

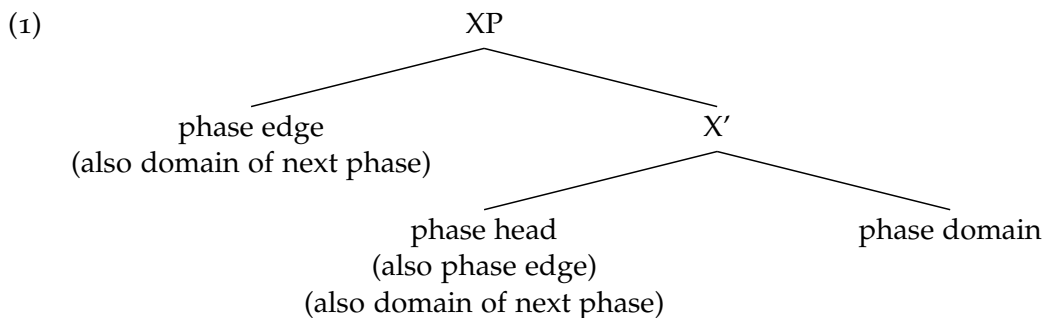
AM2 — Syntax: theories and models

Week 7: Movement and phases

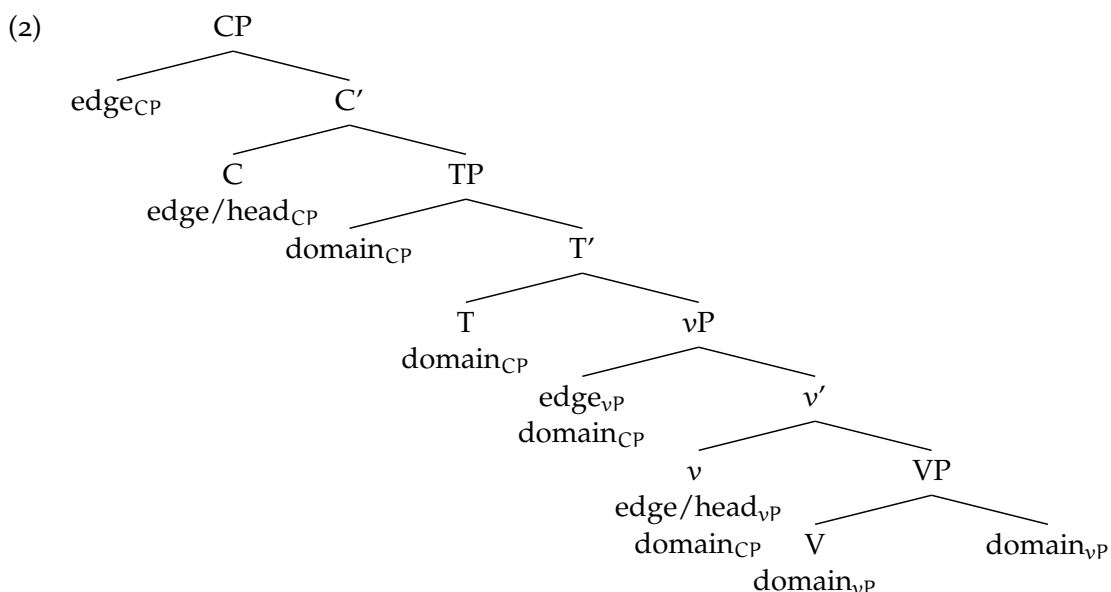
1 Phases

A *phase* is what, in earlier versions of transformational grammar, used to be called a *bounding domain* or a *cycle*. Properly, it is simply the bit of syntactic structure comprised between two phase heads. Its significance comes from the fact that certain syntactic operations (including movement) can apply *within* phases, but not *across* them.

Formally, a phase is defined as follows: we have a phase head, and its complement is the phase *domain*. The phase head itself plus its specifiers and adjuncts are the phase *edge*. Phase edges are special in that they are also part of the domain of the next higher phase.



In this course, we will follow the mainstream hypothesis that *v* and *C* are phase heads, and the rest of heads (*V*, *T*, etc) are not. Inside *DPs*, it is also usually assumed that *D* is a phase head, but we don't have to worry about that because we will not be saying a lot about the internal structure of *DPs*. If we factor these categories into our template for phases, we get the following structure.



Now we can define the following condition:

- (3) *Phase Impenetrability Condition (PIC)*
 Merger of a phase head causes the constituents in its domain to be spelled out (i.e., transferred to the LF and PF interfaces). Spelled out constituents are inaccessible for further syntactic operations.
- (4) *Cyclicity (corollary of PIC)*
 Movement can only happen inside a phase domain. In order to move from one phase domain to the next one, movement has to stop first at the relevant phase edge.

In other words () is a licit instance of movement, but () is not. Movement that proceeds through phase edges is called *successive cyclic movement*. As I did last week, copies of movement are enclosed between $\langle \rangle$ (angle brackets).

- (5) $[_{Ph_1} XP \dots [_{Edge_{Ph_2}} \langle XP \rangle [_{Ph_2} \dots \langle XP \rangle]]]$ [\checkmark successive cyclic mvt]
- (6) $[_{Ph_1} XP \dots [_{Edge_{Ph_2}} \langle XP \rangle [_{Ph_2} \dots \langle XP \rangle]]]$ [$*$ non-stop mvt]

You might have noticed that timing is crucial here. The domain of a phase is not spelled out immediately after the phase head is merged; if it was, then things would be trapped inside the phase domain and movement across phases would truly be impossible. Rather, spell out of a phase domain has to be delayed until the entire phase is completed, so as to give constituents in the phase domain time to move to the phase edge. There are various ways in which this can be technically implemented, but the differences are not important for us.

2 Evidence for successive cyclic movement

2.1 The Fox/Abels paradigm

2.1.1 CPs are phases

Last week, we saw that *wh*- questions exhibit reconstruction effects, in which we use a lower copy of movement as an input for interpretation. If movement can leave a copy at the edge of a phase, then that copy also ought to be accessible for interpretation. We are going to assume the following biconditional

- (7) *Reconstruction and movement*
 Reconstruction can only take place to positions containing a copy of movement. If a position contains a copy of movement, then it is in principle available for reconstruction.

The relevant examples come from the work of Fox (1999) and Abels (2003), all of which you can find in the course website. The crucial Fox example is the following, in which the fronted *wh*- phrase contains (i) the pronoun *he*, coindexed with quantifier *every*; and (ii) the proper name *Ms. Brown*, coindexed with the pronoun *she*.

- (8) [Which paper that he_k gave to Ms. Brown_i] did $every_k$ student hope that she_i would read?

This example is grammatical under the indicated coindexings, but let's think about what it takes to make it grammatical. You should remember the following two conditions.

(9) *Quantifier-variable binding*

A quantifier (*every, each, most, no...*) can bind a pronoun only if the quantifier c-commands the pronoun.

(10) *Binding Theory: Condition C*

A referential expression (proper names, definite descriptions) cannot be c-commanded by a coindexed pronoun.

We know that the *wh*- phrase cannot be interpreted in its surface position, because here the quantifier $every_k$ doesn't c-command the pronoun he_k , in violation of (8). So, we need to resort to a lower copy. However, we cannot use the copy in the original position of the *wh*- phrase, because there the pronoun she_i would c-command the referential expression *Ms. Brown_i*, in violation of (9). Consider the ungrammaticality of the following example as an illustration of the last point.

(11) * $Every_k$ student hoped that she_i would read the paper that he_k gave to Ms. Brown_k.

In order for (7) to satisfy (8) and (9) simultaneously, we have to find a place for reconstruction between $every_k$ and she_i . This place is the intermediate SpecCP. The following is the full structure for (7), with copies again in between angle brackets.

(12) *Full structure for (7)*

[_{CP1} [Which paper that he_k gave to Ms. Brown_i] did $every_k$ student hope
 [_{CP2} <[which paper that he_k gave to Ms. Brown_i]> that she_i would read
 <[which paper that he_k gave to Ms. Brown_i]>]]

At the PF interface, only the highest copy is pronounced. I indicate this by rendering the unpronounced copies in light grey font and framing the pronounced copy.

(13) *PF realization of (7)*

[_{CP1} [Which paper that he_k gave to Ms. Brown_i] did $every_k$ student hope
 [_{CP2} <[which paper that he_k gave to Ms. Brown_i]> that she_i would read
 <[which paper that he_k gave to Ms. Brown_i]>]]

In contrast, the LF realization of (7) makes use of the intermediate copy, as this is the only one that satisfies both (8) and (9).

(14) *LF realization of (7)*

[_{CP1} [Which paper that he_k gave to Ms. Brown_i] did $every_k$ student hope
 [_{CP2} <[which paper that he_k gave to Ms. Brown_i]> that she_i would read
 <[which paper that he_k gave to Ms. Brown_i]>]]

Compare (7) now to (14), which is ungrammatical. The reason why (14) is ungrammatical is that there is no possible reconstruction site that satisfies both (8) and (9). If reconstruction takes place to the intermediate SpecCP, then the pronoun cannot be bound by the quantifier. If reconstruction takes place to the lowest position, then a violation of Condition C obtains.

(15) * [Which paper that he_k gave to Ms. Brown_i] did she_i hope that $every_k$ student would revise?

(16) *Illicit LF realization of (14): no quantifier binding.*

[_{CP1} [Which paper that he_k gave to Ms. Brown_i] did $every_k$ student hope
 [_{CP2} <[which paper that he_k gave to Ms. Brown_i]> that she_i would read
 <[which paper that he_k gave to Ms. Brown_i]>]]

(17) *Illicit LF realization of (14): Condition C violation.*

[_{CP1} [Which paper that he_k gave to Ms. Brown_i] did every_k student hope
 [_{CP2} ⟨[which paper that he_k gave to Ms. Brown_i]⟩] that she_i would read
 ⟨[which paper that he_k gave to Ms. Brown_i]⟩]]

2.1.2 vPs are phases

Similar examples can be produced to show that vP also offers a reconstruction site. Consider the following: *ask* is an object control verb (you can apply the diagnoses on your own), therefore *her* has to be in an object position.

(18) [Which paper that he_k gave to Ms. Brown_i] did every_k student ask her_i to read carefully?

This example is analogous to (7), the only difference being that here there is no CP phase between *every_k* and *her_i*. Therefore, the *wh*-phrase must reconstruct to the vP phase.

(19) *LF realization of (17): reconstruction to vP phase.*

[_{CP} [Which paper that he_k gave to Ms. Brown_i] did every_k student
 [_{vP} ⟨[which paper that he_k gave to Ms. Brown_i]⟩] ask her_i [PRO to revise
 ⟨[which paper that he_k gave to Ms. Brown_i]⟩]]]

Compare (17) to (19), which is analogous to (14). Here, there are no reconstruction sites that satisfy (8) and (9) simultaneously.

(20) * [Which paper that he_k gave to Ms. Brown_i] did she_i ask every_k student to revise?

(21) *Illicit LF realization of (19): no quantifier binding, Condition C violation.*

[_{CP} [Which paper that he_k gave to Ms. Brown_i] did she_i
 [_{vP} ⟨[which paper that he_k gave to Ms. Brown_i]⟩] ask every_k student [PRO to revise
 ⟨[which paper that he_k gave to Ms. Brown_i]⟩]]]

(22) *Illicit LF realization of (19): Condition C violation.*

[_{CP} [Which paper that he_k gave to Ms. Brown_i] did she_i
 [_{vP} ⟨[which paper that he_k gave to Ms. Brown_i]⟩] ask every_k student [PRO to revise
 ⟨[which paper that he_k gave to Ms. Brown_i]⟩]]]

2.1.3 TPs are not phases

The last part of this argumentation was provided by Abels (2003), who showed that not all XPs are possible reconstruction sites. Abels's reasoning is based on the fact that the verb *seem* can either function as a raising verb or as a CP-taking verb, and in both cases it can take an experiencer argument.

(23) a. Alice seems to Bob [_{TP} ⟨Alice⟩ to have enjoyed dinner]. [raising]
 b. It seems to Bob [_{CP} that Alice enjoyed dinner]. [CP-taking]

In neither case can the experiencer argument bind an anaphor inside the complement of *seem*.

(24) a. * Alice seems to Bob_i [_{TP} ⟨Alice⟩ to have bought a picture of himself_i]. [raising]
 b. * It seems to Bob_i [_{CP} that Alice bought a picture of himself_i]. [CP-taking]

The CP-taking version of *seem* can remedy this problem through wh- fronting. We know why this is the case —the intermediate CP is a phase that forces the creation of a copy of movement that can be used as a reconstruction site. In this site, the anaphor is close enough to the antecedent to enable binding.

(25) [Which picture of himself_i] does it seem to Bob_i that Alice bought?

(26) *LF realization of (25): reconstruction to the intermediate CP*

[_{CP1}[Which picture of himself_i] does it seem to Bob_i
 [_{CP2} [[which picture of himself_i]]] that Alice bought
 [[which picture of himself_i]]]

However, wh- movement doesn't enable binding in the raising version. Example (28) shows that wh- movement is actually possible in this environment, so that the ungrammaticality of (27) is due exclusively to a failure of anaphoric binding.

(27) * [Which picture of himself_i] does Alice seem to Bob_i to have bought?

(28) [Which pictures of Claire] does Alice seem to Bob to have bought?

Abels's analysis of (27) lies on the fact that raising verbs are TPs, rather than CPs. If we assume that TPs are not phases, then we can conclude that they don't force the creation of an intermediate copy; therefore, they don't provide intermediate reconstruction sites either.

(29) *Illicit LF for (27): no intermediate copy, no binding*

* [Which picture of himself_i] does Alice seem to Bob_i
 [_{TP} ⟨Alice⟩ to have bought ⟨[which picture of himself_i]]]?

2.2 Conclusion

- C and v are phase heads; movement out of CP and vP must leave a copy in SpecCP and SpecvP.
- T is not a phase head; movement out of TP doesn't leave a copy in SpecTP.