L95: Introduction to Natural Language Syntax and Parsing
Lecture 6

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Organisational

- You hopefully just submitted Assignment 2
- Thursday: Feedback on Assignment 2
- Today: Questions about Assignment 3?
- Today: Constituency Tests and Exercise 5.9.2
- Today: Clause types

Reading:

- For assignment 3: Make sure you have fully read Chapter 12 J&M (Constituency grammars)
- For assignment 4, you will need to read Chapter 15.1-15.3
- You read section 6 today
- Sometime before Mid-Nov: Read Chapter 16.1-16.4 (Semantics)
- **DO** Logic worksheet on paper (not just read through)

From J and M, chapter 12.3.3
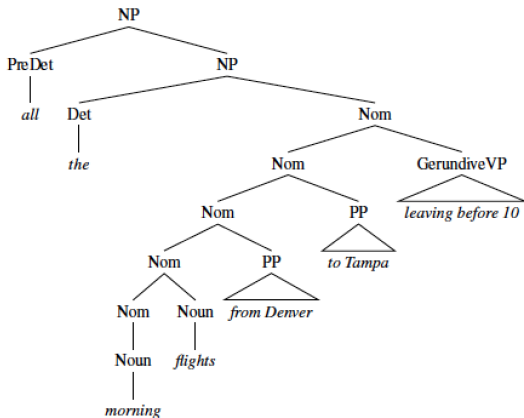
Noun compounds; branching

Constituency Tests: Substitution

- use "proform" (eg "do so" stands in for a VP; eg. "that" stands in for an NP)
- If substitution is felicitious, then phrase is a constituent (of same category as the proform).
    - *I don't want a second-hand fedora that seven people have owned before me*
    - *I don't want* **that**
    - *I don't want to accused her of having indirectly tortured animals*
    - *I don't want to* **do so**

Constituency Tests: Movement

- Constituents can be moved around in the sentence.
  - **The old man** *has come to dinner*
  - *Has* **the old man** *come to dinner?*
  - **The has* **old man** *come to dinner*

Constituency Tests: Insertion

- Appositions are parentheticals.
- They cannot be inserted into constituents, only at the end of constituents.
  - *The* **President of America**, *Ronald Reagan, is over 70.*
  - ***The President**, Ronald Reagan, **of America** is over 70.*
  - ***The* **President of America** *is, Ronald Reagan, over 70.*

Constituency Tests: Omissibility

(only suitable for some constituent types)

- Some constituents can be omitted
- Non-constituents cannot be omitted
    - *Some friends **of the old man** came to dinner.*
    - *Some friends came to dinner.*
    - ***Some friends man came to dinner.*

Constituency Tests: Coordination

- Constituents of the same type can be coordinated
  - *Kim and Sandy kissed each other*
  - *The old man and his young nephew came to dinner*
  - *The old men and women came to dinner*
  - *Kim and Sandy divorced and remarried each other*
  - *Kim kissed Sandy and remarried her*
  - *That rather old and very unreliable car belongs to Kim*
  - *Kim washed up and Sandy watched the TV*

(Well-known exceptions!)
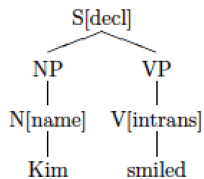
Problems for Coordination Test

- *Kim is a conservative and proud of it*
- *Kim became a conservative and arrogant*
- *Kim enjoys chess and watching football*
- *Kim gave Sandy a pen and Fido a bone*
- *"To hell with them and be dammed", he said*

Exercise 5.9.2

- Why is it "S → NP VP" ?
- Why not "S → (NP V) NP" ?
- Why not "S → NP V NP" ?

- Build a distributional argument using these sentences:
  - *Passionately Kim kissed Sandy*
  - *Kim passionately kissed Sandy*
  - *Kim kissed Sandy passionately*
  - **Kim kissed passionately Sandy*
  - *Kim kissed Sandy and Robin did so too*
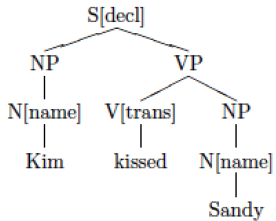 - *A: Who kissed Sandy? B: Kim did.*
  - *Kiss Sandy!*

Intransitive verb

a Kim smiled

```
            S[decl]
           /       \
        NP           VP
        |            |
     N[name]     V[intrans]
        |            |
       Kim         smiled
```
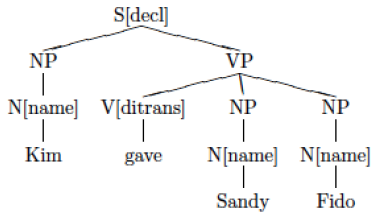
Transitive verb
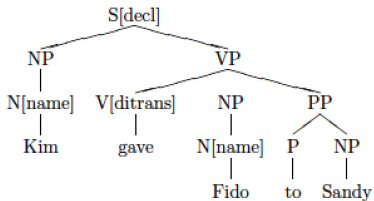
b Kim kissed Sandy

Ditransitive verb 1

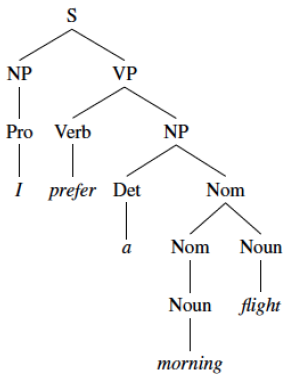c Kim gave Sandy Fido

Ditransitive verb 2

d Kim gave Fido to Sandy

Types of Clauses

- subordinate clauses [finite, -ing, infinitive]
  - *I can't believe that he tweeted that*
  - *I don't like fishing in polluted rivers*
  - *I made him do the dishes*
- WH-clauses
  - *I asked who was at the party*
- relative clauses [object/subject, reduced non-restrictive/restrictive]
  - *the man who filmed her was fellini*
  - *the man who she filmed was fellini*
  - *the paper presented here will address. . .*
  - *the director filming in studio 2 is tarantino*
  - *the Iranian runners who reached the goal within 2 hours were tired*
  - *the Iranian runners, who reached the goal within 2 hours, were tired*

From J and M, chapter 12.3.3

Subject Control verb

e Kim wanted to smile

```
                    S[decl]
            NP              VP
        N[name]      V[infin]        VP
          Kim         wanted    Aux         VP
                                 |           2
                                 to      V[intrans]
                                            smile
```
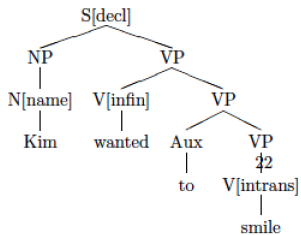
Control vs. Raising Verbs

- Control: Subject or object is semantically an argument of the verb
  - *Kim tried to enjoy the party [subject control]*
  - *Kim persuaded Lee to go to Paris [object control]*
- Raising: Subject or object is semantically not an argument of the verb
  - *Kim seemed to enjoy the party.* [subject raising]
  - *Kim expects Lee to have gone to Paris.* [object raising]

Context-free grammar from J&M, chapter 12

S	→	NP VP
NP	→	Pronoun | Proper-Noun | Det Nominal
Nominal	→	Nominal Noun | Noun
VP	→	Verb | Verb NP | Verb PP |Verb NP PP | Verb S
PP	→	Preposition NP
Det	→	NP 's
Nominal	→	Nominal PP
Nominal	→	Nominal GerundVP
Nominal	→	Nominal RelClause
RelClause	→	(who | that) VP

Coordination

NP	$\rightarrow$	NP and NP
Nominal	$\rightarrow$	Nominal and Nominal
VP	$\rightarrow$	VP and VP
S	$\rightarrow$	S and S
X	$\rightarrow$	X and X

Non-declarative sentences

S → VP
S → Aux NP VP
S → Wh-NP VP
S → Wh-NP Aux NP VP

The lexicon

Det	$\rightarrow$	a | the | an | this | these | that
Verb	$\rightarrow$	is | prefer | like | need | want | fly
Noun	$\rightarrow$	flight | breeze | trip
Pronoun	$\rightarrow$	me | I | you | it
Proper-Noun	$\rightarrow$	Alaska | Baltimore | Los Angeles | Chicago | United
Preposition	$\rightarrow$	from | to | on | near
Conjunction	$\rightarrow$	and | or | but

A context-free grammar (L90)

Rules:

```
S -> NP VP
VP -> VP PP
VP -> V
VP -> V NP
VP -> V VP
NP -> NP PP
PP -> P NP
```

Lexicon:

```
V -> can
V -> fish
NP -> fish
NP -> they
NP -> rivers
NP -> pools
NP -> December
NP -> Scotland
NP -> it
P -> in
```

Exercise

- Critique L90 grammar
- Which rules go against linguistic intuitions?