Lecture 11: Grammar and grammar formalisms

1. Parsing

If trees are useful, how do we get them?

This is not as simple as it sounds.

Turning a string into a parse tree is an unsolved problem.

The best we can do is to try to find the best tree.

2. Exploring syntax

We have in mind the kind of implicit knowledge of your native language that you took for granted before you learned to speak.

We can observe some commonality over the behaviour of the following English phrases:

We can describe an internal structure for the class

That's one of reasons there are so many different theories of grammar and competing analyses

3. Syntax (or Grammar)

Refers to the way words can be arranged in a given language

Key formalism

Non-terminals

Terminals

5. Constituency

5.1. A bit more detail on English Grammar

We can say that in English, noun phrases can come before verbs

This might involve disjunctions of somewhat unlike sub-classes to do this

One of the non-terminals

What co-occurs with what?

The Cambridge Grammar of the English Language is 1860 pages long

So we won't cover all of English by a very long way

6. Constituency, cont'd: Noun Phrases

We can observe some commonality over the behaviour of the following English phrases:
12. Sentence Types

Declaratives
- A plane left

Imperatives
- Leave!

Yes-no questions
- Did the plane leave?

WH questions
- When did the plane leave?

13. Noun Phrases, more carefully

We can identify three quite distinct types of noun phrases:

- Pronouns: she, he, we, ...
- Proper Nouns: Edinburgh, Star Wars, the Eiffel Tower, ...
- Complex noun phrases: the next prime minister after Thatcher

Consider the following moderately complicated noun phrase:

the first three morning flights from Denver to Tampa leaving before 10

14. NP Structure

That big NP is really about flights
- That’s its central critical noun
- Let’s call that the head of the NP

We can dissect this kind of NP into:

- The constituents that can come before the head
- The constituents that can come after it

15. Before the nominal: Determiners

Complex noun phrases can start with determiners

Determiners can be:
- Simple lexical items: the, this, a, her
- (Recursive) possessives: simple Robin's car, complex Robin's youngest child's toy

16. Before the nominal: Other premodifiers

Other premodifiers include

- Quantifiers, cardinals, ordinals: every flight
- Adjectives and Adjective phrases: large cars, extremely sleepy baby

There are constraints we haven’t captured on the order of pre-modifiers:

- Between adjectives and quantifiers: every eligible candidate
- Between one adjective and another: big red bus

17. The nominal: the head and its postmodifiers

Eventually (or even right away), we get to the Nominal

- Including the head, with or without compound preposing

The postmodifiers which stack up behind the head may include

- Prepositional phrases: flight from Seattle
- Non-finite clauses: that flight to depart