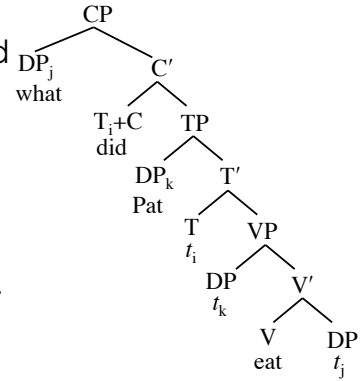


CAS LX 522 Syntax I

Week 13a. Split-INFL
and, time permitting, QR

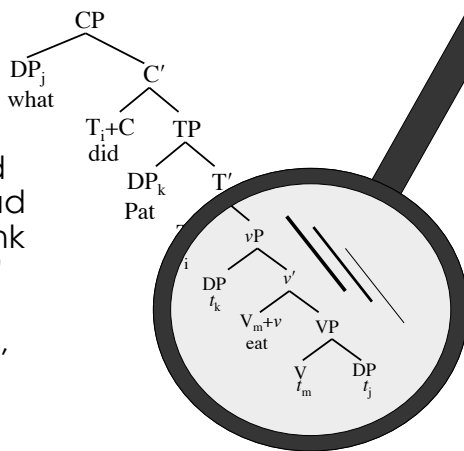
Using the microscope

- We started off with a relatively simple structure, with a CP, a TP, a VP.



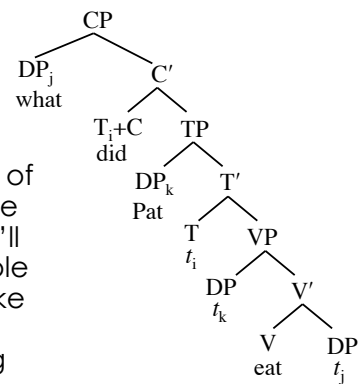
Using the microscope

- As we looked closer, we had reason to think that the "VP" was more complicated, involving a "little v".



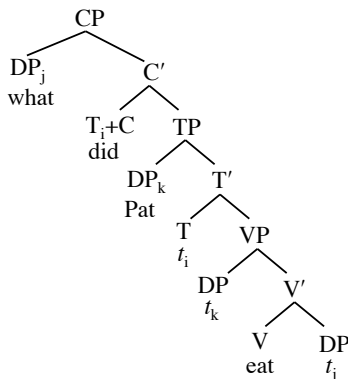
Using the microscope

- But for many purposes, we don't need to focus on the minute details of the VP. In those situations, you'll find that people still write VPs like this, with the understanding that the vP is there.



Using the microscope

- What we're going to do now is put "TP" under the microscope, where we'll find it is more complicated. For most purposes, we can continue to think about it as "TP", but this is a preview of where syntax can go from here.

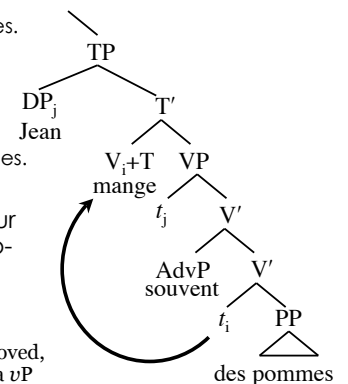


Let's go back to French...

- Jean mange souvent des pommes.
Jean eats often of.the apples
'Jean often eat apples.'

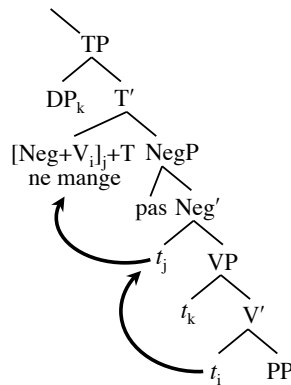
*Jean souvent mange des pommes.

- Recall that this was one of our early examples showing verb-movement to T. French and English differ in whether they move finite main verbs to T.
 - Note: microscope on VP was removed, but we still suppose that there is a vP there...



French negation

- This happens with respect to negation too—the finite verb move to the left of negative *pas*...
- Jean ne mange pas des pommes.
Jean NE eat NEG of.the apples
'J doesn't eat apples.'
*Jean pas ne mange des pommes.
- But fortunately or unfortunately, things are more complex than this...



French and a problem...

- Finite verbs (main verbs and auxiliaries) in French precede adverbs and precede negative *pas*—they **must move to T**.
- Now let's look at infinitives, first the auxiliaries...
 - N'être pas invité, c'est triste.
NE be_{inf} NEG invited, it's sad
'Not to be invited is sad.'
 - Ne pas être invité, c'est triste.
NE NEG be_{inf} invited, it's sad
'Not to be invited is sad.'
- Nonfinite auxiliaries can either move past *pas* (to T) or not, it appears to be optional.

French and a problem...

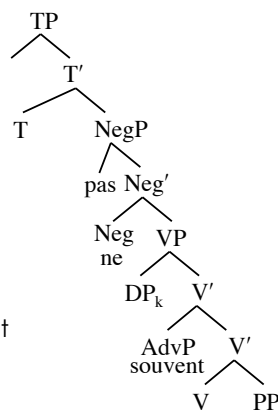
- +Fin aux: V Adv, V neg : Moves to T.
- +Fin verb: V Adv, V neg : Moves to T.
- -Fin aux: (V) Adv (V), (V) neg (V): (Opt.) Moves to T.
- Nonfinite *main* verbs...and adverbs...
 - Souvent paraître triste pendant son voyage de noce, c'est rare.
Often appear_{inf} sad during one's honeymoon, it's rare
'To often look sad during one's honeymoon is rare.'
 - Paraître souvent triste pendant son voyage de noce, c'est rare.
Appear_{inf} often sad during one's honeymoon, it's rare
'To often look sad during one's honeymoon is rare.'
- Nonfinite main verbs can either move past adverbs or not; optional like with auxiliaries.

French and a problem...

- +Fin aux: V Adv, V neg : Moves to T.
- +Fin verb: V Adv, V neg : Moves to T.
- -Fin aux: (V) Adv (V), (V) neg (V): (Opt.) Moves to T.
- -Fin verb: (V) Adv (V), ...
- Nonfinite *main* verbs...and negation...
 - Ne pas sembler heureux est une condition pour écrire des romans.
NE NEG seem_{inf} happy is a prerequisite for write_{inf} of.the novels
'Not to seem happy is a prerequisite for writing novels.'
 - *Ne sembler pas heureux est une condition pour écrire des romans.
NE seem_{inf} NEG happy is a prerequisite for write_{inf} of.the novels
'Not to seem happy is a prerequisite for writing novels.'
- Nonfinite main verbs can *not* move past negation.

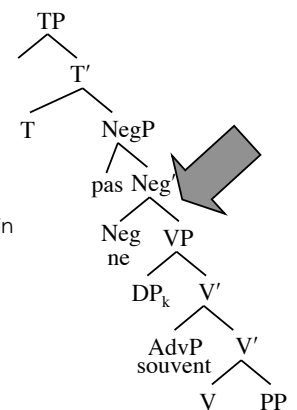
French and a problem...

- +Fin aux/verb:
V Adv, V neg
Moves to T.
- -Fin aux:
(V) Adv (V), (V) neg (V)
(Opt.) Moves to T.
- -Fin verb:
(V) Adv (V), neg V
Moves over adv not neg??
- So we have the whole pattern—and we didn't predict it. Where could the verb be moving? A head can't adjoin to an XP, it has to be moving to a *head*.



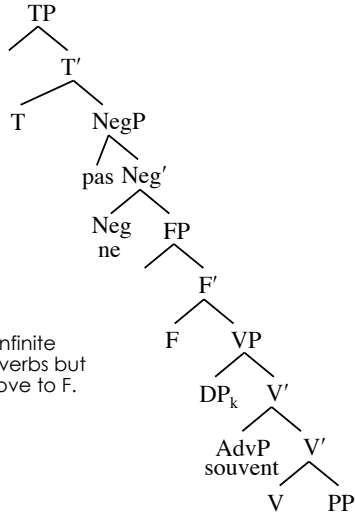
French and a problem...

- +Fin aux/verb:
V Adv, V neg
Moves to T.
- -Fin aux:
(V) Adv (V), (V) neg (V)
(Opt.) Moves to T.
- -Fin verb:
(V) Adv (V), neg V
Moves over adv not neg??
- We need there to be a head **here** in the tree for the verb to move to...
- That means we need to insert a whole phrase (heads always head something)...



A new FP

- +Fin aux/verb:
V Adv, V neg
Moves to (F, then to) T.
 - Fin aux:
(V) Adv (V), (V) neg (V)
(Opt.) Moves to (F, then to) T.
 - Fin verb:
(V) Adv (V), neg V
(Opt.) Moves to F
- Now we have a place for nonfinite main verbs to move, past adverbs but under negation. They can move to F.

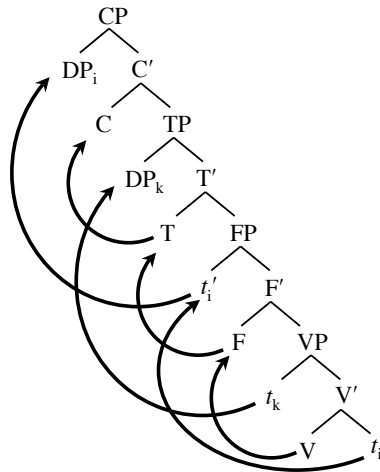


What is FP?

- Vous avez pris les pommes.
you have taken the apples
3MSG 3FPL
'You took the apples.'
- Vous avez pris la pomme.
you have taken the apple
3MSG 3FSG
'You took the apple.'
- Vous les avez prises.
you them have taken
3PL 3FPL
'You took them (3fpl).'
- Vous l'avez prise.
you it have taken
3SG 3FSG
'You took it (3fsg).'
- Quelles pommes avez-vous prises?
Which apples have you taken
3FPL 3FPL
'Which apples did you take?'
- Quelle pomme avez-vous prise?
Which apple have you taken
3FSG 3FSG
'Which apple did you take?'

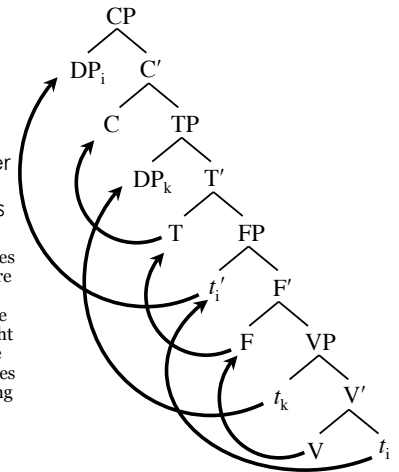
A new FP

- It appears that when an object has to cross FP, the verb shows agreement with it.
- Why?
- This only happens when the object has to move. When the object must not be *trapped* in its original position. This sounds like...



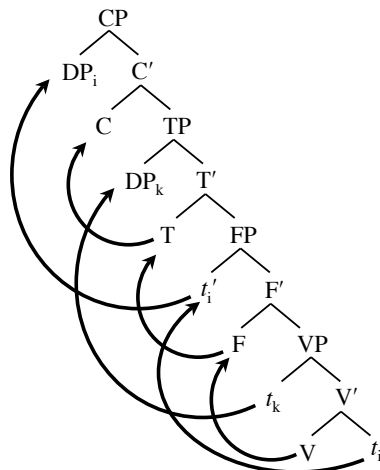
A new FP

- Well, it sounds like phases are involved.
- Suppose FP is a phase.
- If we need to move the object to SpecCP (e.g. *what*), we darn well better get it to the edge of the phase before the phase is finished.
 - There are some technical issues here, that we're going to ignore for now. How the *subject* gets out is one. There are things we can say. For example, we might suppose that the "edge" of the FP phase is larger, and includes SpecvP, but not VP or anything inside. That is, VP gets frozen when the FP phase ends.



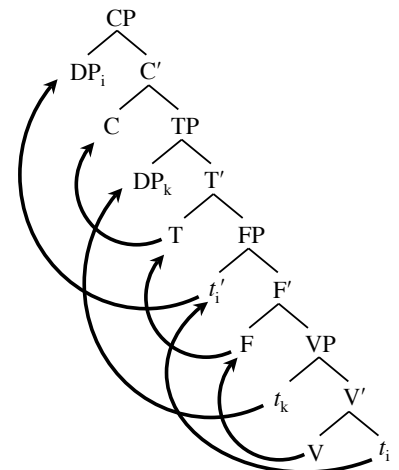
A new FP

- So, suppose that FP has an uninterpretable feature (that attracts the object) that can be strong, optionally.
 - It's strong if it has to be, if the object will get trapped otherwise.
 - It's weak if it doesn't have to be strong (the system is lazy, strong features are work).
- If it's strong, the object moves into SpecFP and the features are checked.
- When the verb moves up to F and on to T, if the feature of F was strong, the agreement features are realized in the verbal morphology.



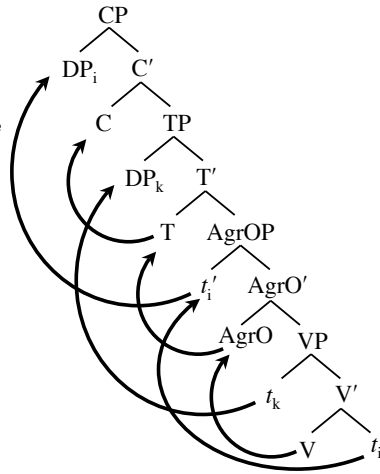
A new FP

- What might that feature be that attracts the object and not the subject?
 - [u ϕ :] doesn't sound like a very good candidate, since subjects have ϕ -features too (and the subject is closer to F than the object is).
- What differentiates objects and subjects?
 - Well, case would.
- Suppose that F has a [ucase:acc] feature that is optionally strong. (This means that we assume now that F, not v, is responsible for accusative case).
- Also, for this to work, we'd have to suppose that the object has a [ucase:acc] feature to begin with (rather than a [ucase:] feature to be valued).



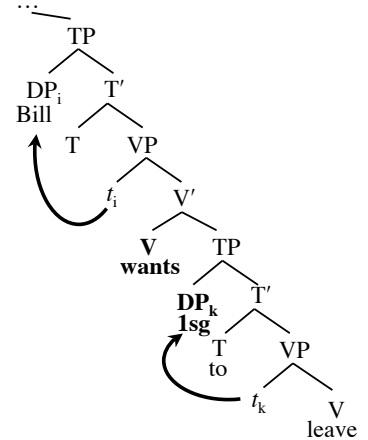
AgrOP

- AgrOP, *Object agreement phrase*.
- The verb moves up to T, stopping at AgrO along the way.
- If the object has to get out of VP, then AgrO will have a strong [acc] feature, forcing the object to move into its specifier first (to get out of the FP phase).
- If the [acc] feature was strong when it was checked, the verb shows agreement.



ECM

- AgrOP can solve a serious problem we had in English too...
- Here's the current way we analyzed ECM sentences, where *me* gets Case from *wants*.
- The thing is, the embedded subject actually acts like it's in the *matrix* clause somewhere.

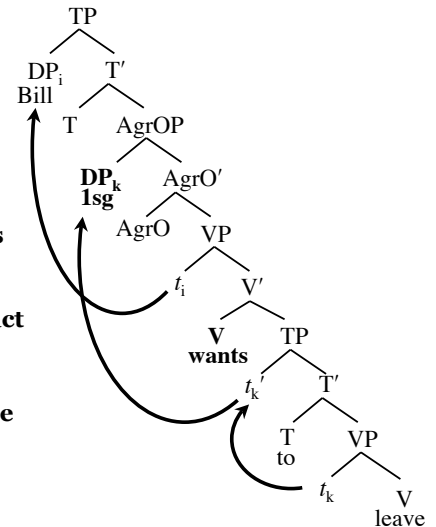


ECM v. BT

- Mary wants her to leave.
- Bill considers himself to be a genius.
- Before we said that the binding domain for anaphors and pronouns was a clause (say, TP).
- *Her* and *himself* above act like they are in the higher clause with the main clause subject.
- Our options are basically to
 - complicate the definition of binding domain in Binding Theory
 - suppose the object has really moved out of the embedded clause.

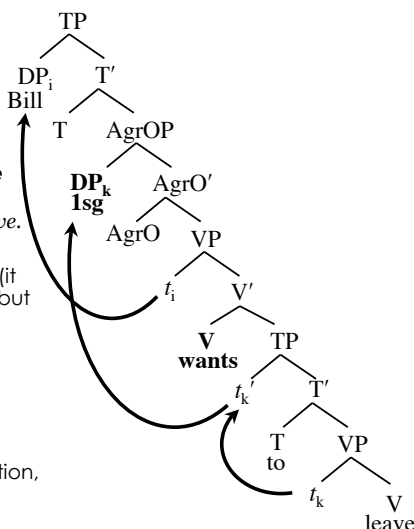
ECM

- If
 - There is an AgrOP and
 - Normal objects generally go there and
 - ECM subjects act like objects
- Then
 - We can suppose that ECM subjects move there.



ECM

- Great!
- But this isn't the surface word order.
 - *Bill me wants to leave.
- It seems to be moving (it makes BT work better) but we don't see it move.
- Yes, another case of "covert" movement.
- Finish the FP phase, commit the pronunciation, then move the object.



AgrOP

- Let's take stock here for a second.
- French told us:
 - There needs to be an FP between NegP and VP.
 - Objects that move past FP have to stop there (inducing object agreement)—so FP is AgrOP.
- How does the *object* get to AgrOP?
 - What differentiates the subject and object is case. So AgrOP is what's responsible for accusative Case. Not *v*.
- We solved an apparent problem with Binding Theory.
 - ECM subjects seem to be in the higher clause:
 - *Bill considers himself to be a genius.*
 - *Mary wants her to leave.*

An AgrO you can see?

- So, yet another invisible head, inducing invisible movement. Great. Have you syntacticians no shame?
- Recall from earlier this semester that Irish is VSO, but yet seems to be SVO underlyingly:
 - Phóg Máire an lucharachán.
kissed Mary the leprechaun
'Mary kissed the leprechaun.'
 - Tá Máire ag-pógáil an lucharachán.
Is Mary ing-kiss the leprechaun
'Mary is kissing the leprechaun.'
- If an *auxiliary* occupies the verb slot at the beginning of the sentence, the main verb appears between the subject and verb. Otherwise, the verb moves to first position.

Northern Irish

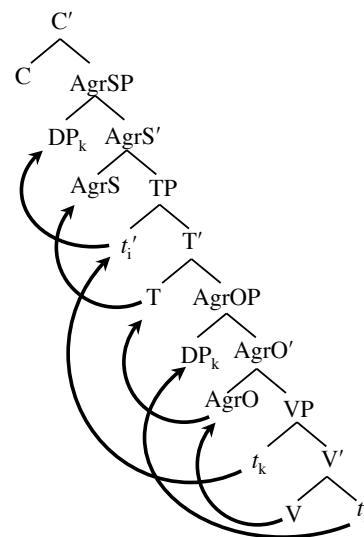
- So, basically everything points to Irish being a head-initial language. But yet, there's this:
 - Ba mhaith liom [Seán an abairt a^l scríobh]
C good with.is S.ACC the sentence.ACC PRT write
'I want S to write the sentence.'
S writing the sentence is good with us (lit.)
 - (cf. also *I want him to meet me*)
 - Ba mhaith liom [Seán fanacht]
C good with.is S.ACC wait
'I want S to wait.'

Morphology on French verbs

- Past, varying persons: je mange-ai-s
'eat'
tu mange-ai-s
il mange-ai-t
- Fut, varying persons: je mange-er-ai
'eat'
tu mange-er-as
il mange-er-a
- Tense morphology is inside and separate from subject agreement morphology.
- Kind of looks like after tense, another, subject-agreeing morpheme is attached...

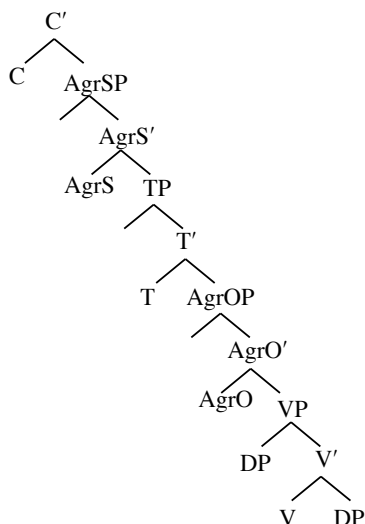
AgrSP?

- AgrOP, Object agreement phrase.
- AgrSP, Subject agreement phrase?
- Pleasingly symmetrical!
- Suppose now that AgrSP is responsible for [nom], the EPP [νD^*] is a property of T, AgrOP is responsible for [acc].
- Why the subject agreement on French verbs?
 - [[[$\nu+V$]+AgrO]+T]+AgrS]



Split-INFL

- The assumption of this structure is sometimes referred to as the "Split-INFL" hypothesis; the INFLectional nodes have been "split" into subject agreement, tense, and object agreement.
- Recall from "history" lessons that what we call TP used to be called "IP" or "InflP". Hence: Split-INFL.

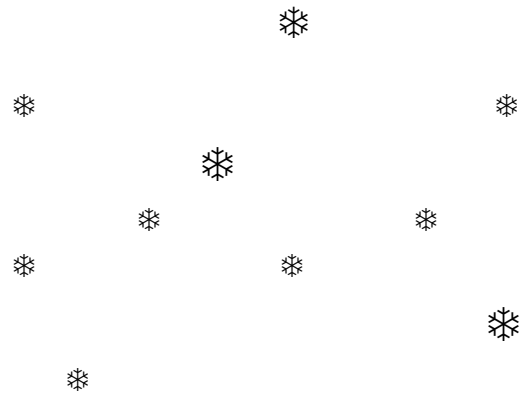


Adopting the Split-INFL hypothesis

- Lots of good syntax has been done both *adopting the Split-INFL hypothesis* (trees contain AgrSP, TP, AgrOP) or *not* (trees contain only IP/TP/InflP).
- For many things, it doesn't matter which you choose—analyses can be directly translated into a Split-INFL tree or vice-versa.
- Where it doesn't matter, it doesn't matter, but sometimes it matters.
 - On the final and in the homework, for example, it doesn't matter. Stick with νP and TP on the final and homework. But know about AgrOP and AgrSP for future interactions with (particularly slightly older) articles in syntax.

Adopting the Split-INFL hypothesis

- The general program is that every dissociable piece of the structure should get its own place in the lexicon, its own functional head...
 - Subject agreement is basically common *across* verbs, an independent piece.
 - Tense too is an independent piece.
 - And object agreement
 - And... plural marking... and progressive *-ing*, aspectual *-en*, ...
- In Syntax II, we'll spend a lot of the semester looking at places in the tree where functional projections need to be added.



Quantifiers

- We interpret *Bill saw everyone* as
- For every person x , Bill saw x .
- This is the meaning. This is the *logical form* of the sentence *Bill saw everyone*. In the notation of formal logic, this is written as
 $\forall x$. Bill saw x
 'For all x (x a person), Bill saw x .'

Quantifiers

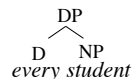
- Every boy hates his roommate.
- Notice that each boy hates a different roommate, the roommates are specific to each boy.
- For every boy x , x hates x 's roommate.
- This means that every boy doesn't just mean the group of boys; rather it goes through the set of boys and says something about each of them individually.

Quantifiers

- These phrases which don't refer to specific people/things in the world but rather seem to do things to sets of people/things are *quantifiers*. Examples include:
 - most students
 - twelve angry men
 - fewer than half of the members
 - some custodian
 - nobody in their right mind

QP

- What is the category of a quantifier like *most students*?
- Well, it goes basically in all the same places a DP goes. Like *which student* or *what* or *who*.
- So, like what we said for *wh*-phrases, quantifier phrases are really DPs with an extra property (they're quantificational). Sometimes people write QP, but they mean 'a quantificational DP'.



Restrictions

- To reiterate, quantifiers are used to say something about *individuals in a set*.
- Most students like syntax.
- The set (sometimes, *restriction*) is the set of students.
- This says that, if you check *all* of the students individually to see if *each* likes syntax, you'll find that most (more than half) of the students you checked do.
- For each x in students, does x like syntax? Did we answer "yes" for most of the ones we checked?

Binding

- A quantifier is said to *bind* its variable. That is, the reference of the variable is assigned by the quantifier.
- Bill read every book.
For every book x , Bill read x
- Is this true? Well, let's go through the books. *Moby Dick*. Did Bill read *Moby Dick*? Yes. Ok, *War and Peace*. Did Bill read *War and Peace*? Yes. Ok, ...

Scope

- A student read every book
There is a student x such that
for every book y , x read y
or
For every book y , there is a student x
such that x read y
- It matters which quantifier comes first in the logical form.

Quantifiers

- To write the logical form (meaning) of a sentence with one of these, you put the quantifier first, and replace where it came from with a variable:
- Most students eat at Taco Bell.
For most students x , x eats at Taco Bell
- No administrators eat at Taco Bell.
For no administrator x , x eats at Taco Bell
- Mary likes every flavor of ice cream.
For every flavor of ice cream x , Mary likes x

Scope

- A student read every book.
- When is this true?
 - Mary, it turns out, has read all of the books.
 - Nobody has read everything, but Mary read half of the books and Bill read the other half. Every book was read by a student.
- There are two meanings here, the sentence is ambiguous between two logical forms.

Scope

- This is perfectly logical. A quantifier takes a set of individuals and checks to see if something is true of the individual members of the set.
- A student read every book. (Namely, Mary)
 - In the set of students, we find that it is true that for at least one student x : x read every book.
 - In the set of students, we find that it is true that for at least one student x : In the set of books, we find that it is true that for each book y , x read y .
 - There is a student x such that for every book y , x read y .
 - $\exists x \in \text{students} : \forall y \in \text{books} : x \text{ read } y$.

Scope

- A student read every book. (They were all covered, though not necessarily by one student)
 - In the set of books, we find that it is true that for each book x : a student read x .
 - In the set of books, we find that it is true that for each book x : In the set of students, we find that it is true that for at least one student y , y read x .
 - For every book x , there is a student y such that y read x .
 - $\exists x \in \text{books}: \forall y \in \text{students}: y \text{ read } x$.

LF

- We think about this kind of ambiguity in much the same way we think about Mary heard a dog bark in the house.
 - (either Mary was in the house or the dog was)
- This (above) is a *syntactic* ambiguity, depending on where the PP *in the house* is attached.
- If there are two different interpretations, there are two different *structures*. Two different LFs.

QR

- Sue read every book.
For every book x , Sue read x .
- Covert movement again: the quantifier *moves* to a position above the sentence, so there is then a direct mapping between the structure and the logical form. But only after the pronunciation has been fixed.
- $[\text{every book}]_i$ [_{IP} Sue read t_i].



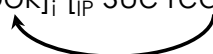
QR

- Sue read every book.
For every book x , Sue read x .
- $[\text{every book}]_i$ [_{IP} Sue read t_i].
- As with *wh*-movement, the *trace* is the variable at logical form—moving quantifiers is a way to establish a quantifier-variable structure.



QR

- Sue read every book.
For every book x , Sue read x .
- $[\text{every book}]_i$ [_{IP} Sue read t_i].
- This movement is called Quantifier Raising (QR), and it happens to every quantifier before LF.




Quantifiers and binding

- Every girl aced her exams.
- $[\text{Every girl}]_i$ [t_i aced her _{i} exams]
- For every girl x , x aced x 's exams
- Not only the trace of QR, but also pronouns, can be bound by the quantifier, their referent determined by the quantifier.

Quantifiers and binding

- [Every girl]_i [_{t_i} aced her_i exams]
 - Binding (assigning reference) is subject to c-command. A quantifier can only assign reference to a variable (its trace and possibly other pronouns) which it c-commands.
- Her brother said that every girl aced her exams.
- The things which a quantifier c-commands are said to be in its scope.
- Quantifiers can only bind variables in their scope.

WCO

- [Every girl]_i [_{iP} _{t_i} likes her_i roommate].
 - For every girl *x*, *x* likes *x*'s roommate.
- 
- [Every girl]_i [_{iP} her_i roommate likes _{t_i}].
 - For every girl *x*, *x*'s roommate likes *x*.
- Answer: WCO again. But WCO is about moving a quantifier over a variable—so if WCO rules out this meaning, there must have been movement. There must have been QR. A movement we couldn't see.

VP ellipsis

- Mary bought a record and Bill bought a tape. ≠ Mary bought a record and Bill did too.
- VP ellipsis is allowed *when a preceding VP is identical*.
- To *interpret* this, you need to use the content of the preceding VP.
- Mary bought a record and Bill did (buy a record) too.

WCO

- Now, let's look at weak crossover again.
- Every girl likes her roommate.
- For every girl *x*, *x* likes *x*'s roommate.
- Her roommate likes every girl.
- For every girl *x*, *x*'s roommate likes *x*.
- Why can't the second sentence have this meaning?

ACD

- Here's another reason to believe in QR, *antecedent contained deletion*. This one's kind of complicated, so hang on tight.
- First, we need to talk about VP ellipsis.
- Mary bought a record, and Bill did too.
- [_{iP} Mary -ed [_{vP} buy a record]] and [_{iP} Bill -ed [_{vP} buy a record]] too.

VP ellipsis

- We will consider the process of VP ellipsis to be one of *deletion under identity*.
- Underlyingly:
-ed [_{vP} Mary sleep] and -ed [_{vP} Bill sleep] too.
- Before deletion:
Mary -ed [_{vP} *t* sleep] and Bill -ed [_{vP} *t* sleep] too
- Pronunciation:
Mary -ed [_{vP} *t* sleep] and Bill -ed [_{vP} *t* sleep] too
Mary slept and Bill did too

VP ellipsis

- So, as long as two VPs in sequence look identical (where traces of movement look identical to one another—they sound the same), we are allowed to pronounce the second one very *quietly*.
- Like an extreme case of Mary bought a record and
Bill bought a record too.

VP ellipsis

- Note that *identity* is actually fairly abstract.
- John slept and Mary will too.
- John slept and Mary will sleep too.
- Before deletion:
John -ed [_{VP} *t* sleep] and Mary will [_{VP} *t* sleep] too
 - The inflectional features of *v* don't matter for identity; the verb doesn't *inherently* have a tense suffix.

ACD

- Now, consider a DP with a relative clause:
- the record [Op_i that Mary bought t_i].
- Bill likes [the record that Mary bought].
- Bill likes the record that Mary bought and Sue does too.
- Bill likes the record that Mary bought and Sue does (like the record that Mary bought) too.

ACD

- Bill likes every book Mary does.
- Bill [_{VP} likes every book Op_i Mary [_{VP} likes t_i]].
- vP: likes [every book Op Mary likes t]
- vP: likes t
- Those aren't the same. VP ellipsis *shouldn't* work, but yet it does.
- The deleted VP is contained in the antecedent VP (*antecedent-contained deletion*)

QR and ACD

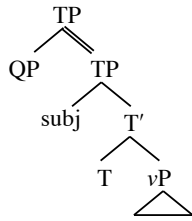
- But now let's consider what QR would do.
- *Every book that Mary likes* is a quantifier.
- Quantifiers have to move up past the subject by LF.
- Bill likes every book Mary does.
- Pronunciation (before covert movement):
Bill [_{VP} likes [every book Op_j Mary [_{VP} likes t_j]]].
- LF:
[every book Op_j Mary [_{VP} likes t_j]]_i Bill [_{VP} likes t_i].
- But now the VPs are identical.
- So if we believe in QR, we can explain ACD sentences in a natural way.

Where do quantifiers go?

- Every student left.
- [Every student]_i [_{IP} t_i left]
- We need a variable in subject position, so QR must be moving the quantifier out of TP, to somewhere higher than TP.
- Believe me that it is also moving somewhere *lower* than CP.

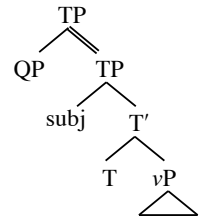
Adjunction to TP

- In order to accommodate this, we need to formulate a new position to which quantifiers move.
- This position is going to be *adjoined to TP*.



Adjunction to TP

- One difference between QR (adjunction to TP) and movement to SpecTP is in the motivations.
- Moving to SpecTP or moving to SpecCP is motivated by some need of T (EPP: T needs a DP in its specifier) or C ([Q] C needs a [+WH] in its specifier).
- Moving a quantifier (QR) is required because the *quantifier* needs to get out of the TP (for interpretation). TP *itself* has no need for quantifiers.



Adjunction to TP

- So, we could say that moving to Spec is something that happens if the moving thing is *pulled* (T is pulling up a subject to satisfy its own needs, not the needs of the moving subject) or *pushed* (quantifiers move to satisfy their own needs, not the needs of the T).
- An XP that is *pulled* up goes into Spec.
- An XP that is *pushed* up adjoins.

