

abstract features in the phrase structure tree. After the rules of the syntax have applied, these features are sometimes spelled out as affixes such as *-ed* or as function words such as *do*.

The basic design of language is universal. Universal Grammar specifies that syntactic rules are **structure-dependent** and that movement rules may not move phrases out of certain structures such as certain types of clauses, among many other constraints, including a need to not violate the X-bar schema. These constraints exist in all languages—spoken and signed—and need not be learned. UG also contains parameters of variation, such as the order of heads and complements, and the variations on movement rules. A child acquiring a language must fix the parameters of UG for that language.

References for Further Reading

- Baker, M. C. 2001. *The atoms of language: The mind's hidden rules of grammar*. New York: Basic Books.
- Carney, A. 2007. *Syntax: A generative introduction, 2nd ed.* Cambridge, MA: Blackwell.
- Chomsky, N. 1995. *The minimalist program*. Cambridge, MA: MIT Press.
- _____. 1972. *Language and mind, rev. ed.* New York: Harcourt Brace Jovanovich.
- _____. 1965. *Aspects of the theory of syntax*. Cambridge, MA: MIT Press.
- Jackendoff, R. S. 1994. *Patterns in the mind: Language and human nature*. New York: Basic Books.
- Pinker, S. 1999. *Words and rules: The ingredients of language*. New York: HarperCollins.
- Radford, A. 2009. *Analysing English sentences: A minimalist approach*. Cambridge, UK: Cambridge University Press.
- _____. 2004. *English syntax: An introduction*. Cambridge, UK: Cambridge University Press.

Exercises

1. Besides distinguishing grammatical from ungrammatical sentences, the rules of syntax account for other kinds of linguistic knowledge, such as:
 - a. when a sentence is structurally ambiguous. (Cf. *The boy saw the man with a telescope*.)
 - b. when two sentences with different structures mean the same thing. (Cf. *The father wept silently*. and *The father silently wept*.)
 - c. systematic relationships of form and meaning between two sentences, like declarative sentences and their corresponding interrogative forms. (Cf. *The boy can sleep*. and *Can the boy sleep?*)

Draw on your linguistic knowledge of English to come up with an example illustrating each of these cases. (Use examples that are different from the ones in the chapter.) Explain why your example illustrates the point. If you know a language other than English, provide examples in that language, if possible.

2. Consider the following sentences:
- I hate war.
 - You know that I hate war.
 - He knows that you know that I hate war.
 - Write another sentence that includes sentence (c).
 - What does this set of sentences reveal about the nature of language?
 - How is this characteristic of human language related to the difference between linguistic competence and performance? (Hint: Review these concepts in chapter 1.)

3. Paraphrase each of the following sentences in two ways to show that you understand the ambiguity involved:

Example: Smoking grass can be nauseating.

- Putting grass in a pipe and smoking it can make you sick.
- Fumes from smoldering grass can make you sick.

- Dick finally decided on the boat.
- The professor's appointment was shocking.
- The design has big squares and circles.
- That sheepdog is too hairy to eat.
- Could this be the invisible man's hair tonic?
- The governor is a dirty street fighter.
- I cannot recommend him too highly.
- Terry loves his wife and so do I.
- They said she would go yesterday.
- No smoking section available.
- We will dry clean your clothes in 24 hours.
- I bought cologne for my boyfriend containing 25% alcohol.

4. i. Consider the following baseball joke (knowledge of baseball required):

CATCHER TO PITCHER: "Watch out for this guy, he's a great fastball hitter."
 PITCHER TO CATCHER: "No problem. There's no way I've got a great fastball."

Explain the humor either by paraphrasing, or even better, with a tree structure like the one we used early in the chapter for *old men and women* (without the syntactic categories).

- Do the same for the advertising executive's (honest?) claim that the new magazine "has between one and two billion readers."

5. Draw two phrase structure trees to represent the two meanings of the sentence *The magician touched the child with the wand*. Be sure you indicate which meaning goes with which tree. (Note: Be sure your trees conform to the X-bar schema.) (Hint: *with the wand* is an adjunct, not a complement.)
6. Draw the NP subtrees for the italicized NPs in the following sentences:
- Every mother* hopes for good health.
 - A big black dog* is barking.
 - Angry men in dark glasses* roamed the streets.
 - We saw *the destruction of the house*. (Hint: * . . . and the one of the garage)

7. In all languages, sentences can occur within sentences. For example, in exercise 2, sentence (b) contains sentence (a), and sentence (c) contains sentence (b). Put another way, sentence (a) is embedded in sentence (b), and sentence (b) is embedded in sentence (c). Sometimes embedded sentences appear slightly changed from their normal forms, but you should be able to recognize and underline the embedded sentences in the following examples. Underline in the non-English sentences, when given, not in the translations (the first one is done as an example):

- a. Yesterday I noticed my accountant repairing the toilet.
- b. Becky said that Jake would play the piano.
- c. I deplore the fact that bats have wings.
- d. That Guinevere loves Lorian is known to all my friends.
- e. Who promised the teacher that Maxine wouldn't be absent?
- f. It's ridiculous that he washes his own Rolls-Royce.
- g. The woman likes for the waiter to bring water when she sits down.
- h. The person who answers this question will win \$100.
- i. The idea of Romeo marrying a 13-year-old is upsetting.
- j. I gave my hat to the nurse who helped me cut my hair.
- k. For your children to spend all your royalty payments on recreational drugs is a shame.
- l. Give this fork to the person I'm getting the pie for.
- m. khǎw chyâ waǎ khruu maa. (Thai)
He believe that teacher come

He believes that the teacher is coming.

- n. Je me demande quand il partira. (French)
I me ask when he will leave

I wonder when he'll leave.

- o. Jan zei dat Piet dit boek niet heeft gelezen. (Dutch)
Jan said that Piet this book not has read

Jan said that Piet has not read this book.

8. Adhering to the X-bar schema, draw phrase structure trees for the following sentences (TPs): (Hint: place any adverbs directly under AdvP without concern for the internal structure of the adverbial phrase. Also, you may assume possessive terms like *my* and *her* are determiners and that there are no "small clauses.")
- a. The puppy found the child.
 - b. A surly passenger insulted the attendant.
 - c. The house on the hill collapsed in the earthquake.
 - d. The ice melted quickly.
 - e. The hot sun melted the ice.
 - f. The old tree swayed in the wind.
 - g. My guitar gently weeps.

9. Create five phrase structure trees of 6, 7, 8, 9, and 10 words. Use your mental lexicon to fill in the bottoms of the trees. (Note: make sure your trees conform to the X-bar schema and be especially cautious to distinguish adjuncts from complements.)
10. We stated that the rules of syntax specify all and only the grammatical sentences of the language. Why is it important to say *only*? What would be wrong with a grammar that specified as grammatical sentences all of the truly grammatical ones plus a few that were not grammatical?
11. In this chapter we introduced the X-bar schema, according to which each phrasal category without \bar{X} recursion has three levels of structure. Draw the subtree corresponding to the phrasal category NP (noun phrase) and give an example of the four possibilities: head only; specifier and head only; head and complement only; and specifier, head, and complement only. (Hint: Make sure your complement is not an adjunct using the *one*-replacement test.)
12. Using one or more of the constituency tests (i.e., stand alone, move as a unit, replacement by a pronoun, *one*-replacement) discussed in the chapter, determine which of the boldfaced portions in the sentences are constituents. Provide the grammatical category of the constituents.
 - a. Martha found a **lovely pillow** for the couch.
 - b. The **light in this room** is terrible.
 - c. I wonder **whether Bonnie has finished packing her books**.
 - d. Melissa slept **in her class**.
 - e. **Pete and Max** are fighting over the bone.
 - f. I gave a bone to Pete **and to Max** yesterday.
 - g. I gave a bone to **Pete and** to Max yesterday.
13. The two sentences below contain a **verbal particle**:
 - i. He ran *up* the bill.
 - ii. He ran the bill *up*.

The verbal particle *up* and the verb *run* depend on each other for the unique idiosyncratic meaning of the phrasal verb *run up*. (*Running up a bill* involves neither running nor the location *up*.) We showed earlier that in such cases the particle and *object* do not form a constituent, hence they cannot move as a unit:

- iii. *Up the bill, John ran. (Compare this to *Up the hill John ran*.)
- a. Using adverbs such as *completely*, show that the particle forms a constituent with the *verb* in [*run up*] *the bill*, while in *run [up the hill]*, the preposition and NP object form a constituent.
- b. Now consider the following data:
 - i. Michael ran up the hill and over the bridge.
 - ii. *Michael ran up the bill and off his mouth.
 - iii. Michael ran up the bill and ran off his mouth.

Use the data to argue that expressions like *up the bill* and *off his mouth* are not constituents.

14. In terms of C-selection restrictions, explain why the following are ungrammatical:

- a. *The man located.
- b. *Jesus wept the apostles.
- c. *Robert is hopeful of his children.
- d. *Robert is fond that his children love animals.
- e. *The children laughed the man.

15. The complement of V may be a single NP direct object as for *find*. English also has **ditransitive verbs**, ones whose complement may be two NPs, such as *give*:

The emperor gave the vassal a castle.

Think of three other ditransitive verbs in English and give example sentences. (Note: The analysis of ditransitive verbs in X-bar theory is controversial. See Exercise 27.)

16. Tamil is a language spoken in India by upward of 70 million people. Others, but not you, may find that they talk “funny,” as illustrated by word-for-word translations of PPs from Tamil to English:

Tamil to English Meaning

the bed on	‘on the bed’
the village from	‘from the village’

- i. Based on these data, is Tamil a head initial or a head final language?
- ii. What would the PS tree for a Tamil PP look like? (Note: Make sure your tree conforms to the X-bar schema.)

17. Here are three more word-for-word glosses in Tamil:

a story tell	‘tell a story’
the boy a cow saw	‘the boy saw a cow’
woman this slept	‘this woman slept’

Do these further data support or detract from your analysis in exercise 16? What would the pertinent VP and NP trees look like in Tamil, based on these data? (Hint: Just give the three levels. You may need to look at Appendix B.)

18. All *wh* phrases can move to the left periphery of the sentence.

- a. Invent three sentences beginning with *what*, *which*, and *where*, in which the *wh* word is not in its d-structure position in the sentence. Give both the s-structure and d-structure versions of your sentences. For example, using *when*:

When could Marcy catch a flight? from *Marcy could catch a flight when?*
(Hint: see Appendix B.)

- b. Draw the phrase structure tree for one of your sentences. (Hint: See the Appendices.) (Note: As always, make sure your trees conform to the X-bar schema.)

19. There are many systematic, structure-dependent relationships among sentences similar to the one discussed in the chapter between declarative and interrogative sentences. Here are some example sentences based on ditransitive verbs (see exercise 15):

The boy wrote the senator a letter.

The boy wrote a letter to the senator.

A philanthropist gave the animal rights movement \$1 million.

A philanthropist gave \$1 million to the animal rights movement.

- a. Describe the relationship between the first and second members of each pair of sentences.
 - b. State why a Move transformation deriving one of these structures from the other is plausible.
20. State at least three differences between English and the following languages, using just the sentence(s) given. Ignore lexical differences (i.e., the different vocabulary). Here is an example:

Thai:	Dèg	khon	ní	kamlang	kin.
	boy	<i>classifier</i>	this	<i>progressive</i>	eat

‘This boy is eating.’

Măa	tua	nán	kin	khâaw.
dog	<i>classifier</i>	that	eat	rice

‘That dog ate rice.’

Three differences are (1) Thai has “classifiers.” They have no English equivalent. (2) The words (determiners, actually) *this* and *that* follow the noun in Thai, but precede the noun in English. (3) The “progressive” is expressed by a single separate word in Thai. The verb does not change form. In English, the progressive is indicated by the presence of the verb *to be* and the adding of *-ing* to the verb.

- a. French

Cet	homme	intelligent	comprendra	la question.
this	man	intelligent	will understand	the question

‘This intelligent man will understand the question.’

Ces	hommes	intelligents	comprendront	les questions.
these	men	intelligent	will understand	the questions

‘These intelligent men will understand the questions.’

- b. Japanese

Watashi	ga	sakana	o	tabete	iru.
I	<i>subject</i>	fish	<i>object</i>	eat (<i>ing</i>)	am
	<i>marker</i>		<i>marker</i>		

‘I am eating fish.’

c. Swahili

Mtoto		alivunja			kikombe.	
m-	toto	a-	li-	vunja	ki-	kombe
<i>class</i>	child	he	<i>past</i>	break	<i>class</i>	cup
<i>marker</i>					<i>marker</i>	

‘The child broke the cup.’

Watoto		wanavunja			vikombe.	
wa-	toto	wa-	na-	vunja	vi-	kombe
<i>class</i>	child	they	<i>present</i>	break	<i>class</i>	cup
<i>marker</i>					<i>marker</i>	

‘The children break the cups.’

d. Korean

Ki	sonyɔn-iee		wiyu-lil		masi-ass-ta.	
ki	sonyɔn-	iee	wiyu-	lil	masi-	ass- ta
the	boy	<i>subject</i>	milk	<i>object</i>	drink	<i>past</i> <i>assertion</i>
		<i>marker</i>		<i>marker</i>		

‘The boy drank milk.’

Ki-nin		muɔs-il		mɔk-ass-ninya.		
ki	nin	muɔs-	il	mɔk-	ass-	ninya
he	<i>subject</i>	what	<i>object</i>	eat	<i>past</i>	<i>question</i>
	<i>marker</i>		<i>marker</i>			

‘What did he eat?’

e. Tagalog

Nakita	ni	Pedro-ng		puno	na	ang	bus.
nakita	ni	Pedro	-ng	puno	na	ang	bus
saw	<i>article</i>	Pedro	that	full	already	<i>topic</i>	bus
						<i>marker</i>	

‘Pedro saw that the bus was already full.’

21. Transformations may delete elements. For example, the s-structure of the ambiguous sentence *George wants the presidency more than Martha* may be derived from two possible d-structures:

- George wants the presidency more than he wants Martha.
- George wants the presidency more than Martha wants the presidency.

A deletion transformation either deletes *he wants* from the structure of example (a), or *wants the presidency* from the structure of example (b). This is a case of **transformationally induced ambiguity**: two different d-structures with different semantic interpretations are transformed into a single s-structure.

Explain the role of a deletion transformation similar to the ones just discussed in the following humorous dialogue between “two old married folks.”

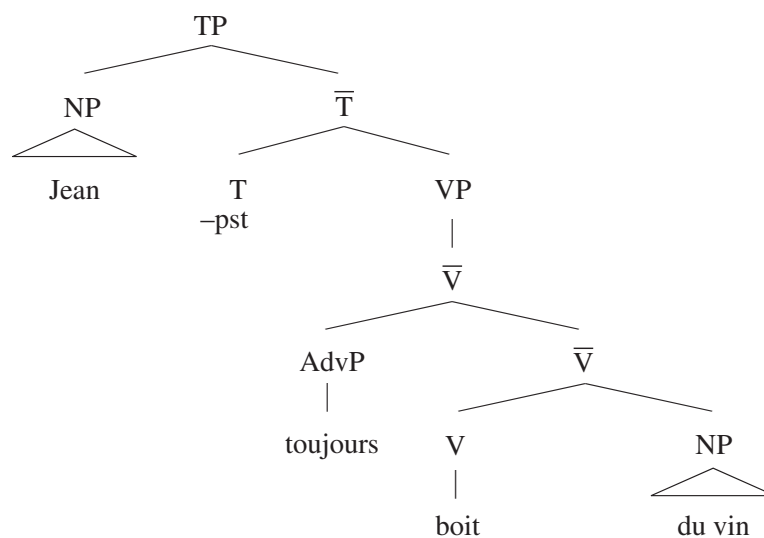
HE: Do you still love me as much as you used to?

SHE: As much as I used to what?

22. Challenge exercise: Compare the following French and English sentences:

French	English
Jean boit toujours du vin.	John always drinks some wine.
Jean drinks always some wine (*Jean toujours boit du vin)	*John drinks always some wine
Marie lit jamais le journal.	Mary never reads the newspaper.
Marie reads never the newspaper (*Marie jamais lit le journal)	*Mary reads never the newspaper.
Pierre lave souvent ses chiens.	Peter often washes his dogs.
Pierre washes often his dogs (*Pierre souvent lave ses chiens.)	*Peter washes often his dogs.

- a. Based on the above data, what would you hypothesize concerning the relative positions of adverbs of frequency (e.g., *toujours*, *jamais*, *souvent*, *always*, *never*, *often*) and the verbs they modify in French and English?
- b. Now suppose that UG specifies that in *all languages* the adverbs of frequency must precede \bar{V} , as in the tree below. What transformational rule would you need to hypothesize to derive the correct surface word order for French? (Hint: Think about the auxiliaries *have* and *be* in English and the movements they can make by referring to appendix B.)



- c. How are English and French alike; how are they different?