

# Handout 5:

## Syntax – Part One

October 25- November 1 2016

## 1 Introduction

Over the next few weeks, we'll be covering **syntax**, the study of the internal structure of phrases and sentences.

Our agenda:

- Considerations about data
- Constituency
- Complements and adjuncts
- Ambiguity
- Sentence structure
- Movement

## 2 Some considerations about data

### 2.1 Grammaticality

When linguists talk about ‘grammaticality’, we mean ‘judged as acceptable in casual speech by a native speaker of the language’.

- (1)    a. I have two beautiful nieces.  
      b. \*I have two nieces beautiful.  
      c. \*I has two beautiful nieces.

Though make sure not to get semantic anomaly confused with grammaticality! Sentences that make absolutely no sense can still be syntactically/grammatically well-formed.

- (2) #Colorless green ideas sleep furiously.

Lastly, we as linguists will be concerned with descriptive grammar, not prescriptive grammar.

- (3)    a. Who did you talk to? (Descriptively correct, prescriptively incorrect)  
      b. ?To whom did you talk? (Prescriptively correct, descriptively weird)

## 2.2 Recursion and competence vs. performance

Many properties of language are recursive.

- Recursion = when an operation can apply to its own output (and therefore can apply over and over again).
- (4) Possessors are recursive in English
- a. Amanda
  - b. Amanda's boyfriend
  - c. Amanda's boyfriend's father
  - d. Amanda's boyfriend's father's car
  - e. Amanda's boyfriend's father's car's tire
- (5) Sentential embedding is recursive in English
- a. Layla loves Zia and Kora.
  - b. Rob said that Layla loves Zia and Kora.
  - c. Carol thinks that Rob said that Layla loves Zia and Kora.
  - d. Mark believes that Carol thinks that Rob said that Layla loves Zia and Kora.
  - e. Dan wonders whether Mark believes that Carol thinks that Rob said that Layla loves Zia and Kora.

While recursion is theoretically unlimited, our processing power is limited.

Linguists distinguish between knowledge of a language, called **competence**, and a speaker's use of language, called **performance**.

- Competence: a speaker's knowledge of language is what allows them to produce and understand an infinite number of utterances, including new utterances.
- Performance: a speaker's use of language, in specific situations at specific times. Performance depends on and interacts with other cognitive systems (memory, for instance) and the nature of the outside world. But it is driven by linguistic competence.

In the following examples, we see recursion of relative clause formation.

- (6)
- a. Bulldogs fight, and bulldogs fight bulldogs.
  - b. Bulldogs that bulldogs fight fight.
  - c. Bulldogs that bulldogs that bulldogs fight fight fight.
  - d. Bulldogs bulldogs bulldogs fight fight fight.
- (7)
- a. The boy kissed the girl (and the girl left).
  - b. The girl that the boy kissed left (and a dog bit the boy).
  - c. The girl that the boy that the dog bit kissed left (and Jim owns the dog).
  - d. The girl that the boy that the dog that Jim owns bit kissed left.
  - e. The girl the boy the dog Jim owns bit kissed left.

Performance-wise, you would never be able to understand the latter sentences. Competence-wise, we can see how they are logically put together using recursive rules of English.

### 2.3 The role of context

Another factor that can obscure what's grammatical is the role of surrounding linguistic context. Sometimes sentences sound odd or downright ungrammatical because they don't have the right context to support them.

Gapping:

- (8)    a. ??Layla the other baby.
- b. Carol picked up one baby, and [Layla the other baby].

Verb phrase ellipsis:

- (9)    a. ?Kaeli did.
- b. Meaghan celebrated her birthday on the same day that [Kaeli did].

- (10)   a. ??Whoever she did got better.
- b. Whoever Kaeli didn't tutor got worse but [whoever she did got better].

So as we go along, we have to be very careful about what is grammatical and what isn't! You should always keep the insights from this section in mind.

## 3 Other preliminaries

The well-known syntactic categories:

- (11) Nouns (the \_\_\_\_)
- (12) Verbs (Mary will \_\_\_\_)
- (13) Adjectives (the \_\_\_\_ girl)
- (14) Adverbs (Mary \_\_\_\_ left)
- (15) Preposition (dance \_\_\_\_ it)

Aside from nouns, verbs, adverbs, adjectives, and prepositions, there are...

- (16) Determiners: the, a(n), some, few, many, most, this, that...
- (17) Conjunctions: and, or, but
- (18) Complementizers: that, if, for, whether
- (19) Tense:
  - a. Finite markers: -s, -ed
  - b. Non-finite marker: to
  - c. Modals: will, would, could, should, may, might, ought, can

We will be drawing structures that have a lot in common with word structures.

- Intermediate meaningful levels (constituents)
- Every structure has a head, and heads are picky (selection)
- Things must be adjacent to combine (no crossing branches)
- Some terminology: sister, mother, daughter nodes

## 4 Native speaker intuition

A quick experiment:

- Read the following string of words aloud to yourself a couple times.

(20) A enjoy delicious I cereal night of often at bowl.

- Now cover up the paper and try to repeat it back.
- Now try the same thing with the following string of words:

(21) I often enjoy a delicious bowl of cereal at night.

- How'd that go? Why do you think it was so much easier?

Language is not truly linear, even though it comes out that way in the speech stream.

- If sentences were just words strung together linearly, like beads on a string, then we wouldn't have any feeling for meaningful subparts of sentences.
- Every time we utter or understand a sentence, we're grouping words into phrases, and those phrases into even bigger phrases.
- This organization of words and phrases creates complex, hierarchical structures.
- Our goal is to discover those structures and understand how they work.

Our first step in modeling syntax, then, will be to try to figure out how sentences break down into smaller meaningful pieces, called **constituents**.

- Constituency is everywhere! (syllable structure, morphology, ...)

**An important difference between morphology and syntax: here we'll be dealing with phrases and heads of phrases (e.g., for every N there's an NP, for every V there's a VP).**

Let's return to our original sentence:

(22) I often enjoy a delicious bowl of cereal at night.

What meaningful units can you intuitively pick out? Let's see how many we can find.

## 5 Beginning trees

Let's see how much structure we can figure out for a simple sentence like...

(23) The girl ate.

- Identify the category of all words.
- Identify constituents.
- Identify phrases/the heads of phrases.
- Make labeled structures, all the way up to the sentence level (S).

(24) The girl ate a sandwich.

Some additional data...

- (25) a. What did the girl do? **Eat**.  
b. What did the girl do? **Eat a sandwich**.  
c. What did the girl do? **\*A sandwich**.
- (26) a. It was **eat** that the girl **did**.  
b. It was **eat a sandwich** that the girl **did**.  
c. **\*It was a sandwich** that the girl **did**.
- (27) a. ...and **eat**, the girl **did**.  
b. ...and **eat a sandwich**, the girl **did**.  
c. ...**\*and a sandwich**, the girl **did**.
- (28) a. The boy **ate**, and then the girl **did so** too.  
b. The boy **ate a sandwich**, and then the girl **did so** too.
- (29) The girl **ate a sandwich** and left.

More evidence for the constituency of the verb and the object:

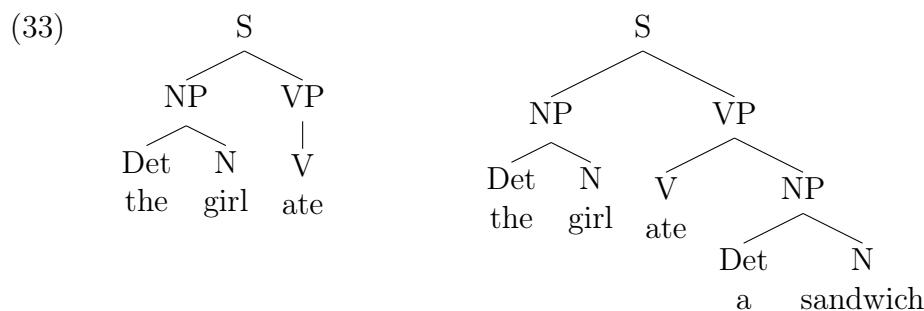
- The behavior of idioms:

- (30) a. Sirius kicked the bucket.  
       b. Snape is keeping tabs on Harry.  
       c. Harry paid heed to Hermione's warnings.

- (31) a. The jig is up.  
       b. The shit hit the fan.

- The behavior of verb-phrase modifiers:

- (32) a. The girl quickly ate the sandwich.  
       b. \*The girl ate quickly the sandwich.  
       c. The girl ate the sandwich quickly.  
       d. Quickly, the girl ate the sandwich.



What should we do with adjectives? N'!

- (34) The young girl ate a sandwich.

Some additional data...

- (35) The young blonde girl ate a sandwich.

- (36) a. the former Canadian CEO  
       b. the Canadian former CEO

- (37) a. the fake pink diamonds  
       b. the pink fake diamonds

What should we do with adverbs? **V'**!

- (38) The girl quickly ate a sandwich.

## 6 Constituency tests

- (39) **Constituent** (intuitive definition) = a string of words that you can manipulate (move around, replace, say alone, delete, interpret) as a single chunk.
- (40) **Constituent** (formal definition) = a unit in syntactic structure, characterized by the existence of a node containing all and only all members of a particular string of terminal nodes.

Turns out, there are lots of ways to test our intuitions. You can think of your intuitions as hypotheses, which you test empirically with any of the following **constituency tests**, which we'll go through in turn:

- Stand alone test
- Topicalization test
- Replacement test
- Coordination test

An important note before we begin: You can't conclude anything from **negative evidence**: just because some constituency test doesn't work for a given string does NOT mean that the string is not a constituent!

And a caution: precisely *how* you perform a constituency test is very important!

### 6.1 Stand alone test

Reasoning: Fragment answers to questions are meaningful units; if a string of words can meaningfully be the answer to a question, then that string of words must be a unit.

Let's test out some of the intuitive constituents we picked out earlier from:

- (41) I often enjoy a delicious bowl of cereal at night.

For example:

- (42) a. When do you often enjoy a delicious bowl of cereal?  
 b. [At night]

## 6.2 Topicalization test

Reasoning: Movement targets units; if a string of words can move together, then that string of words must be a unit.

- (43) a. I often enjoy a delicious bowl of cereal [at night].  
       b. [At night], I often enjoy a delicious bowl of cereal.

What other strings can be topicalized in (43a)?

## 6.3 Replacement test

Reasoning: We know that words are units; if a single word (or another short phrase) can replace a string of words, then that string of words must also be a unit.

Protocol for doing replacements:

- a. Replace string with one (preferably mono-morphemic) word.
- b. Replace string with a word similar in meaning (keeping the whole meaning of the sentence the same, too, and making sure everything has the same role in the sentence).
- c. Keep everything else the same. (Don't add! Don't take away!)

### 6.3.1 Pronoun/name replacement test: identifies NPs

If a string can be replaced with a pronoun (*it, he, she, they*, etc.) or a proper name, then the string has the category NP (Noun Phrase).

- (44) a. [The milk in the fridge] has gone bad.  
       b. [It] has gone bad.
- (45) a. [The chancellor of UCLA]'s gown is blue.  
       b. [Gene]'s gown is blue.

What about *the milk* in (44)?

What about *the fridge* in (44)?

What about *The chancellor of UCLA's gown* in (45)?

Let's see how many NPs we can find in this sentence:

- (46) I often enjoy a delicious bowl of cereal at night.

### 6.3.2 *One replacement test: identifies N-bars*

If a string can be replaced with *one(s)*, then the string has the category N-bar (an intermediate level inside NP). (Note the determiners I've chosen in (47); this test works best with the determiners *this, that, these, those*).

- (47) a. Those fancy [cookies] on that counter are delicious.  
b. Those fancy [ones] on that counter are delicious.

How many other N-bars can we identify in (47a), and what does it tell us about N-bar?

How about in (48)?

- (48) I often enjoy a delicious bowl of cereal at night.

What does this tell us about *of cereal* (from (48)) vs. *delicious* (from (48))?

**6.3.3 *There* replacement: identifies PPs**

If a string can be replaced with *there* or *then*, then the string has the category PP (Preposition Phrase). (*Note the type of PPs I've chosen in (49).*)

- (49) a. The cat [in the basket] leapt onto the refrigerator at ten o'clock.  
       b. The cat [there] leapt onto the refrigerator at ten o'clock.

How many other PPs can we identify in (49a)?

**6.3.4 *Do so* replacement test: identifies VPs/V-bars**

If a string can be replaced with *do so/does so/did so* (after setting up the appropriate sentential context, and with preservation of meaning), then the string has the category VP (Verb Phrase).

- (50) a. I [enjoy a delicious bowl of cereal] at night...  
       b. ...and Dan [does so] in the morning.

How many other VPs/V-bars can we identify in (50a); what does it tell us about VP/V-bar?

What does this tell us about *a delicious bowl of cereal* vs. *often/at night*?

**6.3.5 Bad uses of the replacement test**

- (51) a. I wanted [the kitten to be happy].  
       b. I wanted [one].
- (52) a. This olympic swimmer will make [everyone cheer].  
       b. This olympic swimmer will make [that].
- (53) a. I considered [the man to be in trouble].  
       b. I considered [him].

## 6.4 A useful but tricky test: Coordination

Reasoning: Coordinators (*and*, *or*) coordinate identical units (e.g., *dogs and cats*), so if a string of words can be coordinated with another (like) string, then that string of words must be a unit.

(54) Coordination rule:  $\alpha \text{ Conj } \alpha = \alpha$

- (55) a. [The bright yellow cheese] tastes delicious.  
b. [The bright yellow cheese] and [the crackers] taste delicious.

What else can be coordinated to show constituency in (55a)?

Be careful with this test!! Coordination is the one test that works for pretty much every category of constituent, but it can be misleading. How do we deal with the conflict of (56a) vs. (57b)?

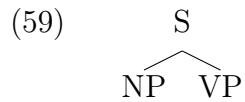
- (56) a. [The bright yellow cheese tastes] delicious.  
b. [The bright yellow cheese tastes] and [the crackers smell] delicious.
- (57) a. The bright yellow cheese [tastes delicious].  
b. The bright yellow cheese [tastes delicious] and [smells awesome].

There are also ambiguous coordinations:

- (58) Pink pants and sweaters are on sale.

## 7 What's the head of a sentence?

Are sentences constituents? If so, how do we know? We've been drawing sentences like (59).



What is the head of a sentence? (That will enable us to determine what the phrase type is.)

- (60)    a. Kaeli laughed.  
        b. Kaeli laughs.  
        c. \*Kaeli laugh.

Conclusions from (60):

- (61)    a. Kaeli laughs.  
        b. Kaeli will laugh.  
        c. Kaeli can laugh.  
        d. Kaeli should laugh.  
        e. \*Kaeli will/can/should laughs.

Conclusions from (61):

- (62)    a. Kaeli will eat a cookie.  
        b. \*Kaeli will a cookie.  
        c. Kaeli can eat a cookie.  
        d. \*Kaeli can a cookie.  
        e. Kaeli should eat a cookie.  
        f. \*Kaeli should a cookie.

Conclusions from (62):