

Cross-categorical structural symmetry

March 2, 2004

Overview

- Intro to X-bar theory
- Behaviour of the various phrasal categories
- Finding heads
- Discuss homework #6

Structure of NPs

- So far we have seen that noun phrases (NPs) can be expanded with the following rules:
 - $NP \rightarrow (D) N'$
 - $N' \rightarrow N' PP \mid S$ [Adjunct Rule]
 - $N' \rightarrow N (PP \mid S)$ [Complement Rule]
 - $N' \rightarrow NP \mid AP N'$ [Attribute Rule]
 - $N' \rightarrow (NP) N$ [Complement Rule]

What about the structure of other phrasal categories?

- Chomsky (1970) noticed that phrasal categories of more than one type can have similar structure and have similar restrictions on selection of complements:
 - Study physics (VP)
 - Student of physics (NP)

 - The barbarians destroyed the city (S)
 - The barbarians' destruction of the city (NP)

 - Fondness for Mary (NP)
 - Fond of Mary (AP)

What are the structural similarities?

- All phrasal categories (NP, VP, AP, PP) have a *head* (N, V, A, P):
 - *Destruction*
 - *Destroy*
 - *Fond*
 - *Out*
- Heads in all categories seem to be able to take *complements*:
 - *Destruction of the city*
 - *Destroy the city*
 - *Fond of Mary*
 - *Out of time*

Similarities (cont'd)

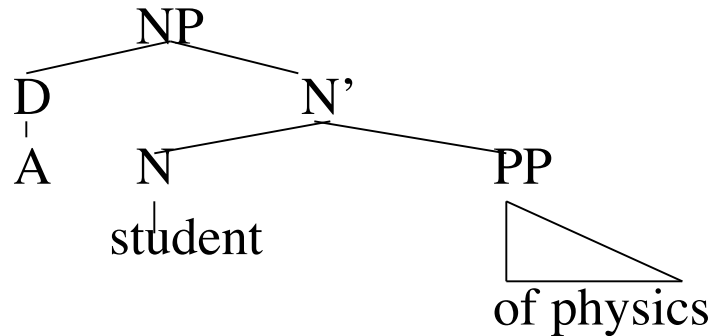
- Heads in all categories seem to be able to take *adjuncts*:
 - Destruction of the city *during the war*
 - Destroy the city *during the war*
 - Fond of Mary *in so many ways*
 - Out of time *in so many ways*
- Heads in all categories seem to be able to take *specifiers*:
 - *The* destruction of the city during the war
 - *Be* destroyed during the war
 - *Quite* fond of mary in so many ways
 - *All* out of time in so many ways

- How can we capture structural similarities across categories?

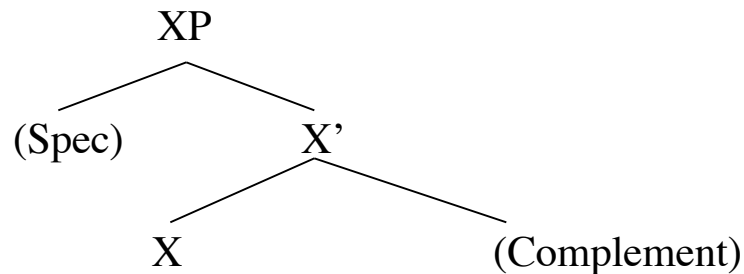
X-bar theory!

The basic X-bar schema

- Recall this basic tree structure for NPs:



- What if we generalize this for all categories:



- Here, X refers to any lexical category--N, V, A, or P
- Also recall that $NP = N''$; therefore $XP = X''$

Optionality

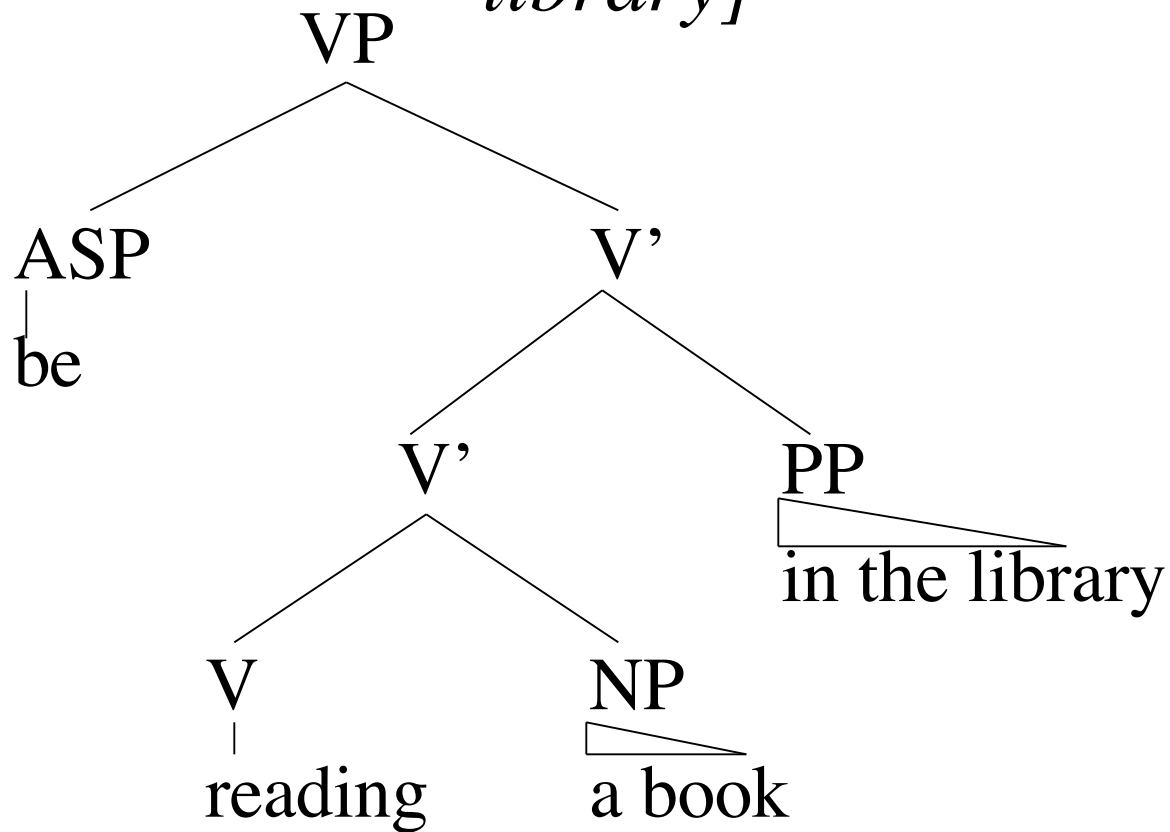
- Recall from our study of NPs that Specifiers (Determiners), Complements, and Adjuncts can be optional:
 - The students of physics at cambridge
 - The students of physics
 - The students
 - Students

Optionality (cont'd)

- The same can be said of Specifiers, Complements, and Adjuncts for other phrasal categories:
 - They are [_{NP} *students*]
 - She is [_{AP} *proud*]
 - She discovered it [_{AdvP} *independently*]
 - The thief fell [_{PP} *out*]
 - You must [_{VP} *think*]

Preview of Verb Phrases in an X-bar framework:

Peter may [vp be reading a book in the library]



VPs: a closer look

- Jackendoff (1977): V and its complements together form a V' constituent and that V' can be expanded by the addition of appropriate specifiers (which he takes to be the aspectual auxiliaries *have/be*) into a VP constituent

VPs (cont'd)

- Chomsky (1965) distinguishes between ‘internal’ postmodifiers (which show a strong degree of what he calls *cohesion* to their governing verb, and ‘external’ postmodifiers (which show less *cohesion* to the verb):
 - He will [_{VP}work [at the job]] (internal)
 - He will[_{VP}work [at the office]] (external)
- The internal modifiers are designated as complements (sisters to the head V)
- The external modifiers are designated as adjuncts (sister of V’; aunt of V)

VP constituents: Evidence

- Preposing: Only V' can be preposed in certain cases:
 - They swore that Peter might have been eating junk food, and
 - ...[_V eating junk food] he might have been!
 - ...[_{VP} been eating junk food] he might have!
 - ...[_{VP} have been eating junk food] he might!

(However, note that the analysis of aspectuals as specifiers is controversial)

Evidence (cont'd)

- Passivization: an NP in a complement PP can generally be passivized, whereas an NP in an adjunct PP cannot:
 - [This job] needs to be worked at by an expert.
 - *[This office] is worked at by a lot of people.

Evidence (cont'd)

- Pronominalization: Jackendoff (1977) notes that the phrase *do so* appears to function as a pro-V':
 - Peter will buy [_{NP}the book][_{PP}on Tuesday]
 - ...and Paul will *do so* as well
 - ...and Paul will *do so* on Thursday
 - Peter will put [_{NP}the book][_{PP}on the table]
 - ...and Paul will *do so* as well
 - *...and Paul will *do so* on the chair

Evidence (cont'd)

- Ordering: complements will always occur closer to their heads than adjuncts:
 - He worked [at the job][at the office]
 - *He worked [at the office][at the job]
- Co-occurrence/selectional restrictions: complements have stricter restrictions than adjuncts:
 - Peter asked [the man next door]
 - *Peter inquired [the man next door]
 - Peter died/sneezed/laughed/asked/inquired/slept [yesterday afternoon]

Evidence (Cont'd)

- Optionality: complements **tend** to be obligatory, whereas adjuncts are always optional:
 - Peter treated [Paul][badly][last night]
 - Peter treated [Paul][badly]
 - *Peter treated[badly][last night]
 - *Peter treated [Paul][last night]
 - *Peter treated [last night]
- But what about this?
 - John ate [a sandwich][in the kitchen]
 - John ate [a sandwich]
 - John ate [in the kitchen]
 - John ate

Evidence (cont'd)

- Ellipsis: any phrasal expansion of V (I.e. V' or VP) can undergo ellipsis under appropriate discourse conditions, so that a V and all its complements, with or without its adjuncts can be ellipted:
 - Who might be going to the cinema on Tuesday?
 - John might ~~be going to the cinema on Tuesday~~
 - John might be going to the cinema on Tuesday
 - Who might be going to the cinema when?
 - Peter might be ~~going to the cinema~~ on Tuesday

Evidence (cont'd)

- Where might elipsis not be possible?
 - Who will put the book where?
 - *Peter will ~~put the book~~ on the table.
- Why not? What might a phrase marker for this sentence look like?
- What is this an example of? Can you think of other examples of verbs like this?

Evidence (cont'd)

- Gapping: under certain conditions, the verb of one clause can be gapped (omitted) when it is identical to the verb of another clause:
 - Peter sells trucks on Tuesdays, and Paul ~~sells~~ cars on Fridays.
 - *Peter put Fido in the doghouse, and Paul ~~put~~ Spot in the yard.
- What's causing the ungrammaticality here? What does this mean about the structure?

Evidence (cont'd)

- Emphatic reflexives: can be positioned between V' and adjuncts, but not between V and its complements; they are sisters to V' , not V .
- Where can we put emphatic reflexives in these sentences:
 - Sally will read the book for class.
 - Marcus will kick the ball into the goal.

Evidence from premodifiers

- For NPs, attributes expand N' into N'.
There are similar premodifiers for VP:
 - His *desperate* search for her (AP attribute for NP)
 - He *desperately* searches for her (AdvP attribute for VP)

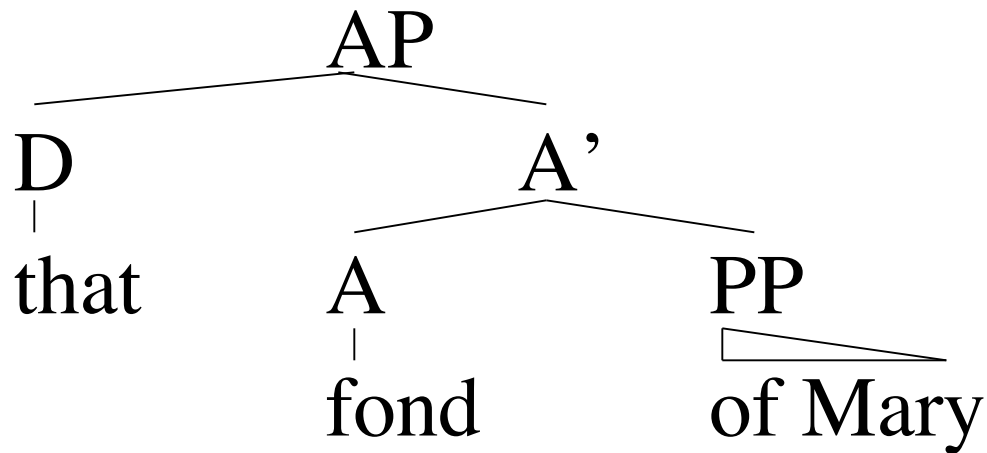
 - His *complete* adoration of her (AP attribute for NP)
 - He *completely* adores her (AdvP attribute for VP)

Evidence from premodifiers

- If, as Jackendoff suggests, aspectual auxiliaries are specifiers for VP, then attributive AdvPs can be positioned to the immediate left of V', but not to the left of the auxiliary:
 - Peter will [_{VP}have *completely* read the book]
 - *Peter will *completely* [_{VP}have read the book]
 - *Peter *completely* will [_{VP}have read the book]
- Where else might we find AdvPs?

Adjectival Phrases: a preview

- Peter isn't [_{AP}that fond of Mary]



Evidence for A'

- In some cases, a complement PP is obligatory for an Adjective:
 - *Peter isn't [_{AP}that fond]
- Pronominalization:
 - Peter used to be [_{AP}very [_Afond of Mary]], but now he is much less *so*.

Adjuncts and attributes to AP

- What evidence is there for calling the second PP an adjunct?

[_{AP}fond [_{PP}of Mary][_{PP}in some ways]]

- Attribute rules are recursive:
 - A' → AdvP A' (optional Adjectival Attribute Rule)
 - He was quite [_{??}severely directly personally [_A,critical of the President]]
 - What would we label the ?? bracket?

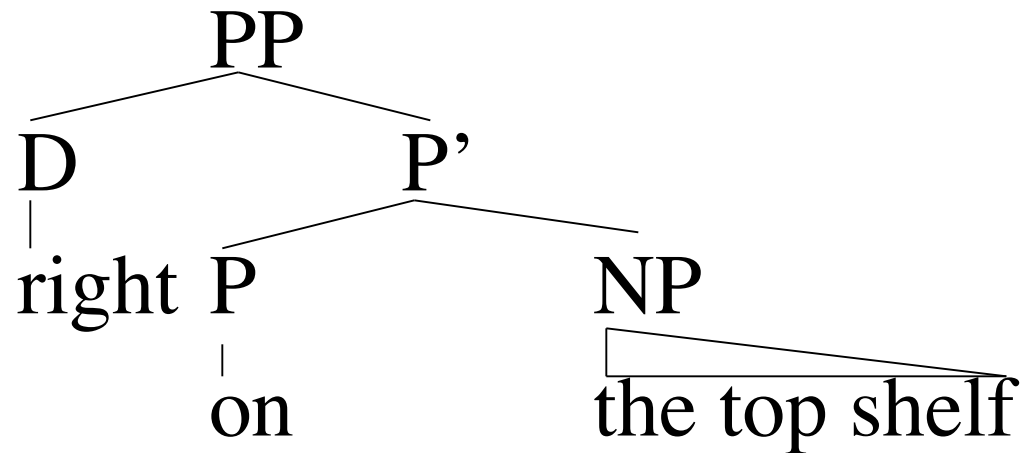
Adverb Phrases

- Given that adverbials are positional variants of adjectives, what might we expect the structure of the following AdvP looks like?

He made up his mind [_{AdvP}quite independtly of me].

Prepositional Phrases: a preview

Put it [_{PP}right on the top shelf]



Evidence for P'

- Pronominalization:
 - Put it [_{PP}right [_P*there*]]
- Coordination:
 - The apple fell [_{PP}right [_Poff the table] and [_Ponto the floor]]

PP attributes and adjuncts

- He was [*completely* in the wrong]
- He was [in the wrong *completely*]
- He was [partly [in the wrong]] and perhaps [*completely* [*so*]]

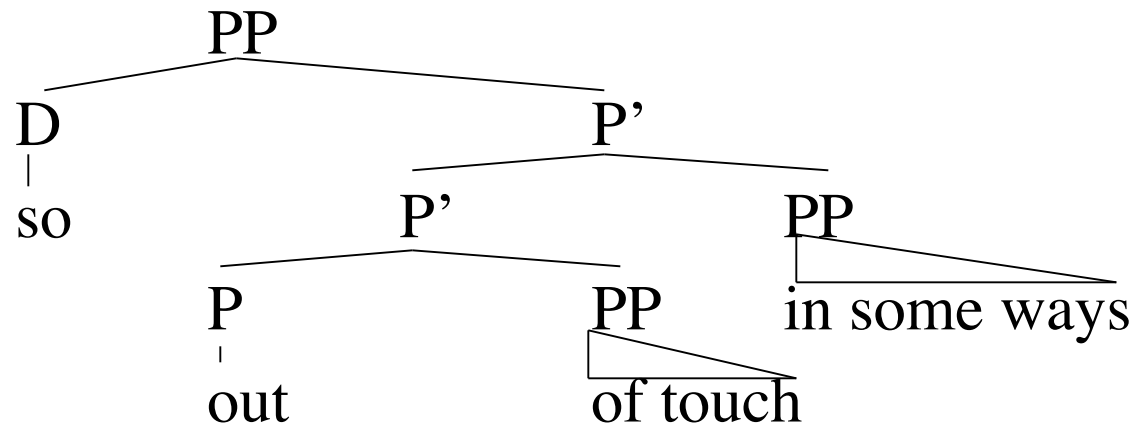
- What can the following grammaticality contrast tell us about the status of *so*?
 - He was [so completely in the wrong]
 - *He was [completely so in the wrong]

More P' constituents

- PPs can take other PPs as adjuncts:
 - He is [_{PP}less [_P, [_P'at odds] [_{PP}with his friends]]] now.
- PPs can take PP complements as well:
 - He stayed at home *because* [of the strike].
 - He fell *out* [of the window].
 - Few people *outside* [of the family] know.

P' constituents (cont'd)

- Thus, PP can be both a complement and adjunct in a P':
 - He is [so out of touch in some ways]



PP Specifiers

- PPs can take a wide range of specifier phrases: NP, AP, AdvP, PP
 - They found the dead miners_{[PP[NPtwo miles]} under the surface]
 - He died _{[PP[AdvPvery shortly]} after the operation]
 - The bodyguards stood _{[PP[APreally close]} behind him]
 - I found it _{[PP[PPup]} in the attic]

Complex PPs

- Which is the head of the overall PP?
 - The dispute dates [_{PP} from before the war]
 - I've put your books [_{PP} over in the corner]
- For the first sentence we will posit *from* as the overall head. But why?

Selecting a head

- Remember, heads are *always* obligatory (without a head, there's no phrase):
 - *The dispute dates before the war
- Since we're saying that *from* is the head and *before the war* is its PP complement, *before the war* is free to take its own specifier:
 - The dispute dates [from [right before the war]]
 - The dispute dates [from [several years before the war]]

Selecting a head (cont'd)

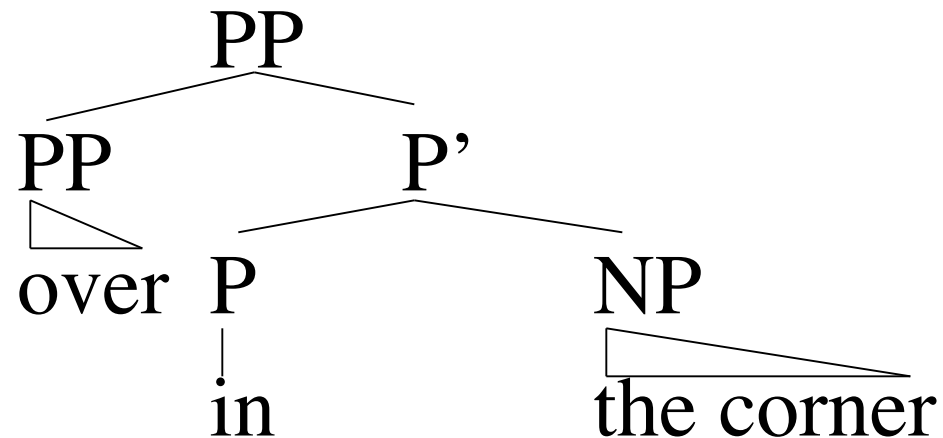
- What about the head of the other sentence:
 - I've put your books [over in the corner]
- Are there optional constituents?
 - I've put your books in the corner
 - *I've put your books over the corner

Selecting a head (cont'd)

- Where can we insert additional specifiers?
 - I've put your books right over in the corner.
 - *I've put your books over right in the corner.
- Can we insert additional complements?
 - I've put your books over there in the corner.
- What conclusion does this evidence lead us to?

Selecting a head (cont'd)

I've put your books [_{PP}[_{PP}over] in the corner].



Practice finding heads

- In the following sentences, which P functions as the head of the overall PP?
 - She is [outside in the garden]
 - I found it [up in the attic]
- How about for these other types of phrases:
 - Bill is [a modern dance instructor]
 - Fred may [have bought that jacket in France]
 - It is [quite sunny in the garden]

Homework #6

- Chapter 5, exercise 1: Draw trees according to the model presented in 5.1-5.5 for each of these sentences. Indicate which constituents are specifiers, which are complements, and which are adjuncts/attributes. Provide one reason (either a piece of evidence or a similarity to a sentence discussed in the chapter) for each such assignment.

Homework #6 (cont'd)

- Chapter 5, exercise II: Draw trees according to the model presented in 5.1-5.5 for each of the italicized constituents. For every adjunct or complement of an A, give one piece of evidence for why you treated it that way.

Homework #6 (cont'd)

- Chapter 5, exercise III, (1), (2), and (8). Which word is the head of the italicized constituent in each of these examples? What is the function of the other words? Provide one piece of evidence to support your analysis of each case. [Example (8) will be for extra credit only.]

Review

- VP, AP, and PP have structures similar to NP
- Evidence comes from our familiar arsenal of diagnostics: ordering, pronominalization, preposing, obligatoriness, and many others
- Complex PPs can appear tricky, but distributional diagnostics lead us to the right conclusion
- Homework #6 due Thursday