Slide 1

Syntax

LINGUISTICS 101
Benjamin Bruening
Department of Linguistics
University of Delaware

Slide 2

Concepts

- *Mental Grammar* A cognitive system that enables a person to produce and understand language.
- *Grammatical* Consistent with the mental grammar.
- *Ungrammatical* Inconsistent with the mental grammar.

Slide 3

Review: Syntax

Syntax is that part of the grammar that combines words (and other elements) into sentences:

(1) should, yards, people, have, who, wombats, large, raise →

(2) People who have large yards should raise wombats.

It also relates sentences to each other:

(3) People who have large yards should raise wombats. →

(4) Should people who have large yards raise wombats?

Slide 4

Knowledge of English

Your knowledge gives you the capacity to combine words and decode combinations like these. It also tells you what is and what is not English:

(5) Should people who have large yards raise wombats?

(6) * Have people who large yards should raise wombats?

Intuition: This sentence is not English. Signify this with the "*".

Slide 5

A Model of Syntax

If we want to model the syntactic ability that you possess, what will the model have to include?

1. Rules for grouping words into larger units;
2. Rules for performing grammatical operations like question formation;
3. Constraints on the application of these rules?

Slide 6

Form and Meaning: Order

Some initial observations regarding different types of combinations:

- Some differences in word order give differences in meaning, while others do not:

(7) a. The Canadian hockey team defeated the U.S. hockey team.

b. The U.S. hockey team defeated the Canadian hockey team.

(8) a. You've never heard most of the sentences in this lecture before.

b. Most of the sentences in this lecture you've never heard before.

Slide 7

Form and Meaning: Ambiguity

Certain sentences are ambiguous between two different meanings:

(9) Visiting relatives can be painful.

a. Visiting relatives is painful.

b. Visiting relatives are painful.

(10) The cop spotted the criminal with a telescope.

a. The cop spotted the criminal who had a telescope.

b. The cop spotted the criminal using a telescope.

Slide 8

Does Form = Meaning?

Some sentences are well-formed but meaningless:

(11) Colorless green ideas sleep furiously.

(12) 'Twas brillig, and the slithy toves
did gyre and gimble in the wabe

While others are ill-formed but understandable:

(13) * He put carefully the book on the table.

(14) * Put down it!

So form $\neq$ meaning; but they are related.

Slide 9

Rules for Combining Words

Is a sentence just a string of words, or does it have structure?

(15) People who have large yards should raise wombats.

(16) Who should raise wombats?

(17) * Who raise wombats?

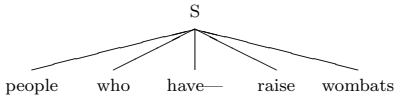
So we can't replace just any string of words with *who*.

Slide 10

Internal Structure

A sentence isn't just this:

(18)



Why not? Well, certain parts act like they belong together, to the exclusion of other parts. Think about our question-formation rule:

(19) People who have large yards should raise wombats.

Our first attempt at a rule was wrong: move the first verb. But how could you pick out *should* if the sentence is just a string of words?

Slide 11

Review: Morphology

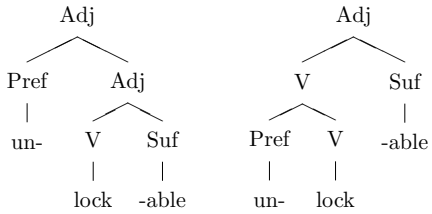
Recall that words had structure:

(20) unlockable

a. 'not able to be locked'

b. 'able to be unlocked'

(21)



Sentences do too.

Slide 12

The Subject

We can assert about anyone that they should raise wombats:

(22) *People who have large yards* should raise wombats.

(23) *You* should raise wombats.

(24) *The president's daughters* should raise wombats.

(25) *The tall, lanky man with bushy eyebrows* should raise wombats.

And we can question it using *who*:

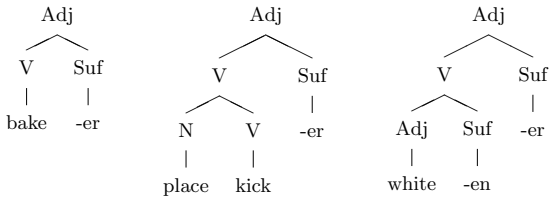
(26) *Who* should raise wombats?

Slide 13

Position

In morphology, the suffix -er could attach to a verb; almost any verb, even complex ones:

(27)

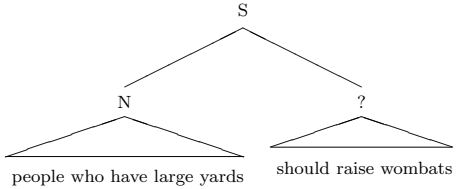


Slide 14

Subject: Type

In the same way, sentences seem to have a position for a subject, and anything that goes there is the same type:

(28)



Slide 15

Grammatical Categories

Grammatical categories are things that pattern together in the syntax:

- They occur in the same positions (here, subject);
- They undergo the same rules (e.g., inversion in questions):

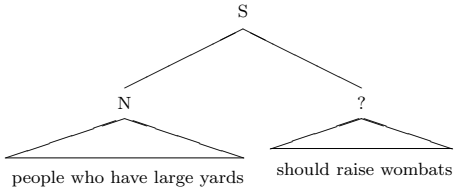
Should { people who have large yards / you / the tall, lanky man } — raise wombats?

Slide 16

Inversion

If this is the structure of a sentence, it's easy to write the question rule—move the first verb after the subject. Now any verbs *inside* the subject don't matter.

(29)



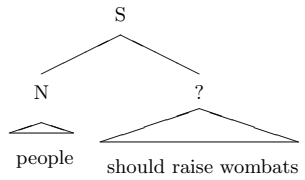
Slide 17

Grammatical Categories

Things that pattern together in this way are instances of the *same category*.

- These all seem to be nouns (person, place, thing).
- Subjects, then, are nouns.
- Sentences consist of nouns and some other things:

(30)



Slide 18

Noun Phrases

- But we don't want to just call them Nouns; some of them are complex, with multiple nouns (*people, who, liver, problems*).
- Call them a Noun Phrase (NP), a sort of extended noun, which appears to consist *minimally* of a noun:

(31) $[_{NP}$ People with large yards] should raise wombats.

(32) $[_{NP}$ People] should raise wombats.

(33) $[_{NP}$ You] should raise wombats.

(34) * $[_{NP}$ Unfold] should raise wombats.

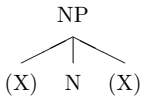
(35) * $[_{NP}$ Tall, lanky] should raise wombats.

Slide 19

Noun Phrases Must Have Ns

- So an NP is at least an N, plus some other stuff:

(36)



These sentences do not conform to this structure; NP does not contain an N:

(37) * $[_{NP}$ Unfold] should raise wombats.

(38) * $[_{NP}$ Tall, lanky] should raise wombats.

Slide 20

Noun Phrases: Substitution

If you suspect that some string of words is a noun phrase, you can try replacing it with other NPs. If that string of words really is a noun phrase, the result will be grammatical:

(39) a. People who have large yards should raise wombats.

b. $[_{NP}$ Bush's daughters] should raise wombats.

c. $[_{NP}$ Raccoons] should raise wombats.

(40) a. People who have large yards should raise wombats.

b. * People who have large yards $[_{NP}$ raccoons] .

(41) a. People who have large yards should raise wombats.

b. * People $[_{NP}$ raccoons] raise wombats.

Slide 21

Noun Phrases: Pronoun Replacement

A string of words that is an NP can also be replaced by a pronoun:

(42) a. People who have large yards should raise wombats.
b. [$_{NP}$ They] should raise wombats.

(43) a. People who have large yards should raise wombats.
b. * People who have large yards [$_{NP}$ they/them] .

(44) a. People who have large yards should raise wombats.
b. * People [$_{NP}$ they/them] raise wombats.

Slide 22

Noun Phrases: Questioning

A string of words that is an NP can be questioned, and the NP can stand alone as the answer:

(45) a. People who have large yards should raise wombats.
b. [$_{NP}$ Who] should raise wombats? *Answer:* people who have large yards

(46) a. People who have large yards should raise wombats.
b. * [$_{NP}$ Who/what] people who have large yards? *Answer:* should raise wombats

(47) a. People who have large yards should raise wombats.
b. * [$_{NP}$ Who/what] people raise wombats? *Answer:* who have large yards should

Slide 23

Noun Phrases: Movement

A string of words that is an NP can also be moved as a unit:

(48) a. I think people who have large yards should raise wombats.
b. [$_{NP}$ People who have large yards] I think — should raise wombats.

(49) a. I think people who have large yards should raise wombats.
b. * Should raise wombats I think people who have large yards —.

(50) a. I think people who have large yards should raise wombats.
b. * Who have large yards should I think people — raise wombats.

Slide 24

Noun Phrases: Conjunction

A string of words that is an NP can also be conjoined with another NP using *and*:

(51) a. People who have large yards should raise wombats.
b. [$_{NP}$ People who have large yards] and [$_{NP}$ raccoons] should raise wombats.

(52) a. People who have large yards should raise wombats.
b. * People who have large yards should raise wombats and [$_{NP}$ raccoons] .

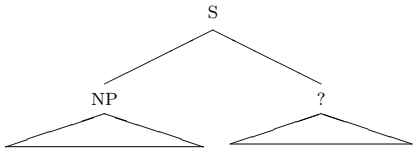
(53) a. People who have large yards should raise wombats.
b. * People who have large yards should and [$_{NP}$ raccoons] raise wombats.

Slide 25

What Besides NPs?

All of these tests show that we have a *constituent* NP in a sentence (S):

(54)



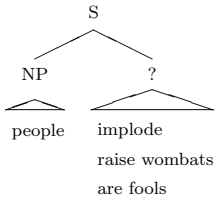
What is the "?"?

Slide 26

Verb Phrases

The "?" seems to consist minimally of a verb; a verb plus an object if it's transitive:

(55)



- We can't have something besides a verb here, like N or P:

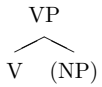
(56) a. * People who have large yards wombats.
b. * People who have large yards between.

Slide 27

Verb Phrases

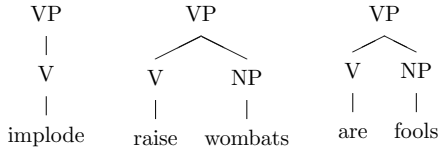
- Call "?" a Verb Phrase (VP), headed minimally by a Verb:

(57)



This gives us:

(58)



Slide 28

Is VP a Constituent?

Let's apply our tests:

(59) *Substitution*
a. People who have large yards raise wombats.
b. People who have large yards [$_{\text{VP}}$ implode] .

(60) *Pro-form replacement*
a. People who have large yards raise wombats.
b. People who have small yards [$_{\text{VP}}$ do] too.

(61) *Questioning*
a. People who have large yards raise wombats.
b. What do people who have large yards do?
c. *Answer: Raise wombats.*

Slide 29

Is VP a Constituent?

(62) *Conjunction*

a. People who have large yards raise wombats.

b. People who have large yards [$_{\text{VP}}$ raise wombats] and [$_{\text{VP}}$ implode] .

(63) *Movement?*

What about movement?

Slide 30

Yodaspeak

Some lines from *The Empire Strikes Back*:

(64) Consume you it will.

(65) If you leave now, help them you could.

Apply to our sentence:

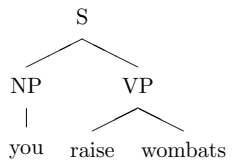
(66) She said you should raise wombats, and [$_{\text{VP}}$ raise wombats] , you certainly should.

Slide 31

VP in S

So sentences consist of an NP and a VP:

(67)

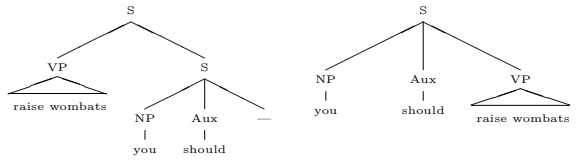


Slide 32

An Auxiliary Verb

Examples of Yodaspeak (or "VP fronting") show something else—auxiliaries are not part of VP:

(68)



Yodaspeak shows that the first auxiliary verb is not part of the VP.

(69) * Should raise wombats you.

Slide 33

Other Tests

All show that Aux is not part of VP:

(70) *Deletion (replacement with nothing):*

a. You should [$_{\text{VP}}$ raise wombats] .

b. I should [$_{\text{VP}}$ —] too.

c. * I [—] too.

(71) *Displacement of Aux:*

a. [$_{\text{Aux}}$ Should] you — raise wombats?

b. * [Should raise wombats] you —?

(72) *Conjunction:*

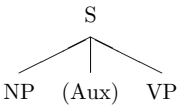
a. You [$_{\text{Aux}}$ can] and [$_{\text{Aux}}$ will] raise wombats.

Slide 34

The Auxiliary Verb

For now, let's just put the Aux under S:

(73)



It's optional:

(74) a. You should raise wombats.

b. You raise wombats.

Now we can state the question rule the right way:

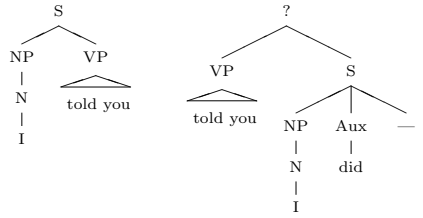
(75) To question S, move the Aux to the front of the sentence.

Slide 35

Auxiliary *Do*

If there is no auxiliary verb, one magically appears in Yodaspeak:

(76)



Note that this *do* appears in emphatic statements and negation:

(77) I DID tell you!

(78) I didn't tell you.

Slide 36

Do in Questions

We saw the independence of the Aux in question formation:

(79) Should people who have large yards — raise wombats?

Note that *do* magically appears here too:

(80) I told you. → Did I tell you?

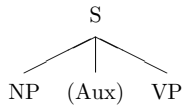
We won't try to explain this, but just note that Aux is obligatory with negation, with VP fronting (Yodaspeak), and with Subject-Aux Inversion.

Slide 37

Summary: The Sentence

Our sentence structure:

(81)



Slide 38

Internal Structure of Phrases

But we noted that NP can be complex, and VP can too:

(82) NP

a. people who have large yards

b. the tall, lanky man

(83) VP

a. implode

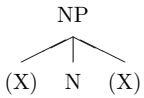
b. raise wombats

c. dance in the rain

Slide 39

NPs

(84)



"X" ranges over various kinds of modifiers, like adjectives and PPs:

(85) the man

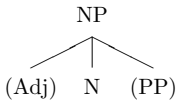
(86) the tall man

(87) the tall man with a vespa

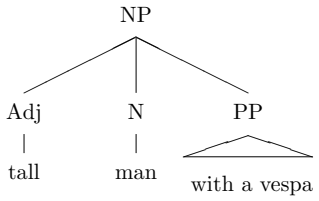
Slide 40

NP Structure

(88)



(89)



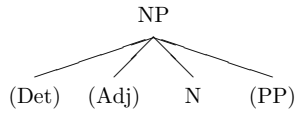
Slide 41

Determiners

NPs can also have determiners:

(90) a. a wombat
b. the wombat
c. those wombats

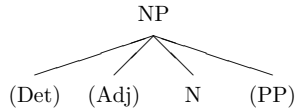
(91)



Slide 42

Order

(92)



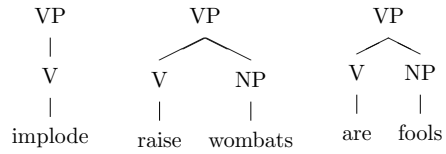
- These trees encode linear order: Det must come before any adjectives, adectives before the N, and PPs after the N:

(93) a. * fat the wombat
b. * the wombat fat
c. * the with a vespa wombat

Slide 43

VP Structure

(94)



These indicate that VPs consist minimally of Vs, but they can also have an NP that must come after the verb:

(95) a. * People wombats raise.
b. * People fools are.

Slide 44

Objects of Verbs

- Our structure has NP as object of verb, same as subject of sentence.
- This appears to be right: anything that can appear in the subject position can also be the object of a verb, and vice versa:

(96) a. People who have large yards implode.
b. I help people who have large yards.

(97) a. You raise wombats.
b. Wombats raise you.

So VPs also have a slot for an NP, and that NP has the structure we discussed above:

Slide 45

Object: Constituency

We can also apply all our tests to show that this object is a constituent:

(98) *Substitution*

a. I help people who have liver problems.

b. I help [$_{NP}$ wombats] .

(99) *Pro-form replacement*

a. I help people who have liver problems.

b. I help [$_{NP}$ them] .

(100) *Questioning*

a. I help people who have liver problems.

b. [$_{NP}$ Who] do you help?

c. *Answer: People who have liver problems.*

Slide 46

Object NP Constituency

(101) *Conjunction*

a. I help people who have liver problems.

b. I help [$_{NP}$ people who have liver problems] and [$_{NP}$ wombats] .

(102) *Movement*

a. I help people who have liver problems.

b. Now, [$_{NP}$ people who have liver problems] , I'll help.

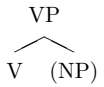
c. It's only [$_{NP}$ people who have liver problems] that I'll help.

So VPs also have a slot for an NP, and that NP has the structure we discussed above:

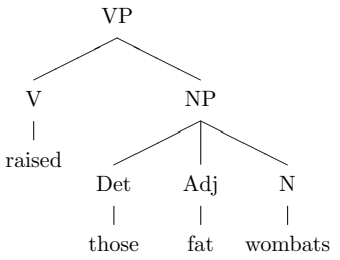
Slide 47

VP Structure

(103)



(104)

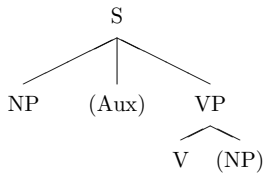


Slide 48

Sentence Structure

So a sentence is a series of phrases embedded within one another:

(105)



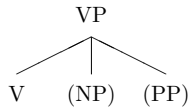
Slide 49

VP Structure: PPs

VPs can also include prepositions + NPs (PPs):

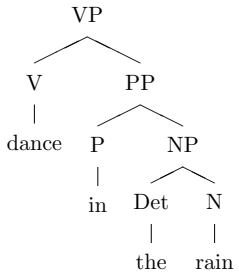
(106) a. Wombats dance in the rain.
b. Some wombats skipped through the garden.
c. I put a wombat on the shelf.

(107)



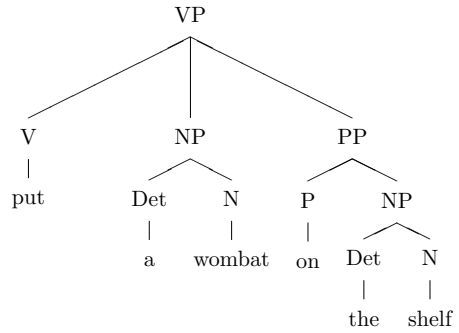
Slide 50

(108)



Slide 51

(109)



Slide 52

VP Structure: PPs

Constituency tests show PPs are part of VP:

(110) I said I would dance in the rain, and dance in the rain I will.
(111) I danced in the rain, and you did too.
(112) I danced in the rain and slipped in the mud.

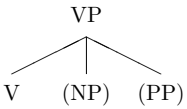
Slide 53

VP Structure: PPs

VPs can have NP and PP:

(113) I eat quiche with chopsticks.

(114)



Since these trees encode linear order, the order must be NP then PP:

(115) I eat quiche with chopsticks.

(116) * I eat with chopsticks quiche.

Slide 54

PPs

Note that what we called a PP always has a P in it, and it has an NP:

(117) a. around the world
b. through the looking glass
c. beside myself

(118) a. Wombats ran in the park.
b. A wombat ran in.

(119)

Slide 55

PPs: Constituency

(120) *Pro-form replacement*
a. I saw wombats <u>in the park</u>.
b. I saw wombats [$_{\text{NP}}$ there] .

(121) *Questioning*
a. I saw wombats <u>in the park</u>.
b. [$_{\text{NP}}$ Where] did you see wombats?
c. *Answer: In the park.*

Slide 56

PP Constituency

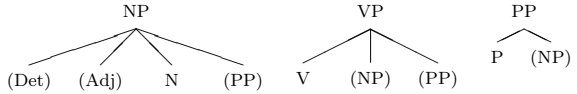
(122) *Conjunction*
a. I saw wombats <u>in the park</u>.
b. I saw wombats [$_{\text{PP}}$ in the park] and [$_{\text{PP}}$ on the roof] .

(123) *Movement*
a. I saw wombats <u>in the park</u>.
b. [$_{\text{PP}}$ in the park] I saw wombats.
c. It was [$_{\text{PP}}$ in the park] that I saw wombats.

Slide 57

Trees

So we have NPs, VPs, and PPs:

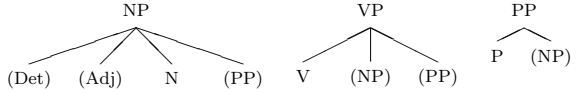


What do these trees encode?

- Constituency
- Hierarchical structure
- Linear order
- Optionality/obligatoriness

Slide 58

Heads



- Exactly one thing is obligatory in each tree.
- This is also the thing that we named the phrase after.
- This is the *head* of the phrase.

Slide 59

Ambiguity

We are now in a position to account for some of the ambiguities discussed above:

(124) The cop spotted the criminal with a telescope.

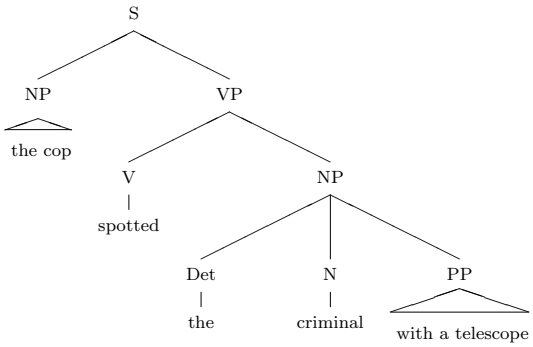
a. The cop spotted the criminal who had a telescope.

b. The cop spotted the criminal using a telescope.

These correspond to PP modification of NP vs. VP:

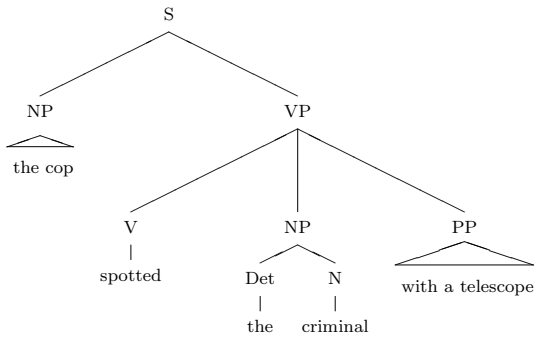
Slide 60

(125)



Slide 61

(126)

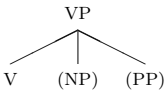


Slide 62

Phrase Structure: Embedding

So far we just have the following options for VP:

(127)



This gives us transitive and intransitive verbs in English:

(128) The wombats left.

(129) The wombats teased the komodo dragon.

But there are other kinds of verbs in English:

(130) The wombats said [$_{S}$ they were going to leave] .

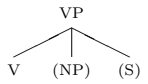
(131) The wombats told [$_{NP}$ me] [$_{S}$ they were going to leave] .

Slide 63

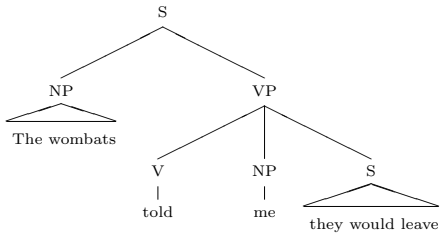
Phrase Structure: Embedding

So there's another VP option:

(132)



(133)



Slide 64

Phrase Structure: Embedding

Now we can embed sentence within sentence within sentence:

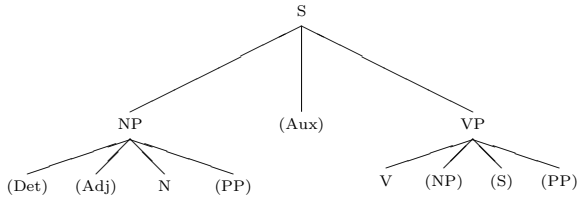
(134) He told me that she said that you thought that. . .

- Embedding likes this gives us infinite possibilities for expansion.
- Add to that the potentially infinite number of nouns and verbs that can be put into the structures, and syntax allows a truly infinite number of combinations.

Slide 65

Our Mini-Grammar

So far our syntactic model consists only of *constituent structure trees*:



Slide 66

Generalizations About Syntax

Despite its apparent simplicity, our mini-grammar consisting only of constituent structure trees captures a host of generalizations about syntax:

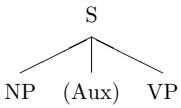
1. The forms of sentences (NP Aux VP);
2. Constituency and grammatical category: NPs pattern together, VP acts like a unit, Aux is separate;
3. Word order and ungrammatical word orders (**I eat with chopsticks quiche*);
4. Infinity: embeddability, plus a large (potentially infinite) number of terminal symbols (words), result in an infinite number of combinations;
5. Structural ambiguity: the possibility of different constituent structures for the same string of words.

Slide 67

Expressing Trees as Rules

Another way to encode trees is in the form of a rule.

(135)



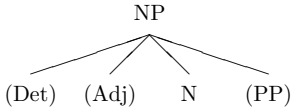
(136) S → NP (Aux) VP

- Read as "S expands to NP, optional Aux, and VP," where linear order matters.
- All we've done is flipped the tree on its side and written it on one line.

Slide 68

PS Rules: NPs

(137)



(138) NP → (Det) (Adj) N (PP)

Slide 69

PS Rules: Terminal Symbols

How do we fill in actual words? A rule giving all the values for, e.g., N:

(139) N → *wombat, you, man, woman, Yoda, ...*

(140) Det → *the, a, those, these, some, many, ...*

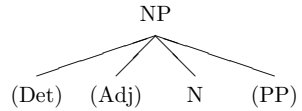
(141) Adj → *tall, lanky, bushy, astute, ...*

Here the comma indicates that we make a choice, and there is no sense to ordering.

Slide 70

Complete PS Rules: NPs

(142)



(143) NP → (Det) (Adj) N (PP)

(144) N → *wombat, you, man, woman, Yoda, ...*

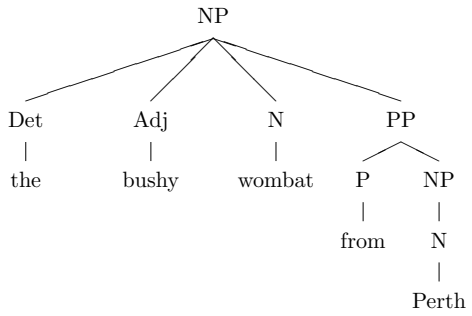
(145) Det → *the, a, those, these, some, many, ...*

(146) Adj → *tall, lanky, bushy, astute, ...*

Slide 71

A Sample Tree with Rules

(147)



(148) NP → (Det) (Adj) N (PP)

(149) N → *wombat, you, man, woman, Perth, ...*

Slide 72

(150) Det → *the, a, those, these, some, many, ...*

(151) Adj → *tall, lanky, bushy, astute, ...*

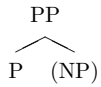
(152) PP → P (NP)

(153) P → *from, to, around, toward, by, ...*

Slide 73

PS Rules: PPs

(154)



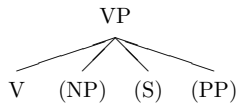
(155) PP → P (NP)

(156) P → *from, to, around, toward, by, ...*

Slide 74

PS Rules: VPs

(157)



(158) VP → V (NP) (S) (PP)

(159) V → *raise, help, drink, implode, ...*

Slide 75

PS Rules = Trees

What do these rules encode? The same things as trees:

- Constituency
- Hierarchical structure
- Linear order
- Optionality/obligatoriness

Slide 76

A Grammar of Rules

Now we can write a grammar consisting entirely of rules:

(160) PS Rules

a. S → NP (Aux) VP
b. NP → (Det) (Adj) N (PP)
c. N → *wombat, you, man, woman, Perth, ...*
d. Det → *the, a, those, these, some, many, ...*
e. Adj → *tall, lanky, bushy, astute, ...*
f. PP → P (NP)
g. P → *from, to, around, toward, by, ...*
h. VP → V (NP) (S) (PP)
i. V → *raise, help, drink, implode, ...*

Slide 77

j. Aux → *can, will, should, have, be, ...*

(161) Other Rules

a. Q-Rule: Move Aux to the beginning of S

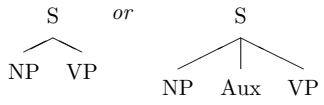
b. VP-Fronting Rule: Move VP to the beginning of S

Slide 78

Using the Rules

Always have to start with S:

(162) S → NP (Aux) VP



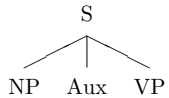
or

Slide 79

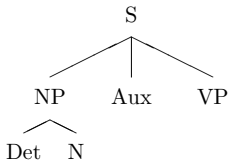
Using the Rules

But then can choose any rule that applies:

(163)



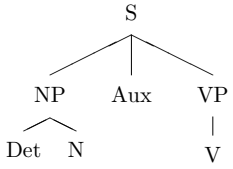
(164) NP → (Det) (Adj) N (PP)



Slide 80

Using the Rules

(165) VP → V (NP) (S) (PP)



Now there are no more phrasal categories; all we can do is fill in the terminal nodes.

Slide 81

Terminal Nodes

Our terminal nodes (cannot expand any more) are N, Adj, V, Det, P, Aux:

(166) *Lexical Categories*

a. N → *wombat, you, man, woman, Perth, ...*

b. Adj → *tall, lanky, bushy, astute, ...*

c. V → *raise, help, drink, implode, ...*

(167) *Functional Categories*

a. Det → *the, a, those, these, some, many, ...*

b. P → *from, to, around, toward, by, ...*

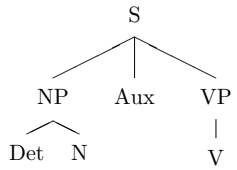
c. Aux → *can, will, should, have, be, ...*

Slide 82

Filling in the Nodes

We ended up with this tree:

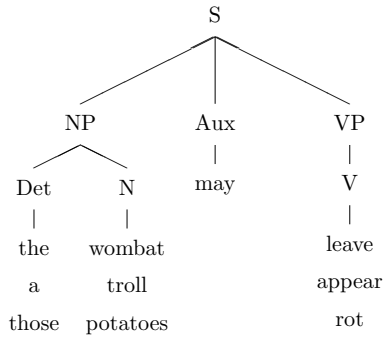
(168)



Since the N, Adj, and V categories are potentially infinite sets, we have an infinite number of sentences corresponding just to this tree:

Slide 83

(169)



Slide 84

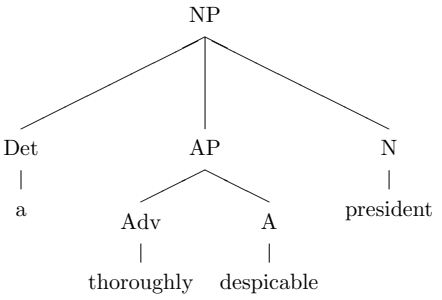
Some More Rules: APs

Adjectives are actually phrasal:

(170) a *very tall* man

(171) a *thoroughly despicable* president

(172)



Slide 85

(173) NP → (Det) (AP) N (PP)

(174) AP → Adv A

(175) A → *tall, despicable, bushy, ...*

Slide 86

Possessors

You might have noticed already that we need another NP rule, too, to account for possessors:

(176) a. that wombat's kimono

b. the Queen of England's hairdo

(177) NP → NP's (Adj) N (PP)

(178) NP → (Det) (Adj) N (PP)

Note that possessors and Dets do not co-occur, which is what our rules say:

(179) a. * the that wombat's kimono

b. * the her hairdo

Slide 87

Some More Rules: Coordination

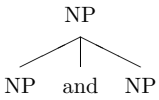
One of our tests for constituency was coordination with *and*:

(180) I raise [$_{\text{NP}}$ bushy wombats] and [$_{\text{NP}}$ hairless anteaters] .

(181) VP → V (NP)

More generally, *NP and NP* can appear anywhere NP can; so it must be the same thing:

(182)



(183) NP → NP and NP

Slide 88

Coordination

Can do this with any phrasal category, so it must be more general:

(184) I should [$_{\text{VP}}$ raise wombats] and [$_{\text{VP}}$ grow parsnips] .

(185) VP → VP and VP

(186) She ran [$_{\text{PP}}$ out of the room] and [$_{\text{PP}}$ into my heart] .

(187) PP → PP and PP

Slide 89

Variations Across Languages

Our PS rules can be modified to account for other languages too, like Japanese:

(188) Masao ga sono hon o yonda.
Masao Nom that book Acc read.
'Masao read that book.'

(189) VP → (NP) V

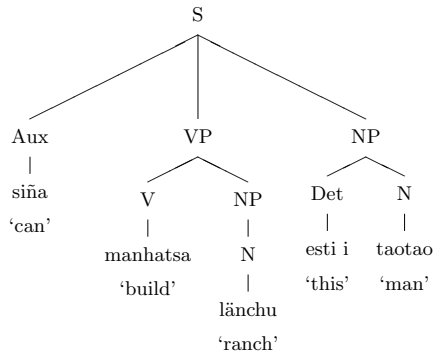
Or Chamorro:

(190) Pues ti siña manhatsa länchu tä'lu esti i taotao.
so not can build ranch again this man
'So this man couldn't build a ranch again.'

(191) S → Aux VP NP

Slide 90

Chamorro



Slide 91

Thematic Roles

- One way to talk about verb meanings, to try to understand how syntax and meaning interact, is in terms of *roles* that things play in events.
- Generally, every sentence has a verb, plus one or more NPs.
- Intuitively, verbs describe events (including states), while the NPs play roles in those events.
- To begin, the object is usually what is *affected* by the action of the verb, while the subject *controls* the action:

(192) a. The agent stamped our tickets.
b. The driver stopped the car.

- We say that the object bears the role of *patient*;

Slide 92

- The subject bears the role of *agent*.
- Note that these roles come from the particular verb:

Slide 93

Other Thematic Roles

There are other thematic roles besides agent and patient:

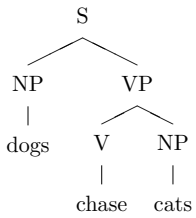
(193)
a. I sent the letter to Mary. Theme
b. I sent the letter to Mary. Recipient
c. I sent the letter to Mary. Source (and Agent)
d. I sat under the tree. Location
e. I did the homework yesterday. Temporal
f. I did the homework with a pen. Instrument
g. Mary detests wombats. Experiencer

Slide 94

Word Order and Meaning

Now we know why *dogs chase cats* and *cats chase dogs* mean different things:

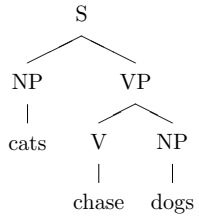
- The S rule and the VP rule for English say that the order must be SVO.



- The NP after the verb, the object, is the patient.

Slide 95

- The NP before the verb, the subject, is the agent.
- Therefore in *dogs chase cats*, it must be the case that the dogs are the chasers, while the cats are the chasees.
- If we reverse the order, we've reversed the hierarchy, and hence the thematic roles:



Slide 96

Thematic Roles and Movement

Note that thematic roles are not affected by other permutations in word order, like topicalization:

(194)
a. People like aapples.
exp theme
b. Apples, people like.
theme exp

Slide 97

Thematic Roles vs. Grammatical Roles

Not the same thing:

(195) a. An angry mob burned all the books.
b. All the books were burned by an angry mob.

(196) a. I like gelato.
b. Mi piace gelato.