

*January 22nd, 2004*  
*Review: Chapters 1–2*

# *Overview*

- Models and modeling
- Our model so far
- (Preview: Phrase structure rules)
- Practice drawing trees
- Evidence for categorial constituent structure
- Practice applying the tests
- Where and why the tests leak

## *Models and modeling (1/2)*

- The data we are trying to model are sets of strings: sentences and non-sentences.
- In particular, we'd like to model which strings of words native speakers accept as part of their language and which they do not.
- (Remember: Acceptability judgments reflect grammaticality only indirectly. Other factors may intervene.)

## *Models and modeling (2/2)*

- An *observationally adequate* model will get the right set of strings.
- A *descriptively adequate* model will get the right set of strings and assign the right structures to them.
- An *explanatorily adequate* model will also be psychologically plausible.

## *Our model so far*

- Words can be grouped into a finite number of categories N, V, A, P, D, ADV, M, ...
- Sentences are not flat lists of words but rather have internal structure.
- The groupings of words within sentences are called constituents.
- Phrasal constituents can also be classified into a finite number of categories NP, VP, PP, AP, ADVP, ...
- Two main kinds of rules make reference to these categories: Phrase structure rules and transformational rules.

## *Preview: Phrase structure rules*

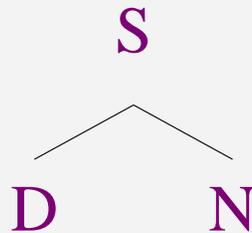
- You may have noticed certain recurring patterns in the trees in the book.
- The patterns are captured in phrase structure rules.
- Alternatively, the particular trees licensed by the grammar are constructed from phrase structure rules.  
(Modulo transformations, more in 462...)

## *Phrase structure rules used in Chapter 2*

$S \rightarrow NP M VP$	$VP \rightarrow V NP$
$NP \rightarrow D N$	$VP \rightarrow V NP NP$
$NP \rightarrow N$	$VP \rightarrow V NP PP$
$V \rightarrow V P$	$VP \rightarrow V PP$
$AP \rightarrow ADVP A$	$VP \rightarrow V AP PP$
$PP \rightarrow P NP$	$VP \rightarrow V AP$
$PP \rightarrow P$	$VP \rightarrow V ADVP$
$ADVP \rightarrow ADV$	$VP \rightarrow V ADVP PP$
	$VP \rightarrow V$

## *Reading Phrase Structure Rules*

- $S \rightarrow NP M VP$ : ‘An S consists of an NP followed by an M followed by a VP’.
- Anything not explicitly licensed by the grammar is out.
- So, since there is no rule  $S \rightarrow D N$ , we won’t license any trees containing:



- We will certainly, however, add to the collection of rules above.
- We will also be looking for ways to generalize across those rules.

## *Practice drawing trees*

- Cats seem utterly arrogant to Kim.
- The cat slept arrogantly on the mat.
- The cat turned on the radio.
- The cat turned the radio on.

*What rules would we need to add for these sentences?*

- The Tigers gave the match completely to the Bears.
- You can certainly rely on me.
- The yellow cat slept on the mat.
- The cat on the mat slept arrogantly.

## *Evidence for categorial constituent structure*

- The model was motivated with a variety of argumentation.
- Each piece is motivated (somewhat) separate from the others.
  - Word classes: Morphological evidence, distributional evidence.
  - Constituent structure: Semantic evidence (ambiguity), various syntactic tests (see next slide)
  - Phrase classes: Words as phrases (distributional), coordination, others

## *Constituency tests*

- Distribution (establishes equivalence classes)
- Movement: Preposing, postposing (complete phrases only)
- Sentence fragment (complete phrases only)
- Allowing S and VP adverbs inside constituent (establishes S or VP category membership)
- Ordinary coordination (establishes equivalence classes)
- Shared constituent coordination
- Pronominalization
- Ellipsis (establishes VP category membership)

## *Practice with constituency tests*

- Use as many tests as you can to determine whether the italicized strings in the following sentences are constituents, and if so, of what type:
  - They *called off the game* on account of rain.
  - They called *off the game* on account of rain.
  - The person *whom you just met* is a spy.
  - Kim owns a *painting by Picasso*.

## *Leaky tests*

- The constituency tests don't always give consistent results.
- Two possibilities:
  - Our notion of constituent structure is not quite right, and there is something more subtle going on.
  - In the cases where tests don't agree, the result on one or the other is affected by some interfering phenomenon.
- Since we like constituent structure, we're going to look for those interfering phenomena.

## *Leaky tests: Example 1*

- Tests:
  - Sandy will [*finish the assignment*].
  - Sandy promised that he would finish the assignment, and [*finish the assignment*] he will.
  - Sandy will [*finish the assignment*] and so will Kim.
  - Sandy will [*finish the assignment*] and [*hand it in*].
  - Kim won't [*finish the assignment*] but Sandy will.
  - \*Kim will [*finish completely the assignment*].
- Why is the ungrammaticality of the last example surprising?
- What else might be going on?

## *Leaky tests: Example 2*

- Tests:
  - Kim [*will clear up the mess*].
  - \*Kim said she will clear up the mess, and [*will clear up the mess*] she.
  - \*Sandy won't clear up the mess, but Kim.
  - \*Kim [*completely will clear up the mess*].
  - Who will clear up the mess? Kim will.
- Why is the grammaticality of the last example surprising?
- What else might be going on?

## *Midterm notes*

- Next Tuesday, for the whole class period.
- Open notes, open book.
- More like the homework than the lectures.

## *Summary*

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