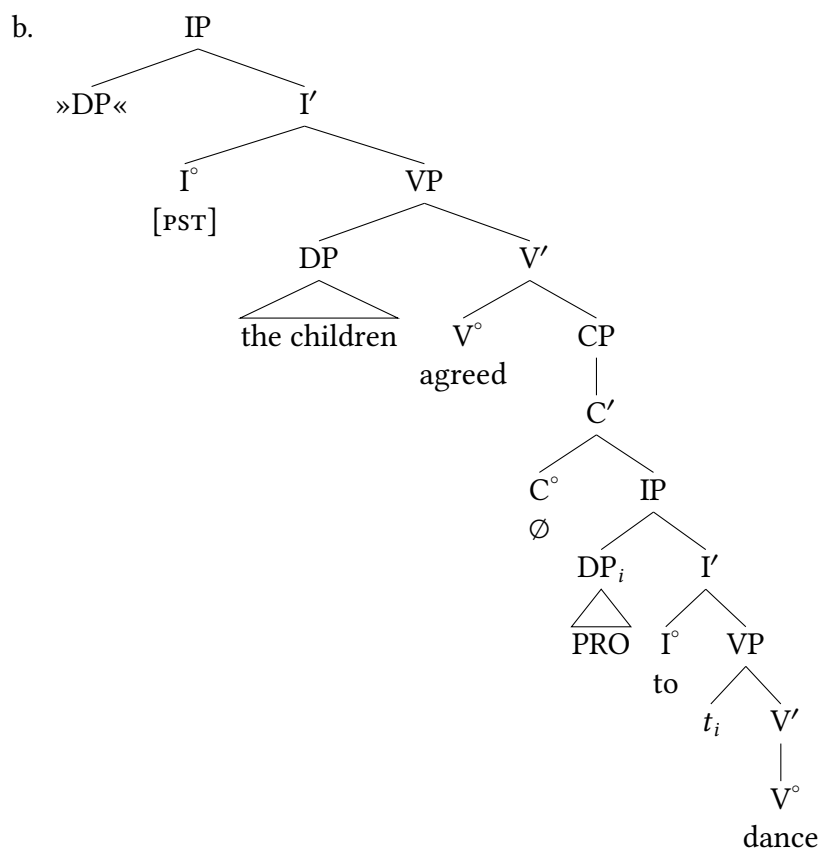
Substitute (12a) as complement  
of *to* and move subject



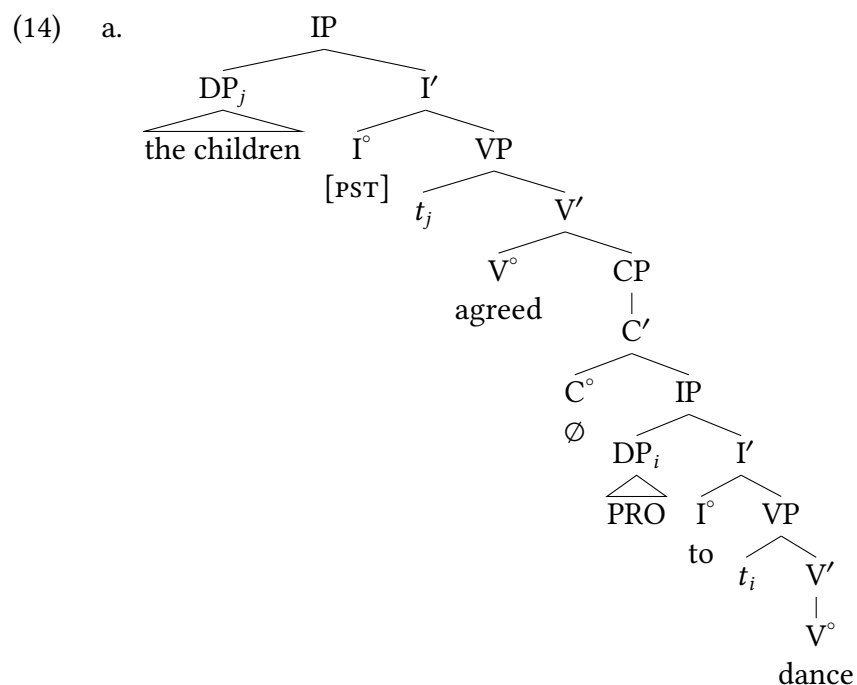
Substitute (12b) as complement  
of silent C

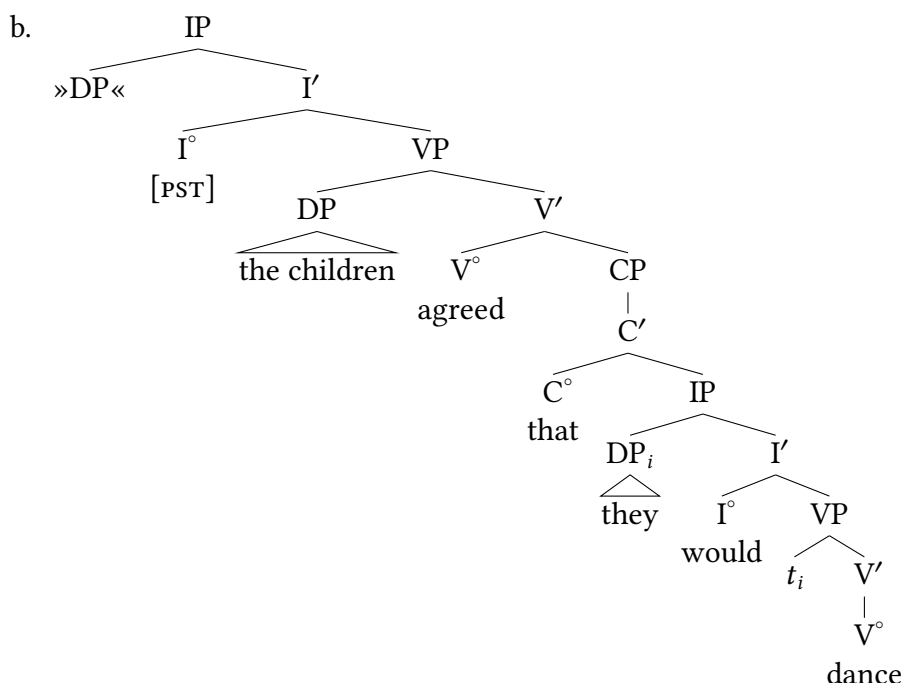
Substituting the structure in (12c) as the complement of the control verb yields (13a), which in turn becomes the complement of the matrix I element, yielding (13b).





Finally, moving the matrix subject yields (14a). The structurally analogous tree for the finite complement counterpart of (14a) (= (5)) is shown for comparison in (14b). As is evident, the trees differ only in a few terminal nodes.





In concluding our discussion of subject control, let us point out that we have not addressed an important question—namely, how PRO gets case. In English, PRO and overt noun phrases are in complementary distribution (at least almost perfectly so).<sup>2</sup> In other words, the positions where PRO can appear are ones from which overt noun phrases are barred, and vice versa. It has therefore been proposed that PRO receives a case unique to it—so-called null case—which is assigned by nonfinite I in the spec-head configuration. However, there is evidence from languages like Icelandic (see Note 1) and German that PRO can be assigned the same case features as overt subjects are, which contradicts the null case idea. We will not attempt to resolve the issue here, and we will ignore it in what follows.

## Raising

2

### 2.1 A “what if” detour

Let us turn now to raising sentences like (1b), repeated here as (15).

(15) The children seemed [ to dance ].

At first glance, it seems as if we could treat such sentences as instances of subject control. But that would leave us without an explanation for the contrast in (16)—in particular, for the grammaticality of (16b).



- (16) a. \* There agreed to be a problem.  
 b. ✓ There seemed to be a problem.

The analysis in the previous section does correctly rule out (16a), to which we assign the structure indicated schematically in (17).

- (17) \* There agreed [ PRO ] to be a problem.

Given (17), the sentence is ruled out for two reasons. First, expletive *there* fails to satisfy the selectional restriction of *agree*, which, as we saw earlier, selects humans as subjects. Second, and conversely, expletive *there* is itself not licensed; it neither occupies the specifier position of a verb of (coming into) existence nor can it have originated in such a position. (This is why we mark (16a) as ungrammatical rather than as just semantically deviant.)

It is true that the sentence contains the *there* licenser *be*, but *there* never substitutes into its specifier position. The predicate whose specifier position *there* does substitute into, namely *agree*, is not a *there* licenser.

- (18) \* There agreed some students.

So (17) correctly rules out (16a) as ungrammatical. But by the same token, if we give (16a) the analogous structure in (19), we incorrectly expect (16b) to be ungrammatical on a par with (16a).

- (19) Incorrect structure: There seemed [ PRO to be a problem ].

The reason is that *there* in the representation in (19), once again, is not licensed, as shown by the ungrammaticality of (20).

- (20) \* There seemed a problem.

It is important to understand that although *agree* is a subject control predicate and *seem* is not, both verbs share the property of not being *there* licensers.

## 2.2 Nonthematic subject positions

At this point, notice that the representations in (17) and (19) are both ruled out because *there* isn't licensed in the matrix clause. However, only in (17) is the matrix verb's selectional restriction violated. It turns out that a crucial difference between *agree* and *seem* is that *seem* imposes no selectional restrictions. We can see this by replacing *agree* in (8) with *seem*, as we do in (21); the acceptability contrast between (8a) and (8b) then disappears. (By contrast, replacing *agree* with *seem* in (9) has no effect on the contrast in acceptability. After reading this section to the end, you will be able to explain this fact, and we invite you to do so in Exercise 9.1, B.)

- (21) a. The children seemed to get wet.  
 b. The { trees, rocks } seemed to get wet.

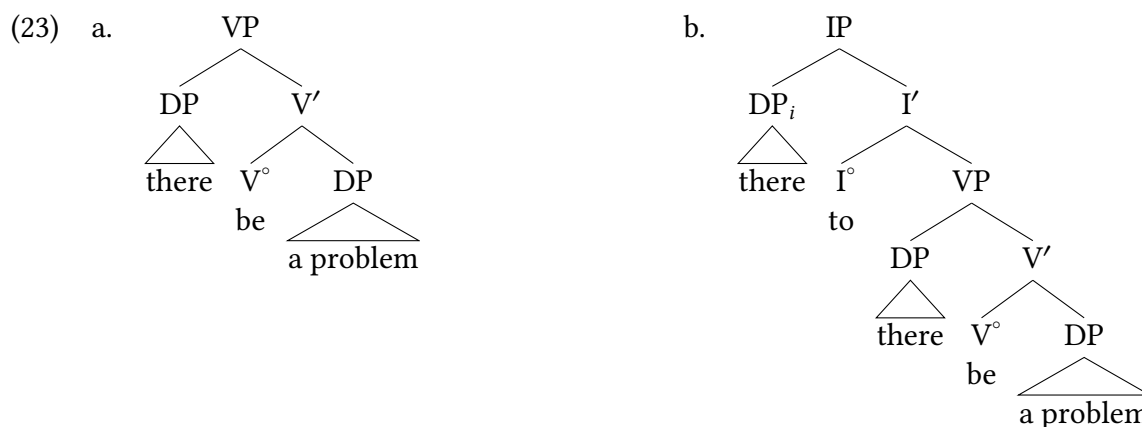
Another noteworthy property of *seem* is that its specifier position is not (and, in fact, must not be) associated with any thematic role. It is true that *seem* takes an argument: what for lack of a better term we will call the proposition argument.<sup>3</sup> However, for some reason, this argument cannot substitute into the specifier position, as we clearly see in the finite complement counterparts of raising sentences.<sup>4</sup>

- (22) a. It seems that the problem was too hard.  
 b. \* That the problem was too hard seems.

To summarize: the subject position of *seem* is semantically deficient in the sense that it is associated neither with selectional restrictions nor with a thematic role. We will call such a subject position **nonthematic**.

### 2.3 Deriving raising sentences

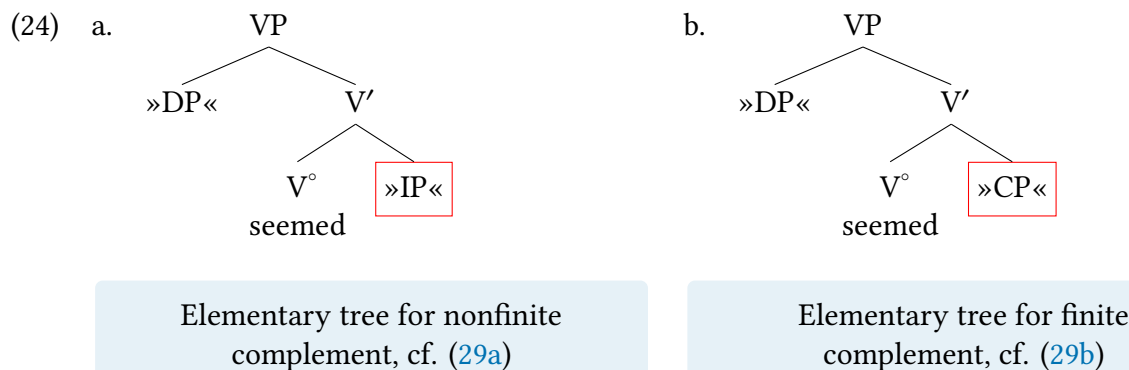
Of course, despite being superfluous from a semantic point of view, nonthematic subject positions are nevertheless syntactically obligatory (recall the subject requirement introduced in Chapter 3, § 3). This makes possible the following analysis of subject raising sentences, which we illustrate by deriving (16b). We begin by deriving the complement clause. Note how the eventual matrix subject *there* is licensed in (23a) as the specifier of main verb *be*. We assume that the subject moves from Spec(VP) to Spec(IP) in (23b) in order to provide the complement clause with a subject in accordance with the subject requirement.



Substitute eventual matrix subject as  
specifier of lower verb

Substitute (23a) as complement of *to*  
and subject movement

We now substitute (23b) into the elementary tree for *seemed* in (24a).

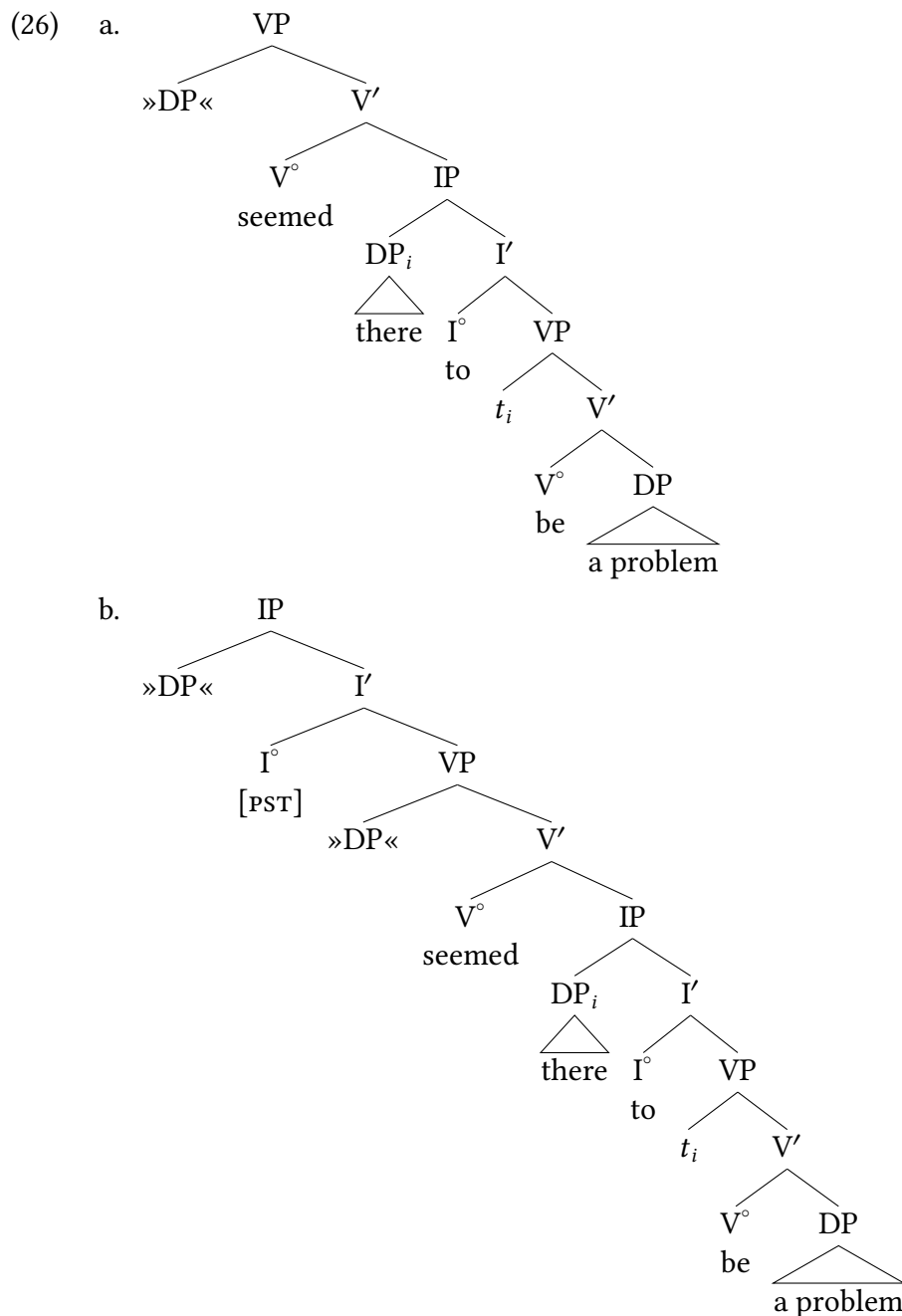


Before proceeding with the derivation, a few words about the elementary trees in (24) are in order. First, notice that both elementary trees in (24) contain a specifier position. Though semantically unnecessary, as discussed above, this position is motivated by the obligatoriness of expletive *it* in small clauses.

- (25) a. They made [ it seem that there was a problem ].  
 b. \* They made [ seem that there was a problem ].

Second, the syntactic category of the clausal complement is IP in (24a), whereas it is CP in (24b), which is the elementary tree we would use in order to derive the finite complement counterpart of (16b) (*It seemed that there was a problem*). The reason that raising predicates, in contrast to subject control predicates, require different elementary trees depending on the finiteness of their complement has to do with certain structural conditions that must be satisfied by traces of movement (but not by PRO). We simply mention the existence of these conditions here (violating them results in “improper movement”); their motivation and exact character go beyond the scope of this textbook.

Substituting the clause in (23b) as the complement of the elementary tree for raising *seem* in (24a) yields (26a), which in turn becomes the complement of the matrix I element, yielding (26b).



At this point in the derivation, the option arises in principle of substituting expletive *it* in the matrix Spec(VP) and moving it to the matrix Spec(IP). In fact, this is what we would do if the complement of *seem* were finite. In the case of a nonfinite complement, however, this step yields the ungrammatical (27).

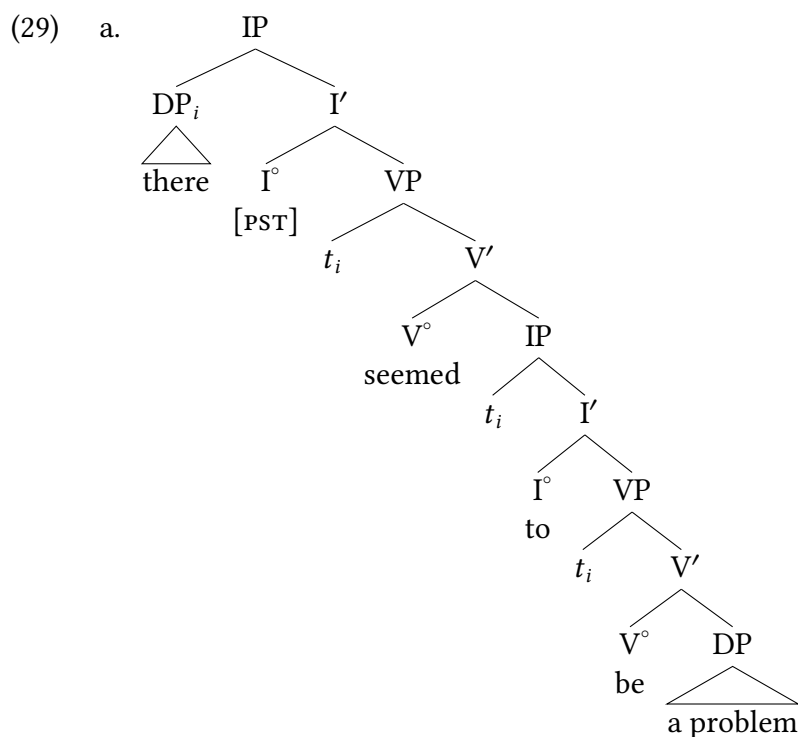
(27) \* It<sub>EXPL</sub> seemed there to be a problem.

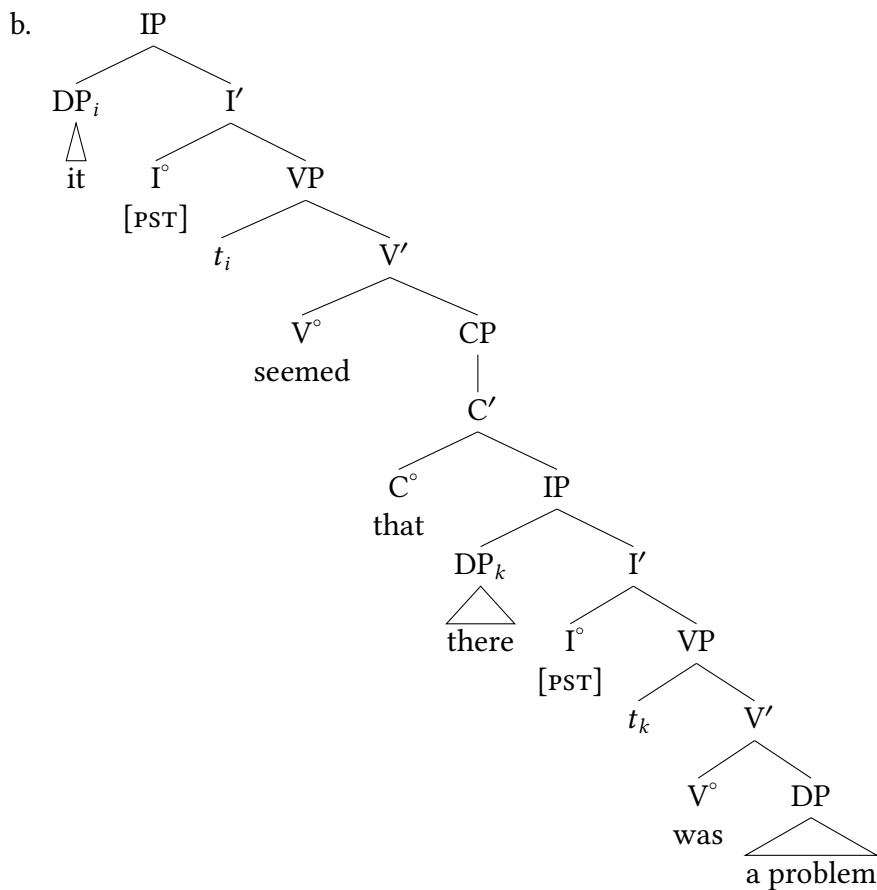
Why is (27) ungrammatical? The equally ungrammatical (28a) provides a hint; the ungrammaticality of the unambiguously objective case form *them* is reminiscent of (2b) in Chapter 8, repeated here as (28b).

- (28) a. \*It<sub>EXPL</sub> seemed them to dance.  
 b. \*It<sub>EXPL</sub> was approved them (by us).

The parallel ungrammaticality of all three sentences leads us to conclude that *seems* is deficient in not being able to assign case. (Recall that it is also deficient in not licensing a thematic specifier position.) Thus, both *there* in (27) and *them* in (28) (more precisely, their chains) don't receive case. Let's run through the possibilities. The chains can't receive case via the trace in the complement-clause Spec(VP) because verbs can't assign case to their specifiers. The chains can't receive case from nonfinite I, because nonfinite I doesn't assign case. And finally, they can't receive case from *seems* in the head-spec configuration because, as we have just concluded, *seems* (and raising verbs in general) don't assign case either.

Since the complement-clause subject cannot get case within its own IP, it moves on via the matrix Spec(VP) to the matrix Spec(IP), as shown in (29a). Here, it can finally get case from finite I in the spec-head configuration. It is this movement of the subject out of the complement clause in (29a) that we refer to as **raising**. For comparison, the structure of the finite complement counterpart is shown in (29b); here, each of the two subjects gets nominative case from its own finite I.





## Some special verbs

3

### 3.1 *Tend* versus *occur*

As was the case with subject control verbs, certain raising verbs are able to take finite complements in addition to nonfinite ones. But this is not true for all of them. *Seem*, as we have seen, belongs to the first type. *Tend* belongs to the second type, as shown in (30)–(31).

- (30) a. ✓ There seems (to me) to be a solution.  
 b. ✓ It seems (to me) that there is a solution.
- (31) a. ✓ There tends to be a traffic jam at rush hour.  
 b. \* It tends that there is a traffic jam at rush hour.

Despite the contrast between examples (30b) and (31b), *seem* and *tend* are both raising verbs; what is crucial is that examples (30a) and (31a), where the subject of the complement clause leaves its clause, are both grammatical.

There are also verbs that exhibit the converse pattern of *tend*.

- (32) a. ✓ It occurred to me that there is a solution.  
b. \* There occurred to me to be a solution.

Such verbs have a nonthematic subject position, just like *seem* and *tend*. But *as was mentioned in the introduction*, they are not raising verbs, since (for whatever reason) their complement subjects cannot leave the clause they originate in.

### 3.2 *Promise*

*Promise* has the noteworthy property of behaving either as a subject control predicate or as a raising predicate. As a subject control predicate, *promise* means something like ‘vow’ and selects human subjects. This *promise* can take either finite or nonfinite complements.

- (33) a. The { children, #horses } promised [ to eat their oatmeal ].  
b. The { children, #horses } promised [ that they would eat their oatmeal ].

On this interpretation, the matrix clause can contain manner adjuncts that modify *promise* (notice how *promise* can be replaced by *vow* in the examples).

- (34) a. The children obediently promised [ to eat their oatmeal ].  
b. The children softly promised [ to eat their oatmeal ].

In (34a), it could be argued that *obediently* is licensed as a property of the children (✓*The children were obedient*). The grammaticality of (34b) is therefore particularly important, since the only licenser for *softly* is *promise* (\**The children were soft*).

But *promise* can also have a ‘weaker’ meaning; on this interpretation, a sentence like (35a) can be paraphrased as (35b).

- (35) a. The weather promises to be lovely tomorrow  
b. All available evidence indicates that the weather will be lovely tomorrow.

On this interpretation, modifying the matrix predicate by a manner adverb as in (36) is as deviant in the original *promise* sentence as in the paraphrase.

- (36) a. # The weather { confidently, softly } promises to be lovely tomorrow.  
b. # All available evidence { confidently, softly } indicates that the weather will be lovely tomorrow.

Notice, moreover, that in the alternative paraphrase in (37), the presence of expletive *there* in matrix subject position suggests that the position is nonthematic.

- (37) There is every indication that the weather will be beautiful tomorrow.

The nonthematic character of the matrix subject position for this interpretation of *promise* is borne out by the grammaticality of (38).

(38) There promises to be a new version by spring.

From these facts, we conclude that the proper representation for a sentence like (38) must be the raising structure schematically indicated in (39).

(39) There<sub>*i*</sub> promises [ *t<sub>i</sub>* to be a new version by spring ].

*Promise* sentences with thematic subjects, on the other hand, are ambiguous between a raising analysis and a subject control analysis (as long as they contain no disambiguating adverbs). Which reading is prominent depends, as always, on the discourse context. In a sentence like (33a), the prominent interpretation, and the only one considered so far, is the subject control interpretation represented in (40).

(40) The { children, #horses } promised [ PRO to eat their oatmeal ].

However, (33a) also has the raising interpretation represented in (41a), which can be paraphrased as in (41b).

- (41) a. [ The { children, horses } ]<sub>*i*</sub> promised [ *t<sub>i</sub>* to eat their oatmeal ].  
 b. There was every indication that the { children, horses } would eat their oatmeal.

As expected, under this interpretation, the acceptability contrast between *children* and *horses* that is due to the selectional restrictions imposed by subject control *promise* disappears.

There is at least one other verb in English that clearly has the same property as *promise*—namely, *threaten*. You are invited to provide evidence for this assertion in Exercise 9.1, C.

## More nonthematic subjects

### 4

In distinguishing between subject control and raising in this chapter, we have relied heavily on the grammaticality or ungrammaticality of sentences containing expletive *there*. As it turns out, expletive *there* is not the only **nonthematic** subject (= subject that is not associated with a thematic role). In this section, we present two further instances of nonthematic subjects: **subject idiom chunks** and **weather *it***.



### 4.1 Subject idiom chunks

In Chapter 8, § 2.2, we introduced the notion of object idiom chunks—noun phrases that are ordinarily restricted to object position. The notion of subject idiom chunk is related (though not exactly identical). We use it to refer to subjects that occur in sentence idioms like (42); the subject idiom chunks are underlined.

- (42) a. The cat is out of the bag.  
 b. The fur will fly.  
 c. The jig is up.  
 d. The pot is calling the kettle black.  
 e. The shit hit the fan.

Subject idiom chunks share two important properties with expletive *there*. First, just as expletive *there* must be licensed as the specifier of a verb of existence, the subjects in (42) have whatever idiomatic force they have only in connection with the rest of the idiom, but not otherwise.<sup>5</sup> In particular, the subject idiom chunk must start out as the specifier of the verb in the idiom. For instance, neither *cat* in (42a) nor *pot* in (42d) have a metaphorical sense of *secret* or *hypocrite*, respectively, in other syntactic contexts. So sentences like those in (43) have only literal interpretations.

- (43) a. The cat is safe with them.  
 (only literal meaning; can't have the idiomatic meaning: 'The secret is safe with them.')
- b. # Your neighbor sounds like a real pot.  
 (literal meaning is semantically deviant; also can't have the idiomatic meaning: 'Your neighbor sounds like a real hypocrite.')

Second, presumably because they are not interpreted literally, subject idiom chunks don't seem to refer or be associated with any thematic role, and so they can occupy the nonthematic subject position of raising predicates. As a result of these two properties, contrasts as in (44) are expected.

- (44) a. # The cat agreed [ PRO to be out of the bag ].  
 b. [ The cat ]<sub>i</sub> seems [ *t*<sub>i</sub> to be out of the bag ].

(44a) is ruled out both on a literal and an idiomatic reading. *Agree* selects humans as subjects and is therefore incompatible with *the cat* either as a literal or as an idiomatic (nonthematic) subject. In addition, *the cat* isn't licensed as an idiom chunk in the representation in (44a) because it is never a specifier of the lower verb (*be*, the verb heading the rest of the idiom). By contrast, both readings, and in particular the idiomatic one, are possible in (44b). This is expected, since the matrix subject originates in Spec(VP) of the complement clause, forming a constituent with the rest of the idiom.

Note that examples like (45) do not invalidate the diagnostic value of subject idiom chunks in distinguishing between subject control and raising predicates.

- (45) The cat wanted [ PRO to be out of the bag ]. (only literal interpretation)

Here, the selectional restrictions that *want* imposes on its subject are less strict than in the case of *agree*. Since the subject of *want* isn't required to be human (but only to have a reasonably well-developed nervous system), the sentence is grammatical, unlike (44a). However, unlike in (44b), the matrix subject position isn't nonthematic and the matrix subject doesn't move out of the lower clause, so the sentence has only a literal interpretation.

## 4.2 Weather *it*

The third type of nonthematic subject is weather *it*, the subject of verbs of precipitation.

- (46) ✓ It is { hailing, pouring, raining, sleeting, snowing }.

As with subject idiom chunks and their predicates, the licensing relationship between weather *it* and their predicates is mutual: not only is weather *it* licensed by weather verbs, but the weather verbs are in turn themselves licensed by weather *it*, as shown in (47).

- (47) \* The { air, atmosphere, environment, precipitation, sky, weather } is { hailing, pouring, raining, sleeting, snowing }.

Given the nonthematic character of weather *it*, contrasts as in (48) are expected.

- (48) a. # It decided to rain at night.  
b. It tends to rain at night.

Unexpectedly, given what we have said so far, sentences like (49) do occur.

- (49) It's trying to rain; it finally managed to rain.

What is going on here? A plausible explanation is that the selectional restrictions of *try* and *manage* are being flouted (recall the discussion in Chapter 8 of the students lapping up their teacher's praise), prompting the hearer to conceptualize the weather metaphorically as an animate being.<sup>6</sup>

## 4.3 Summary

We have seen that expletive *there* is licensed as the subject of verbs of (coming into) existence. In a similar way, subject idiom chunks and their predicates stand in a mutual licensing relationship, as does weather *it* with predicates denoting precipitation. Because of their special licensing requirements, none of these subjects is licensed by subject control predicates. Conversely, subject control predicates select humans as subjects, so that their selectional restrictions are not met by nonthematic subjects. By contrast, raising predicates neither interfere with the licensing of nonthematic subjects (which takes place in a lower clause) nor do they impose selectional restrictions that nonthematic subjects cannot meet. It is precisely because of their semantic deficiency or neutrality that they are able to act as grammatical catalysts, allowing licensing relations that are normally confined to the same clause to extend across an IP boundary.

As we have seen, the special properties of nonthematic subjects make them useful diagnostics for distinguishing subject control predicates from raising predicates. The relevant judgment patterns are summarized in Table 9.2; for completeness, we also include the judgments for manner adverbs discussed in connection with *promise*.

|                        | Subject control     | Raising                  |
|------------------------|---------------------|--------------------------|
| Expletive <i>there</i> | *                   | ✓                        |
| Subject idiom chunk    | # (or only literal) | ✓ (idiomatic or literal) |
| Weather <i>it</i>      | # (or metaphorical) | ✓                        |
| Manner adverb          | ✓                   | *                        |

Table 9.2: Judgments of subject control and raising sentences with nonthematic subjects.

## Notes

## 5

1. It might occur to a careful reader that an alternative approach to the facts in (8) and (9) is possible, according to which control sentences contain a single subject, which must simultaneously satisfy the selectional restrictions of both the higher and the lower verbs. Regardless of whether such an approach might be worked out for English, we do not adopt it, since it cannot be extended to subject control universally. In particular, the approach in question fails for Icelandic.

In contrast to English (and most other languages), Icelandic has certain verbs whose subjects appear in some non-nominative case (genitive, dative, or accusative), even in finite clauses. The analysis of these so-called ‘quirky case’ subjects is beyond the scope of this textbook, but it is well established that they are true subjects (despite the lack of subject-verb agreement) (see Zaenen, Maling, and Thraínsson 1985; Sigurðsson 1991, and the many references therein). (i) gives examples of Icelandic finite clauses with an ordinary nominative subject and with a quirky case subject. The subjects are in **boldface**. Note that the underlined quantifiers agree in case with the subjects; this fact will be important directly. (How exactly this case agreement is implemented is irrelevant for present purposes.)

- (i) a. Ordinary nominative subject:

**Strákarn-ir** komust all-ir í skóla.  
 boys-DEF.NOM got all-NOM.PL.M in school  
 ‘The boys all got to school.’ (= Sigurðsson’s (6a))

- b. ‘Quirky dative’ subject:

**Strákarn-um** leiddist öll-um í skóla.  
 boys-DEF.DAT was.bored all-DAT.PL.M in school  
 ‘The boys were all bored in school.’ (= Sigurðsson’s (6c))

(ii) shows that the clauses in (i) can be embedded under a subject control verb (here, *vonast til* ‘hope for’). As in English, the subject of the embedded clauses is silent, but note that the quantifiers continue to exhibit the same case that they did in (i).

- (ii) a. Embedded ordinary subject:

**Strákarn-ir** vonast til að PRO komast all-ir í skóla  
 boys-DEF.NOM hope for COMP get all-NOM.PL.M in school  
 ‘The boys hope to all get to school.’ (= Sigurðsson’s (8a))

- b. Embedded quirky subject:

**Strákarn-ir** vonast til að PRO leiðast ekki öll-um í skóla  
 boys-DEF.NOM hope for COMP be.bored not all-DAT.PL.M in school  
 ‘The boys hope to all not be bored in school.’ (= Sigurðsson’s (8c))

In particular, in (ii.b), the quantifier must appear in the dative. From this, we conclude that the silent subject of the lower clause in (ii.b) is assigned quirky dative case in (ii.b), just as it is in the finite clause in (i.b). The fact that the matrix and embedded subjects are each assigned a different case in (ii.b) provides conclusive evidence that control constructions are indeed biclausal, since a single noun phrase cannot be assigned more than one case (even if it were to satisfy more than one selectional restriction at the same time).

2. In fact, the complementary distribution is not perfect. There is a bit of overlap in English—for instance, in the subject position of gerunds.

- (i) a. [ PRO going out with them ] would bother me.  
 b. \* [ { Kim’s, Kim } going out with them ] would bother me.

3. For simplicity, we ignore the verb *seem*’s optional experiencer argument (*It seems to me that you’ve solved the problem*), since it has no effect on our conclusions.

4. Clear evidence that the specifier position at issue is the Spec(VP) associated with *seem* (and not, say, some higher specifier position, such as Spec(IP)) comes from the grammaticality contrast in (i).

- (i) a. They made [ it seem [ that the problem was hard ] ].  
 b. \* They made [ [ that the problem was hard ] seem ].

5. The licensing relation between subject idiom chunks and their predicates is actually even tighter than that between expletive *there* and its licensors. Existential *there* must be licensed by verbs of (coming into) existence, but these verbs can occur independently of existential *there*. In other words, the licensing relationship is only one-way. By contrast, neither the subjects nor the predicates of idiomatic sentences can be interpreted idiomatically independently of each other. So in this case, as also for weather *it* and predicates of precipitation, the licensing relationship is mutual.

6. This metaphorical animate being can urinate, as is evident from the (vulgar) slang terms for ‘to rain’ illustrated in (i); cf. also (ii).

- (i) a. It’s pissing.  
 b. Es schifft (wie die Sau). (German)  
 it pisses like the sow  
 ‘It’s raining heavily.’  
 (ii) Il pleut comme vache qui pisse. (French)  
 it rains like cow that pisses  
 ‘It’s raining heavily.’

## Exercises and problems

6

### Exercise 9.1

- A. As mentioned in the text, certain subject control predicates, like *try*, cannot take finite complements. Provide evidence that in subject control sentences containing these predicates, both the matrix predicate and the complement predicate impose their own selectional restrictions, thus motivating a biclausal analysis.
- B. Explain the acceptability contrast in (1).
- (1) a. The children seemed to learn Twi.  
b. # The children seemed to { elapse, evaporate }.
- C. Show that *threaten* is both a subject control verb and a raising verb.

### Exercise 9.2

- A. You have been asked to review an article for *Linguistic Inquiry* by Professor A.B.C. Gerneweis, who concludes on the basis of the contrast in (1) that *volunteer* is a control verb. What is wrong with the argument?
- (1) a. ✓ They volunteered to do the job.  
b. \* There volunteered to do the job.
- B. In your review, you graciously provide the conclusive evidence that Professor Gerneweis failed to provide.

### Exercise 9.3

- A. Using the examples below as a model, determine whether the verbs in (4) are raising predicates, subject control predicates, or neither. In each example below, the evidence takes the form of grammaticality judgments about the example sentences, and the conclusions are annotated below each example. For the purposes of this exercise, use only active verb forms.
- (1) ✓ There chanced to be an opening  
→ **Conclusion:** *Chance* is a raising verb.
- (2) a. \* There resolved to be a solution.  
→ **Conclusion:** *Resolve* is not a raising verb.  
b. ✓ They resolved to solve the problem.  
→ **Conclusion:** *Resolve* is a subject control verb.

- (3) a. \* There is possible to be a solution.  
       → **Conclusion:** *Possible* is not a raising adjective (despite the grammaticality of *It is possible that there is a solution.*).  
 b. \* They are possible to solve the problem.  
       → **Conclusion:** *Possible* doesn't allow a nonfinite complement, so it is not a subject control adjective either.
- (4) agree, aspire, attempt, be, beg, cease, choose, claim, come, commence, continue, dare, demand, deserve, desire, determine, elect, end up, endeavor, expect, fail, forget, happen, have, hope, intend, look, mean, need, neglect, plan, pledge, prefer, presume, pretend, proceed, prove, purport, remember, request, start, strive, swear, tend, train, try, volunteer, vow, wish, yearn
- B.** Subject control predicates and raising predicates can belong to other syntactic categories than V. The predicates in (5) are adjectives, those in (6) are participles, and *about* in (7) is a preposition. Repeat (A) for these predicates. It's not always clear whether the participles are verbs or adjectives. If in doubt, treat them as adjectives; the exact category is not crucial for the purposes of the exercise.
- Note:** Subject control predicates and raising predicates that aren't verbs need to be integrated into the sentence using some form of the verb *be*. See Exercise 9.4, (1d)–(1f) for examples.
- (5) afraid, anxious, apt, certain, content, eager, ecstatic, evident, fortunate, glad, happy, hesitant, liable, likely, lucky, possible, ready, reluctant, sorry, sure, unlikely
- (6) bound, delighted, destined, determined, embarrassed, excited, fated, going, inclined, itching, jonesing, prepared, scared, (all) set, supposed, thrilled
- (7) about

### Exercise 9.4

- A.** Using the examples in (1)–(3) in Exercise 9.3 as a model, determine whether the underlined predicates in (1) are subject control or subject raising predicates.
- (1) a. They failed to be on time.  
 b. They aspire to graduate early.  
 c. They remembered to do the laundry.  
 d. They are hesitant to move.  
 e. They are destined to get the job.  
 f. They are about to hit the jackpot.
- B.** Build structures for the sentences in (1).

**Exercise 9.5**

- A. As was mentioned in [this chapter](#), raising verbs are logically distinct from *there* licensors. There are, however, some verbs that belong to both classes (this is comparable to a single person belonging to two distinct clubs). Can you think of any?
- B. *Tend* is a raising verb that cannot take finite complements. Can you think of other verbs like it?
- C. *Expect* is an ECM verb. Which other class(es) of verbs discussed in this chapter does it belong to?

**Exercise 9.6**

- A. The sentence in (1) is ambiguous. Explain, taking into account the facts in (2).
  - (1) They were determined to be U.S. citizens.
  - (2)
    - a. ✓ They were very determined to be U.S. citizens.
    - b. ✓ They were determined to be U.S. citizens by the INS.
    - c. \* They were very determined to be U.S. citizens by the INS.
- B. Build the trees for the two interpretations of (1).

**Exercise 9.7**

- A. What verb class does *prove* belong to in (1a) and in (1b)?
  - (1)
    - a. They proved there to be an error in the calculation.
    - b. There proved to be an error in the calculation.
- B. Which case does each instance of *there* get? How can you tell? What's the case-assigning head, and what's the case assignment configuration?
- C. Build the trees for both sentences in (1).

**Exercise 9.8**

Superficially, raising looks quite different than ordinary subject movement, the simple passive, and the passive of ECM verbs, but it shares properties with all three. Complete Table 9.3 to better understand the similarities and the differences. By 'local movement' is meant movement where the DP head of the movement chain doesn't leave its IP.

| Name                        | Raising                          | Passive of ECM | Ordinary subject movement | Simple passive |
|-----------------------------|----------------------------------|----------------|---------------------------|----------------|
| Tail of chain               | Spec(VP), low                    |                |                           |                |
| Intermediate links (if any) | Spec(IP), low;<br>Spec(VP), high |                |                           |                |
| Head of chain               | Spec(IP), high                   |                |                           |                |
| Case assigner               | Finite I                         |                |                           |                |
| Case configuration          | Spec-head                        |                |                           |                |
| Local?                      | No                               |                |                           |                |

Table 9.3: Case assignment in raising and other constructions

**Exercise 9.9**

A. (1) is grammatical, but both sentences in (2), with the same intended meaning, are completely ungrammatical. Why is that?

- (1) It seems that Jackie has solved the problem.  
 (2) a. \* It seems Jackie to have solved the problem.  
 b. \* Jackie seems that has solved the problem.

B. Repeat (A) for (3) and (4).

- (3) It seems that they like caviar.  
 (4) a. \* There seems that they like caviar.  
 b. \* They seem that they like caviar.  
 c. \* They<sub>i</sub> seem that *t<sub>i</sub>* like caviar.  
 d. \* Caviar<sub>i</sub> seems that they like *t<sub>i</sub>*.

**Exercise 9.10**

English indirect questions can be finite, as in (1), or nonfinite, as in (2).

- (1) a. ✓ They know who they should invite.  
 b. ✓ They know which topic they should talk about.  
 c. ✓ They know who should speak.  
 (2) a. ✓ They know who to invite.  
 b. ✓ They know which topic to talk about.  
 c. \* They know who to speak.



- A. Using what you've learned in this chapter, build structures for (2) that are as parallel as possible to those for (1a). For simplicity, build a full structure just for (2a) and only structures for the indirect questions in (2b), (2c).
- B. Why is (2c) ungrammatical?

### Exercise 9.11

The sentences in (1) and (2) are structurally ambiguous. Build partial structures for them, as indicated by the slashes, and explain how those structures fit together to yield the various readings. Focus on the intended reading and the most salient funny reading, but feel free to address other unintended readings as well.

In (2), you will need to come up with a structure for the gerund clause introduced by meeting by extending material covered in this chapter.

Treat *freak accident*, *North Koreans* and *Oval Office* as single words.

- (1) Gibson plays a man  
 / who develops the ability to understand  
 / what women are thinking  
 / after a freak accident.  
 (Source: <https://www.imdb.com/title/tt0207201/news?year=2000>, accessed 18 March 2012)
- (2) I remember meeting a mother of a child  
 / who was abducted by the North Koreans  
 / right here  
 / in the Oval Office.  
 (Source: <https://www.slate.com/id/76886/>, accessed 8 April 2010)

### Problem 9.1

Provide as insightful a description of the following facts as you can. What patterns do you notice? Can you state any generalizations?

- (1) a. ✓ a person who we can hire  
 b. ✓ a person with whom we can consult  
 c. ✓ a person who(m) we can consult with  
 d. ✓ a person who can fix the sink
- (2) a. \* a person who to hire  
 b. ✓ a person with whom to consult  
 c. ✓ a person who(m) to consult with  
 d. \* a person who to fix the sink

- (3) a. ✓ a person \_\_\_\_\_ that we can hire  
b. \* a person with \_\_\_\_\_ that we can consult  
c. ✓ a person \_\_\_\_\_ that we can consult with  
d. ✓ a person \_\_\_\_\_ that can fix the sink
- (4) a. ? a person \_\_\_\_\_ for us to hire  
b. \* a person with \_\_\_\_\_ for us to consult  
c. ? a person \_\_\_\_\_ for us to consult with  
d. % a person \_\_\_\_\_ for to fix the sink
- (5) a. ✓ a person \_\_\_\_\_ we can hire  
b. \* a person with \_\_\_\_\_ we can consult  
c. ✓ a person \_\_\_\_\_ we can consult with  
d. % a person \_\_\_\_\_ can fix the sink
- (6) a. \* a person \_\_\_\_\_ us to hire  
b. \* a person with \_\_\_\_\_ us to consult  
c. \* a person \_\_\_\_\_ us to consult with
- (7) a. ✓ a person \_\_\_\_\_ to hire  
b. \* a person with \_\_\_\_\_ to consult  
c. ✓ a person \_\_\_\_\_ to consult with  
d. ✓ a person \_\_\_\_\_ to fix the sink

# The verb raising parameter

## Chapter outline

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As we saw in Chapter 4, tense in English can be expressed in one of two ways. The future tense is expressed by *will*, which precedes the verb and is a **free morpheme**; that is, it can be separated from the verb and stand alone.

- (1) a. \* We watch *will* that show.  
 b. ✓ We *will* never watch that show.  
 c. Q: Will you watch that show?  
 A: ✓ Yes, we *will*.

By contrast, the past tense is expressed by a bound morpheme, ordinarily the suffix *-ed*, which combines with the verb to form a morphologically complex word.<sup>1</sup>

- (2) a. ✓ We watch-*ed* that show.  
 b. \* We-*ed* never watch that show.

- c. Q: Did you watch that show?  
A: \*Yes, we *-ed*.

This dual expression of tense is typical of the Germanic language family, to which English belongs. In all of these languages, the future is expressed **analytically** (as two separate words), whereas the past is mostly expressed **synthetically** (as a single morphologically complex word).<sup>2</sup>

Treating sentences as projections of I, as in Chapter 4, § 2.1, provides a structural locus for free tense morphemes and is therefore straightforwardly compatible with the analytic expression of tense. The analogous semantic contribution of free and bound tense morphemes, in both English and other languages, is a good reason to extend the IP analysis to sentences with synthetic tense forms. But the extension does raise the question of how tense and the verb combine to form a complex word when tense is expressed synthetically. Following an approach called Distributed Morphology that goes back to Halle and Marantz (1993), we assume that word formation takes place in the morphology, a component of the grammar that operates on structures generated by the syntax and that associates the **terminal nodes** in those structures with words in the traditional sense. In Distributed Morphology, this association is called **spellout**. For instance, *play* and past tense are spelled out as the regular form *played*, whereas *sing* and past tense are spelled out as the irregular form *sang*. In this chapter, we present evidence that in some languages, the verb moves up to I before the structure is handed over to the morphology, whereas in others, the verb remains in situ (that is, it does not move). Instead, tense moves down to V in the morphology. We will refer to the choice between V-to-I movement in the syntax and I-to-V lowering in the morphology as the **verb raising parameter**. As we will show, the parametric variation can be detected on the basis of the relative order of inflected verbs and certain adverbs.

It has been proposed that verb raising is correlated with the ‘strength’ of a language’s subject-verb agreement morphology (the number of distinct person-number endings in the verbal paradigm for, say, the present tense). We do not present this proposal here, as it is not clear that the correlation holds up under close scrutiny (Bobaljik 2002; Heycock and Sundquist 2017; Heycock and Wallenberg 2013).

In the remainder of the chapter, we first contrast verb raising in French with tense lowering in English. Our description of English also includes discussion of a closely related and important topic in the grammar of the modern language: the *do* support that is obligatory in negated sentences (*They don’t like okra* vs. \**They not like okra*). (*Do* support is also obligatory in direct questions (*Do they like okra?* vs. \**Like they okra?*); this is the focus of Exercise 10.5.) We then briefly review the parametric variation attested in the modern Scandinavian languages and the loss of verb raising in all but one of them, Icelandic. The chapter concludes with a detailed overview of issues related to the verb raising parameter in the history of English. As we will show, the intricate web of facts concerning *do* support in modern English is the result of a complex diachronic interplay of general principles with several unrelated and contingent language-particular developments.

## Verb raising: V moves to I in the syntax

1

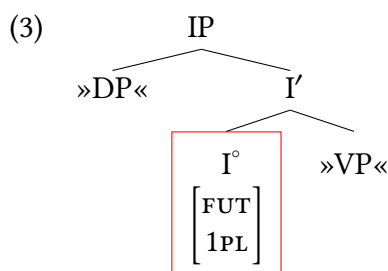
### 1.1 The future tense in French

As just mentioned, in certain languages, the verb moves up to I in the syntax. One such language is French, and we begin our discussion of the verb raising parameter by considering the future tense in French, which is formed by attaching suffixes to a verb's infinitive.

| Future tense of <i>chanter</i> 'sing' |                     | Present tense of <i>avoir</i> 'have' |                |
|---------------------------------------|---------------------|--------------------------------------|----------------|
| je chanter- <b>ai</b>                 | 'I will sing'       | j' <b>ai</b>                         | 'I have'       |
| tu chanter- <b>as</b>                 | 'you.SG will sing'  | tu <b>as</b>                         | 'you.SG have'  |
| il, elle chanter- <b>a</b>            | 'he, she will sing' | il, elle <b>a</b>                    | 'he, she has'  |
| nous chanter- <b>ons</b>              | 'we will sing'      | nous <b>avons</b>                    | 'we will have' |
| vous chanter- <b>ez</b>               | 'you.PL will sing'  | vous <b>avez</b>                     | 'you.PL have'  |
| ils, elles chanter- <b>ont</b>        | 'they will sing'    | ils, elles <b>ont</b>                | 'they have'    |

Table 10.1: Future tense formation in French

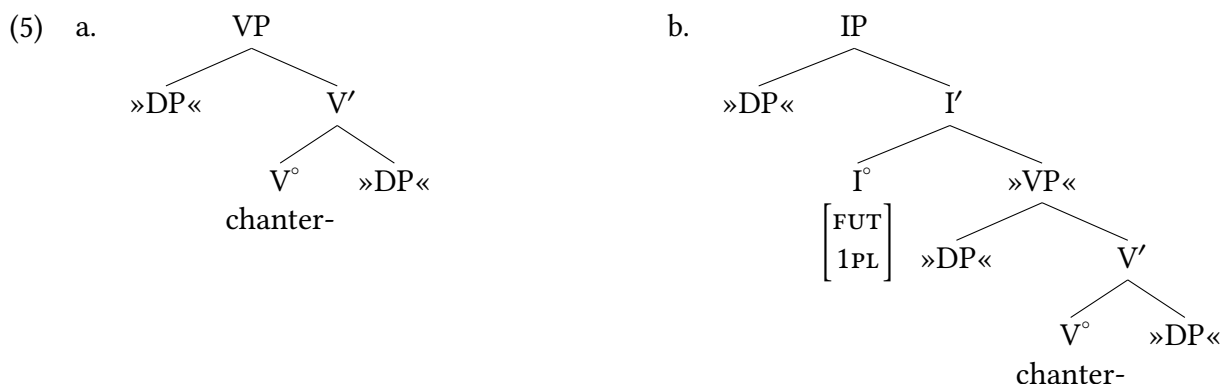
As is evident from Table 10.1, the future tense affixes are nearly identical to the present tense forms of the verb *avoir* 'to have', the only difference being that the affixes are truncated in the first and second person plural by comparison to the full two-syllable forms of *avoir* 'have'. This correspondence suggests that the future tense in French developed via a semantic shift from 'they have to V' to 'they will V'.<sup>3</sup> In addition, and more immediately relevant for the present discussion, the originally free forms of *avoir* were reanalyzed as bound morphemes.<sup>4</sup> The analytic roots of the synthetic French future tense thus indicate that the two ways of expressing tense (analytic or synthetic) are not just semantically parallel, but that they are also morphologically more closely related than might appear at first glance. (3) shows the elementary tree for the French future suffix in the first-person plural, which ends up being spelled out as *-ons* in the morphology.



Given elementary trees like (3), sentences like (4) can be derived as follows.

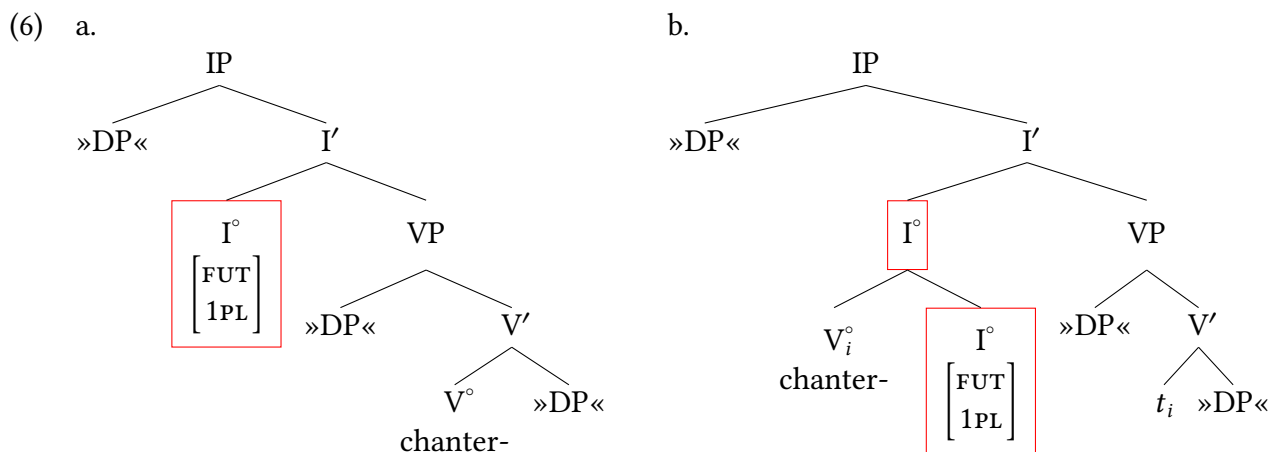
- (4) Nous chanter -ons une chanson.  
 we sing -FUT.1PL a song  
 'We will sing a song.'

We begin with the elementary tree for the verb *chanter* in (5a) and substitute it as the complement of (3) to yield the structure in (5b).

Elementary tree for *chanter*

Substitute (5a) in elementary tree (3)

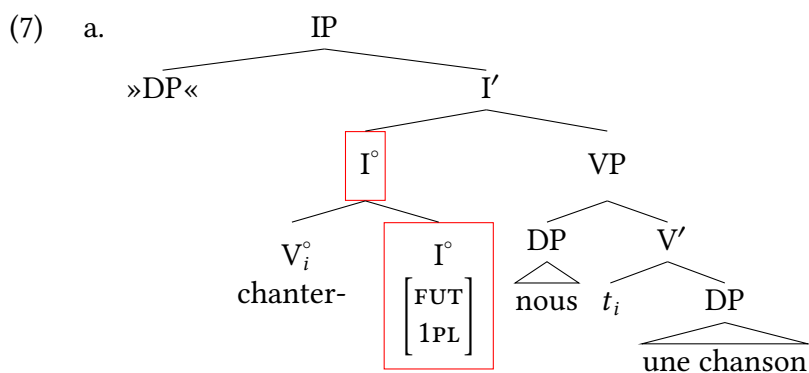
The verb then moves to I. Because I is already filled, the verb cannot directly substitute in I, but must adjoin to it, as shown in (6). The **head movement** that we invoke here is exactly the same formal operation that was introduced in Chapter 6, § 2.2 in connection with subject-aux inversion.



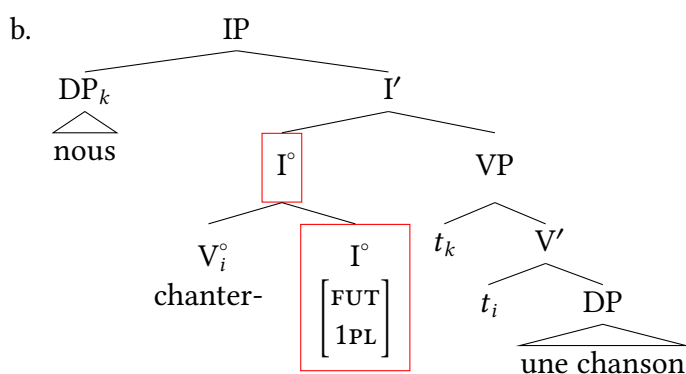
Select I as target of adjunction

Left-adjoin V to I

The remaining steps of the derivation, shown in (7), are identical to the ones that would be required to derive the corresponding English sentence *We will sing a song*.



Substitute subject and object



Move subject

Finally, the structure in (7b) is handed over to the morphological component, where the combination of *chanter* and the future tense affix is spelled out as *chanterons*.

## 1.2 The order of diagnostic adverbs and verbs in French

### Extra Info

In reading the following section, bear in mind that our focus is not on the distribution of adverbs per se. In particular, we are not claiming that all, or even most, adverbs left-adjoin to V' in French; in fact, there are many that right-adjoin. Rather, the idea is to use the particular subset of adverbs that must left-adjoin to V' as a diagnostic tool to determine the structural position of *finite* verbs in French.

The facts of French presented so far are consistent with a verb raising analysis, but do not provide conclusive evidence in favor of it. In other words, nothing in what we have said so far prevents the French verb from remaining in situ and not combining with tense until the morphology. In this section, we present conclusive evidence in favor of the verb raising analysis that is based on the order of verbs and certain diagnostic adverbs (Emonds 1978).

As illustrated in (8)–(10), there are certain adverbs in French (underlined) that ordinarily precede the main verb of a sentence (in boldface), rather than follow it. (Strictly speaking, *à peine* is a PP; what is relevant for the purposes of the argument is not its syntactic category, but rather its syntactic distribution.)

- (8) a. ✓ Elle avait à peine **travaillé** trois heures.  
           she had hardly worked three hours  
           ‘She had hardly worked three hours.’  
       b. ✓ Mon ami a complètement **perdu** la tête.  
           my friend has completely lost the head  
           ‘My friend completely lost his head.’  
       c. ✓ J’ avais presque **oublié** mon nom.  
           I had almost forgotten my name  
           ‘I had almost forgotten my name.’
- (9) a. \* Elle avait **travaillé** à peine trois heures.  
       b. \* Mon ami a **perdu** complètement la tête.  
       c. \* J’ avais **oublié** presque mon nom.
- (10) a. \* Elle avait **travaillé** trois heures à peine.  
       b. \* Mon ami a **perdu** la tête complètement.  
       c. \* J’ avais **oublié** mon nom presque.

### Word of Caution

As highlighted by the grammaticality contrast in (i), constraints in adverb placement in one language don’t necessarily carry over to their translation equivalents in another.

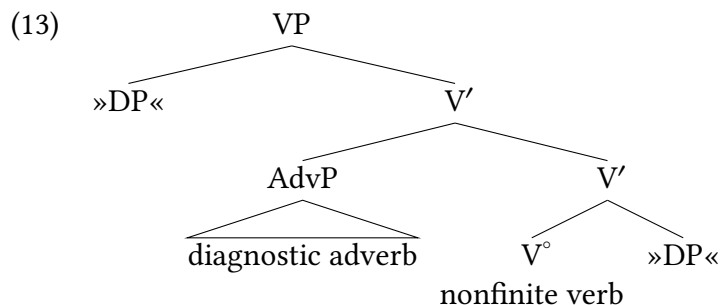
- (i) a. \* ... **perdu** la tête complètement = (10b)  
       b. ✓ ... **lost** one’s head completely

The negative adverb *jamais* ‘never’ and the simple negative marker *pas* ‘not’ behave alike in this regard in French.<sup>5</sup>

- (11) a. ✓ Les enfants d’ aujourd’hui (n’) ont jamais **écouté** la radio.  
           the children of today NE have never listened.to the radio  
           ‘Today’s children have never listened to the radio.’  
       b. \* Les enfants d’aujourd’hui (n’) ont **écouté** jamais la radio.  
       c. \* Les enfants d’aujourd’hui (n’) ont **écouté** la radio jamais.
- (12) a. ✓ Je (n’) ai pas **fait** la vaisselle.  
           I NE have not done the dishes  
           ‘I haven’t done the dishes.’  
       b. \* Je (n’) ai **fait** pas la vaisselle.  
       c. \* Je (n’) ai **fait** la vaisselle pas.



The word order facts in (8)–(12) follow straightforwardly if the adverbs in question must adjoin to the left of V', as shown schematically in (13), rather than to the right.



But now consider an unexpected fact: when the main verb of the sentence is finite, the obligatory adverb-verb order that we have just seen is ungrammatical.

- (14)
- a. \* Elle à peine **travailler-a** trois heures.  
       she hardly work-FUT.3SG three hours  
       Intended meaning: 'She will hardly work three hours.'
  - b. \* Mon ami complètement **perdr-a** la tête.  
       my friend completely lose-FUT.3SG the head  
       Intended meaning: 'My friend will completely lose his head.'
  - c. \* Je presque **oublier-ai** mon nom.  
       I almost forget-FUT.1SG my name  
       Intended meaning: 'I will almost forget my name.'
  - d. \* Les enfants d'aujourd'hui (ne) jamais **écouter-ont** la radio.  
       the children of today NE never listen.to-FUT.3PL the radio  
       Intended meaning: 'Today's children will never listen to the radio.'
  - e. \* Je (ne) pas **fer-ai** la vaisselle.  
       I NE not do-FUT.1SG the dishes  
       Intended meaning: 'I won't do the dishes.'

Instead, the adverb must follow the verb, although it still cannot follow the entire V'.

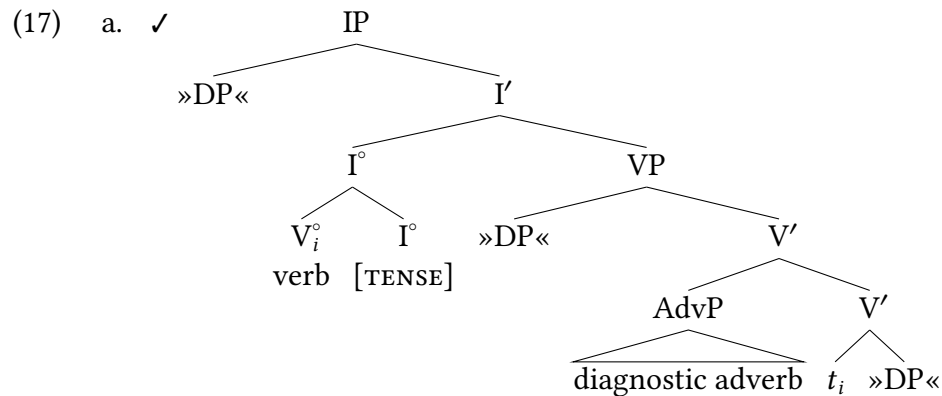
- (15)
- a. ✓ Elle **travaillera** à peine trois heures.
  - b. ✓ Mon ami **perdra** complètement la tête.
  - c. ✓ J'**oublierai** presque mon nom.
  - d. ✓ Les enfants d'aujourd'hui (n')**écouteront** jamais la radio.
  - e. ✓ Je (ne) **ferai** pas la vaisselle.
- (16)
- a. \* Elle **travaillera** trois heures à peine.
  - b. \* Mon ami **perdra** la tête complètement.
  - c. \* J'**oublierai** mon nom presque.
  - d. \* Les enfants d'aujourd'hui (n')**écouteront** la radio jamais.
  - e. \* Je (ne) **ferai** la vaisselle pas.

Table 10.2 summarizes all the facts just presented.

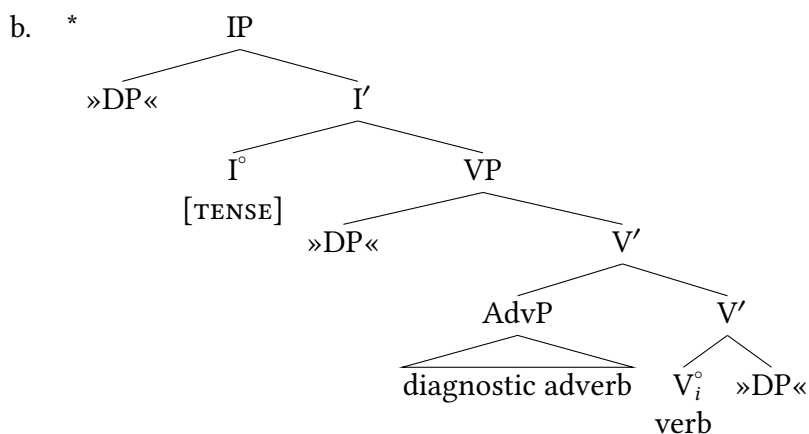
| Finiteness of main verb   | AdvP > verb ... | verb > AdvP ... | verb > XP > AdvP |
|---------------------------|-----------------|-----------------|------------------|
| nonfinite, as in (8)–(13) | ✓               | *               | *                |
| finite, as in (14)–(16)   | *               | ✓               | *                |

Table 10.2: Adverb placement in French by finiteness of main verb

As already noted, the adverb placement facts for nonfinite verbs in the first row are expected under the assumption that diagnostic adverbs obligatorily left-adjoin to  $V'$ . This assumption also explains the rightmost judgment for finite verbs (the blue star in the second row). The judgments highlighted in red, which are the opposite of their green counterparts in the row above, are puzzling at first glance. But they too follow straightforwardly if we assume that finite verbs obligatorily move to I in French, as in (17a).



Verb raising yields finite V > Adv (grammatical in French)



No verb raising yields \*Adv > finite V (ungrammatical in French)

If French did not require finite verbs to move to I, as in the hypothetical scenario represented in (17b), it is difficult to see how the contrast between the green and the red cells in Table 10.2 could be derived in a principled way.

As (18)–(20) show, the adverb facts for other *simple tenses* are parallel to those for the future tense (cf. (14)–(16)), and it is therefore natural to extend the verb raising analysis to them as well.

- (18) a. \* Elle à peine **travaill-ait** trois heures.  
           she hardly work-IMPF.3SG three hours  
           Intended meaning: ‘She used to hardly work three hours.’  
       b. \* Mon ami complètement **perd** la tête.  
           my friend completely lose.PRS.3SG the head  
           Intended meaning: ‘My friend is completely losing his head.’  
       c. \* Je presque **oublie** mon nom.  
           I almost forget-PRS.1SG my name  
           Intended meaning: ‘I am almost forgetting my name.’  
       d. \* Les enfants (ne) jamais **écout-aient** la radio.  
           the children NE never listen.to-IMPF.3PL the radio  
           Intended meaning: ‘The children never listened to the radio.’  
       e. \* Je (ne) pas **fais** la vaisselle.  
           I NE not do-PRS.1SG the dishes  
           Intended meaning: ‘I don’t do the dishes.’
- (19) a. ✓ Elle **travaillait** à peine trois heures.  
       b. ✓ Mon ami **perd** complètement la tête.  
       c. ✓ J’**oublie** presque mon nom.  
       d. ✓ Les enfants d’aujourd’hui (n’) **écoutaient** jamais la radio.  
       e. ✓ Je (ne) **fais** pas la vaisselle.
- (20) a. \* Elle **travaillait** trois heures à peine.  
       b. \* Mon ami **perd** la tête complètement.  
       c. \* J’**oublie** mon nom presque.  
       d. \* Les enfants d’aujourd’hui (n’) **écoutaient** la radio jamais.  
       e. \* Je (ne) **fais** la vaisselle pas.

In concluding our discussion of French, we draw your attention to the fact that verb movement, just like other instances of movement, allows us to accommodate mismatches between an item’s expected position given its thematic or semantic relations and the position in which it is pronounced. In the case at hand, assuming verb movement allows us to maintain a simple generalization concerning diagnostic adverbs (they obligatorily left-adjoin) regardless of the finiteness of the verb they modify. Perhaps even more importantly, we can maintain—regardless of verb finiteness or presence of adverbs—the idea encoded in the X’ schema that verbs and their complements are sisters. Nonfinite verbs presents no difficulty in this regard. But even in the case of finite verbs, where the verb-complement adjacency expected under sisterhood is interrupted by an intervening adverb, the expected structural relation is preserved via the trace of the verb.

## Tense lowering: I moves to V in the morphology

2

### 2.1 The order of diagnostic adverbs and verbs in English

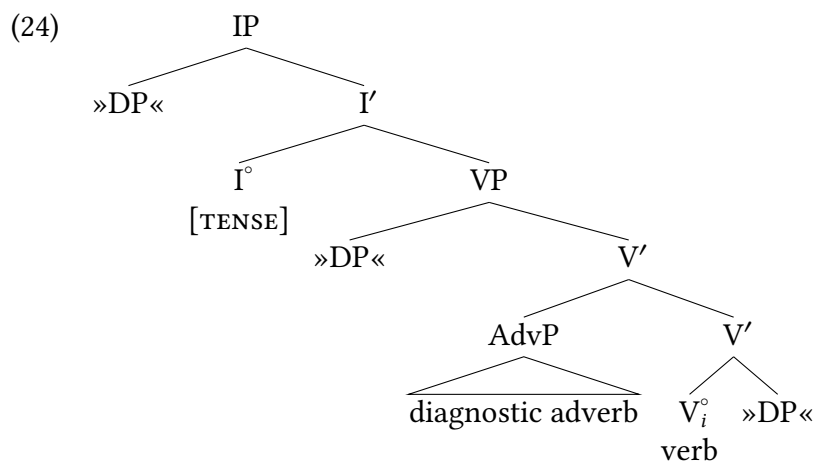
Having established that French exhibits verb raising in the syntax, we now investigate the corresponding English facts, using exactly the same tool that we used in French—namely, the position of diagnostic adverbs. As in French, certain adverbs in English obligatorily precede nonfinite verbs.

- (21) a. They will { almost, hardly, never } **fail**.  
 b. They have { almost, hardly, never } **failed**.  
 (22) a. \* They will **fail** { almost, hardly, never }.  
 b. \* They have **failed** { almost, hardly, never }.

But unlike in French, these adverbs precede the main verb of a sentence even when the verb is finite.

- (23) a. They { almost, hardly, never } **failed**.  
 b. \* They **failed** { almost, hardly, never }.

The ungrammaticality of (23b) means that the verb raising analysis that is successful for French is exactly wrong for English. Instead, in English all verbs remain in situ in the syntax and any tense morphemes lower and adjoin to V in the morphology. The input to the morphology is therefore (17b), repeated here as (24), and the order of the adverb and the verb remains unchanged after tense lowering (which we do not show explicitly).



Morphological tense lowering yields Adv > finite V  
 (grammatical in English regardless of finiteness of V)

## 2.2 Do support in English

We now turn to an apparently idiosyncratic and quirky consequence of the fact that English lacks verb raising—namely, the *do support* that is necessary in sentences negated with *not*. In order to highlight the conditions under which *do support* takes place, we will contrast sentences containing *not* with ones containing *never*.

In vernacular English, *never* can function as a sentence negator equivalent to simple ‘not’, without its literal meaning of ‘not ever’.

- (25) Q: Did you get a chance to talk to Tom last night?  
A: Nope, I *never* got a chance.

But despite their functional equivalence in contexts like (25), *not* and *never* differ from each other in a striking way: *not* obligatorily triggers *do support*, whereas *never* doesn’t. (All forms of *do* in this section are to be read without emphatic stress.)

- (26) a. \* They *not* **applied**.  
b. ✓ They { *did not*, *didn’t* } **apply**.  
(27) a. ✓ They *never* **applied**.  
b. \* They *did never* **apply**.

In order to explain this puzzling fact, we present an analysis of *do support* that relies on two main ideas: first, that *never* and *not* are integrated into the structure of English sentences in different ways, and second, that tense (and heads more generally) can lower in the morphology only under certain structural conditions.<sup>6</sup>

### A syntactic difference between *never* and *not*

As shown in (28), *never* is intransitive and hence a maximal projection in its own right, whereas *not* is transitive and hence not a phrase on its own.

- (28) a. AdvP      b. NegP  
       |            |  
       Adv'        Neg'  
       |            /  \  
       Adv°       Neg° »XP«  
       *never*       *not*

We present two pieces of evidence for this distinction. The first comes from **negative inversion**. (29a) shows an ordinary negative sentence, and (29b) shows its negative inversion counterpart, where the negative constituent (in boldface) has moved to the beginning of the sentence, and modal (in italics) precedes the subject (underlined). (We give the structure for such a negative inversion sentence directly; for the moment, it is sufficient to understand that (29b) is structurally analogous to the corresponding direct *wh*- question *What would they accept more happily?*)

- (29) a. They *would* accept **no present** more happily.

- b. **No present** *would they* accept more happily.

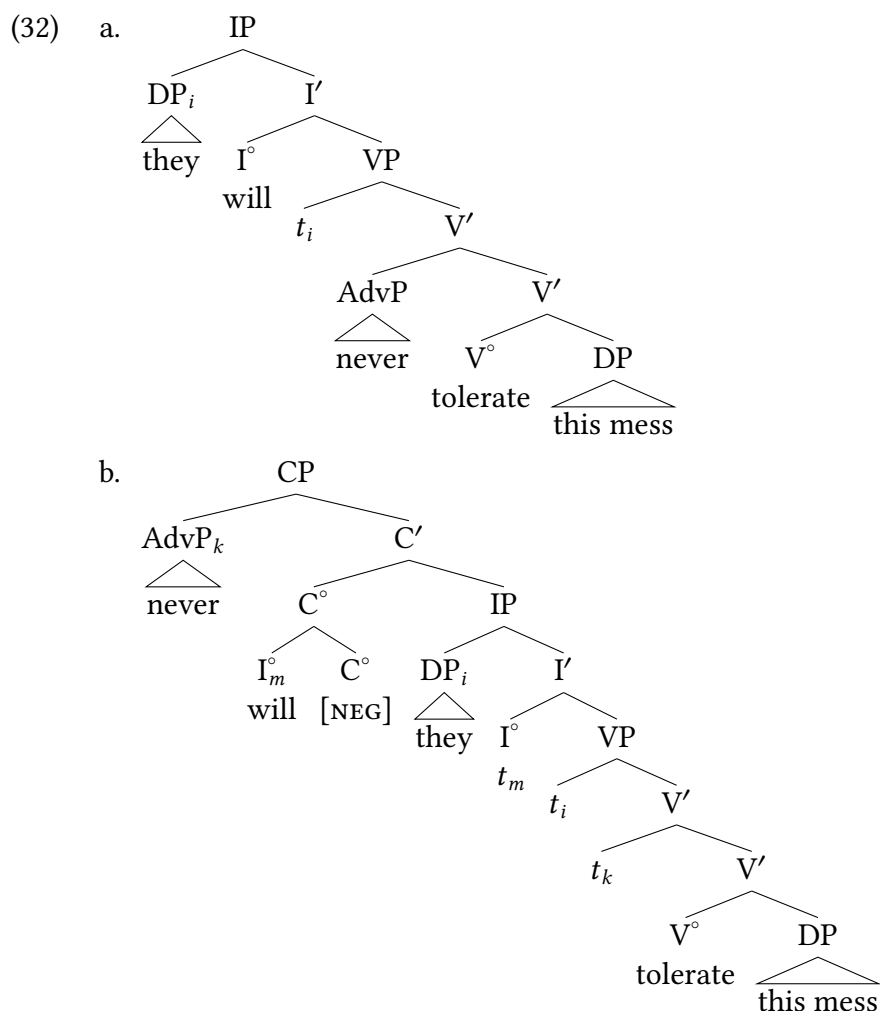
An important property of this construction is that the material preceding the modal must be a maximal projection. Thus, in contrast to the full DP *no present* in (29b), the head of that DP, the negative determiner *no*, cannot undergo negative inversion on its own, as shown in (30).

- (30) \***No** *would they* accept **present** more happily.

Bearing in mind this fact about negative inversion, consider the canonical and negative inversion sentences in (31).

- (31) a. *They will* **never** tolerate this mess.  
 b. **Never** *will they* tolerate this mess.

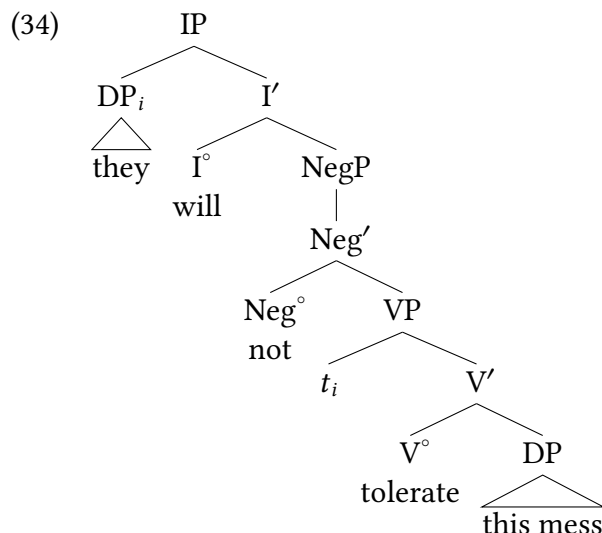
(32) gives the structures for (31a) and (31b), which has the same structure as the corresponding *wh*-question *When will they tolerate this mess?* For present purposes, what is important is that *never* is a maximal projection and therefore a suitable candidate for negative inversion.



Now consider the *not* variant of (31a) in (33).

- (33) They *will* **not** tolerate this mess.

Under the reasonable assumption that Infl can take either NegP or VP complements, (33) has the structure in (34).



In this structure, *not* on its own is not a maximal projection, and so *not*, like *no* but unlike *never*, should not be able to undergo negative inversion. This expectation is confirmed by the ungrammaticality of (35).

- (35) \* **Not** they *will* tolerate this mess.

A second piece of evidence for the status of *not* (and its variant *n't*) as a transitive head comes from the fact that it optionally adjoins to I, forming a complex head that can exhibit morphological irregularities. For instance, *n't* moves to *will*, the result is spelled out as *won't*. Moreover, various non-mainstream English varieties allow the combination of *n't* with various forms of the aspectual auxiliaries *be* and *have* to be spelled out as *ain't*. Such irregularity is the hallmark of two heads combining (whether in the syntax or in the morphology). Comparable examples arise in connection with irregular past tense forms in English, where the combination of two heads like *sing* and past tense is spelled out as irregular *sang*. Other well-known examples from languages other than English include the idiosyncratic spellouts for preposition-determiner combinations like those in (36).

- (36)
- |    |                 |                 |                 |                 |                           |
|----|-----------------|-----------------|-----------------|-----------------|---------------------------|
| a. | à + le > au;    | à + les > aux;  | de + le > du;   | de + les > des  | (French)                  |
|    | to the.M.SG     | to the.M.PL     | of the.M.SG     | of the.M.PL     |                           |
| b. | an + dem > am;  | in + dem > im;  | zu + dem > zum; | zu + der > zur  | (German)                  |
|    | to the.M.DAT.SG | in the.M.DAT.SG | to the.M.DAT.SG | to the.F.DAT.SG |                           |
| c. | con + il > col; | in + il > nel;  | su + il > sul   |                 | (Italian)                 |
|    | with the.M.SG   | in the.M.SG     | on the.M.SG     |                 |                           |
| d. | por + o > pelo; | por + a > pela; | em + o > no;    | em + a > na     | (Portuguese) <sup>7</sup> |
|    | by the.M.SG     | by the.F.SG     | in the.M.SG     | in the.F.SG     |                           |

### A constraint on tense lowering in the morphology

We turn now to the second piece of our solution to the puzzle presented by the contrast between (26) and (27), repeated here as (37) and (38).

- (37) a. \*They *not* **applied**.  
 b. ✓ They { *did not*, *didn't* } **apply**.
- (38) a. ✓ They *never* **applied**.  
 b. \*They *did never* **apply**.

The idea is that tense lowering in the morphology (but not verb raising in the syntax!) is subject to the **locality condition** in (39).

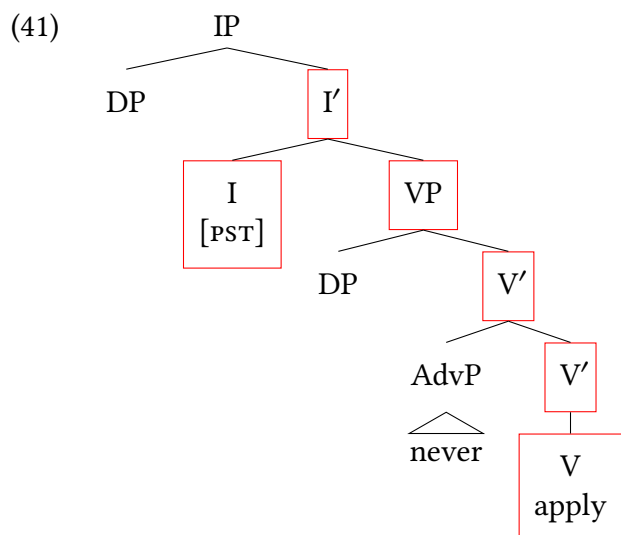
- (39) When a head A lowers onto a head B in the morphology, A and B must in a **local** relation in the sense that no projection of a head distinct from A and B **intervenes** on the path of branches that connects A and B.

The notion of **intervene** is defined as in (40).

- (40) An element C, C distinct from (projections of) A and B, **intervenes** between A and B if and only if (some projection of) A dominates C and (some projection of) C dominates B.

It is important to understand that intervention is defined not in terms of linear precedence, but in terms of the structural relation ‘dominate’. This means that the place to look for whether the locality condition in (39) is satisfied or violated is not the string of **terminal nodes** beginning with A and ending with B, but the path of branches that connects A with B in the tree.

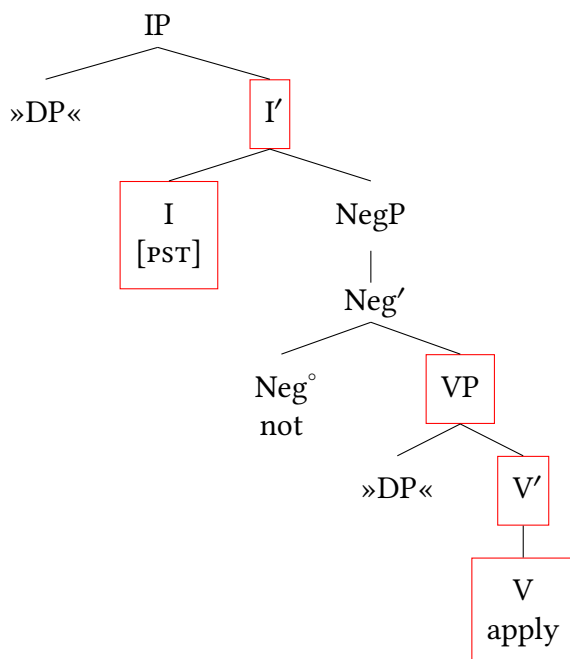
The structure for (38a) is given in (41). In this structure, tense lowering is consistent with the locality condition in (39), since adjoining *never* at V' results in the adverb being too low in the tree to intervene between I and V. (In other words, AdvP isn't on the path from I to V, indicated by the boxed nodes.)



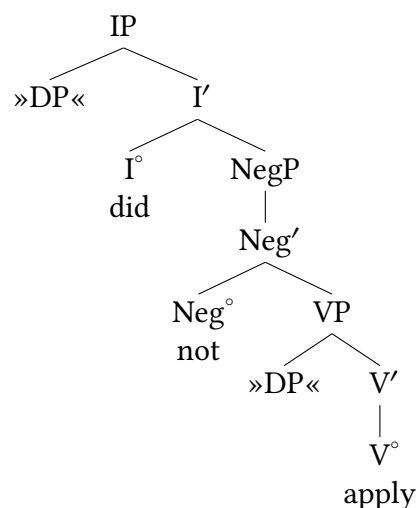


By contrast, in the structure in (42a) tense lowering would violate the locality condition because the path between I and V is interrupted by NegP and Neg'. As a result, only the *do* support variant of (42a) is grammatical, which is shown in (42b). It's true that NegP and Neg' intervene between I and V in (42b) as well, but forms of *do* are free morphemes. Therefore, unlike tense affixes, they don't need to undergo tense lowering onto V to form a well-formed morphological word. Since (39) is a constraint on tense lowering, not a constraint on syntactic trees in general, (42b) does not violate it.

(42) a.



b.



## The loss of verb raising in Scandinavian

3

Before turning to the complex history of *do* support in the history of English, we review one of its ingredients—the loss of verb raising—in the history of Scandinavian, where it occurred without any complicating factors. The modern Scandinavian languages are descendants of Old Norse (the language of the Vikings), which split into two main branches with names that are self-explanatory: Mainland Scandinavian (Danish, Norwegian, Swedish) and Insular Scandinavian (Faroese, Icelandic). Old Norse had verb raising, which is preserved in Icelandic, is in its very final stages in Faroese, and has been lost in the Mainland Scandinavian languages (at least in their standardized forms). The examples in this section are from or modeled after those in Holmberg and Platzack (1995) and Platzack (1988).

The Icelandic facts are illustrated in (43). As usual with examples from the Germanic lan-

languages other than English, we give examples in the form of subordinate clauses in order to avoid complications associated with aspects of main clause word order (see Chapter 12). As the examples show, Icelandic patterns with French.

### Extra Info

The Icelandic characters *eth* (capital Ð, lowercase ð) and *thorn* (capital Þ, lowercase þ) represent the voiced and voiceless ‘th’ sounds in *this*, *eth* and *thin*, *thorn*, respectively. The Danish character *ø* and the Swedish character *ö* stand for the same mid-front rounded vowel (more or less like the vowel in ‘day’, except that the lips are rounded as for ‘do’).

#### (43) Icelandic:

- a. ✓ að Jón **keypti** { ekki, aldrei, raunverulega } bókina  
 that Jón bought not never actually book.DEF  
 ‘that Jón { didn’t buy, never bought, actually bought } the book’
- b. \* að Jón { ekki, aldrei, raunverulega } **keypti** bókina

(44) and (45) illustrate the corresponding facts for modern Danish and Swedish. As is evident, the pattern is the converse of the Icelandic one.

#### (44) Danish:

- a. \* at Ulf **købte** { ikke, aldrig, faktisk } bogen  
 that Ulf bought not never actually book.DEF  
 Intended meaning: ‘that Ulf { didn’t buy, never bought, actually bought } the book’
- b. ✓ at Ulf { ikke, aldrig, faktisk } **købte** bogen

#### (45) Swedish:

- a. \* att Ulf **köpte** { inte, aldrig, faktiskt } boken  
 that Ulf bought not never actually book.DEF  
 Intended meaning: ‘that Ulf { didn’t buy, never bought, actually bought } the book’
- b. ✓ att Ulf { inte, aldrig, faktiskt } **köpte** boken

The loss of verb raising in the Mainland Scandinavian languages has been the subject of detailed investigation (Falk 1993; Platzack 1988; Sundquist 2003). For instance, in Swedish, the earliest tense lowering examples are from the late 1400s. During a transition period from 1500 to 1700, both verb raising and tense lowering are attested, sometimes even in the same text (as in examples (46b) and (47b)).

- (46) a. at Gudz ord **kan** ey vara i honom  
 that God’s word can not be in him  
 ‘that God’s word cannot be in him’
- b. när thet **är** ey stenoghth  
 when it is not stony  
 ‘when it is not stony’

- (47) a. om den dristigheten än **skulle** wara onåsigtt uptagen  
           if that boldness yet would be amiss taken  
           ‘if that boldness would yet be taken amiss’  
       b. om annar sywkdö ey **krenker** nokon  
           if another illness not ails someone  
           ‘if someone isn’t afflicted with another illness’

Finally, after 1700, verb raising in Swedish dies out completely in the standardized variety. However, it is preserved in at least one regional dialect, that of Älvdalen.

(48) Älvdalen Swedish:

- a. ✓ um du **for** int gar ita ia firi brado  
       if you get not done this before breakfast  
       ‘if you don’t get this done before breakfast’  
       b. ✓ fast die **uar** int ieme  
           if they were not home  
           ‘if they weren’t home’  
       c. ✓ ba fo dye at uir **uildum** int fy om  
           just because that we would not follow him  
           ‘just because we wouldn’t follow him’

Faroese, spoken on the Faroes, a group of islands roughly midway between Iceland and mainland Europe, is at the very tail end of losing verb raising Heycock, Sorace, and Z. Hansen (2010) and Heycock, Sorace, Z. S. Hansen, et al. (2011). Speakers do not ordinarily produce verb raising sentences, but when asked to give grammaticality judgments, many speakers accept both word orders in (49), characterizing the verb raising variant in (49a) as archaic.

(49) Faroese:

- a. Verb raising (archaic):  
    Hann spur, hvi tad **eru** ikki fleiri tilikar samkomur.  
    he asks why there are not more such gatherings  
    ‘He asks why there aren’t more such gatherings.’  
       b. Tense lowering (vernacular):  
    Hann spur, hvi tad ikki **eru** fleiri tilikar samkomur.

In concluding this section, we draw your attention to the absence of *do* support in (44b), (45b), and (47b). As the availability of negative inversion in (50a) shows,<sup>8</sup> the translation counterparts of *not* have a different status in Scandinavian than they do in English. They are ordinary intransitive adverbs, and therefore tense lowering is possible in modern Mainland Scandinavian. (Icelandic negative inversion in (50b) is shown for completeness; the verb would be able to move up to I even if negation were a head.)

(50) a. Swedish:

- Inte** *vet* jag var hon bor.  
   not know I where she lives  
   ‘I don’t know where she lives.’

b. Icelandic:

**Ekki** *veit* ég hvar hún býr.  
not know I where she lives

## Verb raising in the history of English

4

This section provides a review of the loss of verb raising and the rise of *do* support in the history of English.<sup>9</sup> As we will see, this part of the grammar of modern English is the culmination of one of the most complicated chapters in the history of the language. It reflects several distinct but interlocking developments, which include:

- the loss of verb raising,
- a change in the status of *not* from intransitive (like *never*) to transitive,
- the emergence of *do* support,
- the emergence of a distinct class of modals, and
- the retention of verb raising in the case of two lexical items (*have* and *be*).

### 4.1 The loss of verb raising

Just like French, Middle English (1100–1500) exhibited verb raising. Examples with several diagnostic adverbs are shown in (51)–(53); they and the others in this section are from Kroch and Taylor (2000a)

#### Extra Info

The characters *eth* (capital Ð, lowercase ð) and *thorn* (capital Þ, lowercase þ) were borrowed from Old Norse and used in Old and Middle English where we use ‘th’ today. The yogh character (ȝ) was used where we use ‘g’ or ‘y’ today.

(51) always:

- he **weneth** alwey that he may do thyng that he may nat do. (cmctmeli,222.C1.193)  
‘he always thinks that he can do things that he can’t do’
- for þe Britons **destroiede** alwai þe cristen peple þat seynt Austyne hade baptisede  
(cmbrut3,98.2951)  
‘for the Britons always killed the Christians that St. Austin had baptized’
- þe ȝong man **resortyd** alwey to þe preste (cmkempe,57.1270)  
‘the young man always resorted to the priest’

(52) never:

- a. for God ... **3eueþ** neuer two tymes to-geder (cmcloud,20.115)  
‘for God ... never gives two times together’
  - b. and y ne<sup>10</sup> **sei3** neuer þe ry3tful for-saken (cmearlps,44.1880)  
‘and I have never seen (lit. ‘not saw never’) the righteous forsaken’
  - c. he thought he **sawe** never so grete a knyght (cmmalory,180.2434)  
‘he thought he had never seen so great a knight’
  - d. for þey **synneden** neuere. (cmwycser,234.204)  
‘For they never sinned.’
- (53) not:
- a. This emperour Claudius was so obliuiows þat, sone aftir he had killid his wyf, he asked why sche **cam** not to soper. (cmcapchr,49.534)  
‘This emperor Claudius was so oblivious that, soon after he had killed his wife, he asked why she didn’t come to supper.’
  - b. He mad eke a precept þat no Jew into Jerusalem schuld entre, but Cristen men he **forbade** not þe entre. (cmcapchr,52.604-605)  
‘He also made a law that no Jew should enter into Jerusalem, but he did not forbid Christians from entering (lit. ‘the entry’).’
  - c. Ich ne **hidde** nou3t þy mercy (cmearlps,49.2107)  
‘I did not hide (literally, ‘not hid not’) your mercy’
  - d. Bott I **sawe** noght synne. (cmjulnor,60.289)  
‘But I did not see sin.’
  - e. but he **wythdrowe** not hir temptacyon (cmkempe,16.321)  
‘but he did not withdraw her temptation’
  - f. but Balyn **dyed** not tyl the mydnyghte after. (cmmalory,69.2361)  
‘But Balyn did not die till the midnight after.’

In the course of Middle English, several syntactic developments took place that eventually culminated in the complex grammar of modern English. First, between 1475 and 1525, the frequency of verb raising dropped from roughly 65% to 10%. In the case of adverbs, this loss simply led to the modern word order adverb > finite verb, as is evident from the translations for (51) and (52). But the effects in the case of negation were more complicated and involved two further changes: a change in the status of *not* and the emergence of *do* support. We discuss these changes in turn.

## 4.2 A change in the status of *not*

### Negative inversion

There is good evidence that in early Middle English *not* was an ordinary adverb on a par with *never* and French and Scandinavian negation. Like *never* and negative phrases throughout the history of English, it could undergo negative inversion.

- (54) a. & **nohht** ne *stannt* itt stille (cmorm,I,125.1079)  
 and not NE stood it still  
 ‘and it didn’t stand still’  
 b. Acc **nohht** ne *mihht* itt oppnenn hemm þe ȝate off heoffness blisse  
 and not NE might it open them the gate of heaven’s bliss (cmorm,I,142.1171)  
 ‘and it could not open the gate of heaven’s bliss for them’

In the absence of further developments, the loss of verb raising would have resulted in a word order change from verb > *not* to *not* > verb, as happened in mainland Scandinavian. However, unlike Scandinavian (or French) negation, *not* in the course of Middle English went from being an ordinary intransitive adverb to being a transitive head. As a result, *not* cannot undergo negative inversion, as we already showed earlier in the chapter, and the modern English counterparts of (54) are ungrammatical, as shown in (55).

- (55) a. \***Not** *did* it stand still.  
 b. \***Not** *could* it open the gates of heaven’s bliss for them.

### Adjunction to I'

There is a further piece of evidence that *not* changed from an intransitive head to a transitive head in the course of Middle English. In early Middle English, *not* could adjoin not just to V', but also to I'.

- (56) a. Þatt Jesuss **nohht** ne **wollde** Ben borenn nowwhar i þe land (cmorm,I,122.1052)  
 that Jesus not NE wanted be born nowhere in the land  
 ‘that Jesus did not want to be born anywhere in the land’  
 b. ða þinges ðe hie **naht** ne **scolden** ȝiuen (cmorm,I,142.1171)  
 the things that they not NE should give  
 ‘the things that they shouldn’t give’

In this respect, *not* resembled *never* and other adverbs, which have preserved this ability to this day, as shown in (57).<sup>11</sup>

- (57) a. Middle English:  
 he swore þat Saxones **neuer** **shulde** haue pees ne reste (cmbrut3,69.2088)  
 ‘he swore that the Saxons never should have peace or rest’  
 b. Modern English:

He { always, never } **will** admit his shortcomings.

However, as it developed from an intransitive to a transitive head, *not* lost the ability to adjoin to I' in the course of Middle English, with the result that the Modern English counterparts of (56) are ungrammatical, as shown in (58).

- (58) a. \* that Jesus *not* **would** be born anywhere in the land.  
 b. \* the things that they *not* **should** give

This is consistent with the elementary tree for Modern English *not* in (28b), where it is a transitive head that can take a VP complement, forcing it to appear lower in the tree than required to generate the word order in (58).

### 4.3 The emergence of *do* support

The reanalysis of *not* from an ordinary adverb to a head was essentially complete by 1400,<sup>12</sup> and shortly thereafter, the first examples of the contracted form *n't* are attested, as we might expect. What consequences did this have for children acquiring sentences containing *not* at that time? On the one hand, verb raising was being lost. On the other hand, the new status of *not* as a head ruled out tense lowering in negative sentences. In other words, the children were caught between a rock and a hard place. In the absence of any other developments, ordinary negative sentences would have become **ineffable** (that is, there would have been no way to say negative sentences in English).

One can imagine a number of different resolutions to such an impasse, each of them representing a particular possible accident of history. For instance, speakers might have begun using the adverb *never* to take over the function of the negative head *not*, as happened in Middle Portuguese (Marlyse Baptista, personal communication). In fact, this is attested in the vernacular modern language, as we saw in (25), but it never became the only way of expressing negation. Alternatively, children might have managed to acquire verb raising solely based on the word order in sentences containing *not*. This is what happened with *be* and auxiliary verb *have*. But with ordinary verbs, what actually happened was something that depended on an unrelated development in the language that had taken place in the 1200s: the development of the verb *do* into a modal.

Like many languages, Middle English had a construction (no longer available in Modern English) involving a causative verb and a lower verb, in which the lower verb's agent could be left unexpressed.<sup>13</sup> We illustrate this construction for French and German in (59). The causative verb is in **boldface**, and the lower verb is underlined.

- (59) a. French:  
 Édouard a fait **assembler** une grande armée.  
 Edward has made assemble a great army  
 'Edward had a great army assembled.' (lit. 'Edward had (someone) assemble a great army.')
- b. German:



Eduard *liess* ein grosses Heer **versammeln**.  
 Edward let a great army assemble  
 ‘Edward had a great army assembled.’

In Middle English, two different causative verbs were used in this construction depending on the dialect (Ellegård 1953). The East Midlands dialect used *do*, as illustrated in (60), whereas the West Midlands dialect used *make*. In other words, the West Midlands equivalent of (60a) would have been (using modern spelling) *Edward made assemble a great host*.

(60) Middle English (East Midlands):

- a. Kyng Edward **dede** *assemble* a grete hoste (cmbrut3,122.3377)  
 ‘King Edward had a great army assembled.’  
 (lit. ‘King Edward had (someone) assemble a great army.’)
- b. This Constantin **ded** *clepe* a gret council at Constantinople (cmcapchr,81.1483)  
 ‘This Constantine had a great council called at Constantinople’  
 (lit. ‘This Constantine had (someone) call a great council at Constantinople’)
- c. He **ded** *make* ferþingis and halfpenies, wech were not used before (cmcapchr,128.2962)  
 ‘He had farthings and halfpennies made, which weren’t used before’  
 (lit. ‘He had (someone) make farthings and halfpennies’)

Now in many discourse contexts, causative sentences like *The king had a great army assembled* are used more or less interchangeably with simple sentences like *The king assembled a great army*. (In the first case, we zoom in, as it were, on the details of the situation—we explicitly describe that the king is getting someone else to do the actual legwork of assembling the army, whereas in the second case, we zoom out, ignoring the fact that the king isn’t running around himself.) As a result, in situations of dialect contact, it was possible for West Midlands speakers (those with causative *make*) to misinterpret sentences with causative *do* from the East Midlands dialect as an alternative way of saying the corresponding simple sentence. Based on this misinterpretation, they might then themselves have begun to use *do*, but as an auxiliary verb bleached of its causative content rather than as a causative verb (for which they would have continued to use their own *make*). Since the border between the East and West Midlands dialects ran diagonally through the whole of England, the chances of dialect contact and of the reinterpretation and adoption of *do* as an auxiliary verb were good. In any event, however it came to pass, it is West Midlands speakers who first used *do* as an auxiliary verb. Once the auxiliary use was established, it could then have spread to other dialects and especially the dialect of London, where people came from many different regional backgrounds and where dialect distinctions were leveled as a result.

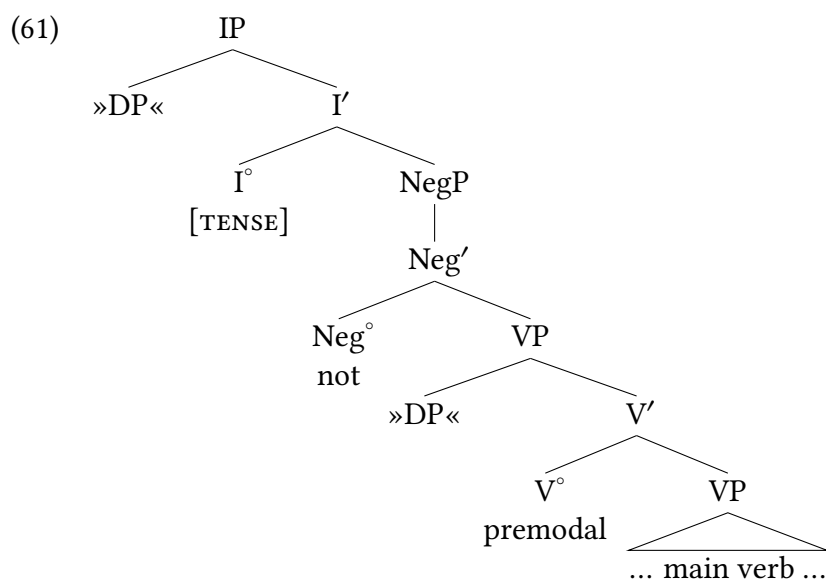
What is important from a syntactic point of view is that auxiliary *do* occurred rarely before 1400. However, when agreement weakened and verb raising began to be lost, auxiliary *do* was increasingly pressed into service since it allowed the ever-increasing number of speakers with the tense lowering grammar to produce negative sentences with *not*.



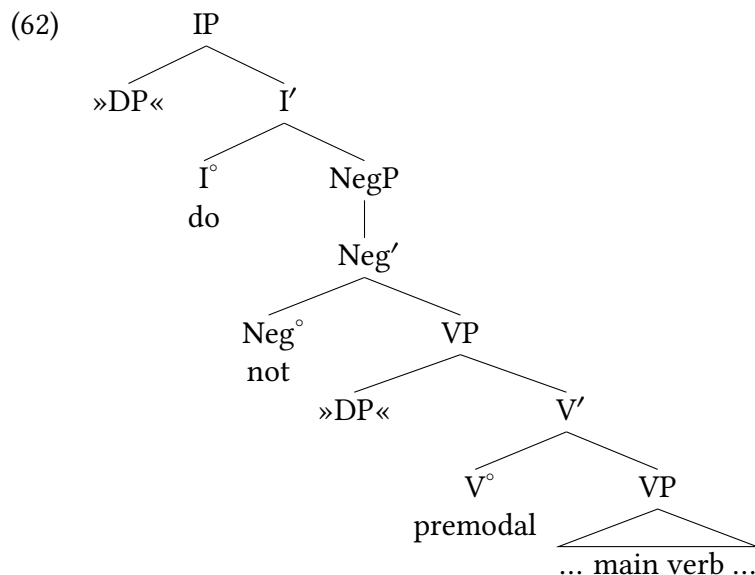
#### 4.4 The emergence of modals

In modern English, the *do* of *do* support is a modal (I) rather than an auxiliary verb (V) (see Chapter 2, § 1.4 for further details concerning the distinction between these categories). We know that auxiliary *do* entered the language as an auxiliary verb (Ecay 2015), but it must have been reanalyzed as a modal early on, since as an auxiliary verb, it would have to combine with tense and would thus, in the tense lowering grammar, run afoul of exactly the locality constraint that it actually helped to circumvent. In any event, the *do* of *do* support was one of a growing number of modals in Middle English that developed out of an earlier class of auxiliary verbs. Historically, many members of this class exhibited morphological peculiarities, and some of them were already syntactically special from the very beginning of Middle English. For instance, *must* and *shall* never occur as nonfinite forms in Middle English. Children acquiring these vocabulary items (what we might call premodals) would therefore never have encountered evidence that they moved from V to I (unlike in the case of Modern English auxiliary *have* and *be*). The children might instead have assigned these items to the syntactic category I from the get-go, and so they might already have been modals in early Middle English.

Consider now the effect of the loss of verb raising on the status of any premodals that were still members of the syntactic category V. In particular, consider a structure like (61) (we assume that the premodals, just like modals, took VP complements).



In the outgoing verb raising grammar, a premodal can combine with tense even in the presence of the new negation (where it is a head rather than an ordinary adverb) because verb raising is not subject to the locality constraint on morphological tense lowering. In the incoming tense lowering grammar, structures containing the new *not* (the head rather than the adverb) are ordinarily rescued by *do* support, as shown in (62).



But in contrast to sentences containing ordinary verbs, *do* support in a structure like (62) might plausibly have been ruled out on the grounds that modal *do* inherited a constraint from causative *do* that is given in (63).

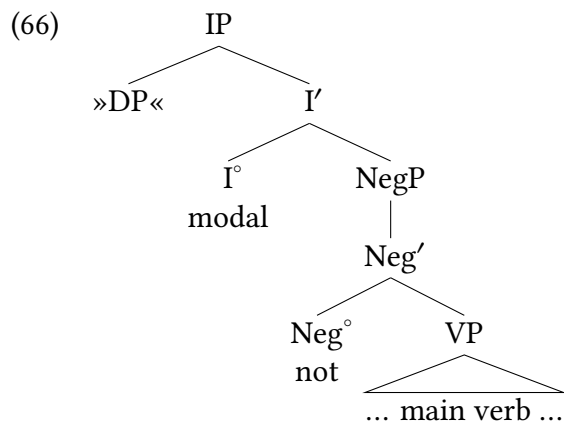
- (63) The complement of a causative construction must be headed by a ‘true’ verb (that is, not a premodal, modal, or auxiliary verb like *have* or *be*).

The constraint on causative verbs that we are postulating is not specific to Middle English; it is independently motivated by effects in modern English and German, as illustrated in (64) and (65).

- (64) a. ✓ The coach had the players run. (no auxiliary)  
 b. \* The coach had the players be running. (auxiliary)  
 c. \* The coach had the players have run.
- (65) a. ✓ Der Trainer liess die Spieler laufen. (no auxiliary)  
           the coach had the players run.  
           ‘The coach had the players run.’  
 b. \* Der Trainer liess die Spieler am Laufen sein. (auxiliary)  
           the coach had the players at.the running be.  
           ‘The coach had the players be running.’  
 c. \* Der Trainer liess die Spieler gelaufen sein.  
           the coach had the players run.PST.PTCP be.  
           ‘The coach had the players have run.’  
 d. \* Der Trainer liess die Spieler laufen wollen.  
           the coach had the players run want.  
           ‘The coach had the players want to run.’

Again, various ways out of this impasse are conceivable. For instance, the constraint in (63) might have been relaxed for modal *do*. What actually happened, however, was that any

remaining premodals were reanalyzed as modals along the lines of *must* and *shall*, yielding the modern structure in (66).



After this reanalysis, sentences like (67), with nonfinite forms of premodals like *cunnen* and *mowen*, both meaning ‘be able to’, ceased to be possible in English (at least in mainstream varieties).

- (67)
- a. he schuld **cun** best rede þe booke (cmkempe,4.52)  
‘He should be able to read the book best.’
  - b. I shal not **conne** wel go thyder (cmreynar,14.261)  
‘I won’t be able to go there easily.’
  - c. and hij shul nouȝt **mow** stonde (cmearlps,19.765)  
‘and he shall not be able to stand.’
  - d. Noo man shall **mow** resyst thy power in all thy life. (cmfitzja,A3R.28)  
‘No man shall be able to resist your power in all your life.’

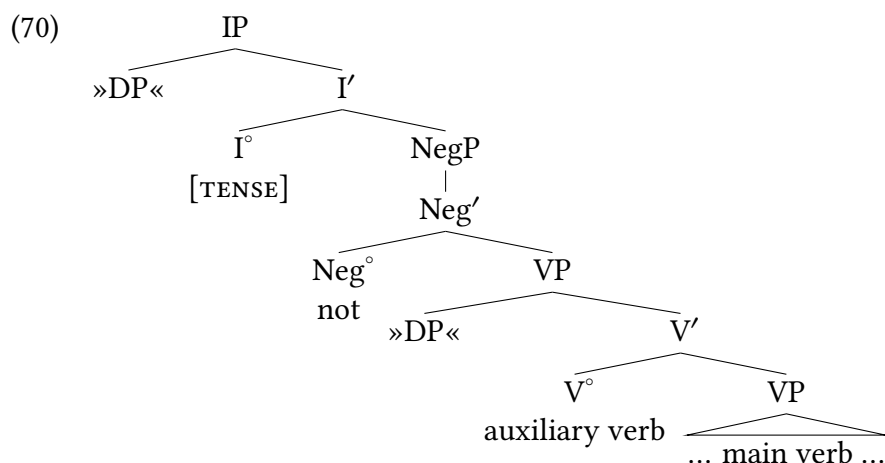
#### 4.5 Remnants of verb raising in modern English

Despite the overall loss of verb raising in the history of English, verb raising is still possible with two verbs in Modern English—namely, *have* and *be*. These two verbs, which did not belong to the premodals, have functioned as both auxiliary verbs and main verbs throughout the history of the language (as they do in Germanic and Romance more generally). The two uses are illustrated for modern English in (68) and (69); auxiliaries are underlined and main verbs are in boldface. (For more detailed discussion of the morphological and syntactic properties of *have* and *be*, see Chapter 2, § 1.4.)

- (68) Auxiliary verb:
- a. I have **read** that chapter. (perfect)
  - b. I am **reading** that chapter. (progressive)
  - c. That material is **treated** in the next chapter. (passive)
- (69) Main verb:
- a. I **have** that book.

- b. This chapter **is** difficult.

We begin by considering these verbs as auxiliaries in structures like (70) (we assume for simplicity that the elementary trees for auxiliary verbs don't have specifiers, but the assumption isn't crucial in what follows).



As just discussed in connection with modals, tense lowering is impossible in a structure like (70) because *not* intervenes between tense and the verb, nor can the structure be rescued by *do* support given the constraint in (63). This is exactly the situation in which the premodals were reanalyzed as instances of I. In the case of the premodals, this reanalysis was possible because they so rarely occurred as nonfinite forms. But an analogous reanalysis in the case of auxiliary verbs couldn't happen because nonfinite auxiliary *have* and *be* were productive in Middle English (as they continue to be in Modern English). Some examples are given in (71) and (72); again, the auxiliary verbs are underlined and the main verbs are in boldface. In addition, the element in I (modal or premodal), which guarantees the nonfiniteness of the auxiliary verb, is in italics.

- (71) a. *y* *shulde* haue **axede** of here no more (cmbrut3,19.562)  
       'I should have asked no more of her'
- b. and after he *wolde* haue **conquered** al Scotland and Walys (cmbrut3,23.686)  
       'and afterwards he would have conquered all Scotland and Wales'
- c. And Gutlagh *wolde* haue **went** into his countree (cmbrut3,25.728)  
       'And Gutlagh would have gone into his country'
- (72) a. Bot euensang *sal* be **saide** wid foure salmes (cmbenrul,18.626)  
       'But evensong shall be said with four psalms'
- b. the wordes of the phisiciens *sholde* been **understonden** in this wise (cmctmeli,226.C2.365)  
       'the words of the physicians should be understood in this way'
- c. A sone, Josias bi name, *schal* be **born** to the hous of Dauith (cmpurvey,I,13.518)  
       'A son, Josias by name, shall be born to the house of David'

As in the earlier case of the development of the premodals to modals, various ways of resolving this impasse are conceivable. Again, for instance, the constraint against *do* occurring with auxiliary elements might have been relaxed. However, what actually happened in the history of English is that children acquired the verb raising option with precisely these two lexical items. As a result, the order of auxiliary *have* and *be* with respect to negation in modern English parallels that in French.

|                 | English                                                                                                   | French                                                                                                                                                                |
|-----------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Verb raising    | We <i>have</i> <u>not</u> <b>read</b> the book.<br><br>We <i>are</i> <u>not</u> <b>invited</b> .          | Nous (n') <i>avons</i> <u>pas</u> <b>lu</b> le livre.<br>we NE have not read the book<br>Nous (ne) <i>sommes</i> <u>pas</u> <b>invités</b> .<br>we NE are not invited |
| No verb raising | * We (do) <u>not</u> <i>have</i> <b>read</b> the book.<br>* We (do) <u>not</u> <i>be</i> <b>invited</b> . | * Nous (ne) <u>pas</u> <i>avons</i> <b>lu</b> le livre.<br>* Nous (ne) <u>pas</u> <i>sommes</i> <b>invités</b> .                                                      |

Table 10.3: Order of auxiliary *have* and *be* with respect to negation in modern English and French

Let us now turn to the main verb uses of *have* and *be*. For a time, main verb *have* behaved syntactically like auxiliary *have*, raising from V to I and otherwise exhibiting the syntactic behavior of a modal, as illustrated in (73).

- (73) a. Negation without *do* support:  
They haven't any money. You haven't any wool.  
b. Question formation without *do* support:  
Have they any money? Have you any wool?

However, in present-day American English, the pattern in (73) is archaic and has been replaced by the pattern in (74), where main verb *have* exhibits the syntax of an ordinary verb.

- (74) a. Negation with *do* support:  
They don't have any money. You don't have any wool.  
b. Question formation without *do* support:  
Do they have any money? Do you have any wool?

The replacement of (73) by (74) in American English took place from about 1800 to 1950 (Zimmermann 2017). British English usage, which was more conservative during this time, is now to some extent falling in line with American English.<sup>14</sup>

Finally, main verb *be* is the only main verb in English that continues to raise to I.

- (75) No *do* support:  
a. This chapter isn't difficult.  
b. Is this chapter difficult?

(76) Do support:

- a. \* This chapter doesn't be difficult.
- b. \* Does this chapter be difficult?

Even here, there are some indications that main verb *be* may one day follow in the footsteps of main verb *have*. In imperatives, *be*, like all other verbs, allows *do* support.

- (77)
- a. (Do) sit down.
  - b. (Do) have a seat.
  - c. (Do) be quiet.

And in so-called *wh*-imperatives, *do* support is obligatory even with main verb *be*. (In contrast to true questions, these questions are only felicitous if the main verb refers to a property under the addressee's control.)

|                                              | True question | <i>Wh</i> -imperative |
|----------------------------------------------|---------------|-----------------------|
| Why aren't you quiet?                        | ✓             | *                     |
| Why don't you be quiet (for a change)?       | *             | ✓                     |
| Why aren't you Rh-positive?                  | ✓             | *                     |
| Why don't you be Rh-positive (for a change)? | *             | #                     |

Table 10.4: *Do* support with main verb *be* in *wh*-imperatives

Conceivably, even auxiliary *have* and *be* will one day allow or require *do* support. Sentences like (78) may be paving the way.

- (78) What kind of time frame do they be lookin' at?  
(overheard on trolley between 22<sup>nd</sup> and 30<sup>th</sup> Streets, Philadelphia, PA, 19 May 2012)

## Notes

5

1. In what follows, we focus on the past tense since the present tense is not overtly marked in English. The -s of the third person singular expresses subject agreement rather than present tense (Kayne 1989).
2. Yiddish and the southern German dialects from which it developed are exceptions in this regard. In these languages, the synthetic *simple past* has been completely replaced by the analytic present perfect (Middle High German *ich machte* 'I made' > Yiddish *ikh hob gemakht*, lit. 'I have made').
3. A comparable shift occurred in English from 'they have to V' to 'they must V'. Such semantic shifts, with concomitant changes in morphological status (see Note 4), are very common across languages.

4. Such reanalysis might be the source of much, if not all, inflectional morphology. In many cases, especially in languages that are not written, the sources of the inflections would be obscured by further linguistic changes, primarily phonological reduction. Consider, for instance, the development of the future tense in Tok Pisin, an English-based contact language that originated in the 1800s and that has become the national language of Papua New Guinea. In current Tok Pisin, particularly among speakers who learn it as a first language, the future marker is the bound morpheme *b-*. We are fortunate to have written records of Tok Pisin from the late 1800s, and so we happen to know that this morpheme is the reflex of the adverb phrase *by and by*, which the earliest speakers of Tok Pisin used to express future tense. The modern form of the marker developed via reduction (*by and by* > *baimbai* > *bai* > *b-*). Without written records, the derivation of the modern form would be speculation at best.
5. Historically, the negative marker in French was *ne*, and *jamais* and *pas* (an intensifier literally meaning ‘step’) had no negative force of their own. Modern English has comparable intensifiers, as in *I don’t want to do it one bit, at all*. In the course of the history of French, *ne*, being phonologically weak, was often elided in speech, and *jamais* and *pas* were reanalyzed as carrying negative force. In modern French, *ne* is characteristic of the formal language, and in some spoken varieties, such as Montreal French, *ne* hardly ever occurs. In the present discussion, we disregard *ne*, treating it as a semantically meaningless particle and glossing it as *NE*.
6. *Do* support and the syntax of negation raises some thorny problems, and no completely satisfactory analysis of it exists as yet. So although our analysis is adequate to explain the contrast between (26) and (27), it is not intended to solve many other puzzles that have been discovered in connection with these phenomena.
7. See Hutchinson, Lloyd, and Sousa (2018), §§ 3.4, 3.8.
8. For some reason, Danish *ikke* ‘not’ cannot invert, perhaps because it cannot bear prosodic stress.
9. The discussion in this section is based on data and ideas in Frisch (1997), Kroch (1989), and Roberts (1993).
10. Early Middle English had a negative particle *ne*, etymologically cognate with French *ne* (see Note 5) and syntactically comparable to it. The Middle English particle was lost between 1200 and 1400.
11. The possibility of adjoining adverbs to *I'* complicates the assignment of structures to sentences with adverb-verb word order once verb raising begins to be lost. This is because they could be instances of the old verb raising grammar, with the adverb adjoined at *I'*, or instances of the new grammar without verb raising, with the adverb adjoined at either *I'* or *V'*. In any particular sentence, it isn’t possible to tell which is the right structure. But in a corpus of sentences, it is possible to correct for the complication introduced by the possibility of adjunction to *I'*, because the frequency of adjunction to *I'* has remained relatively stable from Early Middle English until today (10–15% with *never*). This means that in a situation of grammar variation and change, frequencies of adverb-verb order in a corpus that appreciably exceed the diachronically stable rate can reasonably certainly be attributed to the tense lowering grammar.
12. *Not* continued to be available as an adverb with a low frequency into the 1600s. The evidence for this is the existence, though rare, of negative sentences in Early Modern English of the modern mainland Scandinavian type, with *not* preceding a finite verb, as in the examples from Shakespeare in (i).
  - (i) a. they deafe mens’ eares, but not **edify**.
  - b. he that filches from me my good name robs me of that which not **enriches** him.
  - c. Safe on this ground we not **fear** today to tempt your laughter by our rustic play.

These sentences are linguistic hybrids in the sense that they contain the adverbial *not* characteristic of early Middle English, yet have lost verb raising, just like modern English. As adverbial *not* finally dies out completely in the 1600s, so do sentences of this type.
13. The agentless construction discussed in the text was also attested with verbs of perception, as illustrated in (i).

- (i) a. They heard say that the English had won the battle of Agincourt.  
'They heard someone say that ..., they heard it said that ...'
- b. They heard tell of the wages of sin.  
'They heard someone tell of the wages of sin.'

A fossilized form of the construction is the nominalization *hearsay*.

14. The replacement of (73) by (74) is complicated by the existence in both American and British English of the *have got* pattern illustrated in (i), where *have* serves as an auxiliary verb rather than as the main verb. Sutherland (2000) studies the competition among all three variants (*have* with and without *do* support and *have got*) in both varieties of English.

- (i) a. They haven't got any money. You haven't got any wool.
- b. Have they got any money? Have you got any wool?

## Exercises and problems

6

### Exercise 10.1

Build structures for the Middle English sentences in (1).

#### Extra Info

A note on spelling: *u* and *v* were interchangeable in Middle English.

The data raise various issues beyond the ones concerning verb raising. For instance, is *never before* a constituent? Is *such* a determiner or an adjective? What about numerals? Solve the issues as best you can, and briefly describe the issues and justify your solutions. Assume that you can bring evidence from Modern English (or other languages, for that matter) to bear on the structures you are building for the Middle English sentences.

- (1) a. Engist knew neuer before þat lande.  
'Engist never before knew that land.'
- b. she saide she had neuer company of man worldely.  
'She said that she never had the company of any worldly man.'
- c. Seynt Edmond vsyd euer after that prayer to his lyvys ende  
'Saint Edmund afterwards always used that prayer till the end of his life (lit. 'to his life's end')'
- d. sche had euyr mech tribulacyon tyl sche cam to Iherusalem.  
'She always had much tribulation till she came to Jerusalem.'



- e. I knewe never such two knyghtes.  
'I never knew two such knights.'
- f. thes two gyauntes dredde never knyght but you.  
'These two giants never feared any knight but you.'

### Exercise 10.2

- A. Explain the grammaticality contrast in (2), assuming the judgments as given. If necessary, invent a new syntactic category for *so* to belong to.
- (1) A (challenging B): You're lying; you didn't go to the movies.
  - (2) a. B (responding to the challenge): I did *so* go to the movies.  
b. B (responding to the challenge): \*I *so* went to the movies.
- B. Some speakers accept (2b) as a response to (1). How does the grammar of such speakers differ from the grammar of speakers with the contrast in (2)?

### Exercise 10.3

- A. Build a structure for (1). (Don't build structures for the material in parentheses.)
- (1) They didn't only write the letter (but they sent it).
- B. Now build a structure for (2), making sure that it is consistent with the **locality constraint on head movement** from the chapter.
- (2) They not only wrote the letter (but they sent it).
- C. There turn out to be two structures for (2). They are topologically distinct, but there is no semantic difference between them. What's the difference between the structure that you came up in (B) and the alternative?

### Exercise 10.4

Given the discussion in the chapter and the notes below, exactly one of the Korean sentences in (1) is ungrammatical. Which sentence is it, and why is it ungrammatical?

## Background Info

Assume that *하였다* *hayessta* is a morphologically simple head of category I (despite apparently containing the same bound morpheme *었다* *-essta* as *먹었다* *mek-essta*). This is exactly parallel to the way that we treat tense on auxiliary *do* in English. Korean allows only left adjunction.

The nominative (NOM) and accusative (ACC) case morphemes explicitly indicating the grammatical functions subject and object, respectively, are included for completeness. They are not important for the purposes of the exercise.

The data for this exercise have been simplified to ignore a syntactic process called scrambling. As a result, native speakers of Korean will find more than one sentence in (1) unacceptable.

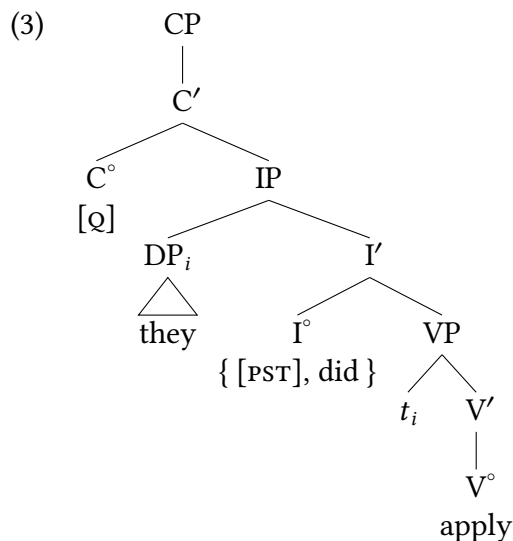
- (1) a. *철수가 밥을 먹었다.*  
       *Chulswu-ka pap-ul mek-essta.*  
       *Chulswu-NOM meal-ACC eat-PST*  
       ‘Chulswu ate the meal.’
- b. *철수가 밥을 먹지 아니하였다.*  
       *Chulswu-ka pap-ul mekci ani-hayessta.*  
       *Chulswu-NOM meal-ACC eat NEG1-did*  
       ‘Chulswu did not eat the meal.’
- c. *철수가 밥을 먹었다 아니.*  
       *Chulswu-ka pap-ul mek-essta ani.*  
       *Chulswu-NOM meal-ACC eat-PST NEG1*  
       ‘Chulswu did not eat the meal.’
- d. *철수가 안 밥을 먹었다.*  
       *Chulswu-ka an pap-ul mek-essta.*  
       *Chulswu-NOM NEG2 meal-ACC eat-PST*  
       ‘Chulswu did not eat the meal.’

## Exercise 10.5

- A. The chapter discusses *do* support in negative sentences. In Modern English, *do* support is also obligatory in the formation of direct questions from sentences with finite main verbs, as shown in (1) and (2).

- (1) They will apply. → ✓ Will they apply?
- (2) a. They applied. → \* Applied they?  
       b. They applied. → ✓ Did they apply?

Given the basic structure in (3), can you explain the contrast in (2)?



B. Under what circumstances would the question in (2a) be grammatical?

C. Build the structure for (4).

(4) Won't they apply?

### Exercise 10.6

Build structures for the following expressions (adapted from the Shakespeare quotations in Note 12).

- (1) a. They not edify mens' eares.
- b. that which not enriches him
- c. We not fear to tempt your laughter.

### Problem 10.1

In both (1) and (2), the (a) examples are unambiguous, with an “also” reading associated with the agent argument. The (b) examples are also unambiguous, with a “contrary to expectation” reading. The (c) examples are structurally ambiguous between an “also” reading associated with the activity and an “also” reading associated with the theme argument.

- (1) a. They too will read the novel.  
(They—in addition to an unspecified set of readers—will read the novel.)
- b. They will too read the novel.  
(Contrary to expectation, they will read the novel.)
- c. They will read the novel too.  
(They will—in addition to an unspecified set of activities—read the novel.)  
(They will read—in addition to an unspecified set of readable things—the novel.)
- (2) a. They too read the novel.

- b. They did too read the novel.
  - c. They read the novel too.
- A. Provide the two elementary trees for *too* required to account for the above facts. For clarity, you can distinguish between *too<sub>also</sub>* and *too<sub>contrast</sub>*.
- B. How are the elementary trees from (A) integrated into larger structures?
- C. Given your answers to (A) and (B), why doesn't (2a) have a "contrary to expectation" reading? (After all, *too* immediately precedes *read* in (2a) just as it does in (1b) and (2b).)
- D. Given your answers to (A) and (B), why don't (2a) or (2b) have an "also" reading associated with the activity?

### Problem 10.2

Explain the facts in (1) and (2). Ignore the first conjunct and the conjunction *and*.

They said they would finish the project, and ...

- (1) ✓ finish the project they { will, did }.
- (2) a. \* { will, did } finish the project they.
- b. \* finished the project they.

# VP shells

## Chapter outline

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In Chapter 4, § 3.1, we mentioned the **binary-branching hypothesis**—the idea that syntactic nodes have at most two daughters. At first glance, this hypothesis is threatened by the existence of **double object sentences** in natural language, illustrated for English in (1).

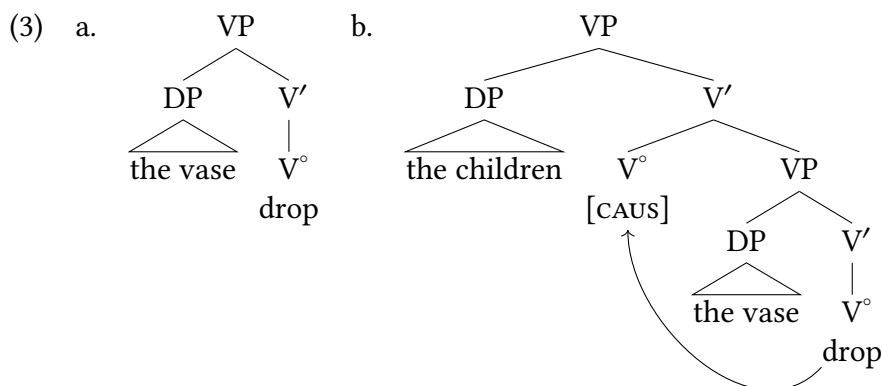
- (1) Malia will give Langston the receipts.

In such sentences, the verb appears to be associated with three semantic arguments (agent, recipient, theme), and it looks like the **recipient** (*Langston*) and the **theme** (*the receipts*) must both be represented as complements of the verb. This is the view that underlies traditional grammatical terminology, where the verb is said to be ditransitive and to take two objects, the indirect object (the recipient) and the direct object (the theme). In this chapter, we present a proposal for how to make double object sentences consistent with the binary-branching hypothesis. The proposal hinges on the fact that ditransitive verbs can be semantically decomposed into a causative part and a second part whose meaning differs according to the verb in question.

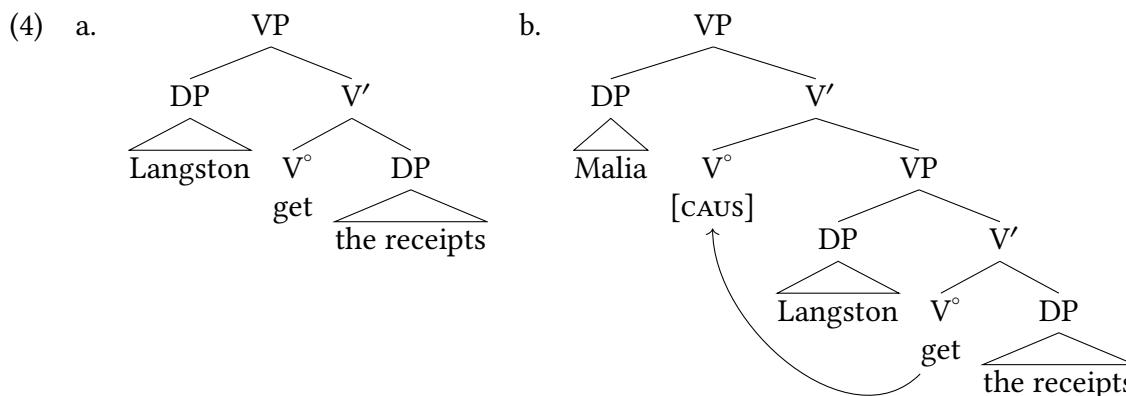
The simplest case of causative decomposition is the **causative alternation** illustrated in (2).

- (2) a. The vase will drop.  
b. The children will drop the vase.

It is easy to see that (2b) is roughly synonymous with *The children will make (or let) the vase drop*. In order to capture this fact, we give the sentences in (2) the basic structures in (3). For simplicity, we show only the relevant parts of the structure. The postverbal position of *the vase* is the result of moving and adjoining the lower verb to the higher [CAUS] head (shown in (3b) by the arrow, for example (2b)).



Extending this approach allows us to relate (1) to the semantically more basic *Langston will get the receipts*, as in (4).



Recursive structures like (3b) and (4b) (where a  $V^\circ$  selects another VP) are known as **VP shells**.<sup>1</sup> In principle, the term could also apply to ordinary small clauses, where the higher verb is *let* or *make*, but in practice, it is restricted to structures where the higher V head is silent. What is important for our purposes is that VP shell structures contain two verbal heads, so that they can accommodate three arguments without either of the heads being associated with more than one complement—exactly as required by the binary-branching hypothesis.

We go on to provide a VP shell analysis of further verb classes, where the lower verb takes not a DP complement as in (4b), but a PP, AdvP, or CP complement. A striking consequence is that **object control** sentences like *We persuaded the children to dance* come out as causative

variants of subject control sentences (in other words, as equivalent to *We caused the children to agree to dance*). Another welcome consequence is that the passive of verbs with causative semantics patterns with the passive of ECM verbs. It is important to understand that this is not because ECM verbs themselves have causative semantics (they don't), but because the structures with ECM verbs and with verbs with causative semantics are topologically analogous.

In the final section of the chapter, we show that in addition to maintaining the binary-branching hypothesis, VP shells also allow us to preserve a generalization concerning idioms—the idea that expressions with idiomatic meanings are invariably constituents. We then distinguish the semantic notions of direct and indirect causation and relate the notion of direct causation to the development of *do* support covered in the [previous chapter](#). Among other considerations, the distinction between direct and indirect causation is also helpful in helping to understand certain differences between three verbs with otherwise similar meanings: *give*, *get*, and *send*. The chapter concludes with a brief discussion of VP shells in Japanese and German, two languages with inherent case. The case-marking facts of these languages, especially those of Japanese, provide striking support for the VP shell analysis of verbs with causative semantics.

Before proceeding, a note of clarification is in order. According to the VP shell analysis, the terms 'ditransitive', 'double object verb', 'double complement verb', and so on are misnomers. Indeed, even calling the causative variant of *drop* in (3b) a transitive verb is a misnomer, since the apparent object (*the vase*) remains the subject of the lower verb in the VP shell structure. Nevertheless, for convenience, we will continue to use the familiar terms of traditional grammar as purely descriptive terms, without intending to imply corresponding structural analyses.

## The causative alternation

1

English has a class of verbs expressing movement or other changes of state that are known as **inchoative** verbs. These verbs are intransitive, and their subject is a theme argument. (In this respect, inchoative verbs resemble the passive of ordinary verbs, but recall from Chapter 8 that unlike passives, they are incompatible with an agent *by* phrase.) Some examples are given in (5) and (6); the theme argument is in **boldface**.

- (5) a. **The apple** dropped.
- b. **The ball** rolled (down the hill).
- c. **The boat** sank.
- (6) a. **The water** { boiled, froze }.
- b. **The ice** melted.
- c. **The door** opened.

Many (though not all) inchoative verbs also have a transitive use, where the subject is

an agent or cause initiating the change of state, and the theme argument appears in postverbal position, as illustrated in (7) and (8).

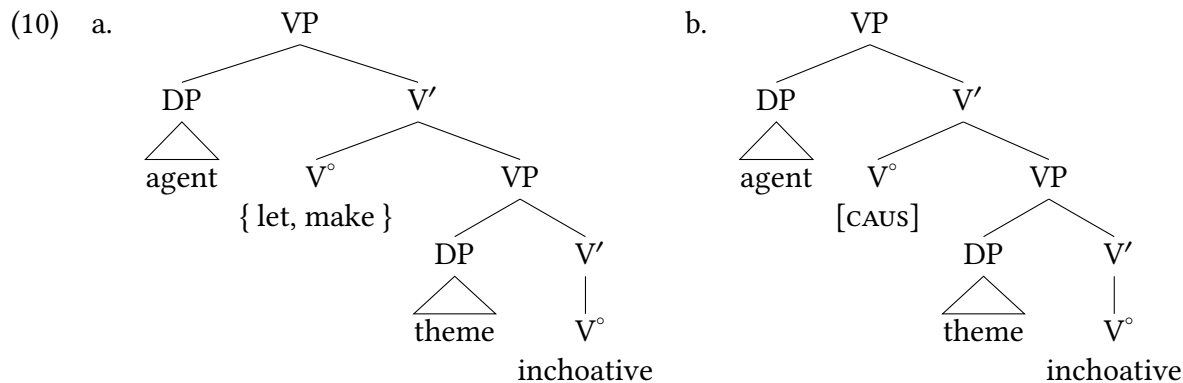
- (7) a. The children dropped **the apple**.  
 b. The children rolled **the ball** (down the hill).  
 c. The { explosion, sailors } sank **the boat**.
- (8) a. The chemist { boiled, froze } **the water**.  
 b. The { cook, sun } melted **the ice**.  
 c. The { janitor, wind, key } opened **the door**.

The alternation between the intransitive and transitive uses of these verbs is known as the **inchoative-causative alternation** (or causative alternation for short).

The causative meaning of the transitive variants suggests giving them the same structure as ordinary causative sentences like (9).

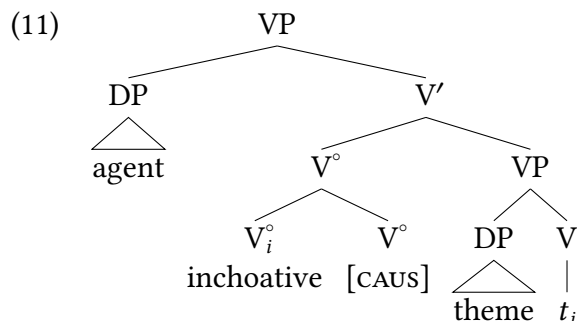
- (9) The children { let, made } the apple drop.

The structure for (9) is given in (10a); the verbs expressing causation (*let* or *make*) take a small clause complement headed by the intransitive inchoative verb. In (10b), the analog to *let* or *make* is an abstract (= silent) verbal head [CAUS]. For simplicity, we show only the relevant parts of the structures.



The structural parallel in (10) captures the semantic parallel between (7a) and (9), but the word order is not yet right: in (7a), the verb precedes the theme. This is a garden-variety mismatch between where an element is interpreted and where it is pronounced, and we solve it in the usual way by movement. Specifically, the inchoative verb adjoins to the causative verbal head, as shown in (11).





We left-adjoin the verb by analogy to English causative suffixes like *-ify* and *-ize* and the Japanese causative suffix *-sase* discussed [later on](#) in this chapter). The complex verbal head is spelled out as a homonym of the simple inchoative head.

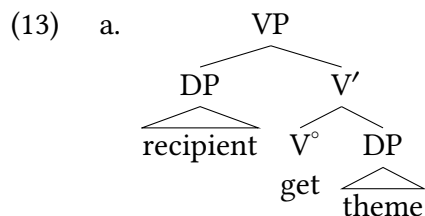
## Double object sentences

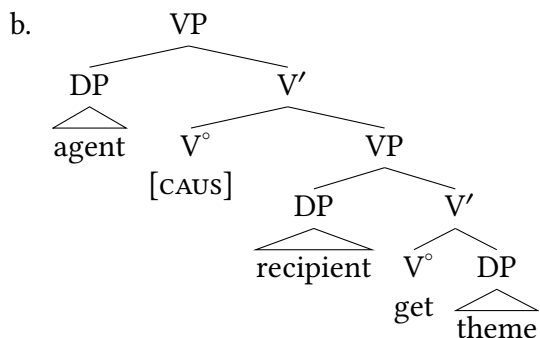
2

The inchoative verbs in the previous section are all intransitive, but there is nothing to prevent the lower VP in a VP shell structure from being transitive. For instance, sentences with transitive *get* have corresponding ditransitive counterparts, as illustrated in (12).

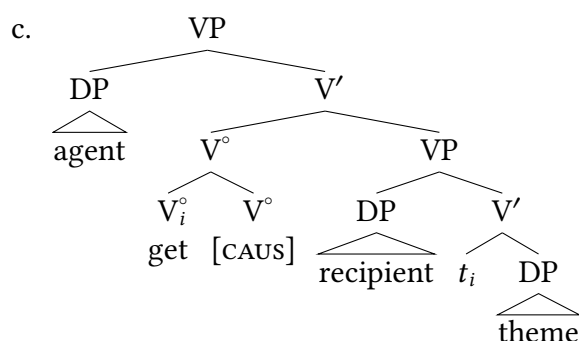
- (12) a. Langston got the receipts.  
b. Malia got Langston the receipts.

In the transitive variant, a theme and a recipient substitute in the complement and specifier position of *get*, respectively. As in the causative alternation, the ditransitive variant introduces an additional argument—an agent. The schematic structures for the sentences in (12) are given in (13).





Double object *get*, before head movement



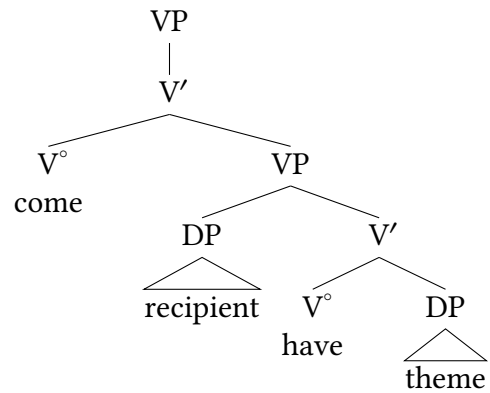
After head movement

A careful consideration of the meaning of (12a) suggests a further decomposition of transitive *get* into a head that explicitly expresses change of state and a verb expressing the state of possession. In other words, we are proposing structures corresponding to the following paraphrases.

- (14) a. Langston got the receipts.  
       = It came about that Langston has/had the receipts.  
       b. Malia got Langston the receipts.  
       = Malia made it come about that Langston has/had the receipts.

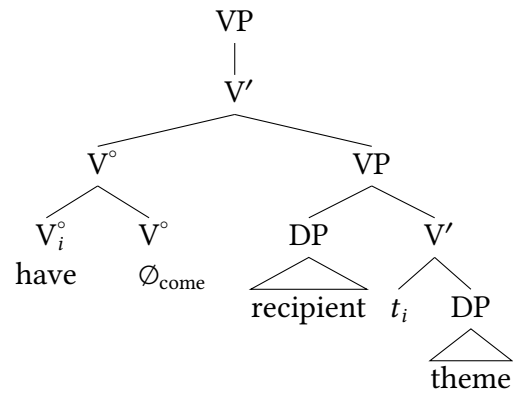
The structures themselves are given in (15). For simplicity, we omit the non-thematic specifier of *come* (in other words, we are treating *come* like a raising verb).

(15) a.



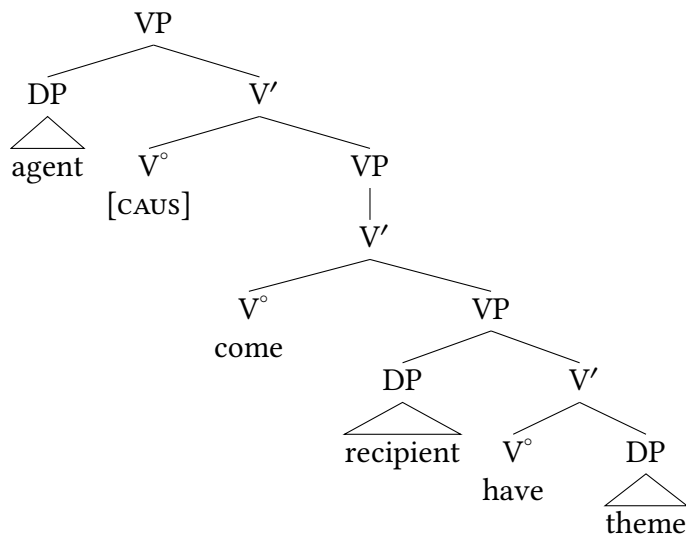
Transitive *get*, with change-of-state head, before head movement

b.

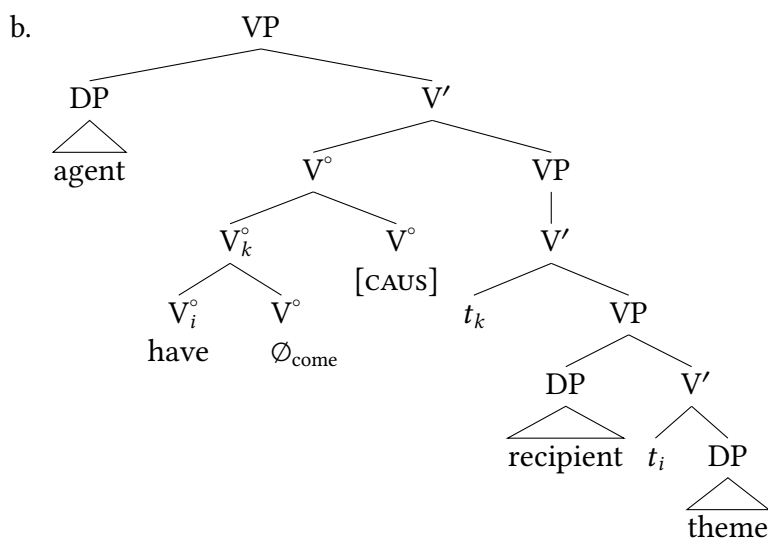


After head movement

(16) a.



Double-object *get*, with change-of-state head, before head movement



After head movement

However, even with this simplification, these three-level VP shell structure are a bit daunting, and so we will generally use the simpler two-level structures in (13) in what follows.

The VP shell analysis of double object *get* can be extended to other double object verbs, but unlike in the case of *get*, the ditransitive and transitive variants aren't spelled out as homonyms. Verbs of transfer like *bequeath*, *hand*, *lend*, *sell*, *send*, and others are all basically causative variants of *get*, with various additional semantic nuances as indicated informally in Table 11.1.

| Double object verb | Semantic nuance                                      |
|--------------------|------------------------------------------------------|
| bequeath           | get from owner after owner's death                   |
| hand               | get by hand-to-hand contact                          |
| lend               | get from owner temporarily                           |
| sell               | get in exchange for money                            |
| send               | get by indirect means over some fairly long distance |

Table 11.1: Some causative variants of *get* and their semantic nuances

It is worth noting that in Old English, *sell* was just the ordinary word for *give*; the 'exchange for money' bit of meaning was added later. The difference between *get* and *give* is difficult to state; we return to the issue [later on](#) in this chapter. There are also other double object verbs where the head of the lower VP shell is not (some variant of) *get*, but rather some other transitive verb. Table 11.2 shows some examples.

| Transitive verb | Double object verb |
|-----------------|--------------------|
| eat             | feed               |
| hear            | tell               |
| learn           | teach              |
| see             | show               |

Table 11.2: Some causative variants of transitive verbs

## Double complement sentences

3

### 3.1 Give and send

Many double object sentences have a double complement counterpart in which the order of the recipient (**red, bold**) and theme (*blue, italics*) arguments is reversed and the recipient is expressed as a PP rather than as a DP.

- (17) a. Malia gave **Langston** *the receipts*.  
 b. Malia gave *the receipts* **to Langston**.

At first glance, double complement sentences seem to be completely synonymous with their double object counterparts and to stand in a one-to-one correspondence with them. Indeed, early on in generative grammar, it was held that any double complement sentence could be transformed into a double object sentence by an operation known as Dative Shift (in many languages, recipients are marked by dative case morphology or dative case particles). However, certain semantic restrictions on the two sentence types have led this view to be abandoned (Green 1974; Oehrle 1976; Jackendoff 1990). For instance, recipients in double object sentences, but not in double complement sentences, are constrained to be animate.

- (18) Double object sentence:  
 a. Malia sent Langston the receipts.  
 b. \*Malia sent the post office box the receipts.
- (19) Double complement sentence:  
 a. Malia sent the receipts to Langston.  
 b. Malia sent the receipts to the post office box.

This effect is so strong that noun phrases that can be interpreted as inanimate in a double complement sentence are coerced into an animate interpretation in the corresponding double object sentence, if that is possible. For instance, in (20b), *Philadelphia* cannot be interpreted as a location,

as is possible in (20a), though it can be interpreted metonymically as ‘people at the Philadelphia office’.<sup>2</sup>

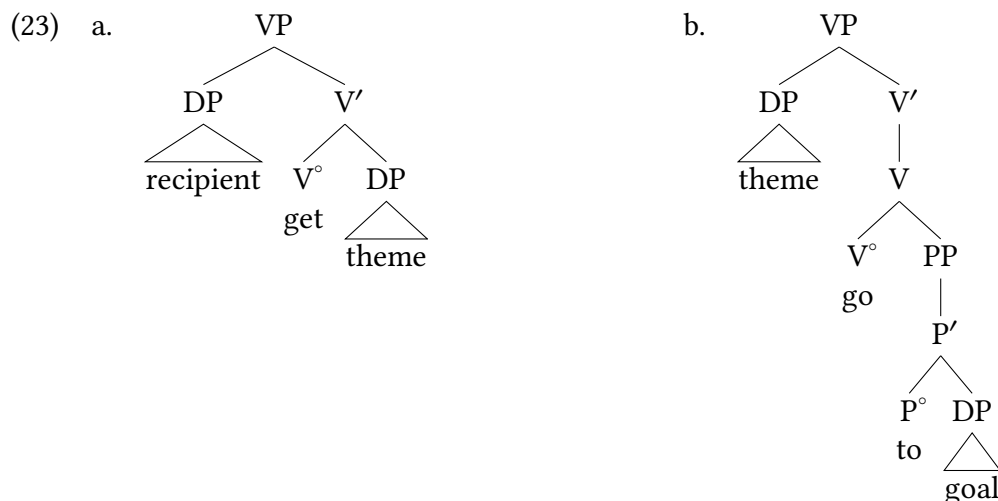
- (20) a. Malia sent the receipts to Philadelphia.  
           (ambiguous between location and metonymy reading)  
       b. Malia sent Philadelphia the receipts.  
           (only metonymy reading)

What the facts in (18)–(20) suggest is that ascribing exactly the same thematic role (that of recipient) to the first DP in a double object sentence and to the PP in a double complement sentence is not quite correct. Rather, the PP headed by *to* denotes a path or direction along which the theme moves, and the complement of *to* denotes the path’s endpoint or **goal**, which can be either a recipient at that location, as in (19a), or a pure location, as in (19b). We give the structures that we are assuming shortly.

This move of carefully distinguishing between recipients and locations is supported by the parallel between (18)–(20) on the one hand and the corresponding simple *get* and *go* sentences in (21) and (22) on the other. (It is also possible to replace *get* by *have* or *receive* without changing the judgments.)

- (21) Parallel to double object sentence:  
       a. Langston got the receipts.  
       b. \* The post office box got the receipts.  
       c. Philadelphia got the receipts.  
           (only metonymy reading)
- (22) Parallel to double complement sentence:  
       a. The receipts went to Langston.  
       b. The receipts went to the post office box.  
       c. The receipts went to Philadelphia.  
           (ambiguous between metonymy and location reading)

Schematic structures for (21) and (22) are given in (23). ((23a) repeats (13a) for convenience.) In order to rule out (21b), we need to assume that *get* imposes a selectional restriction on its specifier according to which it must be filled by a recipient and not by a pure location.



Embedding the structures in (23) under [CAUS] yields the facts in (18)–(20). In particular, the ill-formedness of (18b) is directly related to the ill-formedness of (21b).

In the double complement examples presented so far, the path complement is headed by a transitive P. The X' schema leads us to expect that semantically suitable intransitive heads should also be able to serve as complements of *go*, and this expectation is borne out in (24), where *here* and *there* are AdvPs without arguments of their own.

- (24) a. Malia sent the receipts { *here*, *there* }.  
b. The receipts went { *here*, *there* }.

Notice that *here* and *there* unambiguously refer to locations or to paths with locations as endpoints. Therefore, neither (24a) nor (24b) have metonymy readings, in contrast to (20a) and (22c), respectively. Moreover, the ill-formedness of (25a) and (25b) follows from the fact that these sentences violate the selectional restriction imposed by *get* on its specifier (compare the absence of location readings in (20b) and (22b)).<sup>3</sup>

- (25) a. \*Malia sent { *here*, *there* } the receipts.  
b. \*{ *Here*, *there* } got the receipts.

From what we have said so far, it is clear that not every double complement sentence has a double object counterpart. Specifically, double complement sentences with goals that are locations rather than recipients have no double object counterpart. However, since goals are not required to be pure locations, but can instead be recipients, it might still be the case that every double object sentence has a double complement counterpart. But this turns out not to be true either. The reason is that in a double complement structure, the preposition *to* imposes a semantic requirement on the theme: namely, that the theme travel (or at least be able in principle to travel) to the goal denoted by the complement of *to* along some path. By contrast, themes in double object sentences, which lack *to*, aren't subject to such a requirement (at least not in principle; we return to this issue [later on](#) in this chapter). For instance, since it is perfectly possible for ideas or migraines to be the result of certain causes, the double object sentences in (26) are acceptable.

(26) Double object sentence:

- a. The scandal gave the reporter an idea.
- b. Flickering lights give some people a migraine.

(27) Double complement sentence:

- a. \* The scandal gave an idea to the reporter.
- b. \* Flickering lights give a migraine to some people.

The reason that the corresponding double complement sentences in (27) are unacceptable is that the idea and the migraine are conceptualized as arising within somebody's mind or brain as the result of a cause, but without having traveled there along some path. One way of putting this in terms of thematic roles is to say that the subject of *get* in sentences like these is an experiencer rather than an ordinary recipient. As expected, the simple *get* and *go* sentences in (26) and (27) are parallel to (28) and (29).

(28) Parallel to double object sentence:

- a. The reporter got an idea.
- b. Some people get a migraine headache.

(29) Parallel to double complement sentence:

- a. \* An idea went to the reporter.
- b. \* A migraine headache goes to some people.

Contagious diseases, incidentally, seem not to be conceptualized as traveling along a path. Instead, they are conceptualized as spreading (occupying their original location in addition to the new location). This explains the contrast between (30) and (31).

## (30) a. Lisa gave Joel a bad cold.

- b. Joel got a bad cold.

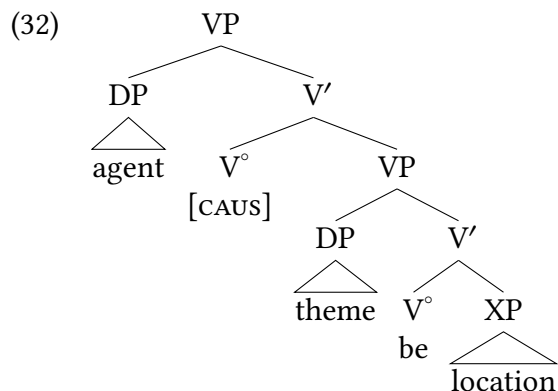
## (31) a. \* Lisa gave a bad cold to Joel.

- b. \* A bad cold went to Joel.

### 3.2 *Put*

Another double complement verb is *put*, which can be decomposed into a VP shell structure where [CAUS] takes a VP complement headed by *be*, which in turn takes a complement denoting a location.





Unlike *give* or *send*, *put* cannot be associated with a recipient argument. Even human or animate complements of *be* receive a purely locative interpretation. As a result, *put* appears in double complement sentences, but (at least in English) not in double object sentences, as shown in (33).<sup>4</sup>

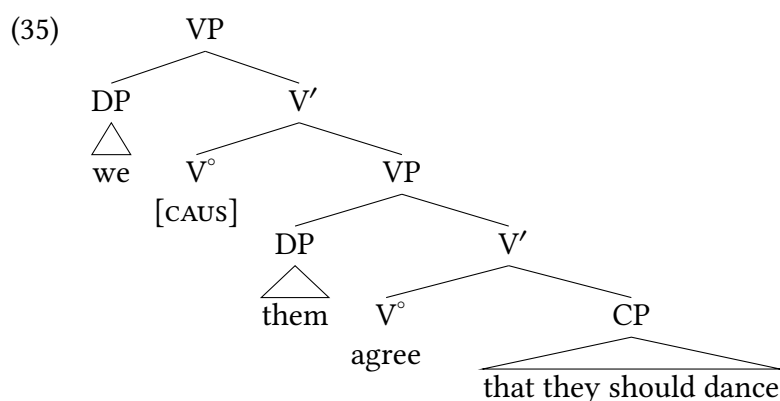
- (33) a. Amy put the books { on the shelf, there }.  
 b. \* Amy put { the shelf, there } the books.

### 3.3 Persuade

In the VP shells that we have considered so far, the complements in the lower VP shell have been DP (double object verbs) or PP (double complement verbs, *put*). In *persuade*, we have the case of a VP shell where the lower verb takes a clause (CP) complement, as shown in (34).

- (34) a. We will persuade them that they should dance.  
 b. We will [CAUS] them [agree] that they should dance.

The relevant VP shell structure is shown schematically in (35). (We omit head movement for simplicity.)



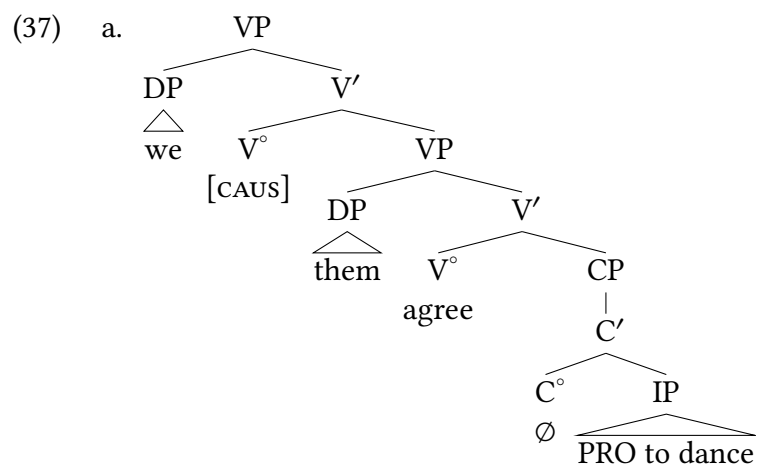
## Object control

4

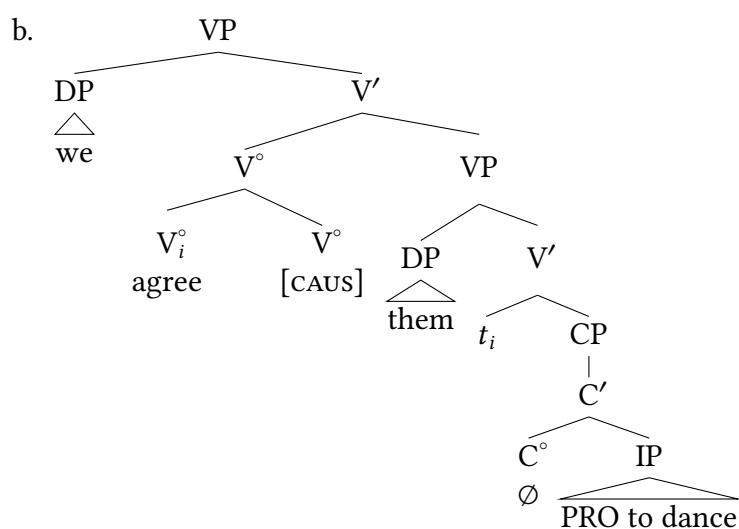
*Persuade* takes nonfinite complement clauses as well, as shown in (36).

- (36) a. We will persuade them to dance.  
 b. We will [CAUS] them [agree] to dance.

According to the causative decomposition in (36b), the lower VP shell in such sentences is headed by an abstract subject control verb (Larson 1988). The VP shell structure is shown in (37).



Object control, before head movement



After head movement

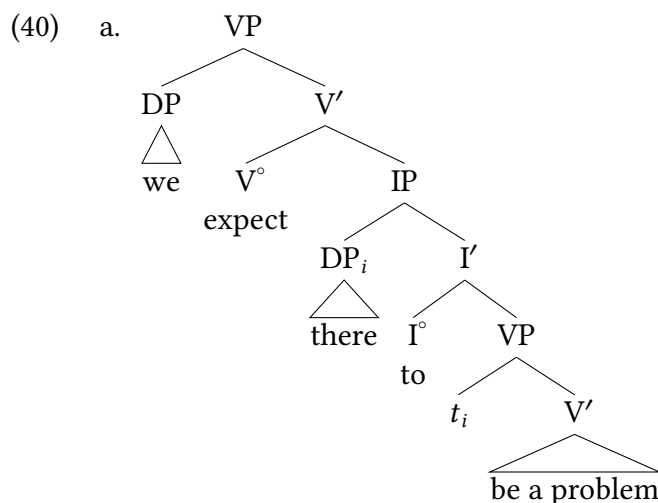
In (37), the reference of PRO is controlled by the subject of [agree]. But unlike in the cases of subject control discussed in Chapter 9, § 1, where the subject of the control verb is assigned nominative case, here the subject in question—*them*—is assigned objective case in the head-spec configuration. The case assigner is the complex verbal head (spelled out as *persuade*), which inherits its case-assigning power from [CAUS]. Superficially, therefore, *them* looks like an object, and so verbs like *persuade* are known as **object control verbs**. The superficial difference between subject control verbs and object control verbs is highlighted in (38). With subject control verbs, the verb immediately precedes the nonfinite complement; with object control verbs, an apparent object intervenes.

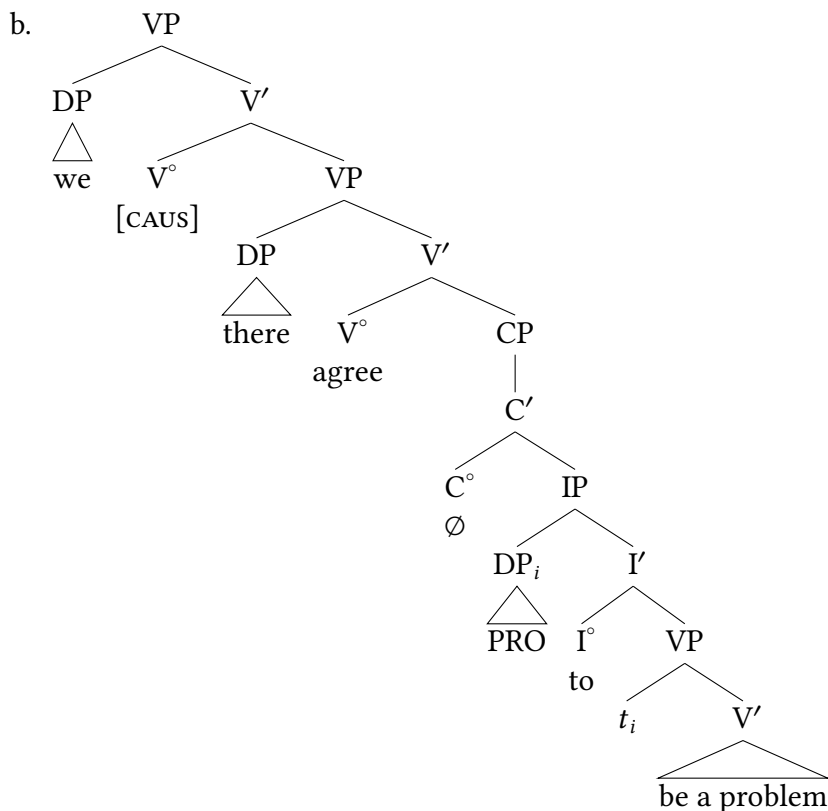
- (38) a. They agreed [ to dance ]. (subject control)  
 b. We persuaded them [ to dance ]. (object control)

The analysis just presented is straightforwardly consistent with the contrast between ordinary ECM verbs and object control verbs illustrated in (39).

- (39) a. We expected there to be a problem  
 b. \* We persuaded there to be a problem

The relevant partial structures for the two sentences are shown in (40). Head movement is omitted in (40b) to clarify the relevant licensing relationships.





In (40a), expletive *there* is licensed by originating as the specifier of main verb *be* in the complement clause. (40b), on the other hand, is ruled out for exactly the same reasons as (41).

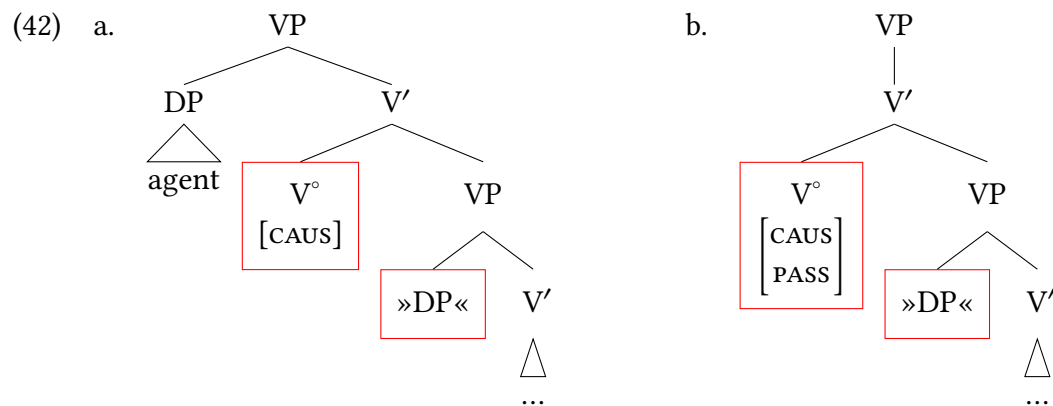
(41) \* There agreed [ PRO to be a problem ].

First, expletive *there* is not licensed, since neither ordinary nor abstract *agree* are verbs of existence. Second, both ordinary and abstract *agree* select rational beings as subjects, and expletive *there* fails to satisfy this selectional restriction.

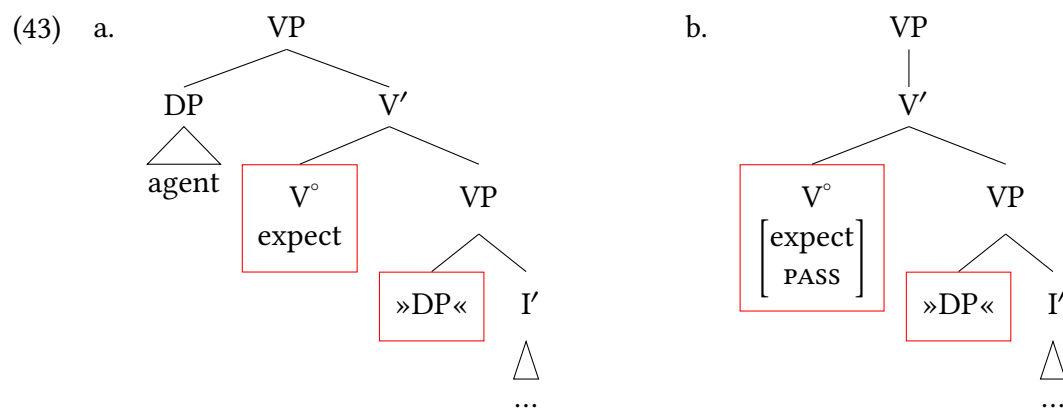
## Passive and VP shells

5

As just noted, [CAUS] assigns objective case in the head-spec configuration to the subject of its complement. Like any other verb, [CAUS] loses its case-assigning ability when passivized. The relevant VP shells are shown in (42).



Although the labels for the syntactic categories differ, the configurations in (42) are analogous to those for an ECM verb like *expect* in (43).



As a result, the parallels between ECM verbs and the VP shell verbs in Table 11.3 are expected.<sup>5</sup>

|                        | Active                                             |     | Passive                                              |
|------------------------|----------------------------------------------------|-----|------------------------------------------------------|
| ECM verb               | We expected the children to find the Easter eggs.  | →   | The children were expected to find the Easter eggs.  |
| Double object verb     | We gave them a present.                            | →   | They were given a present.                           |
| Double complement verb | We sent them to the park.                          | →   | They were sent to the park.                          |
| Object control verb    | We persuaded the children to find the Easter eggs. | →   | The children were persuaded to find the Easter eggs. |
| ECM verb               | We expected the children to find the Easter eggs.  | → * | The Easter eggs were expected the children to find.  |
| Double object verb     | We gave them a present.                            | → * | A present was given the children.                    |
| Object control verb    | We persuaded the children to find the Easter eggs. | → * | The Easter eggs were persuaded the children to find. |

Table 11.3: Passivization patterns in ECM and VP shell verbs

## Further issues

## 6

### 6.1 A locality constraint on idioms

**Idioms** are expressions whose meaning does not follow straightforwardly from the individual parts, as in (44). (The idiomatic meaning can sometimes be traced back to an etymological source, but even if that is possible, the source is unknown to most of the idiom's users.)

- (44) a. red tape 'bureaucratic difficulties'  
 b. the Big Apple 'New York City'  
 c. kick the bucket 'die'  
 d. let the chips fall where they may 'disregard the consequences of one's actions'

It has been traditional in generative grammar (Marantz 1984) to (attempt to) impose a **locality constraint** on idioms along the lines of (45) (locality constraints are so called because they make reference to relatively small, or local, domains).

- (45) All parts of an idiomatic expression must together form a constituent.

The examples in (44) trivially satisfy this constraint: *red tape* is an NP, *the Big Apple* is a DP, and *kick the bucket* and *let the chips fall where they may* are instances of V'.

The motivation for (45) is to account for the absence of theoretically possible idioms like the made-up example in (46), where *blue* and *hopping*, though adjacent, don't form a constituent.

- (46) a. They've bred a strain of *blue hopping* drosophila.  
           Intended meaning: 'They've bred a strain of drosophila that is unusually large.'  
       b. The great apes all have *blue hopping* brains.  
           Intended meaning: 'The great apes all have unusually large brains.'  
       c. She's a *blue hopping* child for her age.  
           Intended meaning: 'She's an unusually large child for her age.'

Since idioms consisting of discontinuous chunks should not exist, idioms like those in (47) at first glance seem to pose a problem for the locality constraint.

- (47) a. give someone the creeps            'make someone uneasy'  
       b. throw someone to the wolves    'sacrifice someone'

However, just as the VP shell analysis allows us to preserve the binary-branching hypothesis in the face of *prima facie* counterevidence, it also allows us to preserve the locality constraint on idioms in the face of apparently discontinuous idioms. This is because the VP shell analysis allows us to say that what is idiomatic in (47) are the underlined instances of V' in (48).

- (48) a. [CAUS] someone [get] the creeps  
       b. [CAUS] someone [go] to the wolves (by throwing)

Strong evidence for the decomposition in (48a) is the existence of the related idiom in (49).

- (49) get the creeps 'become uneasy'

We attribute the absence of an idiomatic interpretation for *go to the wolves* to the absence of the salient manner specification; compare the corresponding idiomatic passive form *get thrown to the wolves* 'be sacrificed'. (You are invited to explain the unavailability of noncausative *throw to the wolves* in Problem 11.6.)

Since heads form constituents with their complements but not with their specifiers, potential idioms such as those in (50) are predicted not to be possible.

- (50) a. the { creeps, wolves } [get] someone  
       b. the { creeps, wolves } [go] to someone

This straightforwardly explains the unacceptability of sentences like (51) and (52) (on their intended idiomatic interpretation).

- (51) a. \* The creeps got me.  
       b. \* The wolves went to Felix.  
       (52) a. \* Oscar threw the wolves Felix. (= [CAUS] the wolves [get] Felix)  
           b. \* Crazy people give the creeps to me. (= [CAUS] the creeps [go] to me)

## 6.2 Direct vs. indirect causation

Although [CAUS] is syntactically analogous to overt causative verbs like *let* and *make*, we do not claim that it is completely synonymous with them. Overt causative verbs express what has been called **indirect causation**, where the causing event and the caused event are conceptualized as two separate events. By contrast, [CAUS] expresses **direct causation**, and the causing event is not conceptualized as distinct from the caused event. It is important to realize that direct and indirect causation are conceptual categories that speakers impose on the universe of discourse; they do not themselves reflect distinctions inherent in that universe. In other words, the very same event in the real world can be conceptualized as involving either indirect or direct causation. We can think of this choice as corresponding to a camera zooming in or out on a given scene. For instance, a bridge-building event could be described as involving indirect causation. In (53a), the agent of the caused event is expressed as the subject of an active verb, whereas in (53b), the agent of the caused event is expressed as a *by* phrase modifying a passive verb. Despite the difference in voice (active vs. passive), the agent of the caused event (the two legions) is expressed explicitly in both sentences.

- (53) a. Caesar had two legions build a bridge.  
 b. Caesar had a bridge built (by two legions).

It is also possible to zoom out, treating some of the complexity associated with the bridge-building as not at issue, and to describe the same event as in (54).

- (54) Caesar built a bridge.

From this zoomed-out perspective, the bridge-building is an event with a single agent. The legions can no longer be integrated into this sentence as a subordinate agent, but only as an instrument wielded by the sole remaining agent.

- (55) a. \* Caesar built a bridge by two legions.  
 b. ✓ Caesar built a bridge { using, with } two legions.

A naturally-occurring example of zooming is given in (56), where the speaker elaborates on a possibly misleading description of a movie scene.

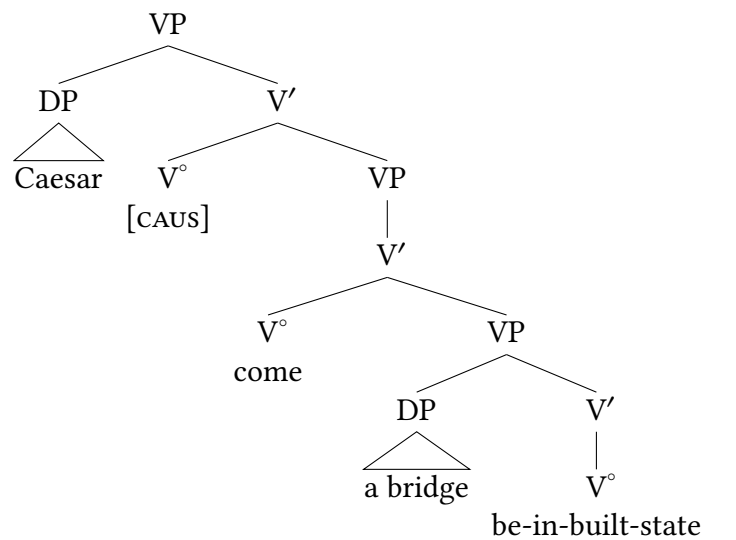
- (56) And he put the rope around his neck,  
 made him put the rope around his neck.  
 (Kendall and Farrington 2021, DCA\_se2\_ag2\_m\_03\_xmin=848.83082)

It is worth noting that the zoomed-in and zoomed-out perspectives on event complexity correlate with the complexity of the surface morphology in an arguably iconic manner. The zoomed-in, more detailed perspective in (53) is expressed by two surface verbs (causative *have* and *build*), whereas the zoomed-out, less detailed perspective in (54) is expressed by a single surface form (*build*).

Although this chapter focuses on causative decomposition of only certain verb classes, we would like to point out that the availability of [CAUS] opens the possibility of treating all (or at



least most) transitive verbs as containing [CAUS]. Pursuing this approach, apparently simple *build* would be derived from [CAUS], the ‘come’ head mentioned earlier, and a verbal head meaning something like ‘be-in-a-built-state’. A sentence like (54) would then be derived from a structure like (57a), corresponding to a paraphrase like (57b).

- (57) a. 
- b. Caesar caused it to come about that a bridge was in a built state.

If it were possible to generalize this approach to all transitive heads, the notion of ‘complement’ (along with the notion of ‘intermediate projection’) could be eliminated from the theory of phrase structure. The price of this simplification is the inclusion in the theory of abstract heads like [CAUS]. Much recent work in morphosyntax adopts the approach just sketched, and Problem 11.3 invites you to evaluate this idea.

The distinction we have just drawn between direct and indirect causation allows us to revisit a point that we made in connection with the rise of *do* support in the history of English. Recall from Chapter 10, § 4.3, that Middle English allowed a variant of (53a) where the subordinate verb exhibits active voice, but where the subordinate agent is expressed with an optional *by* phrase, as in the passive.

- (58) Caesar { did, had, let, made } \_\_\_\_\_ build a bridge (by two legions).

Recall further that the causative verb was *make* in certain dialects of Middle English and *do* in others. For native speakers of both dialects, their own causative verb expressed indirect causation. However, Ellegård (1953) surmises that in a situation of dialect contact, speakers of the *make* dialect misanalyzed the *do* of the *do* dialect in sentences like (58) as an overt expression of direct causation. This mis- or reanalysis would then have taken hold as a way of circumventing the ineffability of simple negative sentences with structures violating the locality constraint on tense lowering, at least in sentences containing verbs with causative semantics. In modern English, *do* has gone one step further, having developed into a modal that is compatible even with verbs without causative semantics (Ecay 2015). This is comparable to the development of other modals; for instance, the modern English future auxiliary *will* originally had the meaning ‘want’, but has developed into a pure tense marker, able to co-occur with entities that are incapable of wanting.

### 6.3 Semantic nuances: *Give, get, send*

Double object verbs like *get*, *give*, and *send* all share a basic meaning of ‘cause to (come to) have’. Nevertheless, they are not interchangeable with each other in every context, and even where they can appear in the same context, they do not always have the same meaning. In this section, we attempt to shed some light on these differences. Because of our focus here on the differences rather than on the similarities among the various verbal heads that combine with [CAUS], we need a convention to distinguish among them. In the syntax literature, the convention is to put the eventual spellout form in all caps under a mathematical root sign (the idea is that the element in question is the **root** of the eventual spellout form). For instance,  $\sqrt{\text{GIVE}}$  indicates the root that after adjoining to [CAUS] in the syntax will be spelled out with it as a form of *give* in the morphology.

We begin by recalling that the subject of *have* is a recipient, but cannot be a location. This explains the contrast between (59) and (60).

(59) Lisa {  $\sqrt{\text{gave}}$ ,  $\sqrt{\text{got}}$ ,  $\sqrt{\text{sent}}$  } Joel a book.

(60) Lisa { \* $\sqrt{\text{gave}}$ , \* $\sqrt{\text{got}}$ , \* $\sqrt{\text{sent}}$  } there a book.

(61) shows that  $\sqrt{\text{SEND}}$  imposes a selectional restriction on its complement (the theme argument), which to a first approximation requires the theme to be able to undergo transfer along a path.

(61) Lisa {  $\sqrt{\text{gave}}$ ,  $\sqrt{\text{got}}$ , # $\sqrt{\text{sent}}$  } Joel a { raise, promotion }.

As always when selectional restrictions are at issue, figurative language use complicates the picture. For instance, if *raise* or *promotion* are used metonymically for letters containing confirmation of a raise or promotion (as in *So, have all the the promotions gone out?*), then using *sent* (61) becomes (more) felicitous. And *love* or *hugs* are certainly often equated metaphorically with a substance that can be enclosed in an envelope or conveyed along an electronic pipeline, explaining uses like *I send my love* or *I’m sending a big hug*.

(62) is also consistent with the proposed selectional restriction. In (62a) and (62b) *job* is ambiguous between ‘piece of work’ and ‘way of earning a living’. (62c), however, is unambiguous and has only the ‘piece of work’ meaning.

- (62) a. Lisa gave Joel a job. (ambiguous)  
 b. Lisa got Joel a job. (ambiguous)  
 c. Lisa sent Joel a job. (unambiguous)

So far, *give* and *get* have been patterning alike, but that is not always the case. For instance, (63a) is ambiguous between Lisa handing Joel an idea (written down, say, on a piece of paper) vs. Lisa somehow (possibly unbeknownst to herself) giving rise to an idea in Joel’s mind. In the first scenario, Lisa is an agent, and Joel is a recipient. In the second scenario, Lisa is a cause, and Joel is an experiencer. This ambiguity is lost in (63b) and (63c), which have only the agent-recipient sense.

- (63) a. Lisa gave Joel an idea. (ambiguous)

- b. Lisa got Joel an idea. (unambiguous)
- c. Lisa sent Joel an idea. (unambiguous)

It is worth noting that the noncausative alternant with *get*—*Joel got an idea*—can have the meaning ‘An idea arose in Joel’s mind’; in fact, that is its ordinary meaning. This fact suggests that when not embedded under [CAUS],  $\sqrt{\text{GAVE}}$  is spelled out as a form of *get*.

The distinction between the agent-recipient and the cause-experiencer senses is highlighted in (64), where the subject, being inanimate, cannot be an agent. Subtracting the agent-recipient reading, as it were, from the corresponding examples in (63) makes *give* in (64) unambiguous and *got/sent* in (64) infelicitous.

- (64) Lisa’s haircut {  $\checkmark$ gave, #got, #sent } Joel an idea.

Two further examples of the same type are (65) and (66).

- (65) { Lisa, the nasty weather } haircut {  $\checkmark$ gave, #got, #sent } Joel a cold.  
 (66) The flickering lights {  $\checkmark$ gave, #got, #sent } my friend a migraine.

The interpretation of the *send* examples in (64)–(66) follows straightforwardly from the selectional restriction that  $\sqrt{\text{SEND}}$  imposes on its theme. But let’s consider the infelicity of the *get* examples more closely. Recall that abstract [CAUS] expresses **direct causation**—the causing event and the caused event are conceptualized as non-distinct. When the caused event is a phenomenon that arises inherently in an experiencer, direct causation gives rise to a weird interpretation—one where an agent initiates a causing event that has a magic effect on the experiencer along the lines of “Poof, now you’ve got an idea, a cold, a migraine, ...” The interpretation is weird in a way that “Poof, now you’ve got a job, a car, ...” isn’t (assuming that the agent has a job or car to give away).

Reconceptualizing the external cause and the internal experience as distinct (in other words, as involving **indirect causation**) and accordingly expressing the event chain with separate overt causative verbs cancels the weird magic effect, and the resulting sentences become acceptable, as in (67).

- (67) a.  $\checkmark$  Lisa made Joel get a cold (by sneezing at him repeatedly).  
 b.  $\checkmark$  The nasty weather made Joel get a cold.  
 c.  $\checkmark$  The bright lights made my friend get a migraine (by causing the neurons in her brain to misfire).

For reasons that remain mysterious, the combination of [CAUS] and  $\sqrt{\text{GIVE}}$  patterns like (67). In other words, even though *give* is synthetic just like *get*, it behaves in (64)–(66) as if it were analytic like *make ... get*.

We turn now to the double-complement counterparts of the above sentences. These all involve a lower *go* head, which imposes a selectional restriction on its theme argument (already mentioned earlier for  $\sqrt{\text{SEND}}$ ). In other words, the theme must be an entity capable of undergoing transfer along a path (with the usual caveats concerning figurative usage). In addition, the  $\sqrt{\text{GIVE}}$

variant of *go*, unlike  $\sqrt{\text{GET}}$  or  $\sqrt{\text{SEND}}$ , requires the goal to be a recipient. Both of these selectional restrictions together explain the pattern of judgments in (68) and (69).

- (68) a. We {  $\checkmark$ gave,  $\checkmark$ got,  $\checkmark$ sent } the tickets to Gillian.  
 b. We { #gave, #got, #sent } a headache to Gillian.  
 (69) We { #gave,  $\checkmark$ got,  $\checkmark$ sent } the tickets there.

As expected, (70a) has only a metonymy reading (where *Hawaii* means ‘people at the Hawaii office’), whereas (70b) and (70c) also have the ordinary locative reading.

- (70) a. We gave the tickets to Hawaii. (unambiguous)  
 b. We got the tickets to Hawaii. (ambiguous)  
 c. We sent the tickets to Hawaii. (ambiguous)

In examples like (71a), the theme argument (*the noise*) is conceptualized as moving along a path from a source location where it doesn’t affect or bother the experiencers at a goal location (*them*) to one where it finally does. The causative variant in (71b) remains infelicitous because of the “weird genie” effect discussed above.

- (71) a.  $\checkmark$  The noise finally got to them.  
 b. # We finally got the noise to them.

To explain the difference with the apparently analogous example in (72), we invoke metaphor, overtly signalled by the presence of the particle *through*. The argument at the goal location is conceptualized as a recipient rather than as an experiencer.

- (72) a.  $\checkmark$  Our idea finally got through to them.  
 b.  $\checkmark$  We finally got our idea through to them.

We conclude this section with two unresolved issues. First, for some speakers, *get* and *send* in (73) and (74) both entail (75); for other speakers, that is true only for *get*.

- (73) a. We got the knitters the yarn.  
 b. We got the yarn to the knitters.  
 (74) a. We sent the knitters the yarn.  
 b. We sent the yarn to the knitters.  
 (75) The knitters got/have the yarn.

For (74b), we could say that some speakers allow *to* to include the meaning ‘towards’, whereas other speakers don’t. But that doesn’t explain why the loose sense of *to* is restricted to sentences with *send*, and it is also not clear how to extend the idea to the double object sentences, which don’t contain a preposition. What is clear is that *send* implies a more complicated path than *get*, with more room for the transfer of the theme to go astray. In other words, we can think of *send* as a zoomed-in version of *get*. But how to apply this intuition to explain the

variation in judgments in a principled way (that is, in a way that doesn't simply restate the facts) is not clear, and we leave the issue unresolved here.

A second unresolved issue concerns the constraint according to which recipients in double object sentences must be animate. This constraint is actually not quite correct, as shown in (76).

- (76) a. The carpenter { gave, ?got, #sent } the cabinet a fancy handle.  
b. The sellers { gave, ??got, #sent } the house a new coat of paint.

Note the roughly corresponding judgments for the noncausative alternants in (77), but also the bleached sense of *accept* in (78).

- (77) a. The cabinet { got, received, #accepted } a fancy handle.  
b. The house { got, received, #accepted } a new coat of paint.  
(78) This fare machine doesn't accept coins.

The sentences in (76) and (77) suggest that inanimate objects can be metaphorically conceptualized as animate, but with limits that are not easy to define. Similar issues arise in connection with sentences like (79).

- (79) The movers { ✓gave, \*got } the couch a shove.

## 6.4 Double object verbs in languages with inherent case

### Case in Japanese analytic and synthetic causative sentences

As discussed in Chapter 7, some languages have richer case morphology than does modern English. For instance, Japanese has a distinction between dative and accusative that English once had, but lost in medieval times. Strikingly, in Japanese, the VP shell analysis of double object causatives that we have argued for above on semantic grounds is supported by facts from case morphology.

We begin by considering case marking in simple intransitive and transitive Japanese sentences. As shown in (80), subjects and direct objects are marked with the nominative case particle *-ga* and the accusative particle *-o*, respectively.<sup>6</sup>

- (80) a. 太郎が 走った こと  
Tarō-ga hashit-ta koto  
-NOM run-PST that  
'(the fact) that Tarō ran'  
b. 太郎が りんごを 食べた こと  
Tarō-ga ringo-o tabe-ta koto  
-NOM apple-ACC eat-PST that  
'(the fact) that Tarō ate an apple'

Embedding a sentence under the causative suffix *-(s)ase* has the following effects on case marking. (The suffix is spelled out as *-sase* or *-ase* depending on whether the lower verb that it

combines with ends in a vowel or a consonant.) When the complement sentence is intransitive, the matrix subject is marked with *-ga*, as usual, but the subject of the complement clause is marked with *-o*, as shown in (81). (This is analogous to what happens in English when we embed *They ran* under a causative verb and end up with *We made them run*, with objective case on the embedded subject.)

- (81) 花子が 太郎を 走らせた こと  
 Hanako-ga Tarō-o hashir-ase-ta koto  
 -NOM -ACC run-CAUS-PST that  
 ‘(the fact) that Hanako made Tarō run’

Given (81), one might expect embedding a transitive sentence under a causative to result in the case-marking pattern in (82), where the object of the lower clause is marked with *-o* because it is an object, as in (80b), and the subject of the lower clause is also marked with *-o*, by analogy to (81) (cf. English *They chased him* and *We made them chase him*).

- (82) \*花子が 太郎を りんごを 食べさせた こと  
 Hanako-ga Tarō-o ringo-o tabe-sase-ta koto  
 -NOM -ACC apple-ACC eat-CAUS-PST that  
 Intended meaning: ‘(the fact) that Hanako made Tarō eat an apple’

As it turns out, however, the case-marking pattern in (82) is ungrammatical, violating what is known in the Japanese syntax literature as the double *-o* constraint, which prohibits the occurrence of more than one *-o*-marked noun phrase per surface verb. Rather, when a transitive sentence is embedded under a causative verb, the subject of the lower clause must be marked with the dative case marker *-ni*, as in (83).<sup>7</sup>

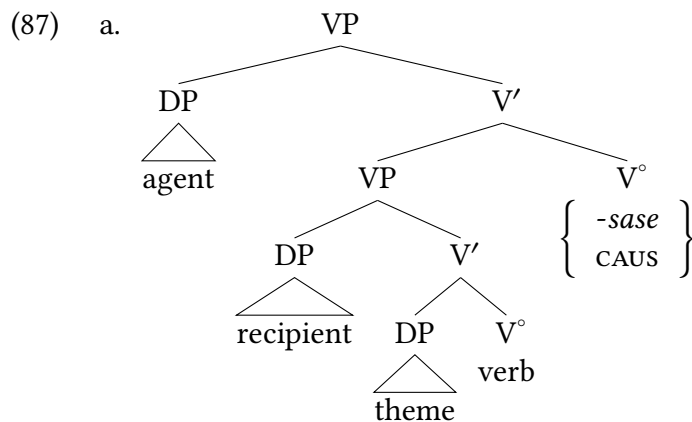
- (83) 花子が 太郎に りんごを 食べさせた こと  
 Hanako-ga Tarō-ni ringo-o tabe-sase-ta koto  
 -NOM -DAT apple-ACC eat-CAUS-PST that  
 ‘(the fact) that Hanako made Tarō eat an apple’

Strikingly, double object sentences exhibit the very same nominative-dative-accusative case-marking pattern. (84) shows the simple sentences underlying both the ordinary small clause causatives in (85) and their double object counterparts in (86).

- (84) a. 太郎が 本を 見た こと  
 Tarō-ga hon-o mi-ta koto  
 -NOM book-ACC see-PST that  
 ‘(the fact) that Tarō saw the book’  
 b. 太郎が 手紙を 受け取った こと  
 Tarō-ga tegami-o uketot-ta koto  
 -NOM letter-ACC receive-PST that  
 ‘(the fact) that Tarō received the letter’

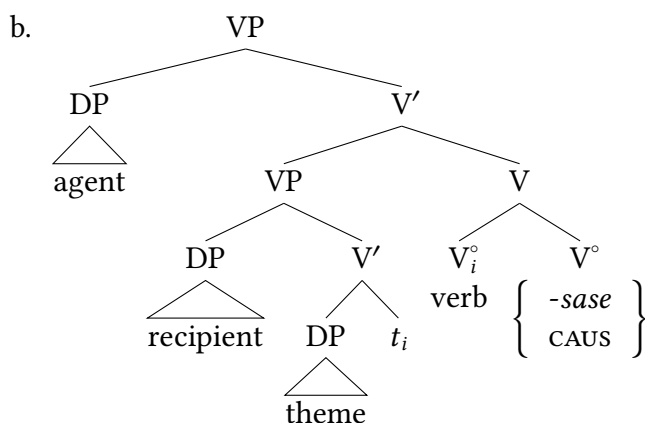
- (85) a. 花子<sup>が</sup> 太郎<sup>に</sup> 本<sup>を</sup> 見させた こと  
 Hanako-<sup>ga</sup> Tarō-<sup>ni</sup> hon-<sup>o</sup> mi-sase-ta koto  
 -<sup>NOM</sup> -<sup>DAT</sup> book-<sup>ACC</sup> see-CAUS-PST that  
 ‘(the fact) that Hanako made Tarō see the book’
- b. 花子<sup>が</sup> 太郎<sup>に</sup> 手紙<sup>を</sup> 受け取らせた こと  
 Hanako-<sup>ga</sup> Tarō-<sup>ni</sup> tegami-<sup>o</sup> uketor-ase-ta koto  
 -<sup>NOM</sup> -<sup>DAT</sup> letter-<sup>ACC</sup> receive-CAUS-PST that  
 ‘(the fact) that Hanako made Tarō receive the letter’
- (86) a. 花子<sup>が</sup> 太郎<sup>に</sup> 本<sup>を</sup> 見せた こと  
 Hanako-<sup>ga</sup> Tarō-<sup>ni</sup> hon-<sup>o</sup> mise-ta koto  
 -<sup>NOM</sup> -<sup>DAT</sup> book-<sup>ACC</sup> show-PST that  
 ‘(the fact) that Hanako showed Tarō the book’
- b. 花子<sup>が</sup> 太郎<sup>に</sup> 手紙<sup>を</sup> 送った こと  
 Hanako-<sup>ga</sup> Tarō-<sup>ni</sup> tegami-<sup>o</sup> okut-ta koto  
 -<sup>NOM</sup> -<sup>DAT</sup> letter-<sup>ACC</sup> send-PST that  
 ‘(the fact) that Hanako sent Tarō the letter’

The identical pattern in (85) and (86) is exactly what the VP shell analysis leads us to expect, since the relevant structures are completely analogous. The structures before and after verb movement are shown in (87).



Before head movement





After head movement

The verbal heads in (87) are spelled out differently in the morphology. The spellout is either analytic, with each syntactic head corresponding to a transparently identifiable morphological form (*mi-*, *uketor-* and *-(s)ase*), or it is synthetic, with the two heads corresponding to a single morphological item (*mise-*, *okut-*).

The Japanese causative exhibits a further important property that corroborates the VP shell analysis. Unlike English *let* or *make*, Japanese *-(s)ase* is a bound morpheme. This fact provides independent cross-linguistic evidence for treating the silent causative morpheme in English as a bound morpheme, as we have been doing.

### Similarities and differences in case marking between Japanese and German

Like Japanese, double object sentences in German exhibit nominative-dative-accusative case marking. As in Japanese, marking the recipient as accusative is completely ungrammatical. (As usual, we give German examples in the form of subordinate clauses in order to avoid the complications associated with the verb-second phenomenon covered in Chapter 12.)

- (88) dass wir { ✓ihnen, \*sie } die ganze Geschichte erzählten  
 that we.NOM them.DAT them.ACC the.ACC whole story told  
 'that we told them the whole story'

The ungrammaticality of the accusative pronoun in (88) is reminiscent of the *double-o constraint*. But when causation is expressed analytically, as in (89), the case-marking pattern is reversed.

- (89) dass wir { \*ihnen, ✓sie } die ganze Geschichte hören liessen  
 that we.NOM them.DAT them.ACC the.ACC whole story hear let.PST  
 'that we let them hear the whole story'

We attribute the difference between Japanese and German to the different morphological status of the overt causative morpheme. In Japanese, *-(s)ase* is a bound morpheme just like its silent counterpart. When it combines with the lower verb, the resulting verb is a single word,



and apparently the case array associated with single words can't include the same morphological case twice. (That's the double -o constraint.) But German *liessen* 'let' in (89) is a separate word, and so gets to have its "own" case, just like *let* does in English.

### The passive of double object sentences in German

As discussed earlier in this chapter, modern American English allows the recipient of a double object sentence to become the subject of a passive sentence, but not the theme. For convenience, we repeat the relevant facts in (90) and (91).

- (90)      Active:  
             We gave them a present.
- (91)    a.    Recipient passive:  
             ✓ They were given a present.
- b.    Theme passive:  
             \* A present was given them.

In German, the pattern is exactly reversed, as shown in (95) and (96). (The same goes for Japanese.)

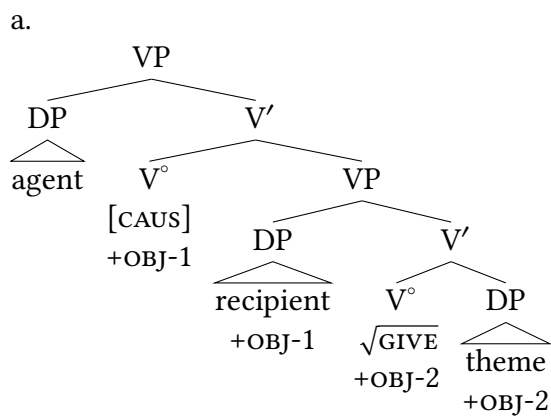
- (92)      Active:  
             dass wir      d-en      Nachbarn ein-en Roman gegeben haben  
             that we.NOM the-DAT neighbors a-ACC novel given have  
             'that we gave the neighbors a novel'
- (93)    a.    Recipient passive:  
             \* dass die      Nachbarn ein-en Roman gegeben wurden  
             that the.NOM neighbors a-ACC novel given became.3PL  
             Intended meaning: 'that the neighbors were given a novel'
- b.    Theme passive:  
             ✓ dass ein      Roman d-en      Nachbarn gegeben wurde  
             that a-NOM novel the-DAT neighbors given became.3SG  
             'that the neighbors were given a novel'

In English, passive removes the ability of the [CAUS] head to assign objective case. In German, the [CAUS] head assigns dative case when the lower VP shell is headed by a transitive verb. As we know from Chapter 8, § 3.1 dative is an inherent case, which remains unaffected by passivization. So what apparently happens in German is that passive removes the case-assigning ability of the next available case-assigning head—the head of the lower VP shell structure. Rather than the recipient, it is then the complement of this head—the theme argument—that has to move to the nearest empty position where it can be assigned case.

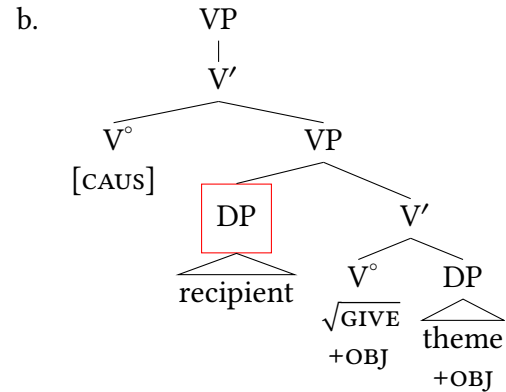
Schematic configurations for the active and passive for both languages are shown in (94) and (95), where the argument that is forced to move is highlighted by a box. The only purpose of the numerical indices on the two instances of objective case in the English examples in (94)

is to make it clear which head assigns case to which DP. The structures for German in (95) are represented as head-initial for ease of comparison with English.

(94) English:

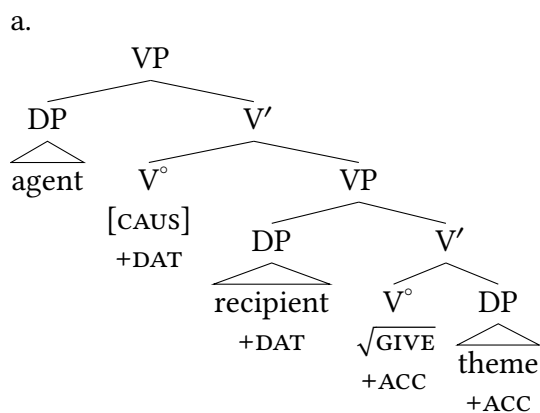


Highest instance of structural case  
([+OBJ-1]) on higher verb

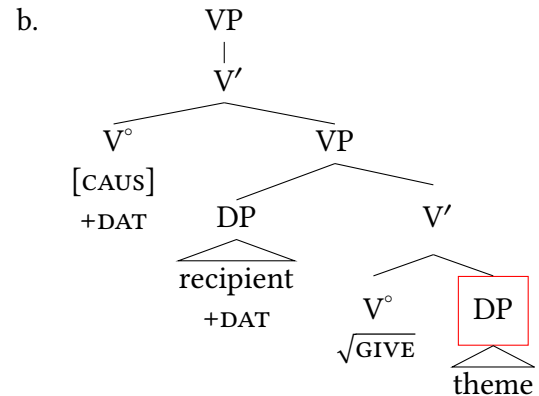


Passive removes [+OBJ-1]

(95) German:



Highest instance of structural case  
([+ACC]) on lower verb



Passive removes [+ACC]

## Notes

## 7

1. The idea underlying the VP shell analysis goes back to Chomsky (1955) and was taken up in Larson (1988) and Larson (1990) (see also Jackendoff 1990). The treatment in this chapter is indebted to that in Harley (2002), though not identical to it in all details.
2. Metonymy is the traditional term for various types of figurative language use, notably including the one relevant here, where an expression that literally refers to a location is used to refer instead to a group of people typically located there. Common examples include *the White House* (broadly ‘the U.S. executive’, more narrowly ‘the U.S. president along with close staff’), *the Kremlin* (‘the Russian government’), *Westminster* (‘the U.K. parliament’), and so on.
3. The alternation in (i)—specifically, the well-formedness of (b)—is only apparently problematic for what we say in the text.
  - (i) a. ✓ Amy sent the mail { back, off }.
  - b. ✓ Amy sent { back, off } the mail.

*Back* and *off* are so-called **particles**, which can behave like ordinary PPs, as in (a), but also more like bound affixes, as in (b). A detailed analysis of the syntax of particles is beyond the scope of this chapter, but evidence for their differing syntactic status in (i) comes from contrasts like (ii).

  - (ii) a. ✓ Amy sent the mail right { back, off }.
  - (cf. ✓ right to the dean)
  - b. \* Amy sent right { back, off } the mail.
4. Again, alternations as in (i) are only apparent exceptions to the statement in the text and reflect the status of *on* and *back* as particles; see Note 3.
  - (i) a. Amy put her sweater (right) { back, on }.
  - b. Amy put (\*right) { back, on } her sweater.
5. Some speakers of British English allow the theme passive in *A present was given the children*. Theme passives are possible in languages that distinguish between structural and inherent case, and English was once such a language. In American English, the theme passive has been entirely replaced by the recipient passive (Bacovcin 2017), whereas British English is not quite as far along in the replacement process.
6. In addition to marking grammatical relations like subject or direct object, Japanese also marks discourse functions such as topic. In Japanese main clauses, topic marking with *-wa* overrides subject marking with *-ga*. It is therefore customary to illustrate *-ga* marking by using subordinate clauses, as we do in what follows.
7. Like French *à*, Japanese *-ni* is ambiguous between a true dative marker and a postposition meaning ‘to’, but unlike in French, there is no way to distinguish the two uses, as the French clitics *lui*, *leur* vs. *y* allow us to do (see Chapter 7, § 1.3). Fortunately, though, the exact status of *-ni* is irrelevant for present purposes since the parallel between ordinary small clause causatives and VP shell causatives in (83)–(89) holds up even if *ni* is a postposition.

## Exercises and problems

8

### Exercise 11.1

- A. Find five double object or double complement verbs not mentioned in the chapter and suggest a semantic decomposition for them.
- B. Can you find further double complement verbs of the *put* type?

### Exercise 11.2

- A. Provide a paraphrase for the two interpretations of the newspaper headline in (1) and the VP shell structure corresponding to each paraphrase.

(1) Lawyers Give Poor Free Legal Advice

- B. Repeat (A) for (2).

(2) I will make you my favorite sandwich.

- C. Repeat (A) for the two salient interpretations of the punchline in (3).

(3) Q: What did the Zen master say to the guy at the hotdog stand?  
A: Make me one with everything.

### Exercise 11.3

Using (1) and (2) as a model, determine whether the verbs in (3) are ECM verbs or object control verbs (or neither!). Use only active verb forms. For the purpose of this exercise, do not be concerned about how you would semantically decompose any object control verbs that you find.

Judgments for *assume*:

- (1) a. ✓ I assumed the meeting to be over.
- b. ✓ I assumed there to be a problem.
- c. \* I assumed the meeting that it was over.
- d. ✓ I assumed that there was a problem.

Conclusion for *assume*:

The grammaticality of (1b) shows that *assume* is an ECM verb. The judgments in (1c)- (1d) are not required, but they corroborate the ECM analysis.

Judgments for *convince*:

- (2) a. ✓ I convinced my friend to take the job.  
 b. \* I convinced there to be a problem.  
 c. ✓ I convinced my friend that he should take the job.  
 d. \* I convinced that there was a problem.

Conclusion for *convince*:

The ungrammaticality of (2b) shows that *convince* is an object control verb. The judgments in (2c)- (2d) are not required, but they corroborate the object control analysis.

- (3) acknowledge, advise, allow, anticipate, ask, beg, blackmail, challenge, command, consider, corral, dare, deem, determine, discover, encourage, enjoin, expect, fear, find, forbid, get, help, instruct, invite, know, order, perceive, permit, predict, pressure, prompt, prove, provoke, remind, report, request, require, tell, tempt, urge, warn

#### Exercise 11.4

Explain the pattern of interpretations in (1) and (2), or as much of it as possible. Assume the judgments as given even if they are not your own.

**Hint:** Find the section in the chapter that discusses differences between *give* and *get*.

- (1) a. The finger { got, went } to the patient. (unambiguously literal)  
 b. The surgeon gave the finger to the patient. (unambiguously literal)  
 c. The surgeon got the finger to the patient. (unambiguously literal)
- (2) a. The patient got the finger (from the surgeon). (ambiguous between literal and idiomatic reading)  
 b. The surgeon gave the patient the finger. (ambiguous between literal and idiomatic reading)  
 c. The surgeon got the patient the finger. (unambiguously literal)

#### Exercise 11.5

Is the example in (1) expected or not? Explain.

- (1) Tennessee coach Pat Summitt, the longtime head of the Lady Vols, gives an earful to Alexis Hornbuckle during their win over Texas Tech.  
 (Daily Pennsylvanian, 28 March 2005, p. 9)

## Exercise 11.6

- A. *Get* is one of the most versatile verbs in English. In addition to taking DP and PP/AdvP complements, it also takes AdjP complements. Give the VP shell structures for the sentences in (1).

- (1) a. The children got wet.  
b. The rain got the children wet.

- B. Give VP shell structures for the sentences in (2). As much as possible, avoid assuming silent heads.

- (2) a. The red cloth enraged the bull.  
b. The new fiscal policies enriched the king.  
c. The news saddened me.

- C. Build VP shell structures for the sentences in (3).

- (3) a. They kept the president's arrival almost completely secret.  
b. They kept the president's arrival a complete secret.

## Exercise 11.7

Propose structures for each of the following expressions, focusing on the parallels between the 'die' and 'kill' expressions. Assume that German and Latin are head-final.

(1)

|               | 'die'             |                | 'kill'            |                  |
|---------------|-------------------|----------------|-------------------|------------------|
| <b>German</b> | um-<br>around     | kommen<br>come | um-<br>around     | bringen<br>bring |
| <b>Latin</b>  | inter-<br>between | ire<br>go      | inter-<br>between | facere<br>make   |
| <b>Latin</b>  | per-<br>through   | ire<br>go      | per-<br>through   | dere<br>give     |

## Exercise 11.8

Modern English has causative verbs that are morphologically related to either other verbs, as in (1a), or to other syntactic categories, as in (1b).

- (1) a. drink, fall, lie (as in 'lie down', not 'prevaricate'), rise, sit  
b. full, gold

The causatives are not spelled out as homonymous with the same form, but at one point in history the two forms were related by a regular phonological rule (specifically, *ablaut* or *umlaut*—see the

Wikipedia entries for these terms for more information). But historical sound changes has since obscured those regularities. Over time, the meaning of the originally causative form has also sometimes drifted away from a strict causative meaning. Can you figure out the causative verbs in question?

**Hint:** Consult [etymonline](#) (see a word's "Related entries") or the Oxford English Dictionary Online.

### Problem 11.1

Can you think of double object or double complement verbs that are not amenable to the causative decomposition proposed in the chapter?

### Problem 11.2

Explain the pattern of acceptability judgments in (1)–(3).

- (1) a. ✓ They gave the people some money.  
       b. ✓ They gave some money. (recipient unexpressed)  
       c. \* They gave the people.  
           (theme unexpressed; ✓ on unintended reading, where *the people* is theme)
- (2) a. ✓ They gave some money to the people.  
       b. ✓ They gave to the people. (theme unexpressed)  
       c. \* They gave some money to. (recipient unexpressed)
- (3) a. ✓ They gave. (recipient and theme unexpressed, as in *I already gave at the office*).  
       b. \* They gave to. (recipient and theme unexpressed)

### Problem 11.3

As mentioned in the main text, it is possible to give at least some transitive verbs like *build* structures that correspond to the paraphrase 'cause to come to be built'. Is this decomposition possible for all transitive verbs?

### Problem 11.4

**A.** Sentences like (1) are ungrammatical in adult English.

- (1) You're giggling me!

Intended meaning: 'You're making me giggle!'

But many children go through a stage of producing such sentences with activity verbs such as *dance*, *giggle*, *laugh*, and others. What is the difference between the children's grammar and the adult grammar?

**B.** If necessary, modify your answer to (A) in light of the judgments of (2)–(4) for adult English.

- (2) a. The horses { walked, trotted, galloped, jumped }.
- b. The trainers { walked, trotted, galloped, jumped } the horses.
- (3) a. The athletes { walked, ran, marched } around the track.
- b. The coach { walked, ran, marched } the athletes around the track.
- (4) a. \* At some point, all new parents want to sleep their baby.
- b. ✓ I have one set to show the desktop, and another to sleep the display. ... Hit Command-Option-H to Hide Others. This works in almost any app, letting you quickly disappear all apps other than the frontmost one.
- c. ✓ They were known as the ‘desaparecidos’, because the Argentinian junta would ‘disappear’ them—for instance, by throwing them out of planes over the Andes.

### Problem 11.5

Can you think of a reason for why (1b) lacks a ‘fetch’ interpretation?

- (1) a. They got the package.  
Interpretation 1: ✓ They received the package.  
Interpretation 2: ✓ They fetched the package.
- b. We got them the package.  
Interpretation 1: ✓ We made it come about that they received the package.  
Interpretation 2: \* We made it come about that they fetched the package.

### Problem 11.6

Unlike *get* in (1), verbs of transfer like *hand*, *kick*, *throw*, and others don’t participate in the causative alternation, as shown in (2). Can you think of a principled reason?

- (1) a. ✓ The package got to Julie.
- b. ✓ We got the package to Julie.
- (2) a. \* The ball { handed, kicked, threw, ... } to Julie.
- b. ✓ We { handed, kicked, threw, ... } the ball to Julie.



# The verb-second (V2) phenomenon

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## Chapter outline

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|     |                                            |     |
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By historical descent, English belongs to a language family called Germanic, which at one time had three branches: East Germanic, North Germanic, and West Germanic. East Germanic (Gothic) became extinct in the 1600s, but the other two branches are still extant today. Over time, the North Germanic branch developed into the modern Scandinavian languages (Danish, Faroese, Icelandic, Norwegian, and Swedish), and the West Germanic branch developed into Afrikaans, Dutch, English, Frisian, German, and Yiddish. In this chapter, we discuss a noteworthy syntactic property shared by all of the Germanic languages, except for modern English. In these languages, the finite verb in a declarative main clause comes in second position, regardless of whether the first phrasal constituent is the subject. For this reason, the word order phenomenon is called **verb-second**, or **V2** (read: vee two) for short. Another way of putting this is to say that ordinary declarative main clauses in V2 languages have the same syntactic structure as direct questions do in English.<sup>1</sup>

Modern English still has some remnants of V2, and we begin our discussion with them. We then illustrate V2 in Middle English and German, where the phenomenon is productive. The chapter concludes with a brief discussion of the loss of V2 in the history of English.

## Remnants of V2 in modern English

1

Recall from Chapter 6 that direct and indirect *wh*- questions are formed in English by moving a *wh*- phrase from the position where it is interpreted to Spec(CP), where it is pronounced. In direct *wh*- questions, this movement is obligatorily accompanied by I moving to C. Recall further that English exhibits the related phenomenon of **topicalization**, where it is a non *wh*- phrase that moves to Spec(CP), without accompanying head movement. Finally, there is a fourth possible combination, where movement of a non *wh*- phrase occurs together with head movement. We have already briefly encountered this possibility in Chapter 10, § 6 under the name of **negative inversion**. As illustrated in the next section, inversion is also possible with *so*. The four possibilities are summarized in Table 12.1.

| I moves to C | XP moves to Spec(CP)          |                                    |
|--------------|-------------------------------|------------------------------------|
|              | <i>Wh</i> -                   | Non- <i>wh</i> -                   |
| Yes          | Direct <i>wh</i> - question   | Negative inversion<br>So inversion |
| No           | Indirect <i>wh</i> - question | Topicalization                     |

Table 12.1: Possible syntactic outcomes of movement to Spec(CP)

### 1.1 Negative inversion

Each pair in (1)–(4) shows a direct *wh*- question along with a corresponding example of **negative inversion**.

- (1) a. *What* **would** they accept more willingly?  
b. *No present* **would** they accept more willingly.
- (2) a. *Where* **can** you see the Southern Cross?  
b. *Nowhere in the northern hemisphere* **can** you see the Southern Cross.
- (3) a. *When* **is** that door left unattended?  
b. { *Never, At no time* } **is** that door left unattended.
- (4) a. *Under what circumstances* **would** they agree to a settlement?  
b. *Under no circumstances* **would** they agree to a settlement.

When negative phrases like those in (1)–(4) are specified more fully with *but* or *except* phrases, they can be paraphrased by *only* phrases, and these too allow inversion.

- (5) a. { *Never except on Sundays, Only on Sundays* } **do** we see them.

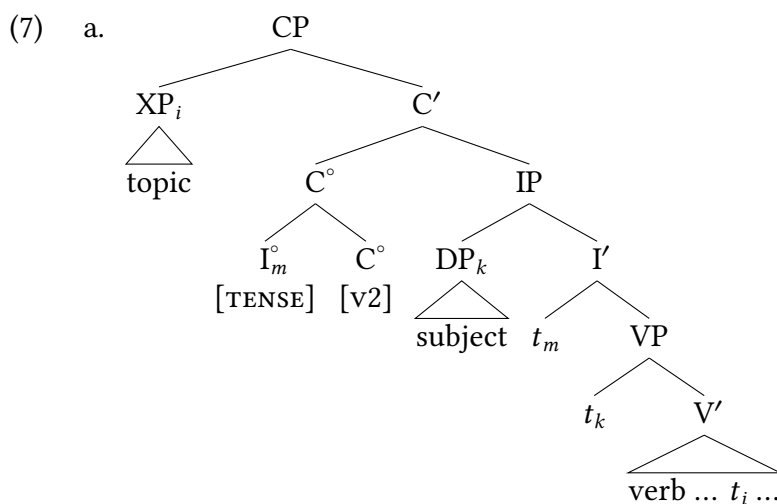
- b. { *No-one but computational linguists, Only computational linguists* } **would** we consider for that position.
- c. { *Nowhere except in my neighborhood, Only in my neighborhood* } **are** the rents so low.

## 1.2 So inversion

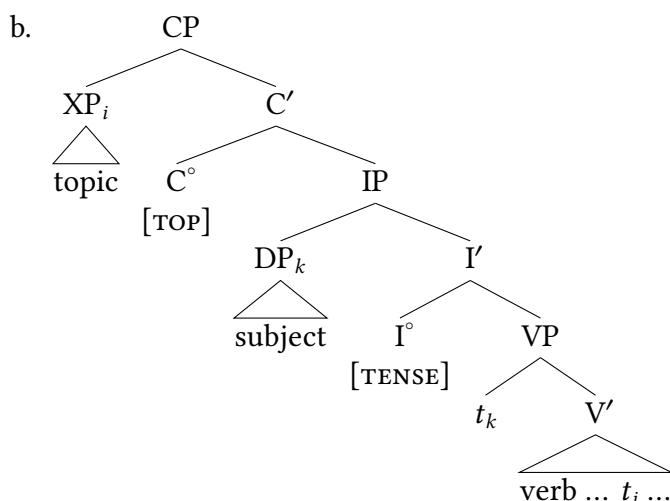
Another remnant of V2 is a variant of the substitution test for adjective phrases mentioned in Chapter 5, § 2. The original test and its V2 variant are illustrated in (6a) and (6b), respectively.

- (6) a. Ordinary *so* substitution: We are happy, and they **are** *so*, too.  
 b. *So* substitution with inversion: We are happy, and *so* **are** they.

We show schematic structures for V2 and topicalization sentences in English in (7). These structures correspond to the righthand column in Table 12.1. As is standard in the syntax literature, we use the term ‘topic’ for the clause-initial phrase in both cases. The [v2] head in C “attracts” the contents of I, whereas [TOP] doesn’t. Therefore, (7a) is identical to the structure for a direct question, except that Spec(CP) would be filled by a *wh*-phrase, and C would be the [Q] morpheme corresponding to Japanese *ka*. (7b) is identical to the structure for an indirect question, except that Spec(CP) would again be filled by a *wh*-phrase, and C would be [that] (and optionally overt in Middle English).



V2 – I moves to C



Topicalization — I remains *in situ*

## V2 in Middle English

2

(8) gives some examples of Middle English V2 clauses from *The Travels of Sir John Mandeville*, a bestselling travel book from the 1300s; the examples are taken from Mossé (1968, p. 279), a convenient compendium of Middle English texts.

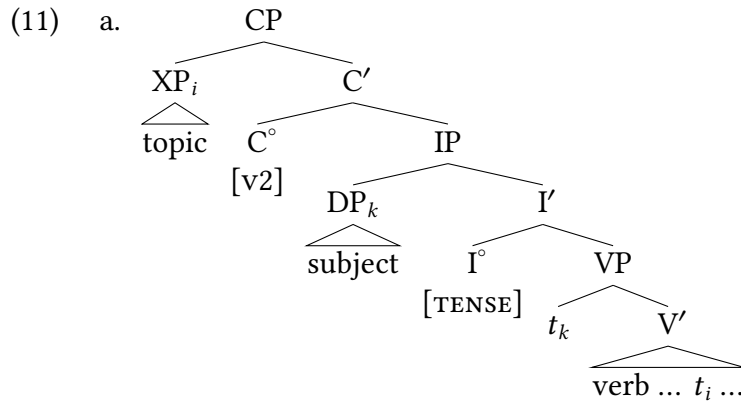
### Extra Info

As in previous chapters, eth (capital Ð, lowercase ð) and thorn (capital Þ, lowercase þ) appear where we use 'th' today. Yogh (ȝ) was used where we use 'g' or 'y'.

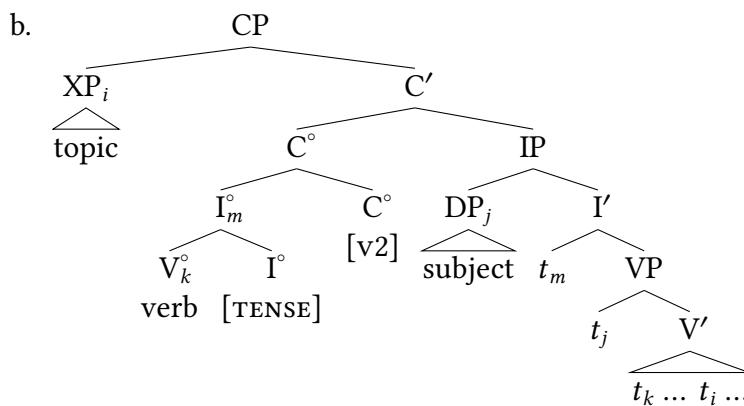
Notice the two instances of overt *that* in (8b), where modern English disallows them.

- (8) a. þanne wolde he make hem to drynken of a certeyn drynk.  
'Then he would make them drink of a certain drink.'
- b. After that ȝit scholde he putten hem in a fayrere paradys where þat þei scholde see God.  
'Yet after that he would put them in a more beautiful paradise where they would see God.'
- c. þan wolde he schewe hem his entent.  
'Then he would show them his intent.'
- d. þere scholde þei dwellen with the most fairest damyselles þat myghte be, and pley with hem everemore.





Middle English V2 before verb  
movement



After movement of V to I to C

## V2 in German

3

Even more striking than in Middle English is the V2 phenomenon in German and Dutch. As already mentioned in Chapter 5, § 4, these languages have head-initial C but head-final V. These phrase structure parameters are straightforwardly apparent in German sentences like (12). For simplicity, we assume that I is head-final as well.

- (12) a. ✓ dass die Kinder dieses Buch lesen **werden**  
           that the children this book read will  
           ‘that the children will read this book’  
       b. \* dass die Kinder **werden** dieses Buch lesen

- c. \* dass die Kinder **werden** lesen dieses Buch

Matrix declarative clauses, however, exhibit the V2 order illustrated in (13). The finite head occupies the second position in the clause; any nonfinite verbs continue to be head-final.

- (13) a. \* Die Kinder dieses Buch lesen **werden**.  
 b. ✓ Die Kinder **werden** dieses Buch lesen.  
 c. ✓ Dieses Buch **werden** die Kinder lesen.  
 d. ✓ { Morgen, Im Wohnzimmer } **werden** die Kinder dieses Buch lesen.  
 tomorrow in.the living.room will the children this book read  
 ‘The children will read this book { tomorrow, in the living room }.’

Once again, in sentences with finite main verbs, it is that verb (the only one in the clause) that moves, and again, in such sentences, V2 movement obscures the verb-final character of the language.

- (14) \* Die Kinder dieses Buch lesen.  
 the children this book read  
 Intended meaning: ‘The children are reading this book.’  
 (15) a. ✓ Die Kinder lesen dieses Buch.  
 b. ✓ Dieses Buch lesen die Kinder.  
 c. ✓ { Morgen, Im Wohnzimmer } lesen die Kinder dieses Buch.

A further bit of word order variation in German provides strong support for the idea that finite heads move to C in V2 sentences. As shown in (16) and (17), object pronouns in German regularly move from their expected position to a position right after the complementizer.

- (16) ✓ dass die Kinder ihren Eltern das Buch zeigen werden  
 that the children their parents the book show will  
 ‘that the children will show their parents the book’  
 (17) a. ✓ **dass** es die Kinder ihren Eltern zeigen werden  
 that it the children their parents show will  
 ‘that the children will show it to their parents’  
 b. ✓ **dass** ihnen die Kinder das Buch zeigen werden  
 that them the children the book show will  
 ‘that the children will show them the book’

In V2 sentences, these same pronouns appear right after the fronted verb.

- (18) a. ✓ Die Kinder **werden** es ihren Eltern zeigen.  
 the children will it their parents show  
 ‘The children will show it to their parents.’  
 b. ✓ Ihren Eltern **werden** es die Kinder zeigen.  
 their parents will it the children show  
 ‘The children will show it to their parents.’

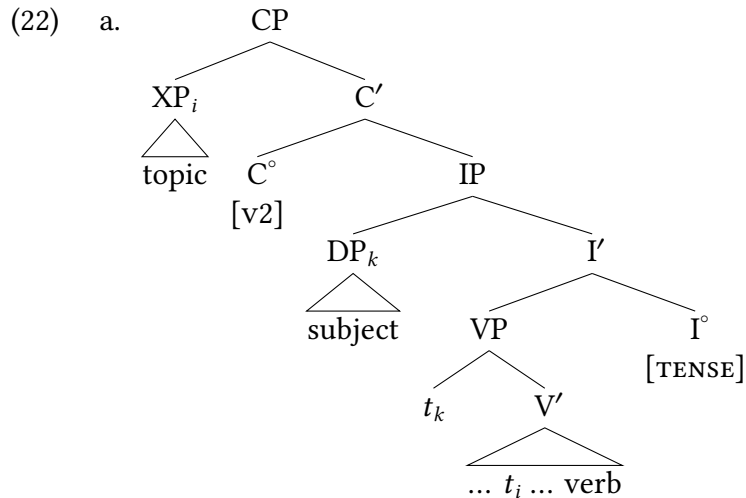
- c. ✓ { *Morgen, im Wohnzimmer* } **werden** es die Kinder ihren Eltern zeigen.  
 tomorrow in.the living.room will it the children their parents show  
 ‘The children will show it to their parents { tomorrow, in the living room }.’
- (19) a. ✓ Die Kinder **werden** ihnen das Buch zeigen.  
 the children will them the book show  
 ‘The children will show them the book.’
- b. ✓ Das Buch **werden** ihnen die Kinder zeigen.  
 the book will them the children show  
 ‘The children will show them the book.’
- c. ✓ { *Morgen, im Wohnzimmer* } **werden** ihnen die Kinder das Buch zeigen.  
 tomorrow in.the living.room will them the children the book show  
 ‘The children will show them the book { tomorrow, in the living room }.’

These word order facts are parallel to the ones for *wh*- questions in German, as expected if the verb moves to C in both sentence types.

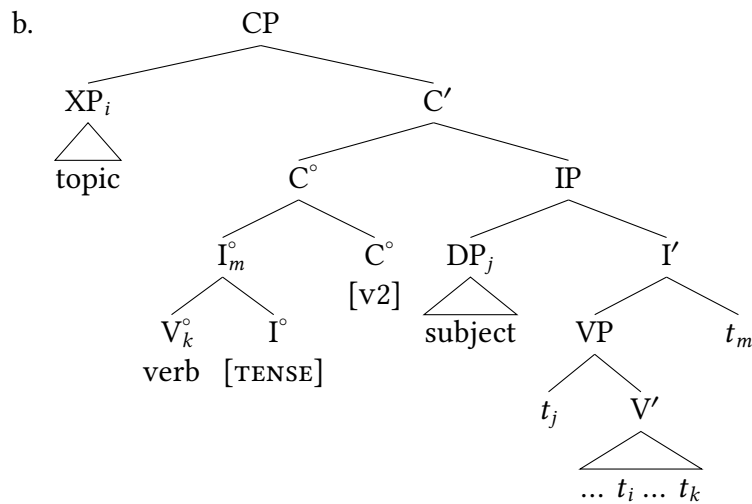
- (20) a. ✓ Wer **wird** es den Eltern zeigen?  
 who will it the parents show  
 ‘Who will show it to the parents?’
- b. ✓ Wem **werden** es die Kinder zeigen?  
 who will it the children show  
 ‘Who will the children show it to?’
- c. ✓ { *Wann, Wo* } **werden** es die Kinder ihren Eltern zeigen?  
 when where will it the children their parents show  
 ‘{ When, where } will the children show it to their parents?’
- (21) a. ✓ Wer **wird** ihnen das Buch zeigen?  
 who will them the book show  
 ‘Who will show them the book?’
- b. ✓ Was **werden** ihnen die Kinder zeigen?  
 what will them the children show  
 ‘What will the children show them?’
- c. ✓ { *Wann, Wo* } **werden** ihnen die Kinder das Buch zeigen?  
 when where will them the children the book show  
 ‘{ When, where } will the children show them the book?’

The schematic structures for German V2 sentences before and after movement of a finite main verb are shown in (22). They are analogous to those for Middle English, except that the V and I projections are head-final. Again, the structures for direct questions are identical, with the same provisos noted for Middle English (that is, Spec(CP) and C would be filled by a *wh*- phrase and [Q], respectively).





German V2 before verb movement



After movement of V to I to C

In conclusion, it is worth noting that German allows Spec(CP) to be filled not only by movement, but also by direct substitution of expletive *es* 'it'. This yields sentences like (23).

- (23) ✓ Es werden einige Kinder das Buch lesen.  
 it will some children the book read  
 'Some children will read the book.'

Thus, in addition to the subject requirement that it shares with English, German (and V2 languages more generally) have an additional **topic requirement**. In both cases, the requirement is purely syntactic. In other words, if the requirement is not satisfied by a semantically contentful element, it must be satisfied by an expletive element (*it* or *there* in the case of the English subject requirement, and *es* 'it' in the case of the German topic requirement). The purely syntactic

character of the topic requirement is apparent from the ungrammaticality of variants of (23) like (24).

- (24) a. \* Das Buch werden es einige Kinder lesen.  
           the book will     it some children read  
           Intended meaning: ‘Some children will read the book.’  
       b. \* dass es einige Kinder das Buch lesen werden  
           that it some children the book read will  
           Intended meaning: ‘that some children will read the book’

## The loss of V2 in English

4

V2 in Old and Middle English was a more complex phenomenon than in any of the other V2 languages. In particular, there is evidence that Old English (700–1100) exhibited not just one, but two types of V2. The first type invariably involved verb movement to C, as just discussed, and was found in direct questions, imperatives, certain clauses with negative force, and clauses introduced by certain adverbs (notably, *þa* ‘then’). The second type of V2 was structurally distinct from the first type (it involved verb movement to a head lower than C), and it was also superficially less transparent. In particular, in topic-initial sentences, subjects followed the finite verb if they were full noun phrases, as in the first type. But unstressed pronoun subjects preceded the verb, resulting in verb-third (V3) word orders, as summarized in Table 12.2.

|                             | Full DP subject | Pronoun subject |
|-----------------------------|-----------------|-----------------|
| V2 (topic verb subject ...) | ✓               | *               |
| V3 (topic subject verb ...) | *               | ✓               |

Table 12.2: Distribution of V2 and V3 word orders in Old English

Modern English still has a relic of this system in examples like (25) and (26).<sup>2</sup>

- (25) a. ✓ Here comes the bus; there goes the bus.  
       b. \* Here comes it; there goes it.  
       (26) a. ? Here the bus comes; there the bus goes.  
           b. ✓ Here it comes; there it goes.

In the south of England, this complicated V2 type continued to hold sway into Middle English times. Beginning in Old English, though, the north of England was repeatedly attacked and invaded by Vikings, who eventually settled there and mixed with the Old English-speaking

population. The Vikings spoke Old Norse (the ancestor of all of the Scandinavian languages), which exhibited the simpler type of V2, and this simpler type spread in the north and became prevalent, if not dominant.

In the course of Middle English, speakers of the two dialects came into increasing contact with one another, and it has been proposed that northern speakers moving to the south or children growing up in a linguistically mixed environment misanalyzed sentences like (26b) as non-V2 (Kroch, Taylor, and Ringe 2000). Such speakers would then have begun to produce sentences like (26a). It is this linguistic innovation—previously ungrammatical in both dialects—that eventually drove out both types of V2 in declarative clauses.

## Notes

5

1. The oldest Germanic language for which we have more than very short inscriptions is Gothic, an East Germanic language, which is attested in a Bible translation from the 4th century CE and which shows no signs of V2. The other Germanic languages begin to be set down in writing a few centuries later, and they already exhibit at least the first signs of V2, so V2 must have developed in the interim. Bizarre though the word order may seem to speakers of modern English and modern varieties of Romance, V2 spread from Germanic to the medieval versions of French, Italian, Spanish, and Portuguese. The way this would have happened is by large numbers of native speakers of a V2 Germanic language learning a non-V2 Romance language imperfectly as adults (for instance, Franks, Lombards, and Vandals learning the precursors of French, Italian, and Spanish, respectively). These adult learners would have produced Romance V2 sentences in error, but if there were enough of them in the population, children growing up in such an environment would have acquired the V2 order natively. In the course of their further history, however, the major Romance languages have all lost V2. It is still found in Sursilvan, a Romance dialect spoken in the Grisons, a canton in southeastern Switzerland bordering on Italy.
2. A detailed analysis of this second type of V2 is beyond the scope of this introductory textbook; for discussion, see Ringe and Taylor (2014, chapter 8).

## Exercises and problems

6

### Exercise 12.1

The sentences in (1) are superficially analogous, but their structures differ. Provide the structures.

- (1) a. English:

- ✓ The children will play.
- b. German:
- ✓ Die Kinder werden spielen.  
 the children will play  
 ‘The children will play.’

### Exercise 12.2

- A. Build structures for the modern English V2 clauses in (1), including full structures for the topics.
- (1) a. Never in their lives have they seen such orchids.  
 b. Under no circumstances will they agree.
- B. Build structures for the topics in (2). Treat *only* as an adverbial modifier.
- (2) a. Only in Brazil have they seen such orchids.  
 b. Only under those circumstances will they agree.

### Exercise 12.3

Build structures for the Middle English sentences in (1) (adapted from the examples in (9)). For simplicity, use triangle notation for DPs, PPs and AdvPs.

- (1) a. A vernycle hadde he sowed upon his cappe. (Mossé 1968: 303, 685)  
 ‘He had sewn a vernicle on his cap.’  
 b. Wel koude he rede a storie. (Mossé 1968: 303, 709)  
 ‘He could read a story well.’  
 c. This tresor hath Fortune unto us yeven. (Mossé 1968: 307, 779)  
 ‘Fortune has given this treasure to us.’

### Exercise 12.4

The Middle English sentence in (1) was structurally ambiguous between the two interpretations in (2). Explain.

- (1) Thys rememberede thei nevyr to doo.  
 (2) a. They never remembered to do this.  
 b. They remembered never to do this.

#### Extra Info

For simplicity, assume that *never* modifies the same syntactic category in both interpretations. (Hint: see Chapter 10, § 4.2.)

**Exercise 12.5**

- A. Build the structure for the German clause in (1). For simplicity, use triangle notation for DPs, PPs, and AdvPs, and treat *hat* as the head of IP.

(1) Mein Onkel hat bei seinen Nachbarn dreimal aus der Schweiz angerufen.  
 my uncle has at his neighbors three.times from the Switzerland called  
 ‘My uncle called his neighbors three times from Switzerland.’

- B. Given the discussion in the chapter, which (if any) of the sentences in (2) are expected to be grammatical? Explain.

- (2) a. Angerufen hat mein Onkel aus der Schweiz dreimal.  
 b. Aus der Schweiz hat mein Onkel dreimal angerufen.  
 c. Dreimal aus der Schweiz hat mein Onkel bei seinen Nachbarn angerufen.

**Problem 12.1**

- A. Assume that the Middle English sentence in (1) is a V2 sentence. What does it mean? Is it structurally ambiguous? (That is, who is greeting whom?) Does it matter whether the V' is head-initial or head-final?

(1) The king greeted the queen.

- B. Repeat (A) for the Middle English sentence in (2).

(2) The king will the queen greet.

- C. Repeat (A) for the Middle English sentence in (3). Assume that VP shells are consistently head-initial or consistently head-final.

(3) The queen was the palfrey given.

# Constraints on *wh*-movement

## Chapter outline

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In Chapter 6, we argued that *wh*- phrases in questions, relative clauses, and various other constructions move from their **canonical** position (the position where they are interpreted) to Spec(CP). In that chapter, the source IP and the target CP for *wh*- movement were neighbors, so to speak, but examples like (1) suggest that the structural distance that a *wh*-phrase can move is unlimited, often called **unbounded** (that is, unbounded apart from performance considerations such as limitations on memory). Movement in (1a) is called **local** movement, as distinct from **long-distance** movement in (1b)–(1e) (also known as **long** or **nonlocal** movement).

- (1) a. [<sub>CP</sub> What<sub>*i*</sub> were they reading *t<sub>i</sub>* ] ?  
       b. [<sub>CP</sub> What<sub>*i*</sub> did he say  
           [<sub>CP</sub> that they were reading *t<sub>i</sub>* ] ] ?  
       c. [<sub>CP</sub> What<sub>*i*</sub> does she believe  
           [<sub>CP</sub> that he said  
           [<sub>CP</sub> that they were reading *t<sub>i</sub>* ] ] ] ?  
       d. [<sub>CP</sub> What<sub>*i*</sub> are they claiming

- e.  $[_{CP} \text{ What}_i \text{ do you think}$   
 $[_{CP} \text{ that they are claiming}$   
 $[_{CP} \text{ that she believes}$   
 $[_{CP} \text{ that he said}$   
 $[_{CP} \text{ that they were reading } t_i ] ] ] ] ] ?$

Surprisingly, however, even very short-distance movement can be stunningly ungrammatical, as shown in (2).

- (2) a. They read Jonathan's book.  
 b. \*Whose<sub>i</sub> did they read t<sub>i</sub> book? (cf. ✓ Whose book did they read?)  
           ↑                                  |

Accordingly, beginning in the 1960s, attempts were made to understand the conditions under which *wh*-movement is and isn't possible. Ross (1967) catalogued various contexts where *wh*-movement isn't possible, which he gave the descriptive blanket term **islands** (the idea behind the metaphor being that a phrase is marooned—it can move within the island, but not escape off of it). Ross's work represents significant empirical progress over what was known at the time about *wh*-movement, but from a theoretical point of view, islands are simply a list of syntactic contexts, sharply raising the question of whether it is possible to characterize them and to derive the constraints on movement associated with them in a principled way. With this aim in mind, Chomsky (1973) proposed the so-called **subjacency** condition, a relatively simple, purely structural condition on *wh*-movement. Along with Ross's original work and later additions to the list of islands, Chomsky's proposal has given rise to a vast literature with two main wings. One wing extends Chomsky's guiding idea that constraints on *wh*-movement are structural, whereas the other wing attempts to derive the same constraints from other sources, notably pragmatics and psycholinguistic processing.

This chapter is not intended to summarize the decades of work since Ross’s and Chomsky’s pioneering work. Rather, we illustrate Ross’s island constraints and present the subjacency condition as formulated in Chomsky (1973), along with a very few considerations motivating further work. An excellent survey of the current state of research is Liu et al. (2022), which should be accessible after reading this chapter.

## Ross's island constraints

1

As mentioned in the introduction to the chapter, Ross (1967) discovered a number of contexts out of which *wh*-movement is unacceptable:


- noun complement clauses,
- relative clauses,<sup>1</sup>
- sentential subjects,
- indirect questions,
- possessive noun phrases, and
- coordinate structures.


We begin by illustrating the island character of noun complement clauses. First, recall from (1b)–(1e) that long *wh*-movement out of *that* complement clauses to verbs is grammatical. By contrast, *wh*-movement out of *that* complements to nouns is not, as shown in (3) and (4). For clarity, in the next few examples, the heads associated with the complement clauses are underlined.

### Extra Info

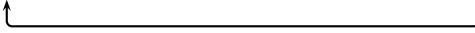
In the rest of this section and for much of the remaining chapter, we indicate unacceptability with asterisks, in accordance with Ross's and Chomsky's assumption that these sentences violate structural constraints. But when discussing approaches that attempt to derive such examples from extragrammatical considerations, we use '#' instead.


#### Noun complement:

- (3) a. They made the claim [ that they know the mayor ].  
 b. \* Who<sub>i</sub> did they make the claim [ that they know *t<sub>i</sub>* ]?  


(4) a. They mentioned the fact [ that they had met the mayor ].  
 b. \* [ Which public figure ]<sub>i</sub> did they mention the fact [ that they had met *t<sub>i</sub>* ]?  


Particularly striking is the contrast between (3b) and (4b) on the one hand and the essentially synonymous examples in (5) on the other.


- (5) a. ✓ Who<sub>i</sub> did they claim [ that they know *t<sub>i</sub>* ]?  


b. ✓ [ Which public figure ]<sub>i</sub> did they mention [ that they had met *t<sub>i</sub>* ]?  


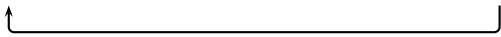


The remaining examples in this section illustrate the other islands.

Relative clause:

- (6) a. They met someone [ who knows the president ].  
 b. \* [ Which public figure ]<sub>i</sub> did they meet someone [ who knows *t<sub>i</sub>* ]?
- 

Sentential subject:

- (7) a. That they personally know the president seems improbable.  
 b. \* Who<sub>i</sub> does [ that they personally know *t<sub>i</sub>* seem improbable? ]
- 

(8) illustrates the island character of indirect questions. In connection with (8b), it is important to distinguish the two instances of *wh*-movement: that of *which problem* and that of *how*. *Which problem* moves from its original position as complement of *solve* to the Spec(CP) of the complement clause. It is this movement—grammatical on its own—that creates an island for any further *wh*-movement, preventing *how* from moving “off island” to the Spec(CP) of the matrix clause.

### Word of Caution

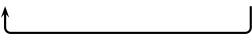

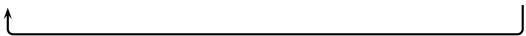
Be sure to interpret *How* in (8b) as modifying the complement verb *solve*, as indicated by the trace, not the matrix verb *forgotten*. In other words, a possible answer to (8b) is *by Fourier analysis*, but not *by succumbing to Alzheimer's*.

Indirect question:

- (8) a. They have forgotten which problem they should solve by Fourier analysis.  
 b. \* How<sub>i</sub> have they forgotten which problem they should solve?

Finally, (9) (= (2)) and (10) illustrate the island character of possessive noun phrases and of coordinate structures.

Possessive noun phrase:

- (9) a. They read Jonathan's book.  
 b. \* Whose<sub>i</sub> did they read *t<sub>i</sub>* book?
- 
- (10) a. They ordered tiramisu and espresso.  
 b. \* [ Which dessert ]<sub>i</sub> did they order *t<sub>i</sub>* and espresso?  
 c. \* [ Which beverage ]<sub>i</sub> did they order tiramisu and *t<sub>i</sub>*?
- 
- 

## Subjacency


2

### 2.1 Two possible derivations for long-distance *wh*-movement


When we consider examples of long-distance *wh*-movement like (1b), repeated in (11), two possible derivations come to mind.

- (11) What did he say that they were reading?

On the one hand, the *wh*-phrase might move in one fell swoop from the position where it is interpreted, however deeply embedded that is, to the sentence-initial Spec(CP) position, yielding a *wh*-movement chain with two links, as in (12).

- (12)  $[_{CP} \text{ What}_i [_{IP} \text{ did he say } [_{CP} t_i \text{ that } [_{IP} \text{ they were reading } t_i ] ] ] ] ?$
- 

On the other hand, *wh*-movement might take place in several steps. The first step takes the moved constituent from its original position to the nearest Spec(CP), and each subsequent step takes it to the next higher Spec(CP). This derivation of (11), which involves two steps and yields a chain with three links, is shown in (13).

- (13)  $[_{CP} \text{ What}_i [_{IP} \text{ did he say } [_{CP} t_i \text{ that } [_{IP} \text{ they were reading } t_i ] ] ] ] ?$
- 

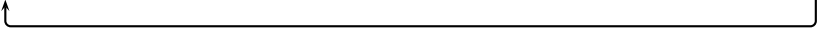
Derivations as in (13) are known as **cyclic** (the idea being that each successively higher CP forms a separate cycle in the derivation of the entire sentence). Cyclic derivations decompose apparently nonlocal movement into sequences of local movement. Derivations as in (12), which do not decompose nonlocal movement, are accordingly known as **noncyclic**.

### 2.2 IP as a barrier

Given only grammatical instances of long-distance *wh*-movement like (1b)–(1e), repeated here as (14), it is impossible to decide which of the two alternatives just presented is correct, or even whether a choice must be made between them. (The parentheses indicate intermediate traces that are posited in a cyclic, but not in a noncyclic, derivation.)

- (14) a.  $[_{CP} \text{ What}_i \text{ did he say } [_{CP} (t_i) \text{ that they were reading } t_i ] ] ?$   
 b.  $[_{CP} \text{ What}_i \text{ does she believe } [_{CP} (t_i) \text{ that he said } [_{CP} (t_i) \text{ that they were reading } t_i ] ] ] ?$   
 c.  $[_{CP} \text{ What}_i \text{ are they claiming } [_{CP} (t_i) \text{ that she believes } [_{CP} (t_i) \text{ that he said } [_{CP} (t_i) \text{ that they were reading } t_i ] ] ] ] ?$   
 d.  $[_{CP} \text{ What}_i \text{ do you think } [_{CP} (t_i) \text{ that they are claiming } [_{CP} (t_i) \text{ that she believes } [_{CP} (t_i) \text{ that he said } [_{CP} (t_i) \text{ that they were reading } t_i ] ] ] ] ] ?$

However, the existence of syntactic islands forces us to choose the cyclic alternative. For instance, consider the derivation of the ungrammatical question in (8b), repeated as (15). (Remember to interpret *how* in (15) as modifying *solve*, not *forgotten*, as indicated by the trace.)

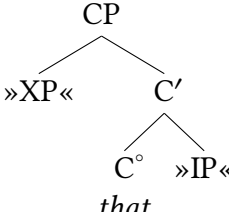
- (15) \*How<sub>i</sub> have they forgotten [<sub>CP</sub> which problem they should solve *t<sub>i</sub>*] ?
- 

If *wh*-movement were able to occur in one fell swoop, there would be nothing to stop long-distance *wh*-movement in (15), and the question should be grammatical, contrary to fact. But the ungrammaticality of the question can be made to follow if we assume that *wh*-movement is cyclic. Specifically, let's assume, following Chomsky (1973), that *wh*-movement is subject to the condition in (16), and that IPs form **barriers** to movement.


- (16) Subjacency condition:

In a chain formed by movement, the path connecting two neighboring links must not contain more than one barrier (in other words, on the path between A and B, there is at most one barrier C such that A c-commands C and C **dominates** B).

Given (16), a *wh*-phrase can move out of an IP that dominates it just in case an empty local Spec(CP) is available as an intermediate landing site. We allow CPs to “sprout” specifiers as needed; more precisely, we allow complementizers to have elementary trees with specifiers as needed, as shown for *that* in (17).

- (17)
- 

In the absence of an intermediate landing site, *wh*-movement is ruled out as ungrammatical. The barriers relevant in the derivation of (15) are shown in (18).<sup>2</sup>

- (18) \* [<sub>CP</sub> How<sub>i</sub> have [<sub>IP</sub> they forgotten [<sub>CP</sub> which problem [<sub>IP</sub> they should solve *t<sub>i</sub>*] ] ] ] ?
- 

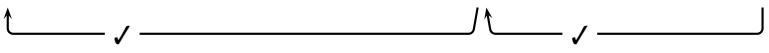

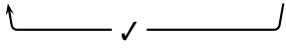
### Extra Info

In determining whether subjacency is violated, we can consider the relevant movement chains in either top-down or bottom-up fashion. In what follows, we choose bottom-up. In other words, we follow the *wh*-phrase as it attempts to move from its canonical position to the target Spec(CP). The lowest barrier in each chain is indicated by a check mark, because movement past it is consistent with subjacency; subsequent higher barriers are indicated by asterisks.

### 2.3 DP as a barrier

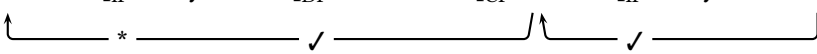
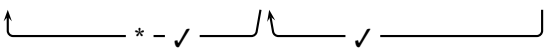
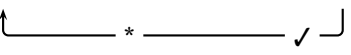
Given the structural parallels between indirect questions and relative clauses, the island character of relative clauses illustrated in (6) follows directly. However, under the assumption that only IP counts as a barrier, subjacency fails to rule out the other island types. (19) shows the relevant derivations, to be revised, according to which the examples should be grammatical. (In (19b), the CP brackets the sentential subject.)

(19) Derivations to be revised!

- a. \* Who<sub>i</sub> did [<sub>IP</sub> they make the claim [<sub>CP</sub> *t<sub>i</sub>* that [<sub>IP</sub> they know *t<sub>i</sub>* ] ] ] ?  

- b. \* Who<sub>i</sub> does [<sub>IP</sub> [<sub>CP</sub> *t<sub>i</sub>* that [<sub>IP</sub> they know *t<sub>i</sub>* personally ] ] seems improbable ] ?  

- c. \* Whose<sub>i</sub> did [<sub>IP</sub> they buy *t<sub>i</sub>* book ] ?  


Chomsky therefore proposed that the set of barriers includes not only IPs, but DPs as well. In that case, the examples are all correctly ruled out, as shown in (20).

(20) Correct Derivations

- a. \* Who<sub>i</sub> did [<sub>IP</sub> they make [<sub>DP</sub> the claim [<sub>CP</sub> *t<sub>i</sub>* that [<sub>IP</sub> they know *t<sub>i</sub>* ] ] ] ] ?  

- b. \* Who<sub>i</sub> does [<sub>IP</sub> [<sub>DP</sub> [<sub>CP</sub> *t<sub>i</sub>* that [<sub>IP</sub> they know *t<sub>i</sub>* personally ] ] ] seems improbable ] ?  

- c. \* Whose<sub>i</sub> did [<sub>IP</sub> they buy [<sub>DP</sub> *t<sub>i</sub>* book ] ] ?  


Notice that in (20b), we need to assume that the sentential subject is dominated by DP. It is not exactly clear how the relationship between DP and CP can be made consistent with the X' schema, and this could be taken as a weakness of the subjacency approach.

## Further issues and considerations

### 3

### 3.1 The status of nonfinite IP

In addition to allowing finite complements, *forget* is a subject control verb. As expected, replacing the finite IP in (15) by its nonfinite counterpart has no effect on grammaticality, as shown in (21).

- (21) \* [CP How<sub>i</sub> have [IP they forgotten [CP which problem [IP PRO to solve *t<sub>i</sub>* ] ] ] ] ?
- 

But if nonfinite IPs are barriers just like finite ones, the questions in (22) should to be ungrammatical too.

- (22) a. ✓ [CP Who<sub>i</sub> are [IP they likely [IP to know *t<sub>i</sub>* already ] ] ] ?
- 
- b. ✓ [CP How<sub>i</sub> do [IP they expect [IP to solve the problem *t<sub>i</sub>* ] ] ] ?
- 

The grammaticality of these questions forces us to conclude that ECM IPs (that is, sisters of V or Adj) do not count as barriers.

### 3.2 The coordinate structure constraint revisited

Only a single IP barrier intervenes between the moved phrase in Spec(CP) and its trace in both (23) and (24), yet *wh*-movement in (23b), (23c), (24b), and (24c) is completely unacceptable. (Take care to read (23b) and (24b) without an intonation break before the conjunction.)

- (23) a. [AdvP When and where ]<sub>i</sub> were [IP you born [AdvP *t<sub>i</sub>* ] ] ?
- 
- b. \* [AdvP When ]<sub>i</sub> were [IP you born [AdvP *t<sub>i</sub>* and where ] ] ?
- 
- c. \* [AdvP Where ]<sub>i</sub> were [IP you born [AdvP when and *t<sub>i</sub>* ] ] ?
- 
- (24) They say they will get out the vote and win the election, and ...
- a. [VP get out the vote and win the election ]<sub>i</sub> , [IP they will [VP *t<sub>i</sub>* ] ] .
- 
- b. \* [VP get out the vote ]<sub>i</sub> , [IP they will [VP *t<sub>i</sub>* and win the election ] ] .
- 
- c. \* [VP win the election ]<sub>i</sub> , [IP they will [VP get out the vote and *t<sub>i</sub>* ] ] .
- 

A further example of this sort is shown in (25b).

- (25) a. They have [VP peeled the cucumbers and chopped up the onions ] .
- b. \* [ Which vegetables ]<sub>i</sub> have [IP they [VP peeled *t<sub>i</sub>* and chopped the onions ] ] ?
- 

As (26) shows, (25b) violates a parallelism constraint known as the **across-the-board (ATB)** constraint, according to which movement of a conjunct out of a coordinate structure must affect all co-conjuncts simultaneously.

- (26) [ Which vegetables ]<sub>i</sub> have [IP they [VP peeled *t<sub>i</sub>* and chopped *t<sub>i</sub>* ] ] ?
-

The exceptional character of *wh*-movement out of coordinate structures (consistent with subadjacency, but still ungrammatical/unacceptable) and the special restriction imposed upon them (the ATB constraint just mentioned) strongly suggest that the coordinate structure constraint is *sui generis* and that it should not be grouped together with the other island constraints. Accordingly, most proposals to reduce the island constraints to more general structural principles make no attempt to include the coordinate structure constraint.

### 3.3 The status of DP as a barrier revisited

As we have just seen, some examples of *wh*-movement are unacceptable even though they respect subadjacency. The converse situation occurs as well. Chomsky's definition of barrier to include both IP and DP prohibits *wh*-movement out of all noun phrases even though such movement is often completely acceptable, as shown in (27).

- [illegible]

(28) gives some naturally-occurring examples. In (28a), the struck-out *which* is included for clarity; it is silent in the original. Nominal *attempt* is treated as taking a subject control complement by analogy to the homonymous verb.

- (28) a. When I was a little boy, he teased me about a temporary but intense devotion I had to Gene Autry, the singing cowboy—a devotion **which**<sub>i</sub> [<sub>IP</sub> I would make [<sub>DP</sub> some lame attempt [<sub>CP</sub> *t*<sub>i</sub> [<sub>IP</sub> to justify *t*<sub>i</sub> ... ] ] ] ]  
(Calvin Trillin. 1996. Messages from my father. New York: Farrar, Strauss, and Giroux. 43–44)
- b. arcane technical wisdom [ of which ]<sub>i</sub> [<sub>IP</sub> he has scarcely [<sub>DP</sub> a glimmering of [<sub>DP</sub> an understanding *t*<sub>i</sub> ] ] ]  
(Jeremy Campbell. 1982. Grammatical man. Information, entropy, language, and life. Simon and Schuster. 260–261)

The acceptability of (27) and (28) suggests that perhaps DP is not a barrier after all—at least not in all contexts. It is facts like these that have prompted attempts to derive the island constraints, or at least some of them, from extragrammatical considerations, as we now briefly illustrate. We begin by noting that any question is associated with a so-called existential presupposition. The presupposition expresses the backdrop of knowledge against which the question is raised, and the question itself solicits information that is missing in the questioner’s knowledge store. For instance, the question in (29a) is associated with the presupposition in (29b).

- (29) a. Question:  
           { What, which book } are they reading?  
       b. Presupposition:  
           There is { something, some book } that they are reading.

Consider now the pattern of acceptability judgments for the questions in (30a) and for their associated presuppositions in (30b), which range from ordinary to implausible.

- (30) a. Question:  
What did they { ✓read, ✓write, ?sell, #drop } a paper about?
- b. Presupposition:  
There is a topic that they are { ✓reading, ✓writing, ?selling, #dropping } a paper about.

If we make the natural assumption that, all other things being equal, the acceptability of a question matches the plausibility of its associated presupposition, then questions that are perfectly well-formed from a grammatical point of view might nevertheless be judged as unacceptable if they are associated with a highly implausible presupposition (Kroch 1998). This, then, would straightforwardly account for the successively decreasing acceptability of the variants of the question in (30a), despite their structural parallelism.

It is worth noting that this attempt to derive the judgments in (30) from pragmatic considerations is consistent with the judgments in (31).

- (31) a. Idiomatic reading:  
✓ What did they drop a hint about?  
(cf. ✓There is a topic such that they hinted at it.)
- b. Literal reading:  
# What did they drop a hint about?  
(cf. #There is a topic such that they dropped a piece of paper with the hint written on it.)

### 3.4 Argument-adjunct asymmetries

Ross (1967) already observed that not all island violations are equally unacceptable. In particular, long movement of arguments is more acceptable than long movement of adjuncts. Subjects (which are also non-complements) behave like adjuncts, giving the pattern in (32).

#### Extra Info

The pattern in (32) is generally known as the **argument-adjunct asymmetry**, though it would be more accurate to call it an asymmetry between complements and non-complements.


- (32) a. ? [ Which problem ]<sub>i</sub> have they forgotten how<sub>k</sub> they should solve *t<sub>i</sub> t<sub>k</sub>*? (The last one on the page.)
- b. \* How<sub>i</sub> have they forgotten [ which problem ]<sub>k</sub> they should solve *t<sub>k</sub> t<sub>i</sub>*? (By Fourier analysis.)
- c. \* [ Which problem ]<sub>i</sub> have they forgotten how<sub>k</sub> *t<sub>i</sub>* should be solved *t<sub>k</sub>*? (The last one on the page.)

The pragmatic approach just discussed in connection with (30) and (32) carries over naturally to the contrast between (32a) and (32b). It does not fare so well, however, with (32c). The relevant presuppositions are given in (33); indeed, it might be argued that the presupposition for (32c) is identical to the one in (32a), which would render the contrast between those two examples even more mysterious.


- (33) a. ? There is a problem such that they have forgotten how they should solve that problem.  
 b. # There is a manner such that they have forgotten which problem they should solve in that manner.  
 c. ? There is a problem such that they have forgotten how that problem should be solved.

### 3.5 The Comp-trace effect


The final constraint on *wh*-movement that we wish to discuss is the so-called **Comp-trace effect**. (The name of the effect comes from a time when the term ‘complementizer’ was abbreviated as ‘Comp’—rather than as ‘C’, as it is today.) We begin by noting that long-distance *wh*-movement of complements and adjuncts is unaffected by whether the complement clause is headed by an overt complementizer or a silent one (indicated in the following examples by  $\emptyset_{that}$ ).

- (34) [ Which friends ]<sub>i</sub> did they say { ✓that, ✓ $\emptyset$  } they had invited  $t_i$ ?  



By contrast, long-distance movement of subjects is possible only with a silent complementizer. Replacing the silent complementizer by the overt one is ungrammatical for many speakers; hence the name of the effect.

- (35) [ Which friends ]<sub>i</sub> did they say { ✓ $\emptyset_{that}$ , %that }  $t_i$  had invited them?  


As indicated by the percent sign, there is some variation among English speakers with regard to the status of (35) (Sobin 1987). But even speakers who judge (35) to be acceptable report a Comp-trace effect in connection with movement out of indirect questions. As we have just seen, indirect questions are islands, and so long *wh*-movement out of them is not expected to be acceptable to begin with. However, indirect questions introduced by *whether* or *if* tend to give rise to relatively weak island effects; in (36), this weak effect is indicated by ‘?’.

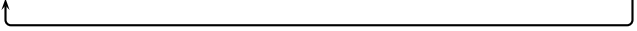



- (36) ?\* [ Which friends ]<sub>i</sub> did they forget whether they had invited  $t_i$ ?  


But analogous long subject movement, illustrated in (37), is completely unacceptable for all speakers and thus provides evidence for the existence of a Comp-trace effect even for those speakers who accept (36).

- (37) \* [ Which friends ]<sub>i</sub> did they forget whether  $t_i$  had invited them?  




Relative clauses also exhibit the Comp-trace effect. The examples in (38) are parallel to those in (34)–(37).

- (38) a. the friends  $\text{who(m)}_i$  they said { ✓that, ✓ $\emptyset_{that}$  } they had invited  $t_i$   
  
 b. the friends  $\text{who}_i$  they said { ✓ $\emptyset_{that}$ , %that }  $t_i$  invited them  
  
 c. ?\* the friends  $\text{who(m)}_i$  they forgot whether they had invited  $t_i$   
  
 d. \* the friends  $\text{who}_i$  they forgot whether  $t_i$  had invited them  


A puzzling fact is that local movement in *that* relative clauses, as in (39a), does not result in a Comp-trace effect, unlike long *wh*-movement in (39b).

- (39) a. the people [<sub>CP</sub> [ *who* ]<sub>i</sub> that  $t_i$  moved in next door ]  
 b. % the people [<sub>CP</sub> [ *who* ]<sub>i</sub> that I think [<sub>CP</sub> that  $t_i$  moved in next door ] ]

This contrast between local and nonlocal movement has given rise to many attempts at explanation, but none that we know of is entirely satisfactory.

## Notes

### 4

1. Ross (1967) treated relative clauses together with noun complement clauses, subsuming the noun phrases containing them under the category of complex noun phrases. We follow more modern treatments by distinguishing the two cases.
2. The representation in (18) assumes that *which problem* moves before *how* does, thereby preventing the complement Spec(CP) from serving as an **escape hatch** for *how*. It is also necessary to rule out an alternative derivation, according to which it is *how* that moves first. In that case, the complement Spec(CP) is empty, and *how* can move through it up to the matrix Spec(CP) without violating subadjacency. But then, of course, the intermediate trace of *how* blocks movement of *which problem* into the lower Spec(CP).

## Exercises and problems

5

### Exercise 13.1

At first glance, the structure in (1a) seems preferable to that in (1b) on the grounds that it is simpler in the sense of postulating fewer nodes. It is standardly argued, however, that the structure in (1b) with a silent complementizer is preferable. Provide evidence for the standard view.

- (1) a. They believe [<sub>IP</sub> we have read *War and Peace* ].
- b. They believe [<sub>CP</sub>  $\emptyset_{that}$  [<sub>IP</sub> we have read *War and Peace* ] ].

### Exercise 13.2

According to the analysis of relative clauses presented in Chapter 6, *that* relative clauses like (1) have the structure in (2a). But since the *wh*-phrase is silent, an alternative analysis is possible in principle, according to which the *wh*-phrase remains in its original position, as shown in (2b). Provide evidence that the movement analysis in (2a) is preferable.

- (1) the people *that* you met
- (2) a. the people [<sub>CP</sub>  $\text{wh}\theta_i$  that [<sub>IP</sub> you met  $t_i$  ] ] (movement)
- b. the people [<sub>CP</sub> that [<sub>IP</sub> you met  $\text{wh}\theta_i$  ] ] (no movement)

### Exercise 13.3

This exercise extends Exercise 6.7. Refer to that exercise for information concerning *though* preposing.

- A. The examples in (1)—and in particular, the *though* clauses—are completely acceptable. (The remaining material is given to provide context; it should be ignored for the purposes of the exercise.)

- (1) a. ✓ Though I wonder why the problem seems difficult, my friends don't wonder—they know exactly.
- b. ✓ Though the students enjoy problems which are difficult, they can't always solve them completely.

But the corresponding *though* preposing variants in (2) are not.

- (2) a. \* Difficult though I wonder why the problem seems, ...
- b. \* Difficult though the students enjoy problems which are, ...

Explain the ill-formedness of the *though* clauses in (2) in terms of subadjacency.

- B. Given subadjacency, is the acceptability judgment for (3b) expected? Explain.

- (3) a. Though we regret that the problem seems difficult, we will assign it anyway.  
 b. \* Difficult though we regret that the problem seems, ...

### Exercise 13.4

Does the relative clause in (1) respect subjacency? Explain.

- (1) a letter of which every line was an insult  
 (Jane Austen. 1981. *The complete novels*. New York: Gramercy. 84. From Chapter 7 of *Sense and sensibility*.)

### Exercise 13.5

Consider the sentence in (1a) and the simplified subpart of it in (1b).

- (1) a. Already Agassiz had become interested in the rich stores of the extinct fishes of Europe, especially those of Glarus in Switzerland and of Monte Bolca near Verona, of which at that time, only a few had been critically studied.  
 (Encyclopædia Britannica Online, Agassiz, (Jean) Louis (Rodolphe). Accessed 27 August 1999.)  
 b. the fishes of Europe, of which only a few had been studied

A. Does the relative clause in (1b) respect subjacency? Explain.

#### Extra Info

(B) and (C) address issues unrelated to islands or subjacency.

B. Is *of Europe* a complement or an adjunct of *fishes*? How can you tell?

C. Does *had* in (1b) undergo V-to-I raising? How can you tell?

### Exercise 13.6

A. Build structures for the two readings of (1).

- (1) What would you like the power to do?

B. Briefly explain how your structures from (A) are consistent with subjacency.

# Cross-linguistic variation in *wh*-movement

14

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## Chapter outline

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In this chapter, we discuss some important properties of *wh*- movement in various languages other than English. As we have seen, *wh*- phrases undergo movement to Spec(CP) in English. In many languages, however, *wh*- phrases occur in the same position as the corresponding ordinary phrases. In the first part of the chapter, we present a way of unifying the treatment of languages with and without *wh*- movement. In the course of doing so, we discuss a variant of *wh*- movement known as **partial *wh*- movement** (*Who do you think who is coming?*) which occurs in various adult languages as well as in child English. The second part of the chapter focuses on Hungarian, which resembles English in exhibiting *wh*- movement, but differs from it in that *wh*- movement targets different positions in questions and relative clauses.

## To move or not to move?

1

### 1.1 *Wh*-scope

For the purposes of this chapter, it is convenient to introduce the notion of ***wh*-scope**. For simplicity, we restrict our attention for the moment to direct questions, and define the notion as in (1).

- (1) The **scope** of a *wh*-phrase in a question is determined with respect to some full answer to the question.

The *wh*-phrase's scope in the question is the IP that corresponds to the root in the full answer.

In (2), the *wh*-phrases are underlined in red, and their scope is in **bold**.<sup>1</sup>

- (2) a. Question: When<sub>i</sub> did [IP **the visitors arrive *t<sub>i</sub>*** ] ?  
       Full answer: [IP The visitors arrived at noon ].  
       b. Question: Who<sub>i</sub> do [IP **the parents think that the children saw *t<sub>i</sub>*** ] ?  
       Full answer: [IP The parents think that the children saw the teacher ].

It is useful to think of the *wh*-phrases in (2) as marking their scope in the sense that they move from inside their scope to the edge of it. In structural terms, a *wh*-phrase moves to the specifier of the lowest projection that dominates its scope. We will refer to this position as the *wh*-phrase's **scope-marking position** or **scope position**.

### 1.2 *Wh*-in situ

In English, *wh*-phrases generally come to occupy their scope position by *wh*-movement. In other languages, however, *wh*-phrases do not undergo *wh*-movement, but instead remain **in situ** (that is, in the position where the *wh*-phrase enters the derivation of the question, whether by substitution or adjunction). Such ***wh*-in situ languages** include Chinese, Hindi, Korean, and Japanese, among many others. (3) gives the Japanese counterparts of (2).<sup>2</sup>

Once again, the *wh*-phrases are underlined in red, and their scope indicated in **bold**. As is evident, a *wh*-phrase in a *wh*-in situ language is contained within its scope, rather than moving to the edge of it. (We assume that the question marker *ka* is the overt counterpart to the silent complementizer that we have been assuming for English questions; this is why it is represented outside of the IP, in the clause-final position that is expected given the head-final character of Japanese phrase structure.)

## Extra Info

The abbreviations used in the glosses are: accusative (ACC), locative (LOC), nominative (NOM), plural (PL), present tense (PRS), Question (Q), topic (TOP).

- (3) a. Question:

[<sub>IP</sub> 見学者は いつ 着きました ] か。  
 [<sub>IP</sub> kengakusha-wa itsu tsuki-mashita ] ka?  
 visitor-TOP when arrive-PST Q

‘When did the visitors arrive?’

Full answer:

[<sub>IP</sub> 見学者は 昼に 着きました ] 。  
 [<sub>IP</sub> kengakusha-wa hiru-ni tsuki-mashita ] .  
 visitor-TOP noon-at arrive-PST

‘The visitors arrived at noon.’

- b. Question:

[<sub>IP</sub> 両親は 子供たちが 誰を 見た と 思います ] か。  
 [<sub>IP</sub> ryōshin-wa kodomo-tachi-ga dare-o mi-ta to omoi-masu ] ka?  
 parents-TOP child-PL-NOM who-ACC see-PST that think-PRS Q

‘Who do the parents think that the children saw?’

Full answer:

[<sub>IP</sub> 両親は 子供たちが 先生を 見た と 思います ] 。  
 [<sub>IP</sub> ryōshin-wa kodomo-tachi-ga sensei-o mi-ta to omoi-masu ] .  
 parents-TOP child-PL-NOM teacher-ACC see-PST that think-PRS

‘The parents think that the children saw the teacher.’

### 1.3 A copy theory of movement

Given the aim of generative syntax of minimizing the differences among languages, it has been proposed to derive *wh*- in situ questions by *wh*- movement—contrary to superficial appearances. This becomes possible by slightly revising our ideas about movement. Instead of saying that movement leaves a trace, let us say that it leaves a copy and that Universal Grammar allows variation concerning which copy is pronounced. In English, it is the highest copy of *wh*- movement that is pronounced;<sup>3</sup> in *wh*- in situ languages like Japanese, the lowest copy. In what follows, we indicate silent copies by striking them through.

- (4) a. [<sub>CP</sub> Which movie did [<sub>IP</sub> the children watch ~~which movie~~ ] ] ?  
 b. The parents asked [<sub>CP</sub> which movie [<sub>IP</sub> the children watched ~~which movie~~ ] ].
- (5) a. [<sub>CP</sub> どの 映画を [<sub>IP</sub> 子供たちは どの 映画を 見ました ] か ] 。  
 [<sub>CP</sub> dono eiga-o [<sub>IP</sub> kodomo-tachi-wa dono eiga-o mi-mashi-ta ] ka ] .  
 child-PL-TOP which movie-ACC see-PST Q  
 ‘Which movie did the children watch?’

- b. 両親は [CP どの 映画を [IP 子供たちが どの 映画を 見た ] か ]  
 ryōshin-wa [CP dono eiga-o [IP kodomo-tachi-ga dono eiga-o mi-ta ] ka ]  
 parents-TOP child-PL-NOM which movie-ACC see-PST Q  
 聞いた。  
 kii-ta.  
 ask-PST  
 ‘The parents asked which movie the children watched.’

### Word of Caution

For convenience, we will continue to use the terms ‘*wh*-movement’ and ‘*wh*-in situ’ to refer to languages, questions, and so on, in which the highest and lowest copies of a *wh*-phrase are pronounced, respectively.

Independent evidence in favor of the copy theory of movement comes from the judgments of speakers of certain languages who do not allow ordinary long-distance movement. For instance, some speakers of German reject the examples in (6), while accepting the corresponding *wh*-copy questions in (7).

- (6) a. % Wen glauben die Besucher, dass sie gesehen haben?  
 who-ACC believe the visitors that they seen have  
 ‘Who do the visitors believe that they saw?’  
 b. % Wen glaubst du, dass Martin meint, dass du magst?  
 who-ACC believe you that thinks that you like  
 ‘Who do you believe that Martin thinks that you like?’  
 (7) a. % Wen glauben die Besucher, wen sie gesehen haben?  
 who-ACC believe the visitors who-ACC they seen have  
 ‘Who do the visitors believe that they saw?’  
 b. % Wen glaubst du, wen Martin meint, wen du magst?  
 who-ACC believe you who-ACC thinks who-ACC you like  
 ‘Who do you believe that Martin thinks that you like?’

The overt repetition of the *wh*-phrase in (7) lends strong support to the idea that *wh*-phrases move through Spec(CP) in long-distance movement. In addition, it supports the idea that grammars can differ as to which copies of movement are pronounced. (8) and (9) give isomorphic structures for (6) and (7), which differ only in which links are pronounced: only the highest one in ordinary long-distance *wh*-movement, or all links except the lowest in the corresponding *wh*-copy questions.  $\emptyset_{dass}$  indicates the silent counterpart of the complementizer *dass* ‘that’; like modern standard English, the varieties of German under discussion allow either Spec(CP) or C, but not both, to be filled with overt material in subordinate clauses.

- (8) a. [CP Wen glauben die Besucher, [CP ~~wen~~ dass sie ~~wen~~ gesehen haben ] ] ?  
 b. [CP Wen glauben die Besucher, [CP wen  $\emptyset_{dass}$  sie ~~wen~~ gesehen haben ] ] ?  
 (9) a. [CP Wen glaubst du, [CP ~~wen~~ dass Martin meint, [CP ~~wen~~ dass du ~~wen~~ magst ] ] ] ?  
 b. [CP Wen glaubst du, [CP wen  $\emptyset_{dass}$  Martin meint, [CP wen  $\emptyset_{dass}$  du ~~wen~~ magst ] ] ] ?

### 1.4 Partial *wh*-movement

Certain languages exhibit yet a further variant of *wh*-movement in which the *wh*-phrase undergoes *wh*-movement, but to a position lower than its scope position. The scope position itself is occupied by a distinct *wh*-phrase (generally the language's counterpart of *what*). This phenomenon, known as **partial *wh*-movement**, is illustrated for German in (10).<sup>4</sup> The true (= contentful) *wh*-phrase is underlined in red, and the scope-marking *wh*-phrase is **in blue bold-face**.

- (10) a. **Was** glauben die Besucher, wen  $\emptyset_{dass}$  sie ~~wen~~ gesehen haben?  
 what believe the visitors who-ACC they seen have  
 'Who do the visitors believe that they saw?'  
 b. **Was** glauben die Besucher, mit wem  $\emptyset_{dass}$  sie ~~mit wem~~ gesprochen haben?  
 what believe the visitors with who-DAT they spoken have  
 'Who do the visitors believe that they talked with?'

For comparison, (11) shows the full *wh*-movement counterparts of (10), where the *wh*-phrase functions as a scope marker on its own.<sup>5</sup>

- (11) a. Wen glauben die Besucher, ~~wen~~  $\emptyset_{dass}$  sie ~~wen~~ gesehen haben?  
 who-ACC believe the visitors they seen have  
 'Who do the visitors believe that they saw?'  
 b. Mit wem glauben die Besucher, ~~mit wem~~  $\emptyset_{dass}$  sie ~~mit wem~~ gesprochen haben?  
 with who-DAT what believe the visitors they spoken have  
 'Who do the visitors believe that they talked with?'

The scope of the *wh*-phrase needs to be indicated in one of the two ways just presented. The absence of scope marking results in severe ungrammaticality, as shown in (12).

- (12) a. \*Glauben die Besucher, wen  $\emptyset_{dass}$  sie ~~wen~~ gesehen haben?  
 believe the visitors who-ACC they seen have  
 Intended meaning: (11a)  
 b. \*Glauben die Besucher, mit wem  $\emptyset_{dass}$  sie ~~mit wem~~ gesprochen haben?  
 believe the visitors with who-DAT they spoken have  
 Intended meaning: (11b)

The scope-marking *wh*-phrase in (10) is often called a ***wh*-expletive**. The idea is that the relationship between it and the true *wh*-phrase is comparable to the relationship between the expletive subject and the logical subject in the expletive *there* construction. In that construction, the logical subject occupies a VP-internal position marking its function as an argument of a verb (we will remain agnostic about the exact location of the position), and expletive *there* occupies Spec(IP), marking the subject's function as the subject of predication. It is this higher position that the logical subject occupies in an ordinary sentence without expletive *there*. As (13) shows, the higher position cannot be left empty.



- (13) a. **There** remain several vexing problems. — analogous to (10)  
 b. Several vexing problems remain ~~several vexing problems~~. — analogous to (11)  
 c. \* Remain several vexing problems. — analogous to (12)

The analysis of partial *wh*-movement that we will propose relies on the copy theory of the movement as well as on an idea introduced in earlier chapters—namely, that the elements manipulated by the syntax are not words per se, but rather features or bundles of features that are **spelled out** by the morphology. Two examples are given in (14).

- (14)
- |    | Features                                                                                                       |   | Spellout |
|----|----------------------------------------------------------------------------------------------------------------|---|----------|
| a. | $\begin{bmatrix} \text{person: 3} \\ \text{number: PL} \\ \text{gender: M} \\ \text{case: POSS} \end{bmatrix}$ | → | their    |
| b. | $\begin{bmatrix} \text{root: sing} \\ \text{tense: PST} \end{bmatrix}$                                         | → | sang     |

In the present case, let us assume that *wh*-phrases consist of a *wh*-feature and some remaining substantive content. This syntactic dichotomy corresponds semantically to a so-called *wh*-quantifier (which takes scope over some proposition) and a restriction on the quantifier. For instance, if the *wh*-quantifier is restricted to humans, the bundle consisting of the features [*wh*: +] and [*human*: +] is spelled out as *who*. Otherwise, the *wh*-quantifier is spelled out by default as *what*. In ordinary *wh*-movement, the *wh*-feature and the features associated with it in its in-situ position always move together. In partial *wh*-movement, however, the feature bundle moves only as far as the next highest Spec(CP). After that, the *wh*-feature moves on alone. When the sentence is spelled out, lone *wh*-features are spelled out as the language's default *wh*-word. Under this analysis, partial *wh*-movement is partial in two distinct (though related) senses. First, the true *wh*-phrase moves only part of the way to its scope position. Second, the *wh*-phrase in the scope position contains only part of the features of the true *wh*-phrase. The derivations that we are proposing for the partial movement in (10a) and its full movement counterpart in (11a) are indicated schematically in (15).

- (15) a. [***wh*: +**] glauben die Besucher,  $\begin{bmatrix} \text{wh: +} \\ \text{human: +} \end{bmatrix} \emptyset_{dass} \text{ sie } \begin{bmatrix} \text{wh: +} \\ \text{human: +} \end{bmatrix} \text{ gesehen haben?}$   
 b.  $\begin{bmatrix} \text{wh: +} \\ \text{human: +} \end{bmatrix}$  glauben die Besucher,  $\begin{bmatrix} \text{wh: +} \\ \text{human: +} \end{bmatrix} \text{ dass sie } \begin{bmatrix} \text{wh: +} \\ \text{human: +} \end{bmatrix} \text{ gesehen haben?}$

In instances of partial *wh*-movement with more than two clauses, the true *wh*-phrase can move to the lowest Spec(CP) or to the intermediate one. The two options are shown in (16a) and (16b). (16c) gives the variant with full *wh*-movement by way of comparison. For simplicity, we show the questions after the features have been spelled out.

- (16) a. [<sub>CP</sub> **Was** glaubst du, [<sub>CP</sub> **was**  $\emptyset_{dass}$  Martin meint, [<sub>CP</sub> **wen**  $\emptyset_{dass}$  du **wen** magst ] ] ]  
 b. [<sub>CP</sub> **Was** glaubst du, [<sub>CP</sub> **wen**  $\emptyset_{dass}$  Martin meint, [<sub>CP</sub> **wen** dass du **wen** magst ] ] ]

- c. [<sub>CP</sub> Wen glaubst du, [<sub>CP</sub> ~~wen~~ dass Martin meint, [<sub>CP</sub> ~~wen~~ dass du ~~wen~~ magst ] ] ]  
 who-ACC believe you that thinks that you like  
 ‘Who do you believe that Martin thinks that you like?’

### 1.5 But what if they are errors?

Although adult English exhibits neither *wh*-copy questions or partial *wh*-movement, both types of questions have been reported for child English (Thornton 1995, p. 187), as illustrated in (17) and (18).

- (17) a. Who do think who Grover wants to hug?  
 b. Who do you think who’s in there, really, really, really?  
 (18) a. What do you think what Cookie Monster eats?  
 b. What do you think what the baby drinks?

The availability of partial *wh*-movement in child English raises a subtle issue. We have been assuming that the various constructions under discussion (ordinary long-distance *wh*-movement, *wh*-copy questions, and partial *wh*-movement) are generated by slightly distinct grammars. But the fact that *wh*-copy questions and partial *wh*-movement occur in acquisition suggests the possibility that these variants aren’t generated by separate grammars, but that they reflect a failure to properly implement structures that are generated by the adult standard grammar. We know that speakers make **performance errors** under taxing conditions, and long-distance *wh*-movement imposes a greater processing load than does local *wh*-movement, especially for speakers with immature cognitive resources. Under this latter view, *wh*-copy questions and partial *wh*-movement are comparable to the restart questions mentioned in Chapter 1, § 2.3.

- (19) Is the boy who was holding the plate, is he crying?

As it turns out, both views are correct—for different speakers (Crain and Thornton 1998, pp. 196–198). Some children produce *wh*-copy questions and partial *wh*-movement only rarely and under special conditions (for instance, at the beginning of an experimental session, when they are more nervous than later on). For such children, it is reasonable to assume that the nonadult questions are in fact performance errors. But other children produce the nonadult questions consistently and independently of various factors that favor performance errors (such as beginning of session, young age, and distance between the scope position and the in-situ position, whether measured in terms of numbers of words or number of intervening clauses). For such children, it is reasonable to assume that the nonadult questions are generated by grammars that are consistent with Universal Grammar, although they happen not to be the grammars in use in the child’s language community. Analogous reasoning of course extends to adult usage, leading us to assign a different status to the one-time production of a *wh*-copy question by a highly embarrassed English speaker than to the consistent production of such questions by an entire speech community.

A final note is in order. Even if it had turned out that *wh*-copy questions and partial *wh*-movement were performance errors every time they occurred for all speakers, these phenomena would still provide insight into the speakers’ underlying grammars. The reason is that even

undoubted performance errors respect the structures generated by the grammar and therefore provide evidence concerning them.<sup>6</sup> The canonical example is slips of the tongue, like the classic examples in (20). Such errors provide clear evidence that syllables consist of onsets and rhymes (as indicated by hyphenation), since they involve switching onsets.<sup>7</sup>

- (20) You have h-issued all my m-ystery lectures ... in fact, you have t-asted the whole w-orm.

Speech errors like the hypothetical example in (21), though conceivable in principle, never occur because they do not respect syllable structure.

- (21) \* ... in fact, you have ter-sted the whole wa-me.

Analogously, there are hypothetical errors concerning *wh*-movement that are attested in neither child English nor German. For instance, the examples in (22) involve pronouncing copies of the *wh*-phrase right after each subject.

- (22) a. \* Do [<sub>IP</sub> you what think that [<sub>IP</sub> Cookie Monster what likes ] ]  
           Intended meaning: ‘What do you think that Cookie Monster likes?’  
       b. \* Glauben [<sub>IP</sub> die Besucher wen,      dass [<sub>IP</sub> sie wen      gesehen haben ] ]  
           believe      the visitors    who-ACC that      they who-ACC seen      have  
           Intended meaning: ‘Who do the visitors believe that they saw?’

Given the absence of such “crazy” errors, we can conclude that *wh*-copy questions and partial *wh*-movement provide evidence for cyclic *wh*-movement to Spec(CP), variation concerning the spellout of traces, and the existence of syntactic features—independently of whether these constructions are performance errors.

## Where to move?

2

### 2.1 Hungarian questions

(23) gives a Hungarian sentence with so-called neutral order.<sup>8</sup>

- (23) Emöke látta Attilá-t      tegnap      este.  
           saw                    -ACC yesterday evening  
           ‘Emöke saw Attila last night.’

In such neutral sentences, which are felicitous as answers to the question *What happened?*, the subject occupies clause-initial position and precedes the verb. By contrast, in *wh*-questions like (24), the clause-initial position is occupied by the *wh*-phrase, and the subject follows the finite verb.

- (24) a. Ki-t látott Emöke tegnap este?  
 who-ACC saw yesterday evening  
 'Who(m) did Emöke see last night?'  
 b. Mikor látta Emöke Attilá-t?  
 when saw -ACC  
 'When did Emöke see Attila?'

It is noteworthy that answers to such questions preserve the constituent order of the question when the answer is intended as an exhaustive answer to the question. In fact, under such an interpretation, the variant without subject-verb inversion is ungrammatical.

- (25) a. Attilá-t látta Emöke tegnap este.  
 -ACC saw yesterday evening  
 'Emöke saw Attila (and no one else) last night.'  
 b. Tegnap este látta Emöke Attilá-t.  
 yesterday evening saw -ACC  
 'Emöke saw Attila last night (and only then).'
- (26) a. \* Attilá-t Emöke látta tegnap este.  
 b. \* Tegnap este Emöke látta Attilá-t.

As expected if focused phrases (including questioned phrases) move to the same syntactic position, questions with focused constituents are ungrammatical in Hungarian.

- (27) a. \* Ki-t tegnap este látta Emöke?  
 who-ACC yesterday evening saw  
 Intended meaning: 'Who(m) did Emöke see last night?'  
 b. \* Mikor Attilá-t látta Emöke?  
 when -ACC saw  
 Intended meaning: 'When did Emöke see Attila?'

The constituent order in (24) and (25) is reminiscent of English questions, and so it is natural to propose that focused phrases move to Spec(CP) in Hungarian, with concomitant movement of the verb to C. But contrary to what that proposal predicts, the complementizer *hogy* 'that' precedes the *wh*-/focus position in various types of subordinate clauses: in ordinary complement clauses with a focused constituent, in indirect yes/no questions with a focused constituent, and in indirect *wh*- questions. (Hungarian is a so-called null subject language, so the subjects of finite clauses can be silent, as they are in the matrix clauses in the following examples.)

- (28) a. Azt mondják, hogy Attilá-t látta Emöke tegnap este.  
 it say.3PL that -ACC saw yesterday evening  
 'They say (it) that Emöke saw (only) Attila last night.'  
 b. Azt mondják, hogy tegnap este látta Emöke Attilá-t.  
 it say.3PL that yesterday evening saw -ACC  
 'They say (it) that Emöke saw Attila last night (only).'

- (29) a. Azt kérdeztük, hogy Attilá-t látta-e Emöke tegnap este.  
 it asked.1PL that -ACC saw-Q yesterday evening  
 ‘We asked (it) whether Emöke saw (only) Attila last night.’  
 b. Azt kérdeztük, hogy tegnap este látta-e Emöke Attilá-t.  
 it asked.1PL that yesterday evening saw-Q -ACC  
 ‘We asked (it) whether Emöke saw Attila last night (only).’
- (30) a. Azt kérdeztük, hogy ki-t látott Emöke tegnap este.  
 it asked.1PL that who-ACC saw yesterday evening  
 ‘We asked (it) who(m) Emöke saw last night.’  
 b. Azt kérdeztük, hogy mikor látta Emöke Attilá-t.  
 it asked.1PL that when saw -ACC  
 ‘We asked (it) when Emöke saw Attila.’

The examples in (28)–(30) clearly show that the target of focus movement in Hungarian cannot be Spec(CP), but rather must be some lower position. Accordingly, it has been proposed that the clausal structure of Hungarian is as indicated schematically in (31).

- (31) [<sub>CP</sub> [<sub>C</sub> hogy [<sub>FocP</sub> Focus [<sub>Foc</sub> Verb ] [<sub>IP</sub> Subject ... Verb ... Focus ... ] ] ]

## 2.2 Hungarian relative clauses

In addition to Spec(FocP), *wh*-movement in Hungarian also targets Spec(CP), but it does so not across the board, as in English (as we have just demonstrated), but only in relative clauses. We can’t tell this directly since relative pronouns, as in English, can’t co-occur with the complementizer.

- (32) a. a férfi aki-t (\*hogy) Emöke látott tegnap este  
 the man who-ACC that saw yesterday evening  
 ‘the man who(m) Emöke saw last night’  
 b. a nap amikor (\*hogy) Emöke látta Attilá-t  
 the day when that saw -ACC  
 ‘the day when Emöke saw Attila’

However, focus movement is possible in relative clauses (though not in questions—recall the ungrammaticality of (27)). This is as expected if relative pronouns move to a position distinct from Spec(FocP).

- (33) a. a férfi aki-t tegnap este látott Emöke  
 the man who-ACC yesterday evening saw  
 ‘the man who(m) Emöke saw last night (only)’  
 b. a nap amikor Attilá-t látta Emöke  
 the day when -ACC saw  
 ‘the day when Emöke saw (only) Attila’

## Notes

## 3

1. In questions with a single *wh*-phrase, the scope of the *wh*-phrase coincides with the question's ground (recall the discussion of *it* clefts in Chapter 2, § 2.4). However, the notions of scope and ground aren't identical, as they don't coincide in more complicated questions with multiple *wh*-phrases (questions of the type *Who saw what?*).
2. In Japanese, subjects and topics of sentences are marked by *が* -*ga* and *は* -*wa*, respectively. Topics are generally restricted to matrix clauses. When subjects function as topics, as they often do, topic marking overrides subject marking (in other words, the sentence contains no *ga*-marked phrase). When nominative case marking is at issue, linguists use subordinate clauses to avoid the masking effect of topic marking, but we are not interested in case marking here, so we are free to use matrix clauses.
3. Even languages that ordinarily require *wh*-movement allow *wh*-in situ under certain circumstances. For instance, English **echo questions** commonly exhibit *wh*-in situ (see Chapter 6 for examples), and all but one *wh*-phrase is required to remain in situ in English multiple *wh*-questions like (i).
  - (i) a. Who ~~who~~ saw what?
  - b. \*Who what ~~who~~ saw ~~what~~?
4. A classic reference for partial *wh*-movement is McDaniel (1989), which discusses the phenomenon in German and Romani. Lutz, Müller, and Stechow (2000) is a collection of papers providing a cross-linguistic survey of partial *wh*-movement and *wh*-scope marking more generally.
5. As noted in the previous section, not all German speakers accept long-distance *wh*-movement as in (6).
6. Performance errors also provide insight into the structure of various cognitive domains other than language. For instance, if an instructor misremembers the names of Jeannine and Mark as Jennifer and Michael, that tells us that names are organized in that person's memory by first letter. Another person might misremember Jeannine as Evelyn because Jeannine resembles Evelyn; for such a person, names would be organized by facial similarity.
7. For those unfamiliar with phonology, the onset is the beginning consonant (cluster) of a syllable, while the rhyme consists of the vowel and consonant(s) at the end of that syllable. In (20), we specifically address speech errors involving changes in the onset of a word's first syllable.
8. Thanks to Eva Banik for the Hungarian examples in this section. For detailed discussions of relevant facts, see also Kiefer and Kiss (1994) and Kiss (2002).

## Exercises and problems

4

### Exercise 14.1

Given what you know about *wh*-movement, which (if any) of the following sentences are expected to be grammatical in Hungarian?

(1) Relative out of question:

- a. a férfi aki-nek kérdezik, hogy mi-t mondott Emöke  
the man who-DAT asked-3PL that what-ACC told  
'the man such that they asked what Emöke told him'
- b. a titok ami-t kérdezték, hogy ki-nek mondta Emöke  
the secret which-ACC asked-3PL that who-DAT told  
'the secret such that they asked to whom Emöke told it'

(2) Relative out of relative:

- a. férfi aki-t Emöke hívta a nőt aki ismeri  
the man who-ACC called the woman who knows  
'the man such that Emöke called the woman who knows him'

(3) Question out of relative:

- Ki-t hívott Attila a nőt aki ismer?  
who-ACC called the woman who knows  
'Who is the person such that Attila called the woman who knows that person?'

(4) Question out of question:

- a. Ki-nek kérdezik, hogy mi-t mondott Emöke?  
who-DAT asked-3PL that what-ACC told  
'Who is the person such that they asked what Emöke told that person?'
- b. Mi-t kérdezték, hogy aki-nek mondta Emöke?  
what-ACC asked-3PL that who-DAT told  
'What is it such that they asked to whom Emöke told it?'

# Binding theory

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## Chapter outline

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This chapter is devoted to binding theory, the part of syntactic theory that is concerned with how the interpretation of noun phrases is constrained by syntactic considerations. For the purposes of binding theory, it is useful to distinguish several types of noun phrases: **full noun phrases** (*the question, the student that asked the question*, and so on), **ordinary pronouns** (*I, you, they*, and so on), **reflexive pronouns** (*myself, yourself, themselves*, and so on) and the **reciprocal pronoun** *each other*.

We begin by presenting background concepts concerning reference and related notational conventions. We then discuss two alternative approaches to binding theory. The first approach, due to Hellan (1988), was proposed on the basis of Norwegian, a language with an unusually



rich set of pronouns. We first discuss the Norwegian facts and then extend Hellan's analysis to English. The second approach, due to Chomsky (1981), was proposed on the basis of English and does not cover the full range of Norwegian facts. However, it includes an important condition on the distribution of ordinary noun phrases that is missing from Hellan's binding theory.

## Reference and related notions

1

### 1.1 Reference

The preeminent function of noun phrases like *Benjamin Franklin*, *my two cats*, *the king of France*, *Santa Claus*, or *colorless green ideas* is to **refer**—that is, to stand for a particular discourse entity, the **referent**. As the examples show, referents can be entities in the actual world, entities in some possible world, or even entities that could not possibly exist in principle. One of the characteristic features of human language is the absence, in general, of a one-to-one relation between noun phrases and referents. On the one hand, it is possible to use different noun phrases to refer to the same referent. The classic example for this is the fact that the expressions *the morning star* and *the evening star* both have the same referent, the planet Venus (which is not a star at all!). On the other hand, the same noun phrase can have different referents. For instance, *my two cats*, used either by the same person at different points in time or by different persons at the same point in time, can refer to distinct feline individuals. Similarly, *my current checking account balance* can refer to vastly differing amounts of money.

In general, then, determining the intended referent of an expression requires recourse to a particular discourse context (who is speaking when, to whom, and so on). The interpretation of certain expressions, however, is particularly context-dependent. The expressions in question are pronouns. For instance, it is perfectly natural to introduce a new topic in a conversation with a friend using (1a) (provided that the speaker and the friend have in common a unique (or at least uniquely salient) acquaintance by the name of Vanessa). But replacing the proper noun *Vanessa* with a pronoun, as in (1b), in the same context is decidedly odd.

- (1) a. I ran into Vanessa the other day.
- b. I ran into her the other day.

But if Vanessa has already been mentioned in the discourse, then (1b) is perfectly felicitous, as illustrated in the mini-discourse in (2).

- (2) A: Have you seen Vanessa recently?
- B: I ran into her the other day.

Pronouns, then, in contrast to ordinary noun phrases, are **referentially dependent** on some **antecedent** in the discourse.

The term ‘antecedent’ is potentially misleading. Since it is derived etymologically from Latin *ante-cedens* ‘one who walks before’, an antecedent might reasonably be expected to be required to precede a referentially dependent expression. However, contrary to this expectation, precedence is neither a necessary nor a sufficient condition for antecedenthood. In a sentence like (3), for instance, *Zelda* does not precede *she*, yet can still serve as the pronoun’s antecedent.

- (3) If she calls, tell Zelda that the package arrived.

Conversely, *Zelda* precedes *her* in both examples in (4), but is unable to serve as the antecedent of *her* in (4b) (in other words, (4b) cannot mean ‘Zelda likes herself’).

- (4) a. Zelda believes that nobody likes her.  
b. Zelda likes her.

A less misleading term for the notion of antecedent might be ‘referential anchor’, but we will continue to use the standard term ‘antecedent’.

## 1.2 Coreference

A discourse will often contain more than one possible antecedent for a pronoun. For instance, in (5), *he* can refer to either *Tim* or *Tom*.

- (5) Tim told Tom that he needed some time off.

In any particular discourse context, of course, one interpretation may well be favored over the other, given what is known about Tim, Tom, their respective work loads, and so on. In case the antecedent for *he* must be explicitly specified in an unambiguous way, this can be achieved as in (6).

- (6) a. Tim told Tom that he, Tim, needed some time off.  
b. Tim told Tom that he, Tom, needed some time off.

When (5) is given the interpretation in (6a), *he* and *Tim* are said to **corefer**. On the alternative interpretation in (6b), it is *he* and *Tom* that corefer.

## 1.3 Coindexing

It is convenient to introduce a general notational device to represent coreference relations. Let us begin by associating any noun phrase with a **referential index**. In the literature, it is standard to use the letters of the alphabet as indices, beginning with *i* (for ‘index’). But as we already use *i*, *j*, *k*, ... as indices with another function<sup>1</sup>, we adopt the convention in this chapter of using the natural numbers as referential indices. Specifically, in order to indicate an interpretation in which two expressions refer to the same discourse entity (that is, in which they corefer), we assign the same index to both expressions. The two expressions are then said to be **coindexed**. On the other hand, in order to indicate an interpretation in which two expressions refer to distinct discourse entities (that is, in which they do not corefer), we assign distinct indices to each of the

two expressions. Such expressions are said to be **contraindiced**. In neither case are the specific indices important - only whether the indices are the same or not. That is, both indexings in (7) represent the interpretation in (6a), and both indexings in (8) represent the interpretation in (6b).

- (7) a. Tim<sub>1</sub> told Tom<sub>2</sub> that he<sub>1</sub> needed some time off.
- b. Tim<sub>1097</sub> told Tom<sub>18</sub> that he<sub>1097</sub> needed some time off.
- (8) a. Tim<sub>1</sub> told Tom<sub>2</sub> that he<sub>2</sub> needed some time off.
- b. Tim<sub>380</sub> told Tom<sub>7</sub> that he<sub>7</sub> needed some time off.

(9) gives a further possible indexing for the sentence in (5). Of course, in any particular discourse, this indexing is felicitous only if a discourse entity with the index 3 (say, Tim's brother Mike) has already been mentioned.

- (9) Tim<sub>1</sub> told Tom<sub>2</sub> that he<sub>3</sub> needed some time off.

#### 1.4 Grammatical and ungrammatical index assignments

Take good care to distinguish between reference and indexing. Reference relations are actual linguistic relations that we have intuitions about. For instance, we have the intuition that *Tim* and *him* can corefer in (10a), but not in (10b).

- (10) a. Tim thinks that everyone admires him.
- b. Tim admires him.

The assignment of indices, on the other hand, is a notational device that is intended to represent arbitrary reference relations; the indices themselves have no independent linguistic or psychological status. As a result, it is perfectly possible to assign referential indices to noun phrases so as to represent interpretations of a sentence that are possible in principle, but impossible in fact. Two such ungrammatical indexings are illustrated in (11).

- (11) a. \* Tim<sub>1</sub> admires him<sub>1</sub>.
- b. \* He<sub>1</sub> admires Tim<sub>1</sub>.

Notice that the proposition that both (11a) and (11b) are trying to express is not inherently semantically anomalous. It can be expressed perfectly grammatically as in (12).

- (12) Tim<sub>1</sub> admires himself<sub>1</sub>.

Notice furthermore that what makes these sequences ungrammatical is the index assignment. The same sequences of words as in (11) are grammatical sentences when associated with the indices in (13).

- (13) a. ✓ Tim<sub>1</sub> admires him<sub>2</sub>.
- b. ✓ He<sub>1</sub> admires Tim<sub>2</sub>.

In other words—as mentioned in [Chapter 1](#)—the grammaticality of a sequence is always determined with reference to a particular interpretation.

It is often convenient to combine the information in (11) and (13) as in (14). The descending numerical order of the indices on the object noun phrases is intended to make clear the scope of the asterisk.

- (14) a. ✓ Tim<sub>1</sub> admires him<sub>2</sub>, \*<sub>1</sub>.  
 b. ✓ He<sub>1</sub> admires Tim<sub>2</sub>, \*<sub>1</sub>.

Why can't sentences like (11a) or (11b) express the proposition that is expressed grammatically in (12)? Such questions are what **binding theory** seeks to answer, the topic of [Chapter 15](#).

## Hellan 1988

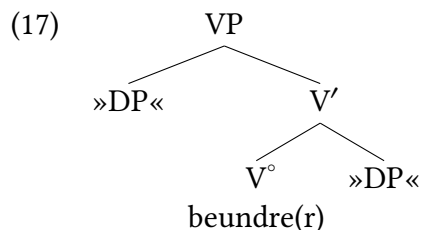
2

### 2.1 The co-argument condition

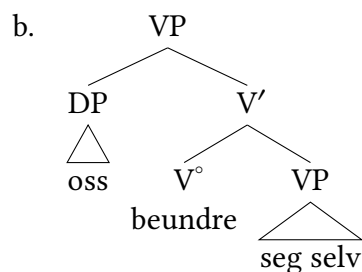
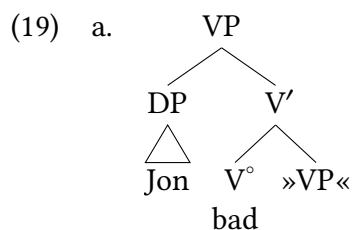
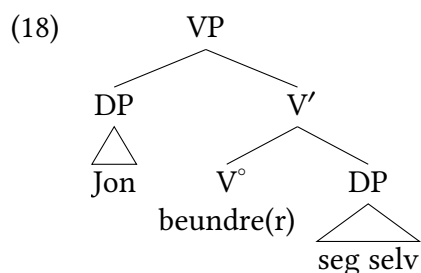
English makes a distinction between reflexive pronouns ending in *-self* (*myself*, *yourself*, and so on) and the corresponding ordinary pronouns (*I*, *you*, and so on). Norwegian, too, distinguishes between pronouns with forms containing *selv* 'self' and ones without. As (15) and (16) show, *selv* is in **complementary distribution** with zero (that is, where a form with *selv* can occur, a form without *selv* cannot, and vice versa).

- (15) a. ✓ Jon<sub>1</sub> beundrer seg selv<sub>1</sub>.  
           admires SEG self  
 b. \*Jon<sub>1</sub> beundrer seg<sub>1</sub>.  
       'Jon<sub>1</sub> admires himself<sub>1</sub>.'  
 (16) a. \*Jon<sub>1</sub> bad oss beundre seg selv<sub>1</sub>.  
           asked us admire SEG self  
 b. ✓ Jon<sub>1</sub> bad oss beundre seg<sub>1</sub>.  
       'Jon<sub>1</sub> asked us to admire him<sub>1</sub>.'

In an effort to understand what determines the complementary distribution, let us consider the derivation of the sentences. Both sentences require the elementary tree in (17) for the verb *beundre(r)* 'admire(s)'.



Observe now that in the derivation of (15a), *seg selv* and *Jon* both substitute into the elementary tree for *beundre(r)*. In the derivation of (16a), on the other hand, the subject position of the elementary tree for *beundre(r)* is filled by *oss* ‘us’, whereas *Jon* substitutes into the elementary tree for *bad* ‘asked’. (We treat *bad* ‘asked’ as taking a VP small clause complement, like its English cognate *bid*.) The structures resulting from substitution in the two cases are shown in (18) and (19).



Given this derivational difference, we can define a notion of co-argument as in (20a) and propose a condition governing the distribution of *selv* as in (20b).

- (20) a. Definition of **co-argument** (to be revised):  
 A and B are **co-arguments** if and only if they substitute into the argument positions (specifier or complement) of the same elementary tree.
- b. Co-argument condition (to be revised):  
*Selv* and its antecedent (more precisely, the minimal DP nodes dominating them) must be co-arguments.

### One type of syntax/semantics mismatch

While adequate for (15) and (16), the definition and condition in (20) does not extend to examples like (21) and (22).

- (21) a. ✓ Jon<sub>1</sub> snakket om seg selv<sub>1</sub>.  
           talked about SEG self  
       b. \*Jon<sub>1</sub> snakket om seg<sub>1</sub>.  
           ‘Jon<sub>1</sub> talked about himself<sub>1</sub>.’
- (22) a. \*Jon<sub>1</sub> bad oss snakke om seg selv<sub>1</sub>.  
           asked us talk about SEG self  
       b. ✓ Jon<sub>1</sub> bad oss snakke om seg<sub>1</sub>.  
           ‘Jon<sub>1</sub> asked us to talk about him<sub>1</sub>.’

As is evident, the distribution of *selv* in (21) and (22) is parallel to that in (15) and (16). However, the grammatical (21a) violates the condition in (20b) because the DPs dominating *seg selv* and its antecedent do not substitute into the same elementary tree. Rather, *seg selv* substitutes into the elementary tree for *om* ‘about’, whereas its antecedent *Jon* substitutes into that for *snakket* ‘talked’.

One way of addressing this problem is to introduce a semantically-based notion of argument, based on the idea that situations can be conceptually decomposed into events (activities, states, qualities, and so on), on the one hand, and different types of participants in such events (agents, experiencers, beneficiaries, goals, etc.), on the other. In general, the participants in an event denoted by a lexical item correspond to the substitution nodes in the elementary tree associated with that lexical item. Indeed, this correspondence is so general that substitution nodes are often equated with participants in a situation, with both being referred to as arguments. However, locutions like *snakker om DP* ‘talk about DP’ provide evidence that syntactic arguments (constituents of the elementary tree projected by a lexical item) must be distinguished from semantic arguments (participants in the event denoted by the lexical item). In such cases, there is a mismatch between the syntax and the semantics. Specifically, the DP, being a complement of the preposition, stands in no local syntactic relation with the verb. Nevertheless, it is a semantic participant in the ‘talking about’ activity. For the purposes of binding, the prepositional complement’s status as a semantic argument is sufficient to license *selv*. This motivates a revision of (20b) to read as in (23b).

- (23) a. **Semantic co-argument:**  
       A and B are **semantic co-arguments** if and only if they denote co-participants in the same situation.
- b. Co-argument condition (to be revised):  
           *Selv* and its antecedent must be semantic co-arguments.

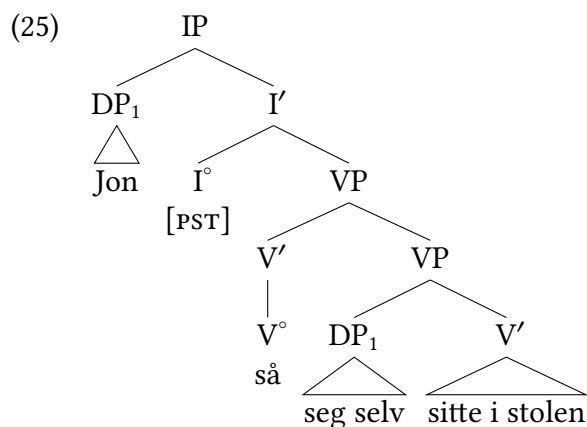
It should be noted that the status of a particular phrase as a semantic argument is not always easy to determine, and that there is some individual variation regarding the relevant judgments. This is reminiscent of the situation that we encountered in connection with the distinction between syntactic arguments and adjuncts discussed in Chapter 4, § 3.1.

### Another type of syntax/semantics mismatch

As we have just seen, a noun phrase can function as a semantic argument in an expression denoting an event without being a syntactic argument of the verb itself. Also possible is the converse state of affairs, where a noun phrase counts as a syntactic argument of a head without being its semantic argument. We illustrate this second type of syntax/semantics mismatch with reference to perception verb complements. Consider (24).

- (24) Jon<sub>1</sub> så seg selv<sub>1</sub> sitte i stolen.  
       saw SEG self sit in chair.DEF  
       ‘Jon<sub>1</sub> saw himself<sub>1</sub> sit in the chair.’

As the tree for (24) in (25) shows, the matrix verb *så* ‘saw’ (like *bad* ‘asked’) takes a VP small clause complement, so *Jon* and *seg selv* are not syntactic co-arguments in the sense of (20a).



*Seg selv* is also not a semantic argument of *så*, as required by (23a), since the complement subject position can be occupied by expletive *det*, the Norwegian counterpart of expletive *there*. (The structure for (26) is beyond the scope of our discussion.)

- (26) Vi så det sitte ett spøkelse i stolen.  
       we saw there sit a ghost in chair.DEF  
       ‘We saw a ghost sit in the chair.’

The facts discussed so far motivate extending the concept of syntactic co-argument as in (27).

(27) **Syntactic argument:**

A and B are **syntactic co-arguments** if and only if they are **locally head-licensed** by the same head C.

The notion of local head-licensing was introduced (though not by that name) in Chapter 7, §3, where we distinguished three case assignment configurations: head-comp, spec-head, and head-spec. These structural notions are also relevant for binding theory. In (18), *Jon* and *seg selv* are syntactic co-arguments because they stand in the spec-head and head-comp relation, respectively, with *beundrer* ‘admires’. In (26), (the trace of) *Jon* and *seg selv* are co-arguments because they

stand in the spec-head and head-spec relation, respectively, with *så*. Wait—what about (16a), though? Fortunately, in that sentence, *Jon* and *seg selv* are too far apart to be co-arguments, even under the extended definition in (27), and so (16a) continues to be ruled out—correctly—as ungrammatical.

Our final revision of the co-argument condition on *selv* is given in (28).

(28) Co-argument condition (final version):

*Selv* and its antecedent must be semantic or syntactic co-arguments.

The statement of the condition is not yet ideal. The fact that (28) contains a disjunction (an *or* statement) suggests that we do not have a complete understanding of the notion of co-argument.

## 2.2 The predication condition

In addition to the distinction between elements with and without *selv*, Norwegian distinguishes between the two third-person singular forms *seg* and *ham*. Like *seg*, *ham* occurs on its own as well as before *selv*. As (29) and (30) show, *seg* and *ham* are in complementary distribution.

### Word of Caution

Note that the noun phrases in (29) and (30) are all semantic arguments. Therefore, since the co-argument condition in (28) is satisfied, the contrast in (29) and (30) must be due to independent conditions governing the distribution of *seg* and *ham*.

(29) Jon<sub>1</sub> snakket om { *seg* / \**ham* } selv<sub>1</sub>.  
       talked about SEG HAM self  
       ‘Jon<sub>1</sub> talked about himself<sub>1</sub>.’

(30) a. Vi snakket med Jon<sub>1</sub> om { *ham* / \**seg* } selv<sub>1</sub>.  
       we talked with about HAM SEG self  
       ‘We talked with Jon<sub>1</sub> about himself<sub>1</sub>.’

b. Vi fortalte Jon<sub>1</sub> om { *ham* / \**seg* } selv<sub>1</sub>.  
       we told about HAM SEG self  
       ‘We told Jon<sub>1</sub> about himself<sub>1</sub>.’

The difference between the two cases is that the (potential) antecedent is a subject in (29), but not in (30). Further evidence that the antecedent of *seg* must be a subject comes from (31), which shows that what is crucial is the antecedent’s status as a subject of predication.

(31) Vi gjorde Jon<sub>1</sub> glad i { *seg* / \**ham* } selv<sub>1</sub>.  
       we made fond of SEG HAM self  
       ‘We made Jon<sub>1</sub> fond of himself<sub>1</sub>.’

The sentences in (29)–(31) obey the condition in (32).

(32) Predication condition:



The antecedent of *seg* must be a subject of predication, whereas the antecedent of *ham* must not be.

The co-argument condition in (28) and the predication condition in (32) are independent of one another. The domain in which the referentially dependent elements under discussion can appear can therefore be partitioned without overlap as in Table 15.1.<sup>2</sup>

| Antecedent subject of predication? | Antecedent co-argument? |            |
|------------------------------------|-------------------------|------------|
|                                    | Yes                     | No         |
| Yes                                | <i>seg selv</i>         | <i>seg</i> |
| No                                 | <i>ham selv</i>         | <i>ham</i> |

Table 15.1: Domains of Norwegian referentially-dependent forms *seg*, *ham*, and their *selv* variants

### 2.3 The finite IP condition

The contrast in (33) shows that *seg* is subject to a final condition, given in (34).

- (33) a. ✓ [<sub>IP</sub> Jon<sub>1</sub> bad oss forsøke å få deg til å snakke pent om seg<sub>1</sub> ].  
           asked us try to get you towards to talk nicely about SEG  
           ‘Jon<sub>1</sub> asked us to try to get you to talk nicely about him<sub>1</sub>.’  
       b. \*Jon<sub>1</sub> var ikke klar over at [<sub>IP</sub> vi hadde snakket om seg<sub>1</sub> ].  
           was not aware over that we had talked about SEG  
           ‘Jon<sub>1</sub> was not aware that we had talked about him<sub>1</sub>.’

- (34) Finite IP Condition:

The minimal finite IP dominating *seg* must also dominate its antecedent.

### 2.4 Strict vs. non-strict co-arguments

As we saw earlier, *selv* is subject to the co-argument condition in (28), repeated in (35).

- (35) Co-argument condition (final version):

*Selv* and its antecedent must be semantic or syntactic co-arguments.

The contrast in (36) might at first glance be taken to indicate that the reciprocal pronoun *hverandre* ‘each other’ is not subject to such a condition.

- (36) a. \*Jon<sub>1</sub> traff noen venner av seg selv<sub>1</sub>.  
           met some friends of SEG self  
           ‘Jon<sub>1</sub> met some friends of his<sub>1</sub>.’  
       b. [Jon og Marit]<sub>1</sub> traff noen venner av hverandre<sub>1</sub>.  
           and met some friends of each.other  
           ‘[Jon and Marit]<sub>1</sub> met some friends of each other’s<sub>1</sub>.’

Nevertheless, as (37) shows, the distribution of *hverandre* is not completely unconstrained.

- (37) ?\* [ Jon og Marit ]<sub>1</sub> leste mine bøker om hverandre<sub>1</sub>.  
           and                  read my books about each.other  
           Intended meaning: ‘Jon read my book about Marit, and Marit read my book about Jon.’

The contrast between (36b) and (37) can be accounted for by introducing a distinction between strict and non-strict co-arguments. Strict arguments are defined as in (20) or (23), but non-strict co-arguments are more loosely related. Consider the two configurations in (38).



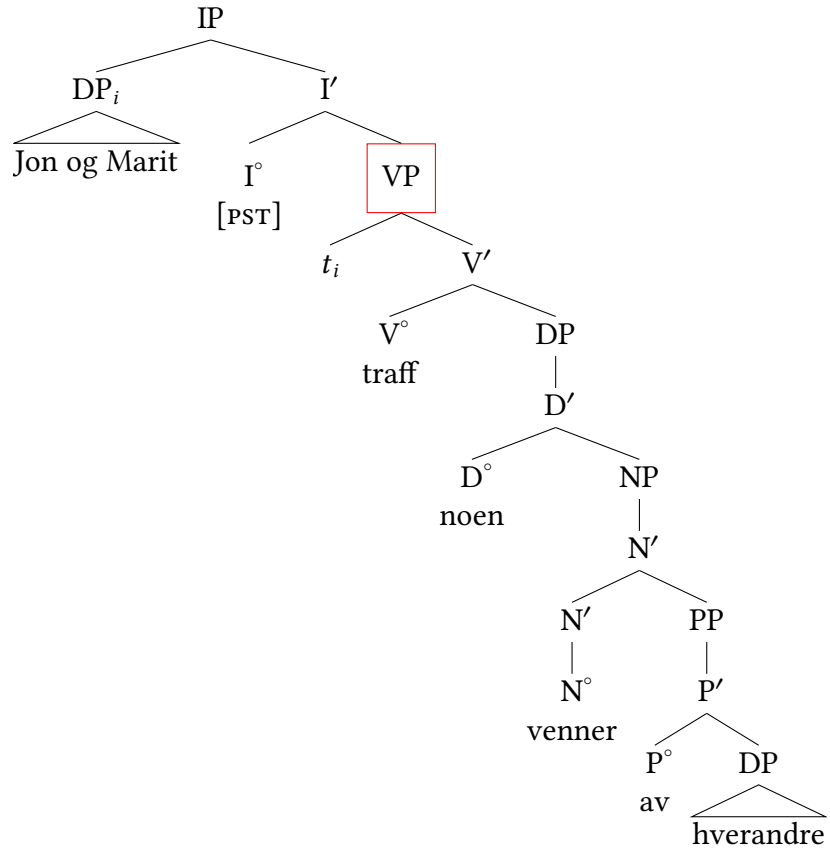
In (38a), we will say that the absence of a specifier in BP allows B to extend its argument-taking domain up to the first maximal projection that is ‘closed off’ by a specifier (in this case, AP). In such a domain, which we will call a **projection chain** of B, the arguments of the heads in the projection chain count as co-arguments in a non-strict sense. By contrast, in (38b), the presence of Spec(BP) prevents the formation of such a projection chain.

The similarities and differences in the distribution of *selv* and *hverandre* can now be succinctly stated as in (39).

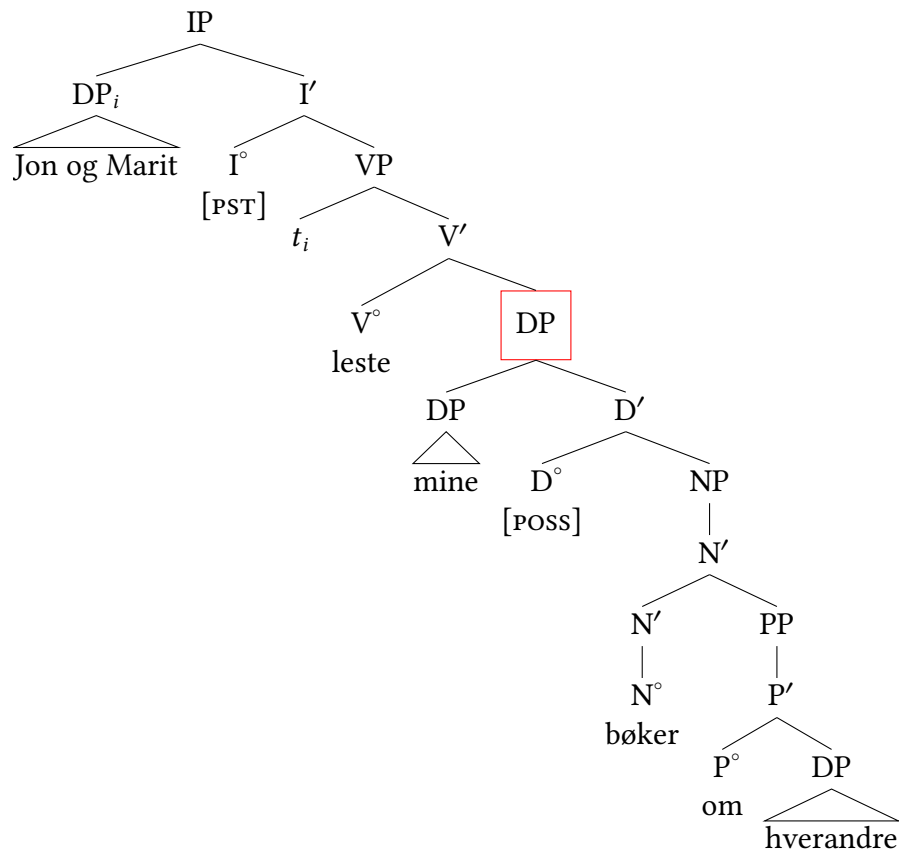
- (39) a. *Selv* and its antecedent must be strict co-arguments.  
       b. *Hverandre* and its antecedent must be co-arguments (possibly non-strict ones).

The application of the condition in (39b) to (36b) and (37) is illustrated in the structures in (40).

(40) a.



b.



(40a) is a (recursive) instantiation of the projection chain configuration in (38a). None of the maximal projections in the object DP is closed off by a specifier, and the projection chain of the preposition *av* (the head of the elementary tree into which *hverandre* substitutes) therefore extends to VP. As a result, (the trace of) *Jon og Marit* is a non-strict co-argument of *hverandre* and can serve as its antecedent. (40b) is a recursive projection chain configuration as well, but here, the projection chain of the preposition *om* extends only up to the object DP, which is closed off by *mine*. The ungrammaticality of the sentence is then due to the fact that *Jon og Marit* is too far away from *hverandre* to serve as an antecedent. Meanwhile, the potential antecedent *mine* (1st person singular) clashes with *hverandre* (3rd person plural).

## Extending Hellan's binding theory to English

### 3

As we have just seen, Norwegian distinguishes between two third-person pronouns, *seg* and *ham*, both of which can stand alone or be combined with *selv*. This yields four referentially dependent forms—*seg*, *seg selv*, *ham*, and *ham selv*. Lacking the distinction between *seg* and *ham*, English has only two referentially dependent forms. In order to maximize the parallel with Hellan's Norwegian examples, we illustrate these in what follows by *him* and *himself*. The question that guides the discussion in this section is how these two forms divide up the syntactic territory covered by the four forms of Norwegian.

### 3.1 The co-argument condition

Since English *-self* is cognate with Norwegian *selv*, it is reasonable to assume that English reflexive pronouns are subject to a condition analogous to the co-argument condition in (35). Such a condition is given in (41a). The companion condition on ordinary pronouns in (41b) makes explicit the complementary distribution between the two types of pronouns.

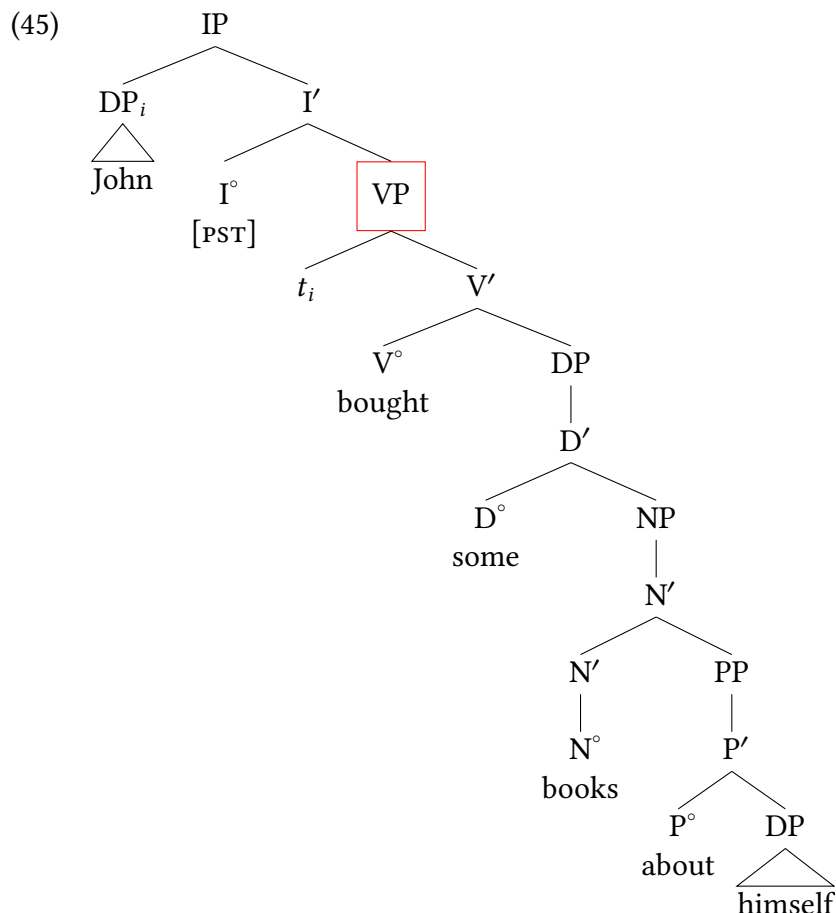
- (41) a. Reflexive pronouns and their antecedents must be (semantic or syntactic) co-arguments.  
b. Ordinary pronouns and their antecedents must not be co-arguments.

The conditions in (41) are borne out by the data in (42) and (43).

- (42) a. John<sub>1</sub> admires { himself<sub>1</sub> / \*him<sub>1</sub> }.  
b. John<sub>1</sub> talked about { himself<sub>1</sub> / \*him<sub>1</sub> }.  
c. We made John<sub>1</sub> fond of { himself<sub>1</sub> / \*him<sub>1</sub> }.  
(43) a. John<sub>1</sub> asked us to admire { him<sub>1</sub> / \*himself<sub>1</sub> }.  
b. John<sub>1</sub> asked us to talk about { him<sub>1</sub> / \*himself<sub>1</sub> }.  
c. John<sub>1</sub> made us fond of { him<sub>1</sub> / \*himself<sub>1</sub> }.

In (39a), we proposed that the antecedents of Norwegian *selv* must be *strict co-arguments*, and so we are led to wonder whether this is true of English reflexive pronouns as well. Evidence bearing on this question comes from examples like (44), which has the structure in (45).

(44) John<sub>1</sub> bought some books about himself<sub>1</sub>.



*Himself* has no strict co-arguments (the PP dominating it lacks a specifier), and (45) is therefore an instance of a projection chain. In particular, given that the entire object DP contains no specifiers, the projection chain of *about* extends up to VP, making *himself* and (the trace of) *John* non-strict co-arguments. Since (44) is grammatical, we conclude that the antecedent of *himself* need only be a non-strict co-argument. In this respect, then, *himself* differs from Norwegian *seg selv* and resembles *hverandre* ‘each other’.

As expected, if the projection chain of *about* is closed off by a specifier of the object DP, then it is that DP that must contain an antecedent that agrees with *himself* in the relevant grammatical features (gender, number, and person). This is illustrated by the contrast in (46).

- (46) a. ✓ { She, they, I } bought John<sub>i</sub>’s book about himself<sub>1</sub>.  
 b. \* John<sub>1</sub> bought { her, their, my } book about himself<sub>1</sub>.

Finally, the contrast between (44) and (47) on the one hand and (46) and (48) on the other confirms the complementary distribution between reflexive and ordinary pronouns.

- (47) \* John<sub>1</sub> bought some books about him<sub>1</sub>.
- (48) a. \* { She, they, I } bought John<sub>1</sub>'s book about him<sub>1</sub>.  
 b. ✓ John<sub>1</sub> bought { her, their, my } book about him<sub>1</sub>.

### 3.2 The predication condition

The predication condition in (32) governs the distribution of *seg* versus *ham*, and so we expect it to be irrelevant in English. This is in fact so. (43) and (48b) show that the antecedent of *him*, unlike that of its Norwegian counterpart *ham*, can be a subject of predication, and (46a) shows that the antecedent of *himself* needn't be. The latter fact is confirmed by (49), where the antecedent of *himself* is not a subject of predication.

- (49) a. We talked with John<sub>1</sub> about { himself<sub>1</sub> / \*him<sub>1</sub> }.  
 b. We told John<sub>1</sub> about { himself<sub>1</sub> / \*him<sub>1</sub> }.

Another way of putting this is that *himself* corresponds to both of the Norwegian *selv* forms.

### 3.3 The finite IP condition

Like the predication condition, the finite IP condition governs the distribution of *seg* versus *ham*, and so again, we expect it to be irrelevant in English. This expectation is confirmed by the parallelism in (50), as opposed to the contrast in (33).

- (50) a. ✓ [<sub>IP</sub> John<sub>1</sub> asked us to try to get you to talk nicely about { him<sub>1</sub> / \*himself<sub>1</sub> } ].  
 b. ✓ [<sub>IP</sub> John<sub>1</sub> was not aware that we had talked about { him<sub>1</sub> / \*himself<sub>1</sub> } ].

In summary, then, English *-self* corresponds almost perfect to Norwegian *selv*. The only difference that we have seen is that the antecedent of *-self*, unlike that of *selv*, needn't be a strict co-argument.

## Chomsky (1981)

## 4

So far in this chapter, we have presented an approach to binding theory that was developed in order to account for the particularly rich data from Norwegian. In this section, we present the standard binding theory of Chomsky (1981), which was developed based on the simpler data of English. Chomsky's binding theory contains three conditions (or principles, as they are more commonly known), which govern the distribution of reflexive and reciprocal pronouns, ordinary pronouns, and full noun phrases, respectively. We present each of these principles in turn.

## 4.1 Principle A

Consider the English binding facts in (51).

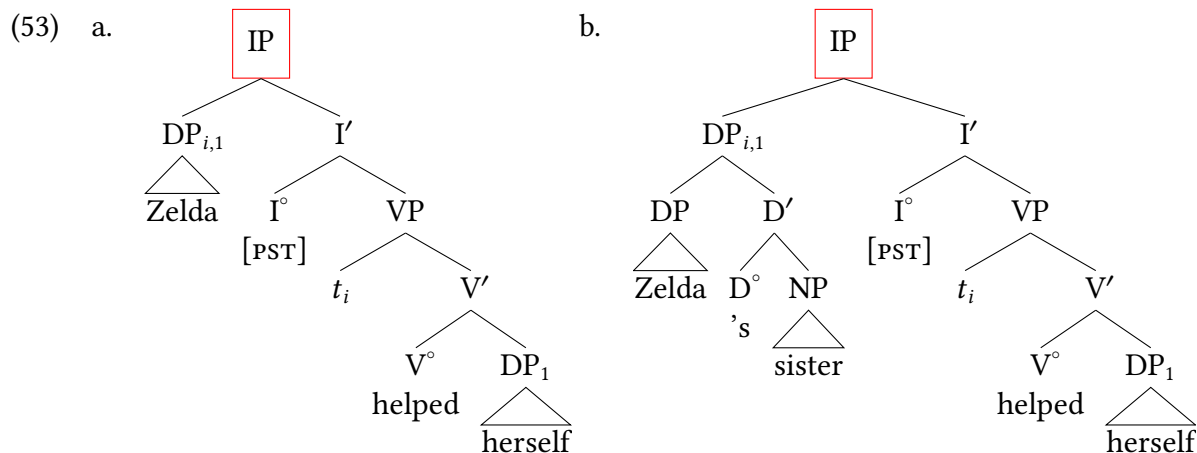
- (51) a. [Zelda]<sub>1</sub> helped [herself]<sub>1</sub> .  
 b. [Zelda's sister]<sub>1</sub> helped [herself]<sub>1</sub> .  
 c. \* [Zelda]<sub>1</sub> 's sister helped [herself]<sub>1</sub> .

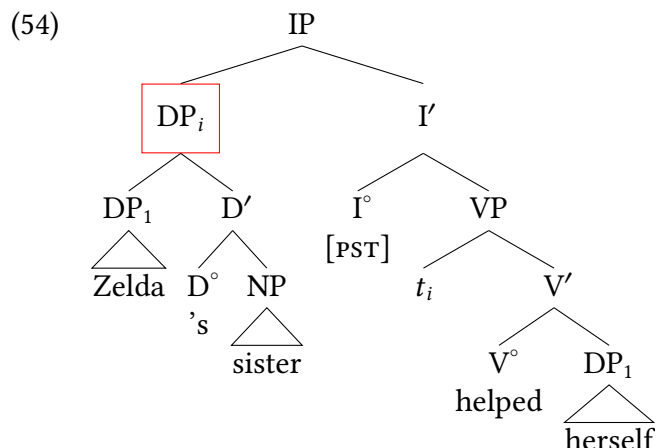
In Hellan's binding theory, (51a) is grammatical because *herself* and its antecedent *Zelda* are syntactic co-arguments. The same is true of *herself* and *Zelda's sister* in (51b), and so it is grammatical as well. In (51c), on the other hand, the intended antecedent *Zelda* is not a co-argument of *herself*, and so the sentence is ungrammatical under the intended interpretation.

Chomsky (1981) derives the grammaticality pattern in (51) on the basis not of co-argumenthood, but on the basis of a purely structural relation called **c-command**, defined as in (52).

- (52) A **c-commands** B if and only if  
 a. neither A nor B dominates the other, and  
 b. the first branching node that dominates A also dominates B.

The structures for the sentences in (51) are shown in (53). The branching node dominating the intended antecedent is highlighted by a box. Notice now that the red boxed nodes dominates that anaphor in (53a) and (53b), but not in (54). In other words, the anaphor is c-commanded by the intended antecedent in (53a) and (53b), but not in (54).





These configurational relations suggest the condition in (55).

(55) Principle A (to be revised):

An anaphor must be c-commanded by a coindexed antecedent.

### Word of Caution

The term **anaphor** in Chomsky's usage refers to reflexive and reciprocal pronouns. This usage is potentially confusing because in general linguistic usage, anaphora refers to referential dependence regardless of morphological form. In other words, ordinary pronouns and even full noun phrases can count as anaphors in this wide sense. Here, we will use the restricted sense of the term, in keeping with Chomsky's usage.

(55) is generally expressed more succinctly as in (56a), where the notion of binding is defined as in (56b).

- (56) a. An anaphor must be **bound**.  
 b. A **binds** B if and only if  
 i. A c-commands B, and  
 ii. A and B are coindexed.

As it turns out, (56a) is a necessary but not sufficient condition on anaphors in English, since it fails to account for complex sentences like (57).

(57) John<sub>1</sub> thinks that Mary<sub>2</sub> will help { herself<sub>2</sub> / \*himself<sub>1</sub> }.

The grammaticality of the variant with *herself* is unproblematic (*herself* is bound by *Mary*). But given (56a), the ungrammaticality of the variant with *himself* is surprising, because *himself* is bound by *John*.

In Hellan's version of the binding theory, *John* is ruled out as an antecedent of *himself* by the co-argument condition in (41a). In Chomsky's version, a similar effect is achieved by introducing the notion of **governing category**, a locality domain within which an anaphor must



be bound. The definition of governing category is fairly complex, so we will work our way up to it in several steps, motivating each revision of the definition in turn.

(58) Principle A (final version):

An anaphor must be bound within its governing category.

(59) Governing category (to be revised):

The governing category for an expression is the lowest IP that contains that expression.

(58) correctly describes the contrast in (57), but is unable to account for contrasts as in (46), repeated as (60).

- (60) a. ✓ { She, they, I } bought John<sub>I</sub>'s book about himself<sub>I</sub>.  
 b. \* John<sub>I</sub> bought { her, their, my } book about himself<sub>I</sub>.

In both sentences, the lowest IP that contains *himself* (the only IP in the sentence) also contains *John*, in accordance with the definition of governing category in (59). The ungrammaticality of (60b) is therefore unexpected.

A first step in accounting for such contrasts lies in making reference to DPs in addition to IPs in the definition of governing category, as in (61).

(61) Governing category (to be revised):

The governing category for an expression is the lowest IP or DP that contains that expression.

But now (61) overshoots the mark by incorrectly ruling out sentences like (44), repeated as (62).

- (62) John<sub>I</sub> bought some books about himself<sub>I</sub>.

A further refinement of the definition of governing category yields (63).

(63) Governing category (to be revised):

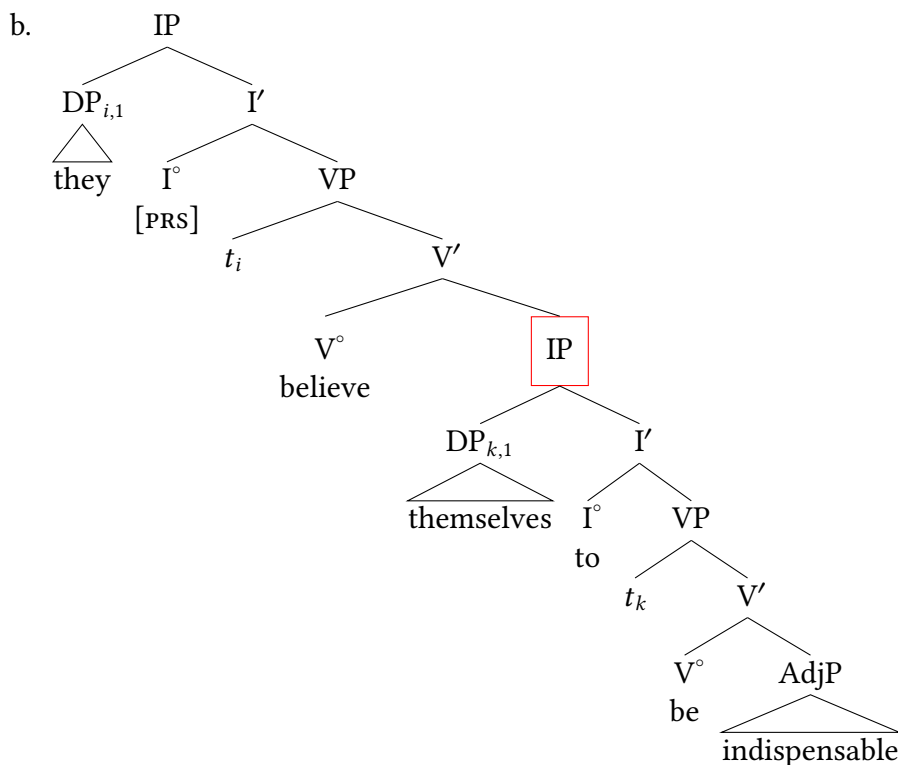
The governing category for an expression is the lowest IP or DP that contains

- a. that expression  
 b. and a specifier.

The reference to a specifier in (63) is the formal counterpart to the distinction between strict and non-strict co-arguments in Hellan's approach to the binding theory. There is a difference, however, in what the two approaches regard as the unmarked domain within which an anaphor must be bound. In Hellan's approach, the availability of non-strict co-argument antecedents extends a binding domain that would otherwise be smaller. By contrast, in Chomsky's approach, the addition of (63b) restricts a binding domain that would otherwise be larger.

There remains one final revision to make to the definition of governing category. The revision is motivated by sentences like (64a), which have the structure in (64b).

(64) a. They<sub>1</sub> believe themselves<sub>1</sub> to be indispensable.



Let's consider in detail why (64) poses a difficulty for the definition in (63). As is evident from (64b), the lowest IP or DP that contains the anaphor and a specifier is the complement IP (indicated by the box). (The anaphor and the specifier turn out to be the same node, but nothing in (63) rules this out.) But this complement IP contains no antecedent for the anaphor, so (64a) is incorrectly predicted to be ungrammatical.

In order to accommodate sentences like (64a), the governing category must be extended in just the right way to allow matrix subjects to act as antecedents in sentences like (64a), but not in ones like (57). This is achieved by the formulation in (65).

(65) Governing category (final version):

The governing category for an expression is the lowest IP or DP that contains

- a. that expression
- b. a specifier,
- c. and the expression's case-assigning head.

The addition of (65c) has the same effect as Hellan's extension of the notion of syntactic argument in (27) (recall the discussion of [the second type of syntax/semantics mismatch](#) discussed earlier in connection with the distribution of Norwegian *selv*).

## 4.2 Principle B

We turn now to the distribution of pronouns.

### Word of Caution

As noted earlier, reflexive and reciprocal pronouns are combined in Chomsky's usage under the rubric of anaphors. This leaves the unqualified term 'pronoun' to refer to ordinary personal pronouns (*I, you, he*, and so on). Unless otherwise noted, we follow this usage below.

Replacing the anaphors in (51) by pronouns yields the sentences in (66).

- (66) a. \* [ Zelda ]<sub>1</sub> helped [ her ]<sub>1</sub> .  
 b. \* [ Zelda's sister ]<sub>1</sub> helped [ her ]<sub>1</sub> .  
 c. ✓ [ Zelda ]<sub>1</sub> 's sister helped [ her ]<sub>1</sub> .

The resulting grammaticality pattern, which is the converse of that in (51), suggests the condition in (67).

- (67) Principle B (to be revised):

A pronoun must be **free**, that is, not bound by an antecedent.

As in the case of our first formulation of Principle A, the formulation of Principle B in (67) is not yet quite adequate. This time, however, the condition errs on the side of caution, incorrectly ruling out grammatical sentences like (68).

- (68) John<sub>1</sub> thinks Mary will help him<sub>1</sub>.

Since *John* c-commands *him* (along with everything else in the sentence), (67) incorrectly leads us to expect (68) to be ungrammatical.

The fact that the antecedent and the pronoun belong to different clauses in (68) suggests reformulating (67) to incorporate the concept of governing category, as in (69).

- (69) Principle B (to be revised):

A pronoun must be free in its governing category.

As is evident, both Hellan's and Chomsky's approaches to the binding theory agree that anaphors and pronouns are in complementary distribution.

### 4.3 Principle C

Consider the sentences in (70).

- (70) a. \*She<sub>1</sub> treats Mary<sub>1</sub> well.  
 b. \*She<sub>1</sub> claims that they treat Mary<sub>1</sub> well.  
 c. \*She<sub>1</sub> claims that we know that they treat Mary<sub>1</sub> well.

In Hellan's approach to the binding theory, (70a) is ruled out by the condition in (41b), according to which an ordinary pronoun and its antecedent cannot be co-arguments. It is not, however, ruled out by Principle B, the counterpart to (41b) in Chomsky's binding theory, since the pronoun is free. In order to rule out sentences like (70a), Chomsky's binding theory therefore contains a third principle that governs the distribution of full noun phrases (referred to in Chomsky's usage as **R(eferential)-expressions**).

(71) Principle C:

R-expressions must be free.

Principle C is reminiscent of Principle B, but differs from it in that the anti-binding requirement is absolute (= independent of a governing category), as required by the ungrammaticality of (70b) and (70c).

The ungrammaticality of the sentences in (70b) and (70c) means that an anti-binding condition on full noun phrases also needs to be incorporated into Hellan's approach to binding theory. This is because the co-argument condition in (41b), which ruled out (70a), fails to apply to (70b) and (70c). They must therefore be ruled out by separate means. The necessity for an independent anti-binding condition on full noun phrases is underscored by sentences like (72).

- (72) \*We made herself<sub>1</sub> treat Mary<sub>1</sub> well.

In Chomsky's binding theory, (72) is ruled out by both Principles A and C. But in Hellan's version of the binding theory, (72) satisfies the co-argument condition in (41a), the equivalent of Principle A, because *herself* and *Mary* are both syntactic co-arguments (in the spec-head and head-spec configuration, respectively). It is therefore only with reference to an anti-binding condition on full noun phrases that (72) can be ruled out as required.

In traditional grammar, the examples in (70) and (72) would all be called instances of **cataphora**, instances of referential dependence where the antecedent follows the referentially dependent element. It is worth pointing out explicitly that not all instances of cataphora are ungrammatical. Examples like (73), where the referentially dependent element precedes the antecedent, but does not c-command it, are grammatical, as expected under Principle C.

- (73) If he<sub>1</sub> calls, tell John<sub>1</sub> I'll be back in an hour.

**Word of Caution**

The term ‘anaphora’ is generally used to refer to referential dependence, subsuming both cataphora and what might be called strict anaphora, where the antecedent precedes the referentially dependent element. According to the metaphor underlying the terms, discourse flows along like a stream, with temporally earlier elements located upstream from later ones. The antecedent is then upstream of the referentially dependent element in strict anaphora (< Greek ἀνα *ana* ‘up(stream)’), but downstream in cataphora (< Greek κατά *kata* ‘down(stream)’).

A final point needs to be made about Principle C. We pointed out earlier that Principle C is an absolute requirement in the sense that it makes no reference to governing categories (= binding domains). It is absolute in a further sense as well: it makes no reference to whether the binder is a referentially dependent element. Thus, Principle C rules out (74) on a par with (70a).

(74) \*? Mary<sub>1</sub> treats Mary<sub>1</sub> well.

It has been argued, however, that given the right discourse conditions, sentences like (75), which are structurally parallel to (74), are in fact acceptable. Two naturally-occurring examples of the same type are given in (76).

(75) Nobody likes Oscar. Even Oscar<sub>1</sub> doesn’t like Oscar<sub>1</sub>.

- (76) a. Phil<sub>1</sub> said that if he<sub>2</sub> came by, Phil<sub>1</sub> would show him<sub>2</sub> around.  
(manager@ling.upenn.edu to beatrice@ling.upenn.edu)  
b. Luke<sub>1</sub> thinks that everyone has as much integrity as Luke<sub>1</sub> has.  
(overheard at the White Dog Cafe, Philadelphia, PA, 17 Feb 2001)

But equivalent sentences in which the full noun phrase is bound by a referentially dependent element are ungrammatical.

(77) \* Nobody likes Oscar. Even he<sub>1</sub> doesn’t like Oscar<sub>1</sub>.

- (78) a. \* He<sub>1</sub> said that if { he<sub>2</sub> / Sean<sub>2</sub> } came by, Phil<sub>1</sub> would show him<sub>2</sub> around.  
b. \* He<sub>1</sub> thinks that everyone has as much integrity as Luke<sub>1</sub> has.

Although judgments regarding contrasts of the type illustrated by (75)–(78) can be delicate, it seems reasonable to weaken Principle C to include reference to the status of the binder, as is done in (79).

(79) Weakened version of Principle C:

Full noun phrases must not be bound by a referentially dependent element.

## Notes

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1. Actually, we will usually use  $i$ ,  $k$ ,  $m$ , ... for better legibility at small font sizes.
2. Certain difficult cases are set aside here; for further discussion, see Hellan ([1988](#), chapter 3).

# Glossary

**asterisk (\*)** indicates a sentence's syntactic ill-formedness (ungrammaticality)

- (1) \* The had pipsqueak the nerve confront me to

Enclosing material that is preceded by an asterisk with parentheses indicates that including the material in parentheses is ungrammatical. Thus, (2) abbreviates the examples in (3).

- (2) a. The (\*those) cats like treats.  
b. My cats like(\*s) treats.
- (3) a. i. The cats like treats.  
ii. \* The those cats like treats.  
b. i. My cats like treats.  
ii. \* My cats likes treats.

On the other hand, prefixing an asterisk to material that is enclosed in parentheses indicates that the parenthesized material is obligatory. Thus, (4) abbreviates the examples in (5).

- (4) a. They consumed \*(dinner).  
b. My cat like\*(s) treats.
- (5) a. i. \* They consumed.  
ii. They consumed dinner.  
b. i. \* My cat like treats.  
ii. My cat likes treats.

72, 162

**% percent** A percent sign indicates that an example is accepted as grammatical by some speakers, but rejected by others.

- (6) % We use a gas stove anymore; anymore we use a gas stove.  
(chiefly Midwest, but found throughout the United States except New England;  
earliest recorded examples from Northern Ireland)

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**adposition** Any P, regardless of whether it is head-initial or head-final. See Chapter 5 for examples. *see also* [postposition](#)

**argument** From the point of view of formal logic, an argument is an input to a [predicate](#) (in the formal logic sense). From the point of view of syntax, specifically X' theory, an argument is a linguistic expression occupying the specifier or complement position of a head. Because a predicate can have more semantic arguments than the X' schema provides, semantic arguments are not necessarily expressed as syntactic arguments. For discussion, see Chapter 3, § 1 and Chapter 4, § 3. Conversely, not all syntactic arguments are semantic arguments; see Chapter 3, §§ 3.1, 3 for examples. 414, *see also* [expletive](#)

**bound morpheme** A [morpheme](#) that cannot stand alone, but must form part of a larger word, like plural *-s*, *un-*, or *-ness*. In contrast, [free morphemes](#), like *cat* or *happy*, can stand alone. A trailing hyphen indicates that a bound morpheme is a prefix; a leading hyphen indicates a suffix. 116, 414

**clause** A constituent that contains a [subject](#), possibly silent (in **boldface**), and a predicate (in *italics*). Clauses can be subdivided into **ordinary clauses** and **small clauses**. Ordinary clauses can be further subdivided into **finite clauses**, which can stand alone, and **nonfinite clauses**, which can't. All ordinary clauses contain an Infl element (underlined)—a modal, auxiliary, silent tense morpheme, or the nonfinite marker *to*. Small clauses differ from ordinary clauses in lacking an Infl element.

- |     |                                                                                                                                                                                                                                                                                         |                  |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| (7) | <ul style="list-style-type: none"> <li>a. <b>Our friends</b> <u>must be in Cancun by now.</u></li> <li>b. <b>Bill</b> <u>has never seen a racoon.</u></li> <li>c. <b>They</b> <u>are our friends.</u></li> <li>d. <b>Bill</b> [<u>past</u>] <i>arrived.</i></li> </ul>                  | Finite clause    |
| (8) | <ul style="list-style-type: none"> <li>a. (John seems) _____ <u>to be having problems.</u></li> <li>b. (I expect) _____ <u>to know tomorrow.</u></li> <li>c. (I expect) <b>them</b> <u>to know tomorrow.</u></li> <li>d. (We consider) <b>them</b> <u>to be our friends.</u></li> </ul> | Nonfinite clause |
| (9) | <ul style="list-style-type: none"> <li>a. (They made) <b>us</b> <i>do it.</i></li> <li>b. (We consider) <b>them</b> <i>our friends.</i></li> </ul>                                                                                                                                      | Small clause     |

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**compound tense** A tense that is expressed analytically, for instance, the English present progressive *she is singing* or the French *passé composé elle a chanté* 'she sang, she has sung'. Compound tenses contrast with [simple tenses](#), which are formed synthetically, like the English simple past *she sang* or the French *imparfait elle chantait* 'she used to sing, she was singing'.

Compound tenses in one language can correspond functionally to simple tenses in another language, and vice versa. For instance, the English compound present progressive corre-



sponds to a French simple present, whereas the English simple past often corresponds to a French *passé composé*. 418

**demotion** see [grammatical relation](#)

**determiner** A syntactic category that includes the definite article *the*, the indefinite article *a* and its variant *an*, the demonstratives *this* and *that*, and ordinary and reflexive pronouns. English also has a silent determiner, marked by \_\_\_\_ in (10) below, which resembles *some* in that it can be used with both mass nouns and plural count nouns.

- (10) a. I see \_\_\_\_ rice on the table.  
b. I heard \_\_\_\_ lions out in the bush last night.

137, 140

**evidence** Here and throughout the book, we will use the term ‘evidence’ to refer to empirical arguments for a conclusion, rather than in a more liberal sense in which it includes conceptual arguments based on theoretical virtues such as simplicity, economy, theory-internal consistency, and so on. In other words, for us, the collocation ‘empirical evidence’ is redundant.

Evidence consists of a linguistic expression (a sentence or phrase), along with a grammaticality judgment (✓ or \*).

For instance, we might ask whether the underlined noun phrase in (11a) is a complement or an adjunct of the italicized verb. The grammaticality of (11b) is evidence that it is an adjunct (given assumptions spelled out in Chapter 4).

- (11) a. They *partied* the entire weekend.  
b. ✓ They *did so* the entire weekend.

What about the status of the same string in (12a)? In this case, it is the ungrammaticality of (12b) that is evidence for the expression being a complement.

- (12) a. They *enjoyed* the entire weekend.  
b. \* They *did so* the entire weekend.

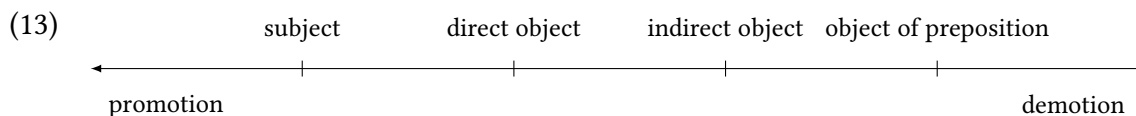
29, 75, 106, 109

**expletive** (from Latin *explere* ‘to fill out’) A syntactic [argument](#) that isn’t a semantic argument. See Chapter 3, § 3.1 for more discussion. 4

**finite** Finite verbs are verbs that are inflected for [tense](#) and person-number agreement. Finite clauses are clauses that can stand alone. See Chapter 2, § 8 for more discussion. 61, 284

**free morpheme** A [morpheme](#) that can stand alone, like *cat* or *happy*. In contrast, [bound morphemes](#), like plural *-s*, *un-*, or *-ness*) are part of a larger word. 280, 413

**grammatical relation** The grammatical relations in a sentence are listed in (13); see Chapter 3, § 5 for more discussion.



Various syntactic operations can change the grammatical relation of a noun phrase. Depending on whether a noun phrase moves “up” or “down” the hierarchy in (13), the noun phrase is said to be **promoted** or **demoted**. For instance, the passive in English demotes the subject of an active sentence to the object of the preposition *by*. In addition, it promotes the object to subject. 237

**homograph** One of two or more linguistic forms that are spelled alike, but different in function or meaning or in pronunciation.

Example:

*bank* ‘river bank’ and *bank* ‘financial institution’ (different meaning)

*read* (infinitive) and *read* (participle) (different pronunciation)

419, see also [homophone](#), [homonym](#) & [word](#)

**homophone** One of two or more linguistic forms that are pronounced alike, but distinct in function or meaning or in spelling.

Examples:

*bank* ‘river bank’ and *bank* ‘financial institution’ (same spelling, different meaning)

*reed* and *read* (infinitive); *red* and *read* (participle) (related meaning, different spelling)

213, 419, see also [homograph](#), [homonym](#) & [word](#)

**hypercorrection** The psychological process of constructing a non-prescribed linguistic form by analogy to a prescribed form. Also the resulting form itself. Example: *They feel badly*, by analogy to *They drive badly*. The prescribed form is *They feel bad*. In *They drive badly*, *badly* modifies *drive*, which is an ordinary verb. In *They feel bad*, on the other hand, *feel* is a [linking verb](#), and *bad* is a predicative adjective (it predicates a particular property of the subject of the sentence; in other words, it attributes the property to the subject).

*They feel badly* is acceptable in prescriptions for “standard” English only if it is the verb *feel* that is being modified; that is, if the sentence is intended to mean *They have a bad sense of touch*.

As always, note that the prescribed “standard” form is not a cognitive or linguistic status, but a social move to privilege one form of speaking over others. 26

**intransitive** Traditionally used of verbs that take no object. We use the term in a more general sense to refer to any syntactic category that takes no [complement](#). For instance, the *italicized* heads are transitive in the (a) examples, but intransitive in their (b) counterparts.

- (14)    a. We have *eaten* the pizza. verb  
           b. We have *eaten*.

- (15) a. They crawled *underneath* the table. preposition  
 b. They crawled *underneath*.
- (16) a. I like *that* radio. determiner  
 b. I like *that*.

see also [transitive](#)

**lexeme** 13, 416, see [word](#)

**lexical ambiguity** The association of a single [word](#) with more than one [lexeme](#). 13, 419

**linking verb** Also known as **copular verb**. One of a class of verbs including the copula *be*, as well as (among others) *appear*, *become*, *feel*, *get*, *grow*, *look*, *prove*, *seem*, *smell*, *sound*, *taste*, and *turn*, when used as in (17).

- (17) a. They { are, appear, became, grew, look, proved, seem } competent.  
 b. It { feels, looks, smells, sounds, tastes } fine.  
 c. He { became, got, grew } old.  
 d. It turned rancid.

415, see also [hypercorrection](#)

**matrix** A structure that contains another structure. Typically used in the collocation ‘matrix clause’ of a CP or IP that contains another CP or IP. 121

**morpheme** A minimal meaning-bearing element.

Words are not necessarily the smallest meaning-bearing elements in a language. For instance, *cats* is a single word, but consists of two morphemes, *cat* and the plural morpheme *-s*. *Unhappiness* consists of the three morphemes *un-*, *happy*, and *-ness*.

Morphemes can be **free** or **bound**. Free morphemes (like *cat* and *happy*) can stand alone, whereas bound morphemes (like *-s*, *un-*, and *-ness*) cannot. A trailing hyphen indicates that a bound morpheme is a prefix; a leading hyphen indicates a suffix. 413, 414, see also [bound morpheme](#) & [free morpheme](#)

**nominal** Of or relating to a noun or its projections (N, N', NP); more generally, of or relating to a noun phrase (DP). 138

**ordinary pronoun** Synonymous with “personal pronoun.” The following table lists the English ordinary pronouns.

| Person | Number | Nominative  | Oblique      | Possessive                       |                                |
|--------|--------|-------------|--------------|----------------------------------|--------------------------------|
|        |        |             |              | Prenominal<br>(That's ___ book.) | Absolute<br>(That book is ___) |
| 1      | SG     | I           | me           | my                               | mine                           |
| 2      |        | you         | you          | your                             | yours                          |
| 3      |        | he, she, it | him, her, it | his, her, its                    | his, hers, its                 |
| 1      | PL     | we          | us           | our                              | ours                           |
| 2      |        | you         | you          | your                             | yours                          |
| 3      |        | they        | them         | their                            | theirs                         |

Table 15.2: English ordinary pronouns

see also [full noun phrase](#)

**postposition** A head-final P. Coined in order to avoid the expression 'head-final preposition', which offends the etymologically aware as a contradiction in terms. See Chapter 5 for examples. see also [adposition](#)

**predicate** The term 'predicate' in linguistics has two distinct (though related) senses, what we will call the **subject-predicate** sense and the **predicate-argument** sense.

The subject-predicate sense derives from traditional logic, where propositions are divided into two parts, the [subject](#) and the predicate, and the predicate is what is affirmed (or denied) of the subject.

In the history of formal logic, this original sense was generalized to include relations missing more than a single argument. In the resulting predicate-argument sense, in linguistics, the term 'predicate' refers to a head that expresses a logical relation. Typically, predicates in this sense are verbs, but other types of heads can function as predicates in this sense as well.

The two senses are illustrated in (18) and (19). The predicate is underlined; notice that the two senses can pick out the same expression, as in the examples (18b) and (19b).

- (18) a. Bill gives money to charity. Subject-predicate sense  
b. Bill swims.  
(19) a. Bill gives money to charity. Predicate-argument sense  
b. Bill swims.  
c. Sheila's criticism of the plan.

413, see also [argument](#)

**promotion** see [grammatical relation](#)

**raising** The movement of a [subject](#) from an embedded clause to a matrix clause. see also [control verb](#) & [raising verb](#)

**reflexive pronoun** The English reflexive pronouns are easy to identify because they all contain a form of the morpheme *self*, as laid out in the following table.

|    | 1         | 2          | 3                            |
|----|-----------|------------|------------------------------|
| SG | myself    | yourself   | himself<br>herself<br>itself |
| PL | ourselves | yourselves | themselves                   |

Table 15.3: English reflexive pronouns

216, *see also* [full noun phrase](#)

**simple tense** A tense that is expressed synthetically, for instance, the English simple past *she sang* or the French *imparfait elle chantait* ‘she used to sing, she was singing’. Simple tenses contrast with [compound tenses](#), which are formed analytically, like the English present progressive *she is singing* or the French *passé composé elle a chanté* ‘she sang, she has sung’.

Simple tenses in one language can correspond functionally to compound tenses in another language, and vice versa. For instance, the English simple past corresponds to a French *passé composé*, whereas the English compound present progressive often corresponds to a French simple present. 288, 307, 413

**subject** See Chapter 3, § 5.1 9, 413, 417

**subject raising** *see* [raising](#)

**subject-aux inversion** The process that forms a [yes-no question](#) from the corresponding declarative sentence. In declarative sentences containing a modal, an auxiliary, or main verb *be*, subject-aux inversion consists in switching the order of the subject and that element (highlighted by italics below).

- |      |                                                       |                       |
|------|-------------------------------------------------------|-----------------------|
| (20) | a. He <i>should</i> apply to both schools.            | Modal                 |
|      | b. <i>Should</i> he apply to both schools?            |                       |
| (21) | a. The guy she met last night <i>is</i> coming along. | Auxiliary <i>be</i>   |
|      | b. <i>Is</i> the guy she met last night coming along? |                       |
| (22) | a. They <i>do</i> have to clean their room.           | Auxiliary <i>do</i>   |
|      | b. <i>Do</i> they have to clean their room?           |                       |
| (23) | a. The mail <i>has</i> come.                          | Auxiliary <i>have</i> |
|      | b. <i>Has</i> the mail come?                          |                       |
| (24) | a. They <i>are</i> superbly qualified.                | Main verb <i>be</i>   |
|      | b. <i>Are</i> they superbly qualified?                |                       |

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**tense** A linguistic category associated with temporal reference (what is the relation of the time of the event under discussion to the time of speaking?) as well as with aspect (is the speaker’s focus on the event’s inception, completion, duration, repetition, general truth, and so on?).

116, 414, *see also* [finite](#)

**transitive** Traditionally used of verbs that take a single object. We use the term in a more general sense to refer to any syntactic category that takes a single [complement](#). *see also* [intransitive](#)

**word** The term ‘word’ has at least three distinct meanings.

1. An **orthographic word** is a particular sequence of written characters. *Bank* in the sense of ‘river bank’ and ‘financial institution’ are the same orthographic word, as are *read* as an infinitive (*to read a book*), as a past tense form (*I read the book*), and as a past participle (*I have read the book*).

See also [homograph](#), [homophone](#).

2. A **word form** is a linguistic form of a particular grammatical type. For instance, *cut* can be an infinitive (*to cut*), a present tense form (*Whenever I stuff envelopes, I cut myself*), a past tense form (*Yesterday, I cut myself*), or a past participle (*I have cut myself again*). In this case, four distinct word forms are associated with a single orthographic word.
3. A **lexeme** is an abstract meaning unit that can subsume several different word forms. For instance, the lexeme *be* subsumes the eight word forms *am*, *are*, *be*, *been*, *being*, *is*, *was*, and *were*. The lexeme *cut* subsumes the three word forms *cut*, *cuts*, and *cutting*. In [lexical ambiguity](#), the same orthographic word is associated with more than one lexeme, as in the case of *bank* ‘river bank’ and *bank* ‘financial institution’.

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**yes-no question** See Chapter 6, § 1.1 418

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