LIN232 Summer 2021 - Week 1

Introduction to Syntax, Categories of Speech, Constituency

Andrew Peters

May 3 – May 7

University of Toronto

Welcome Linguists!

Preliminaries

Your Instructor

Hi folks! My name is Andrew Peters

- I am a PhD Candidate in the department of linguistics
- (Not a professor! Not *yet* a doctor!)
- I study structure and meaning (syntax & semantics) in natural language
- Specifically, I care a lot about how (complex) events are represented in language
- Some languages I've worked on: *Mongolian, English, Mandarin, Cantonese, Malagasy, Zazaki, Hawrami*

Course Information

The main course website & all materials are posted on Quercus

Please review the Syllabus – most all answers are there

My Teaching Philosophy

I am a fairly casual instructor, but my main focus is on ensuring you get as much out of this class as you need. If you want to learn syntax, you will be able to learn a lot here

However, I am aware that some of us are here for different reasons. That's okay! I know this might be a required course for your degree, even if you don't care much about syntax

I want you to be able to meet your own goals for this class. I need to know what those goals are. Please come see me in office hours this week or next week (or make another appointment) and let me know what *you specifically want to get out of this class*, and I will help you negotiate exactly how much & what you need to do in order to be successful

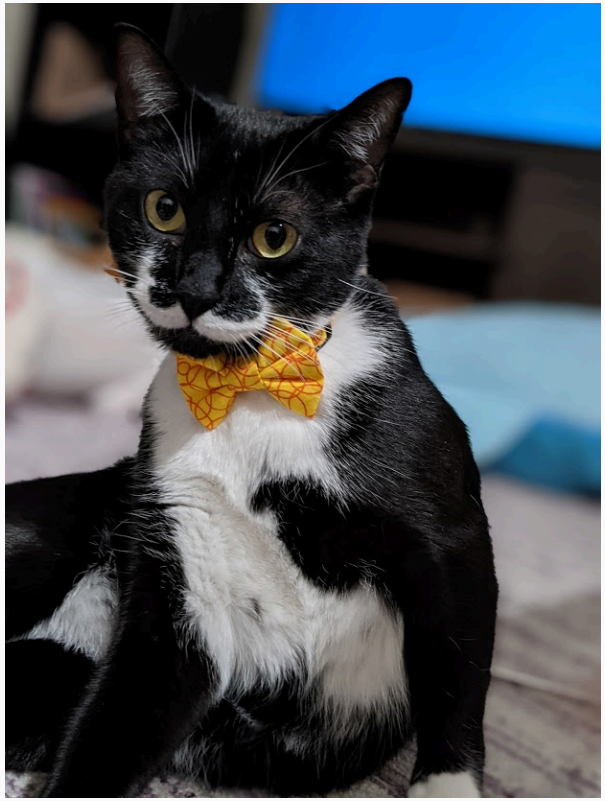
Office hours: Wednesdays 10am-11am

Introduction

What is Syntax? Why study structure?

We say that language is structured. What does that mean?

(1) I rewarded the cat with a fancy bowtie.
↪ *I gave the cat a bowtie as a reward*
↪ *The cat with the bowtie was rewarded* (English)



Frank the fancy cat

(2) a. Tuyaa saw *herself* in the mirror.

b. *Tuyaa saw her reflection in [the mirror *herself* bought]

c. Sartre said that Camus loves *himself* (Camus) (English)

(3) *Jon segir ad Maria elski sig*
Jon says that Maria loves self

'Jon says that Maria loves *him/herself*' (Icelandic)

*=*ungrammatical*

But wait, how do we know these things?

Did anyone tell you this was ungrammatical?

(4) *What did the orange-hat jell-o man enjoy a grapefruit more than he enjoyed?

Did anyone tell you this was ungrammatical?

(5) *What did the orange-hat jell-o man enjoy a grapefruit more than he enjoyed?

Nobody told you this. In fact, you probably have never heard this sentence before in your life, but you still know this.

Turns out there are lots of things nobody could possibly teach you about language:

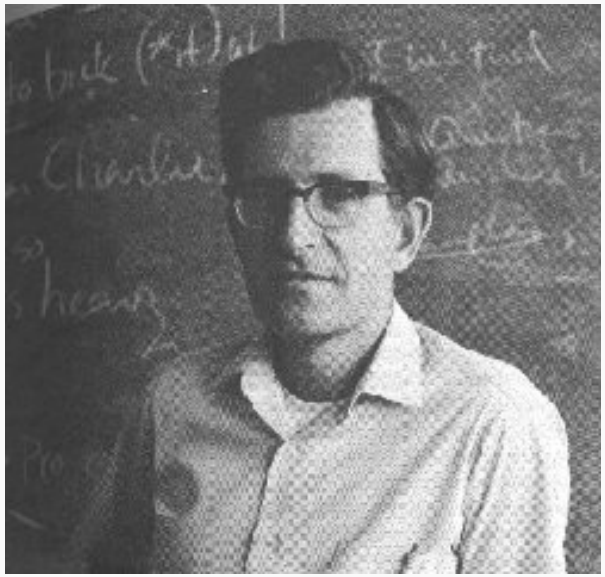
- **Recursive property** *"Sudu thought that Xiao Peng knew that his friend from Japan wanted to go to the hotel that I stayed at after Kazuko recommended I go there with Rabe, but before the spring season, when the bugs...*
- Data in the environment is **incomplete**:
  "Umm, yeah, so like, I dunno if– I dunno if I can say, that, you know, whether they...

This is called the Poverty of the Stimulus

Noam Chomsky & Innateness

There are many parts / structures in language which are too complex to learn by accident from the chaotic speech signal

Chomsky proposed that there is a **Universal Grammar** that constitutes properties of the human language "organ", and much of this is innate



Noam Chomsky

An example: WH-questions

(6) a. Who did Bolod remember he heard Baator sing about?

An example: WH-questions

(8) a. Who did Bolod remember he heard Baator sing about?

b. *Who did Bolod write down that he heard Baator sing about?

(English)

An example: WH-questions

(10) a. Who did Bolod remember he heard Baator sing about?

b. *Who did Bolod write down that he heard Baator sing about?
(English)

(11) a. *What breaking was surprising? (English)

b. *Yaɣu haɣara-ɣsan ɣayiɣaltai bayi-ɣsan bui?
What break-vrn.pst surprising be-vrn.pst qp.wh

(Intended: 'What breaking was surprising?') (Mongolian)

How can we capture this generalisation? How could a baby?

Structure Dependence

(12) **Structure Dependence:** Linguistic operations target structure, not strings of words / linearisations
There are no operations that count words, and positions in a sentence are results of deeper structures

Universal Grammar provides the infant with expectations about types of possible / impossible operations that respect certain structural relations
So we know there is structure, we just have to describe it!

What tools do Syntacticians use?

Grammaticality Judgements

Prescriptive vs. Descriptively grammatical

(13) a. He don't know nothing. *(descriptively grammatical for many speakers)*

b. *Know doesn't anything he. *(descriptively ungrammatical for many or all English speakers)*

We're interested in **descriptive** grammaticality.

Meaningful vs. Grammatical

(14) a. Colorless green ideas sleep furiously *(grammatical, but not meaningful)*

b. *Green furiously ideas colourless sleep. *(ungrammatical)*

Ambiguity & Meaning

Remember the cat example?

(15) I rewarded the cat with a fancy bowtie.
↪ *I gave the cat a bowtie as a reward*
↪ *The cat with the bowtie was rewarded*

(English)

When a sentence like this has multiple meanings, we want to represent each one with different structures.

Distribution

Distribution concerns two things: *the environments where things appear* or *what other things appear in the same place*

(16) a. *The* bird

b. **The* takes off

(17) a. It *might* fly away

b. It *could* fly away

c. *It *green* fly away

Syntactic Categories

Syntactic Category ≠ Meaning

(Part of speech = Syntactic Category)

What ways of determining part of speech have you heard of?

Syntactic Category ≠ Meaning

(Part of speech = Syntactic Category)

What ways of determining part of speech have you heard of?

The meaning-based method doesn't really work:

(19) Through her writing, she opened a world of exploration and wonder

(English)

Which of these words are Nouns?

Determining Syntactic Category

Distribution

Words have the same distribution if they can appear in the same **environment** within a sentence or string of words (*syntactic distribution*) or morphemes (*morphological distribution*). Words that have the same distribution belong to the same category.

(20) a. The lamp exists.
b. The girl exists.
c. The sky exists.

(21) a. *The happy exists.
b. *The tall exists.
c. *The green exists.

(22) a. *The above exists.
b. *The on exists.
c. *The from exists.

(23) a. *The swim exists.
b. *The sing exists.
c. *The ate exists.

(English)

The distinguishing environment for nouns is not just the spot between the specific words *the* and *exists*. Only nouns can sit in the environments below:

(24) a. the _____ eats

b. few _____ is

c. no _____ exists

d. every _____ put

e. a _____ screamed

(English)

Generalization: The distinguishing environment for nouns is more general; the environment itself references categories.

(25) DET _____ VERB: NOUN

A distinguishing environment can be devised for other categories (## means "end of sentence or phrase")

(26)

a.	VERB _____ VERB: ADVERB	*has **quickly** eaten*
b.	DET _____ NOUN: ADJECTIVE	*the **happy** dog*
c.	VERB _____ Pronoun: PREP	*run **on/through/with** it*
d.	TENSE _____ ##: VERB ***arrive/eat/go***	*They will/want to*

The category TENSE (T) includes the infinitival maker *to* (as in *to run, to swim*) as well as the modal auxiliaries *can, could, will, would, shall, should, may, might, must*.

Why don't we simply write the environment for adverb as?

(27) VERB _____ ##: ADVERB (Adv) *walk **slowly**, sing **loudly***

Ontology of Categories

What categories do we have so far?

Ontology of Categories

What categories do we have so far?

- N (noun)
- D (Determiner)
- V (verb)
- T (tense)
- Adj (adjective)
- Adv (adverb)
- P (preposition)

Other Categories

In addition to **N, V, Adj, Adv, P, D**, there are a few other categories:

- Degree word/intensifier (**Deg**): *very, really…*
  These are good diagnostics for adverbs or adjectives (*very quickly, really happy, too tall*)
- Preposition Qualifier (**PQual**): *just, right, straight…*
- Conjunction (**Conj**): *and*, *or*, *but*
- Complementizer (**C**): *that, if, for, whether*
  These introduce embedded sentences
- Tense: (**T**)
  Modals: *will, would, can, could, shall, should, may, might, must*
  Auxiliaries *have, be*
  Non-finite marker: *to*
- Negation (**Neg**): *not*

English Category Diagnostics

Noun (N)

Syntactic distribution	Morphological Distribution
D _____ V Adj _____ V	_____ -s$_{plural}$ _____ -ship

Verb (V)

Syntactic distribution	Morphological Distribution
(wants/seems) to _____	_____ -s$_{3sAgr}$ _____ -able _____ -ing

English Category Diagnostics

Determiner (D) (also sometimes called an article)

Syntactic distribution	Morphological Distribution	Other notes
_____ N	Doesn't take affixes	D in English precede all elements in the noun phrase: *The very happy old dog* vs. **Very happy old the dog*. Typically, you can only get one D per noun: *the old dog* vs. **the every old dog*; there can be many adjectives preceding a N.

English Category Diagnostics

Adjective

Syntactic distribution	Morphological Distribution	Other notes
D _____ N	_____ -ness	Adj combine with Ns, usually preceding the noun but sometimes following it *the* ***visible*** *stars/the stars* ***visible***
very _____	_____ -ly	
as _____ as	un-_____	
	_____ -er (comparative morpheme)	
	_____ -est (superlative morpheme)	

English Category Diagnostics

Adverb

Syntactic distribution	Morph.l Dist.	Other notes
_____ Adv *terribly quickly* _____ Adj *unbelievably happy* _____ V *quickly run* _____ P *totally out/in* very _____ as _____ as		Adv modifies lots of things—not just V Can't complement the copula; cannot modify N

English Category Diagnostics

Preposition

Syntactic distribution	Morphological Distribution	Other notes
V _____ NP PQual _____	Doesn't take affixes	Ps introduce Noun phrases (NPs) PQual = Prep Qualifier like ***just*** *in*, ***right*** *out*, ***straight*** *up*

Subcategories & Caveats

The distribution of some categories is sensitive to finer distinctions. Consider plurality & mass vs. count nouns in English:

(28) a. Many butterflies / *butterfly

b. *Much butterflies / butterfly

(29) a. *Many sand / sands

b. Much sand

Subcategories & Caveats

Some subcategories of V:

(30) a. Intransitive (only one **argument**)
They *sat/arrived/slept*.

b. Transitive (two **arguments**)
They *devoured* the cookie/ They *pet* the dog / etc.

c. Ditransitive (three **arguments**)
They *gave* a present to me / They *sent* me a present.

(English)

Some verbs have both transitive and intransitive options:

(31) a. George *ate*/*read*/*wrote*.

b. George *ate* dumplings/*read* the warning/*wrote* a paper.

Subcategories & Caveats

Consider the following sentences:

(32) a. Gregor stumbled out

b. Gregor stumbled clumsily

What category is ‘out’ here?

Subcategories & Caveats

Just because something modifies a VP doesn't mean it's an adverb:

(33) a. Gregor stumbled [$_{PP}$ out the door]

b. Gregor arrived [$_{NP}$ the next day]

Phrases, Constituents

Some Practice

Let's begin with a little practice labelling elements in English

(34) a. Frank seems happy.

b. My friend wants to take a yellow bird with her everywhere.

c. The large amorphous reflective sculpture in Chicago is actually called "Cloud Gate", not "The Bean"

d. Every linguist who read his dissertation was confused and elated.

e. The accuracy is within tolerance.

Constituency

Whole strings of words can have the same distribution as single words:

(35) a. *The large amorphous sculpture in Chicago is called "Cloud Gate"*
It is called "Cloud Gate"

b. *My friend wants to take a yellow bird with her everywhere.*
My friend wants to do so.

(English)

Constituency

Constituents must be phrases!

Endocentricity:

Every phrase has in its expansion one obligatory word. This is called the **head**, and the phrase is named after the head.

Phrases

How do we decide where a phrase begins or starts; how much can we put into a phrase?
Try bracketing the following sentences:

(36) a. The former courier still rides their ridiculously fast fixie every day.

b. My friend with a yellow bird wears garish sequin dresses with frills on every date.

Phrases

How do we decide where a phrase begins or starts; how much can we put into a phrase?
Try bracketing the following sentences:

(37) a. The former courier still rides their ridiculously fast fixie every day.

b. My friend with a yellow bird wears garish sequin dresses with frills on every date.

We need more tools

Substitution / Replacement Test

Substitution/Replacement Test:
Shows that a string of adjacent words is a constituent.

Protocol for applying a substitution test

- Take a string of adjacent words
- Replace with one (preferably mono-morphemic) word
- Replace with a word similar in meaning (keeping the whole meaning of the sentence the same, too)
- Keep everything else the same (don't add! don't take away!)
- If the result is grammatical, then the original string forms a constituent
- If substitution doesn't give a grammatical result, we can't conclude anything.

Substitution / Replacement Test

The best replacement for an NP is a Pronoun

(this is why it's called a pronoun - "from Latin *pronomen* 'word standing in place of a noun,' from *pro*, here meaning 'in place of,' + *nomen* 'name, noun'" (Etymonline.com))

Pronouns to use: *it, they, he, she, there, here* and their case variants (*them, him, her...* etc.)

Try it on this English sentence:

(38) My friend who likes yellow birds wants to send a long letter to the courier from Hawai'i.

Substitution / Replacement Test

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Pronouns to use: *it, they, he, she, there, here* and their case variants (*them, him, her...* etc.)

Try it on this English sentence:

(40) My friend who likes yellow birds wants to send a long letter to the courier from Hawai'i.

(41) *She* wants to send *it* to *them* from *there*.

Caveat! Warning!

Bad substitutions:

(42) a. I considered **the man in trouble**.

b. I considered **him**.

(English)

These do not mean the same thing. This substitution doesn't work. But...

(43) a. **The man in trouble** was serious.

b. **He** was serious.

Noun Phrases

What strings can pronouns replace?

The large amorphous sculpture in Chicago by the water	is called...
The amorphous sculpture in Chicago by the water	is called...
The sculpture in Chicago by the water	is called...
The sculpture by the water	is called...
The sculpture	is called...
Sculptures	are called...
It	is called

Noun Phrases

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(45) My friend [who likes yellow birds]

Noun Phrases

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The sculpture by the water	is called...
The sculpture	is called...
Sculptures	are called...
It	is called

(46) My friend [who likes yellow birds]

NP $\rightarrow$ (Det) (Adj+) N (PP+) (CP)

Substitution Tests with PPs

(Locational) PP's can be substituted by "there, here" in English

(47) a. The cat [on my lap] is purring loudly.

b. The cat *here* is purring loudly.

Otherwise you can replace them with something you already know is a PP:

(48) a. The cat [without hair] must be cold

b. The cat [on my lap] must be cold

PP rule for English?

Substitution Tests with PPs

(Locational) PP's can be substituted by "there, here" in English

(49) a. The cat [on my lap] is purring loudly.

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Otherwise you can replace them with something you already know is a PP:

(50) a. The cat [without hair] must be cold

b. The cat [on my lap] must be cold

PP rule for English?

PP $\rightarrow$ P (NP)

Substitution Tests with AdjPs

In order to do a substitution test with an Adjective in English, you need to first put it in predicate position, and then replace it with so

(51) a. My extremely smart friend just loves yellow birds

b. My friend is [extremely smart]

c. My friend is [so]

Honestly, there are other tests that work better for AP's. We will get to them shortly.
First, what's the AdjP rule for English?

Substitution Tests with AdjPs

In order to do a substitution test with an Adjective in English, you need to first put it in predicate position, and then replace it with so

(52) a. My extremely smart friend just loves yellow birds

b. My friend is [extremely smart]

c. My friend is [so]

Honestly, there are other tests that work better for AP's. We will get to them shortly.
First, what's the AdjP rule for English?
AdjP $\rightarrow$(AdvP) Adj

Substitution Tests with VPs

The substitution test for VPs is “do so”
Try it with the English sentence from before:

(53) My friend who likes yellow birds wants to send a long letter to the courier from Hawai’i.

Substitution Tests with VPs

The substitution test for VPs is “do so”
Try it with the English sentence from before:

(56) My friend who likes yellow birds wants to send a long letter to the courier from Hawai’i.

(57) My friend who likes yellow birds wants to *do so*.

(58) My friend who likes yellow birds *does so*.

The VP PSR

I will just give you this because it is too long.

VP $\rightarrow$ (AdvP+) V (NP) ({NP/CP}) (AdvP+) (PP+) (AdvP+)

{. . ./. . .} means you can select one and only one.

What other constituency tests are there?

Standalone Test

The Standalone Test is easy to perform.

Take the sentence:

(59) My friend who likes yellow birds is in Hawai'i.

And imagine a dialogue, as follows:

(60) a. Q: "Who is in Hawai'i?"

b. A: "My friend who likes yellow birds."

c. * "who likes yellow birds is"

(English)

Movement Tests

There are several movement tests, but they all involve moving adjacent (continuous) strings of words. If grammaticality is preserved and the "meaning" (truth conditions) is the same, then it is probably a constituent. *These tests are very very peculiar to each language! Be careful!*

The simplest is NP preposing / simple topicalisation

(61) I really respect [my friend who likes yellow birds].

a. [My friend who likes birds], I really respect _____

b. *My friend, I really respect [_____ who likes yellow birds]

c. *Friend who likes yellow birds, I really respect [my _____]

d. *Friend, I really respect [my _____ who likes yellow birds]

e. **etc.*

Movement Tests

Pseudoclefting is next

(62) I really respect [my friend who likes yellow birds].

a. Who I really respect is [My friend who likes birds]

b. *Who I really respect is [who likes yellow birds]

c. *Who I really respect is [my]

d. *Who I really respect is [my who likes yellow birds]

e. **etc.*

Movement Tests

Lastly, we have full clefting (which often works the best in English – I recommend you use this movement test)

(63) I really respect [my friend who likes yellow birds].

a. It is *my friend who likes birds* who I really respect _____

b. *It is *friend who likes yellow birds* who I really respect [my _____]

c. *It is *friend* who I really respect [my _____ who likes yellow birds]

d. **etc.*

Movement Tests

Lastly, we have full clefting (which often works the best in English – I recommend you use this movement test)

(65) I really respect [my friend who likes yellow birds].

a. It is *my friend who likes birds* who I really respect _____

b. *It is *friend who likes yellow birds* who I really respect [my _____]

c. *It is *friend* who I really respect [my _____ who likes yellow birds]

d. **etc.*

Wait...

(66) It is *my friend* who I really respect [_____ who likes yellow birds]

You cannot rely on one single test to show that something is a constituent!

Coordination Test

This test is the most difficult to interpret. It works, but you must be careful!
The coordination test is performed by adding a second conjunct of the same type as the string in question. If it works, it *might* be a constituent

(67) a. I volunteered [my advice]

b. I volunteered [for the shelter]

c. I volunteered [my advice] *and* [my time]

d. I volunteered [for the shelter] *and* [for that organization]

e. *I volunteered [my advice] and [for the shelter].

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(70) a. I will give my students advice and the administration hell

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e. *I volunteered [my advice] and [for the shelter].

(72) a. I will give my students advice and the administration hell

b. *It is [my students advice] that I will give.

c. I will [$_{VP}$ give my students advice] and [$_{VP}$_____ the admin. hell]

Trees

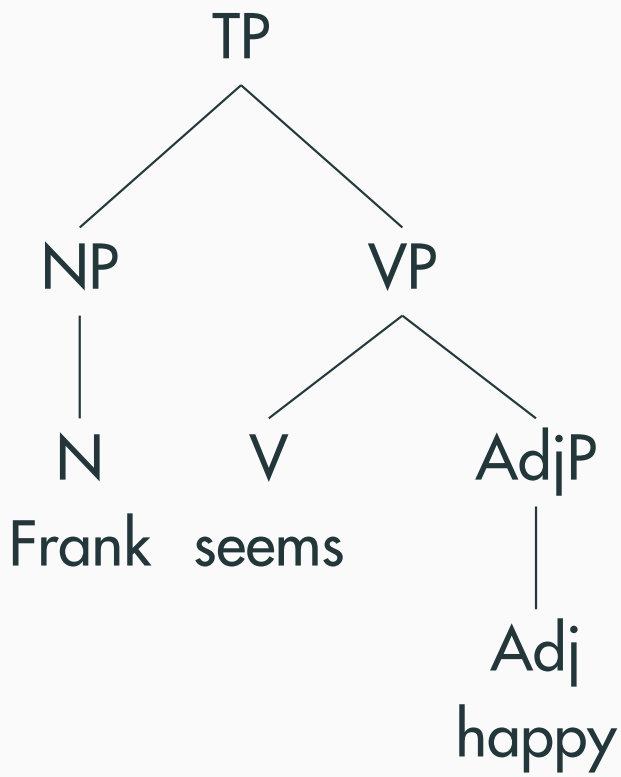
All English PSR's

- CP $\rightarrow$ (C) TP
- TP $\rightarrow$ {NP/CP} (T) VP
- VP $\rightarrow$ (AdvP+) V (NP) ({NP/CP}) (AdvP+) (PP+) (AdvP+)
- NP $\rightarrow$ (D) (AdjP+) N (PP+) (CP)
- PP $\rightarrow$ P (NP)
- AdjP $\rightarrow$ (AdvP) Adj
- AdvP $\rightarrow$ (AdvP) Adv
- XP $\rightarrow$ XP conj XP

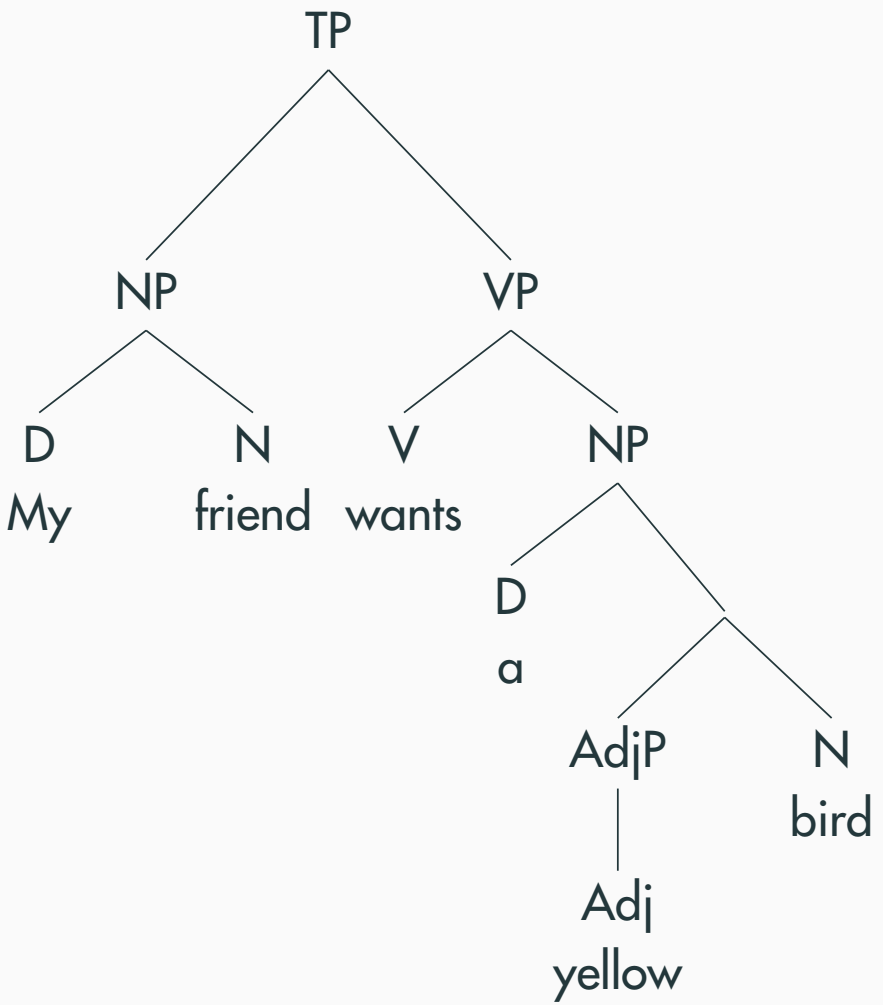
Tree drawing tips:

- Start by identifying heads; label them
- Bracket all single-word phrases
- Bracket constituents starting with the smallest (least words)
- Follow PSRs to decide what belongs in each phrase
- Label bracketed constituents
- Advice: bracket the VP *after* you decide where all NP's and AP's are
- Create pairs of bracketed sisters, starting from the head and its sister
- Draw upward first and plan how many levels you need for each constituent
- Note: Every branch is binary (in pairs / 2's) except coordination
- Empty nodes are only allowed if they have a phrasal sister

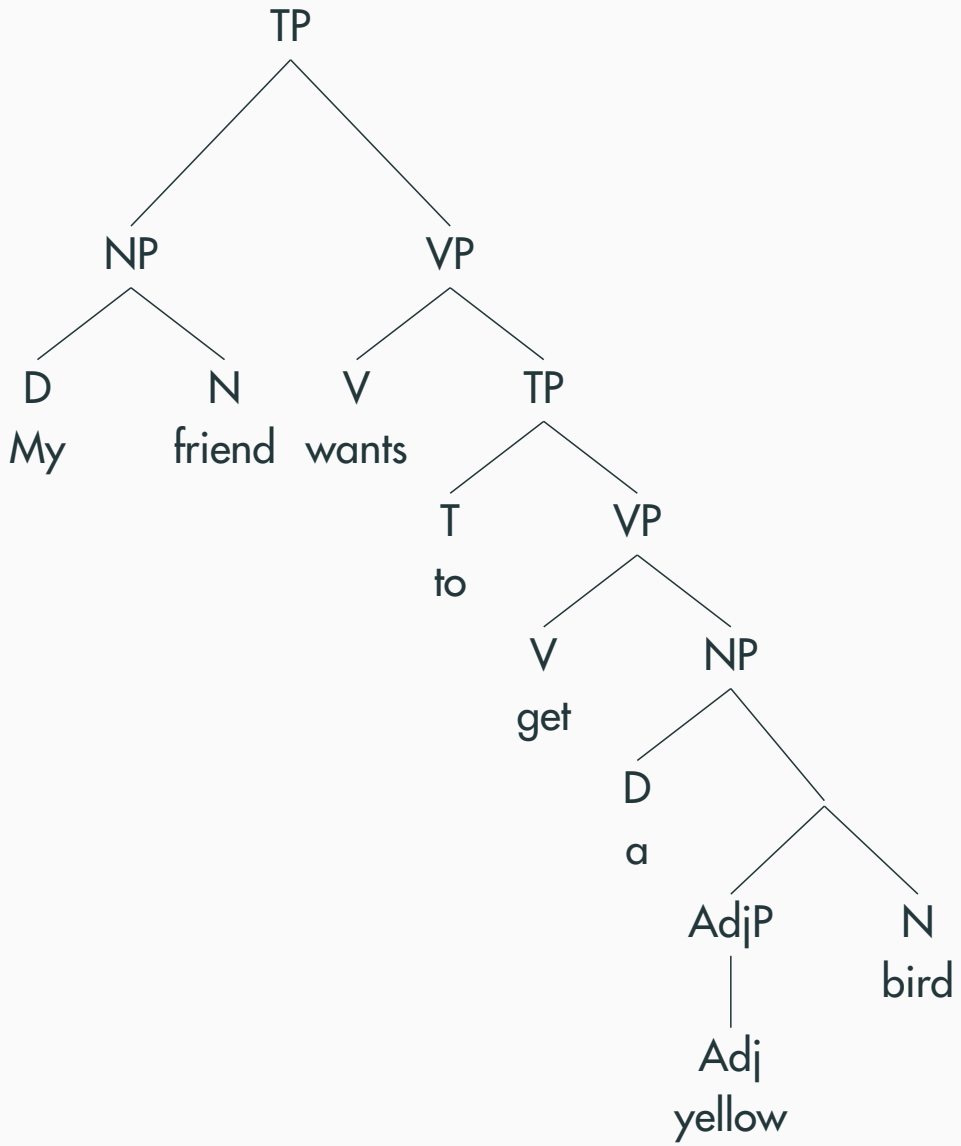
(73) Frank seems happy



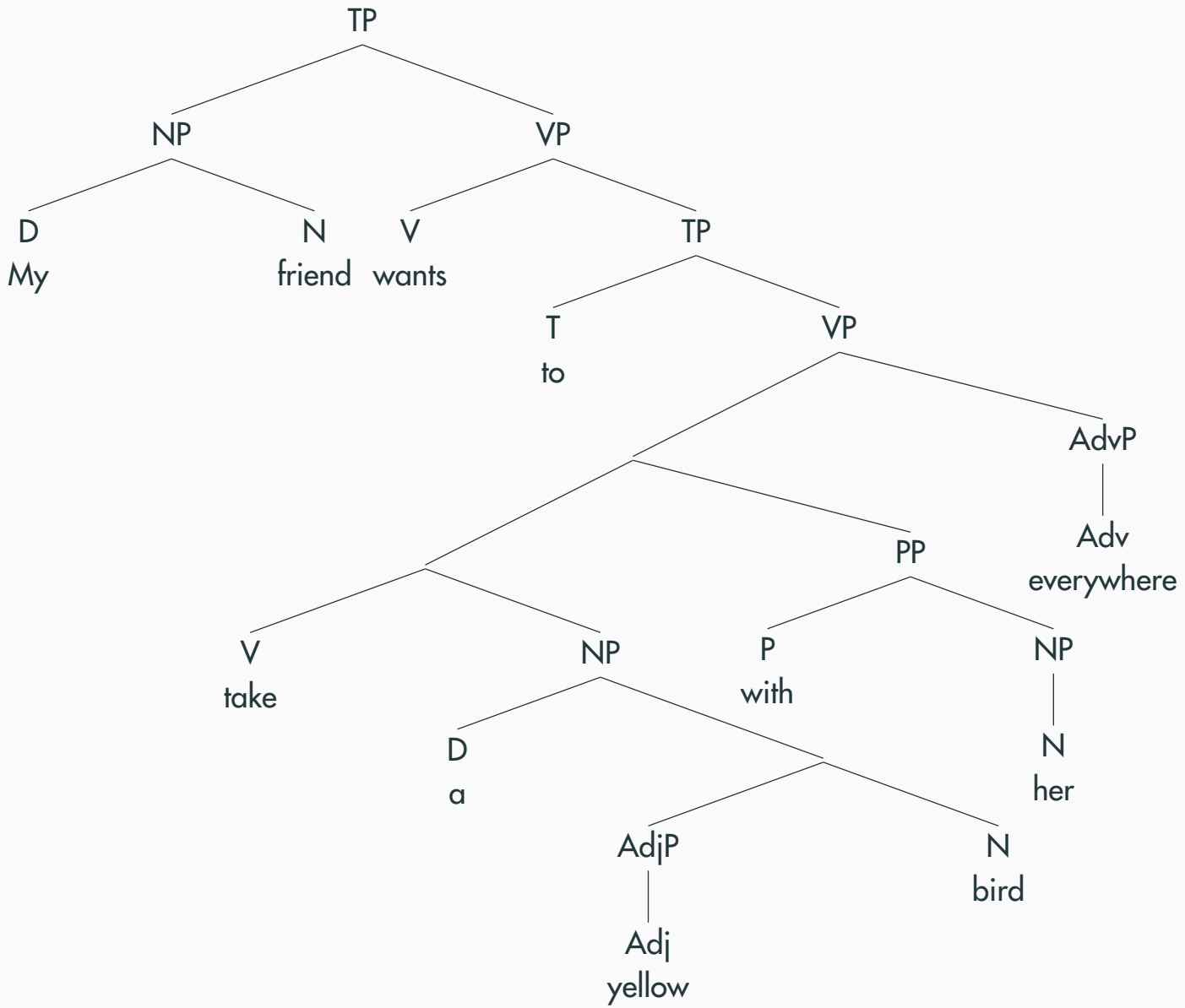
(74) My friend wants a yellow bird



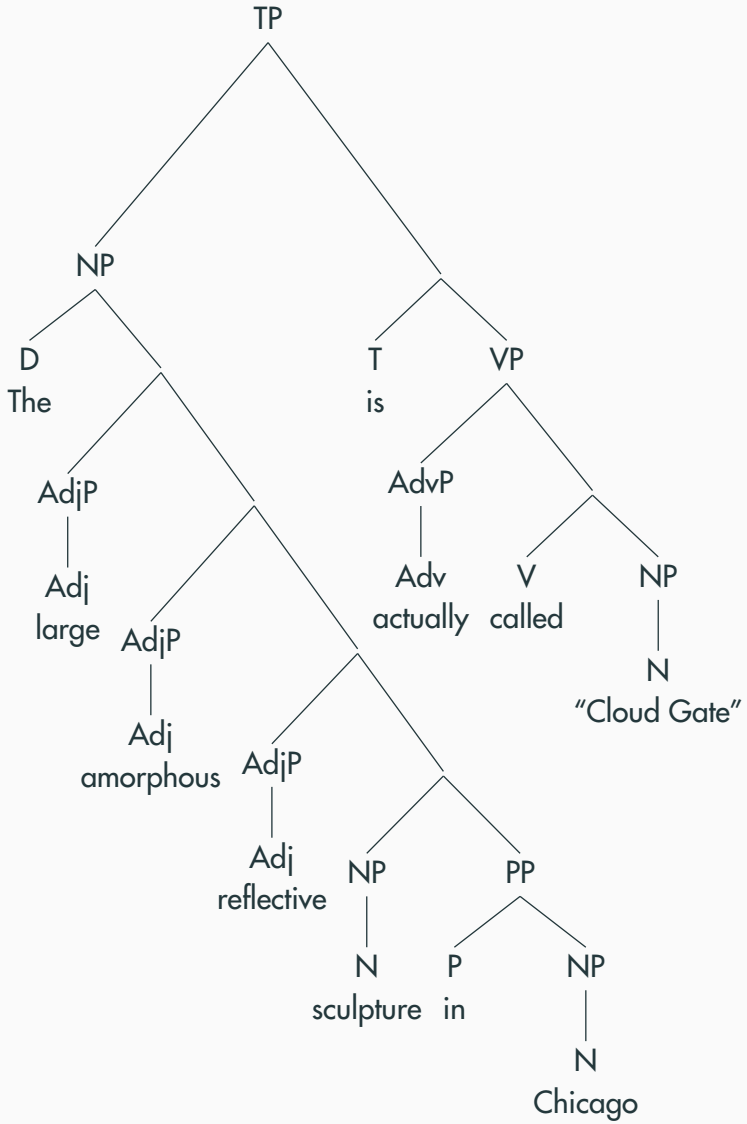
(75) My friend wants to get a yellow bird



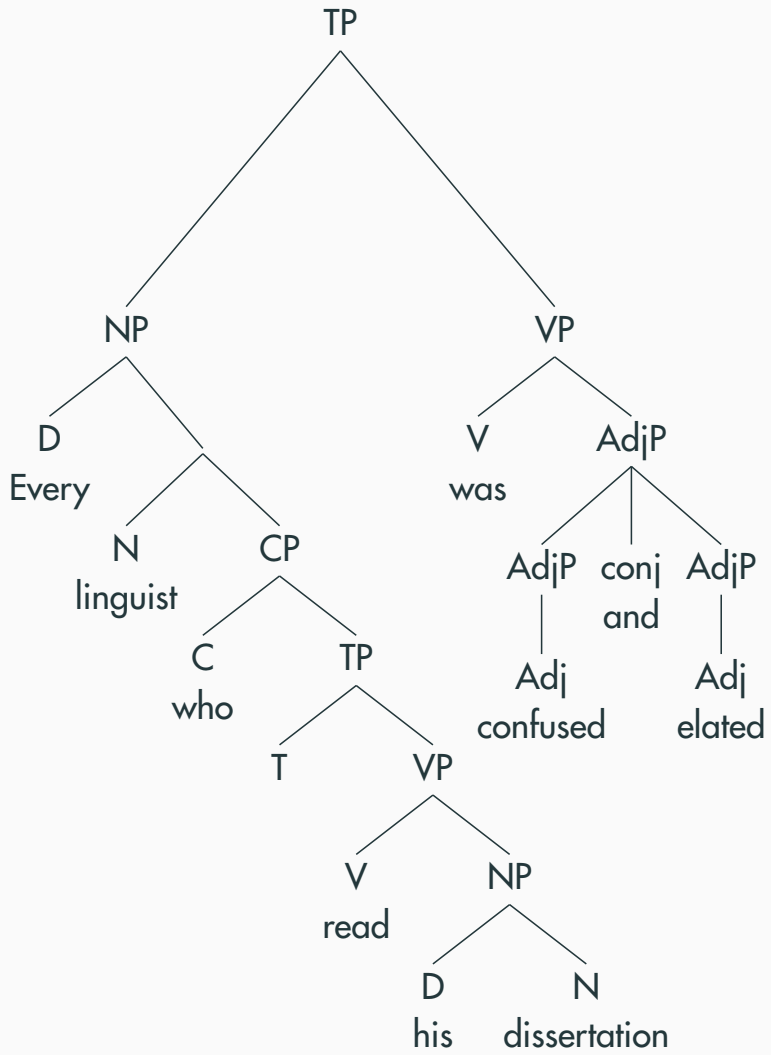
(76) My friend wants to take a yellow bird with her everywhere.



(77) The large amorphous reflective sculpture in Chicago is actually called “Cloud Gate”



(78) Every linguist who read his dissertation was confused and elated.

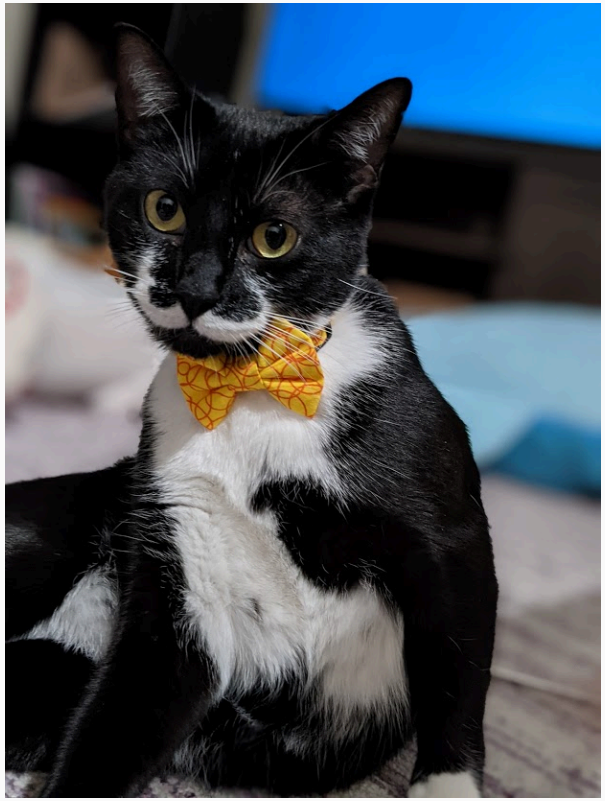


Structural Ambiguity

Structural Ambiguity

Remember the example about the cat & the bowtie from earlier?

(79) I rewarded the cat with a fancy bowtie.
↪ *I gave the cat a bowtie as a reward*
↪ *The cat with the bowtie was rewarded* (English)



Frank the fancy cat

Structural Ambiguity

Let's bracket this sentence based on the two different meanings:

(80) I rewarded the cat with a fancy bowtie.

Structural Ambiguity

Let's bracket this sentence based on the two different meanings:

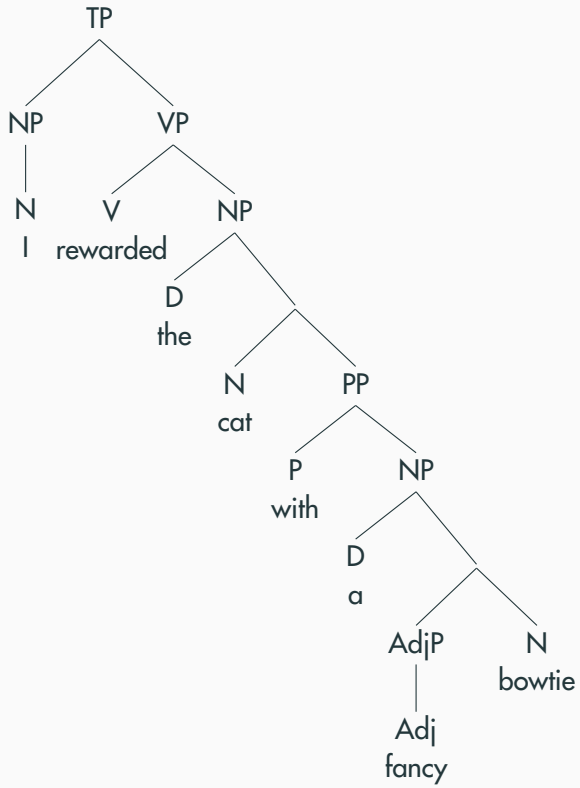
(82) I rewarded the cat with a fancy bowtie.

(83) I rewarded the cat with a fancy bowtie.

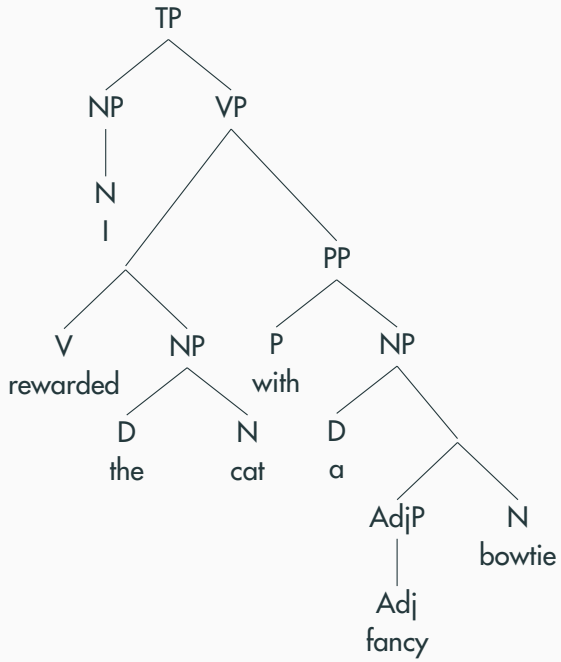
Structural Ambiguity

Now let's draw the two structures.

(84) I rewarded the cat with a fancy bowtie.



(85) I rewarded the cat with a fancy bowtie.



Structural Ambiguity

These are examples of *Structural ambiguity*: the multiple interpretations arise because of different structures that produce the same string.

We can describe the PP's placement by talking about its *attachment*

If the PP modifies the NP, we say it has *NP-attachment*

If the PP modifies the VP, we say it has *VP-attachment*

Structural Ambiguity

We can use constituency tests to disambiguate different meanings:

(86) I came to challenge my rival from my hometown.

Paraphrase 1: *I came here from my hometown to challenge my rival.*
Constituency tests:

(87) a. It is from my hometown that I came to challenge my rival.

b. I came to challenge my rival [from my hometown] and [with only a cat as backup].

c. *I came to challenge *her*

Structural Ambiguity

(88) I came to challenge my rival from my hometown.

Paraphrase 2: *I came to challenge my rival who is from my hometown*

Constituency tests:

(89) a. It is my rival from my hometown that I came to challenge.

b. I came to challenge her.

c. *Who did you come from your hometown to challenge?
My rival from my hometown

Homework info
Questions?