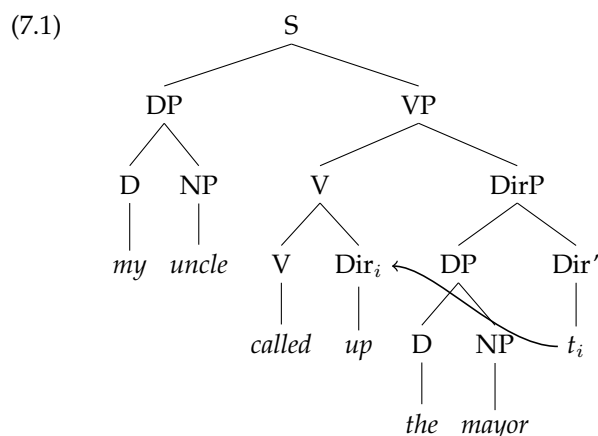


## Chapter 7

# Head Movement

### 7.1 Introduction

- Last time we left off with a puzzle: what's going on with English particle verbs?
- We proposed the following analysis, in which the directional particle, a Dir-head, adjoins to the V-head.

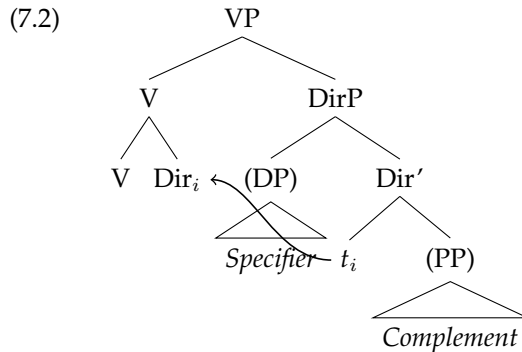


- We established that this movement rule *must* be of a different sort than those constrained by “gap theory”:
  - It involves the movement of a head, not the whole XP. In fact, the rest of the DirP (besides the head) stays put.
  - The landing site of Dir is not a sister to a constituent containing the trace of Dir.
- This handout is devoted to this kind of movement, termed ‘head movement’. It’s going to be very useful in terms of accounting for:
  - the apparently variable position of verbs.
  - the interface between morphology and syntax.
- Goals for this handout.
  - Make this notion of head movement precise.
  - Account for English ‘subject-auxiliary’ inversion (as per the assignment).
  - Contrast English and French verbal positioning, inflection, and negation.
  - Eliminate the category of S (finally no more exceptions for *Succession/Lexicality!*)
  - Provide a basic account of Turkish clause structure.

## 7.2 Formalizing head movement

### 7.2.1 Our particle verb case study

- Our theory of English particle verbs in short:
  - Particle verbs select for a DirP complement (and thus can specify which Dir).
  - Depending on the value of Dir, Dir may have a PP complement and/or a DP specifier.
  - The Dir-head can *optionally* move to adjoin to V.



- This theory makes a prediction: we should find English particle verbs for which
  - i. Dir selects no complement or specifier.
  - ii. Dir selects a complement but not a specifier.
  - iii. Dir selects a specifier but not a complement.
  - iv. Dir selects both a specifier and complement.
- The proposed optional head movement of Dir explains the variable position of Dir and the DP argument.
- Which verbs below would fit into which categories (i–iv)?

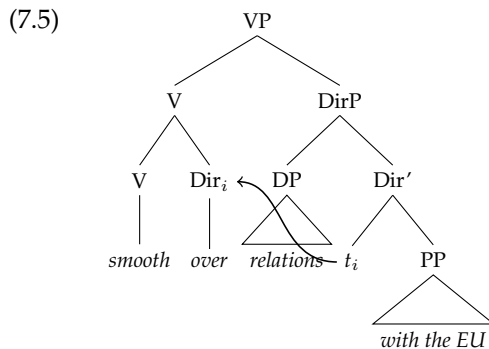
- (7.3)
- a. *take up* (as in *raise an issue/complaint*)
  - b. *look forward* (as in *anticipate*)
  - c. *stand up*
  - d. *turn off*

- We have additional issues with particle verbs not (yet?) accounted for:
  - In English, head movement of Dir can't cross a pronoun *turn it off* vs. *\*turn off it*.
  - In German, Dir *must* adjoin to V if V is non-finite, and *must not* adjoin if it's finite.

- (7.4)
- a. *Ich komme heute an* - I arrive today. (vs. *\*Ich ankomme heute*)
  - b. *Ich kam heute an* - I arrived today. (vs. *\*Ich ankam heute*)
  - c. *Ich bin heute angekommen* - I am[have] today arrived.  
(vs. *\*Ich bin (\*an) heute gekommen (\*an)*)
  - d. *Ich kann heute ankommen* - I can today arrive.  
(vs. *\*Ich kann (\*an) heute kommen (\*an)*)

## 7.2.2 Defining head adjunction

- We want our definition of head movement to permit the following structure:



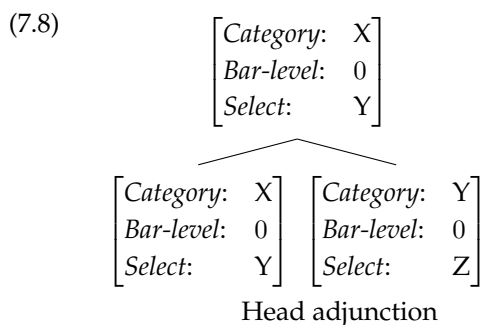
(7.6)

$$\begin{bmatrix} \text{Cat:} & V \\ \text{Select:} & \text{Dir}_{\text{over}} \end{bmatrix} \rightarrow \text{smooth} \qquad \begin{bmatrix} \text{Cat:} & \text{Dir} \\ \text{Select:} & \text{P}_{\text{with}} \end{bmatrix} \rightarrow \text{over}$$

- Firstly, the adjunction of Dir to V does not change V's selectional properties. We still want V to select for DirP, with or without the head movement taking place.

(7.7) **HM property 1:** head movement of X to Y doesn't change Y's selectional properties.

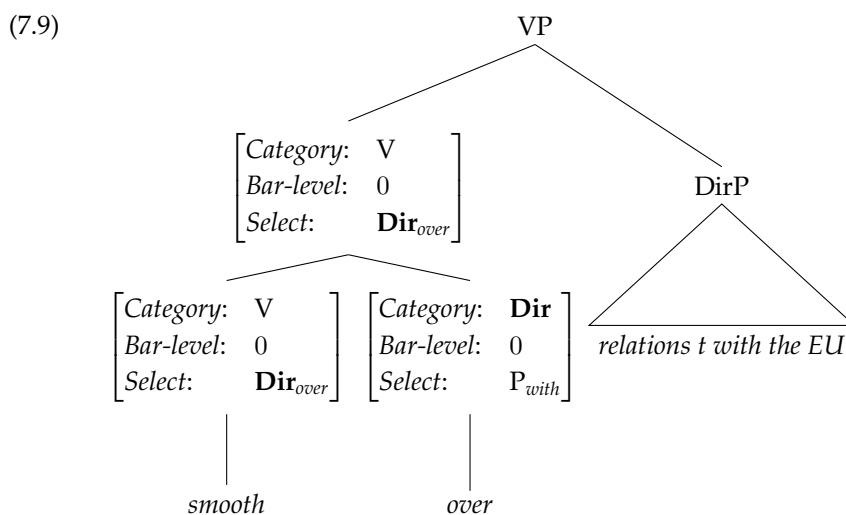
- This property falls out from our hypothesis that head movement involves adjunction.
- Recall our general definition of adjunction: *the mother node has the same featural specifications as the "adjoinee" node.*



- What predictions are we making about structures involving head adjunction of Y to X:

–

- Another important property of (7.17): *The complex head selects for a complement Y, such that Y is the same category as the adjoined head.*



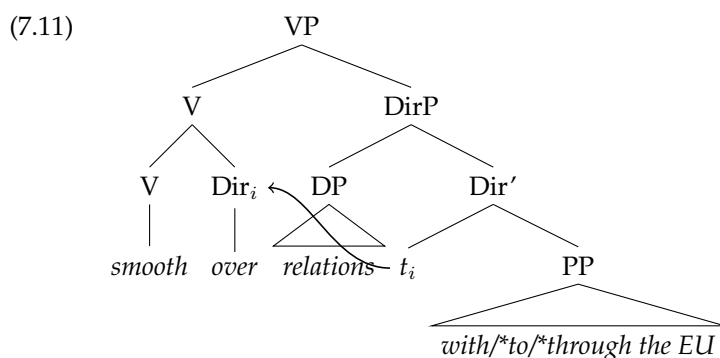
- This derives a constraint on head movement

(7.10) **The Head Movement Constraint (HMC):** Head movement of X to Y can only take place if Y selects XP as its complement. (Travis 1984)

- Standardly, head movement is taken to be a general transformation whereby a head move to some higher head position: the HMC has to be *independently stipulated*.
- For us, the HMC is an entailment of the definition (7.17), no extra principles needed.

### 7.2.3 Defining traces of moved heads

- The head movement doesn't seem to alter *over*'s selection of *with*.



(7.12) **HM property 2:** head movement of X to Y doesn't change X's selectional properties.

- It's clear that the trace of HM is different from the trace left by XP-movement.
- Let's revisit our rule for traces left by XP-movement in (7.13).
  - Its Gap feature ensures it "meets" a constituent with category X higher up.
  - Its lack of Select features means it doesn't select any arguments.
- So there's no way a trace like (7.13) could have arguments like in (7.15).

(7.13) 
$$\begin{bmatrix} \text{Cat:} & X \\ \text{Bar:} & 0 \\ \text{Gap:} & X \end{bmatrix} \rightarrow \emptyset$$

**Trace rule for XP-movement** (but not for head movement)

- The simplest fix: define a 2nd type of trace, that has selection features like a head.

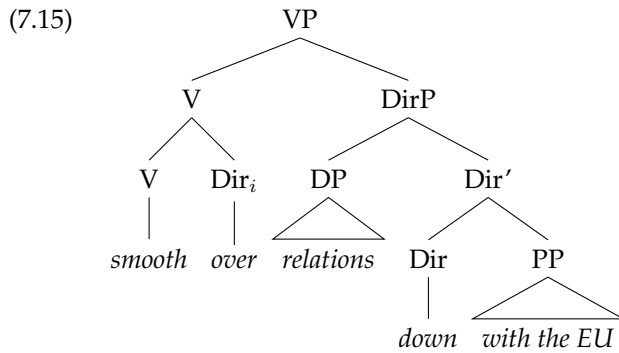
(7.14) 
$$\begin{bmatrix} \text{Cat:} & X \\ \text{Bar:} & 0 \\ \text{Select:} & Y \\ \text{Gap:} & X \end{bmatrix} \rightarrow \emptyset$$

**Trace rule for Head-movement** (but not for XP movement)

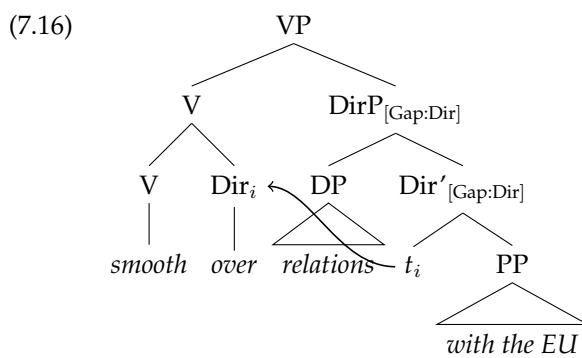
- Now there's nothing stopping a head movement trace having a complement/specifier.

### 7.2.4 Linking head adjunction and head movement

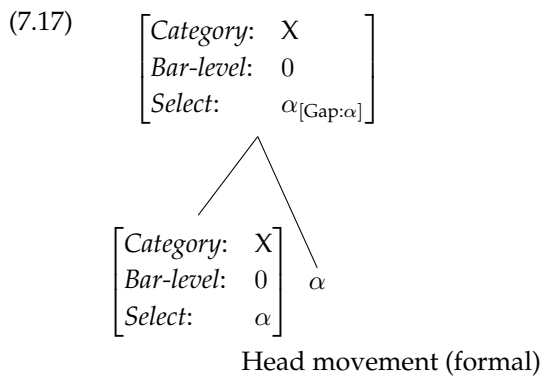
- So far we have head adjunction, and head movement traces, but what associates them? Nothing obvious so far rules out the following in principle:



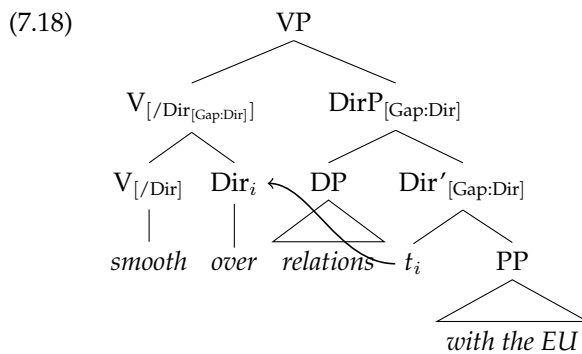
- According to our theory above, both XP-traces and HM-traces introduce a Gap feature, which will pass from daughter to mother.
- Recall a Gap:X feature can be read as “I have a trace of type X below me”.



- To get (7.18), but rule out (7.15), we just need one tweak to our head adjunction rule.



- How would you describe this structure in plain English:



- (7.19) **Head movement (informal)** In short, if you have a head Y adjoined to you, your complement had better be YP, headed by Y's trace!

- To sum up, movement of a head X to adjoin to a head Y:
  - doesn't alter the selectional properties of Y.
  - doesn't alter the selectional properties of X.
  - is the only way of licensing head adjunction.
  - requires that Y select for XP as its complement (the HMC).
- All of these properties are entailed by the theory outlined above.
- As always, just using the abbreviated format (with arrows) is fine, so long as you understand the mechanics behind them.

### 7.3 Subject-auxiliary inversion

- Let's use our brand new theory of head movement to understand English "subject-auxiliary inversion". This is a phenomenon were in matrix interrogatives, the subject and auxiliary invert positions.

- (7.20) a. Will she open the door? (vs. She will open the door)  
 b. Has the monkey washed his feet? (vs. The monkey has washed his feet)

#### 7.3.1 Embedded interrogatives

- First, we observe that embedded interrogatives use *if* and *whether*

- (7.21) a. I was wondering if the packages would arrive on time.  
 b. I was wondering whether the packages would arrive on time.  
 c. Harvey asked me if the monkey had been vaccinated.  
 d. Harvey asked me whether the monkey had been vaccinated.

- We have a category for *if/whether* already: complementizers.
- How can we characterize the difference between *wonder/ask*, and *deny/claim*?

- (7.22) a. \*Harry denied whether he was a wizard.  
 b. Harry denied that he was a wizard.  
 c. \*Harry claimed if he was innocent.  
 d. Harry claimed that he was innocent.

- In some varieties of English other than Standard American, we observe "subject-auxiliary inversion" in embedded interrogatives as well as matrix interrogatives.

- (7.23) a. \*Do you think will she open the door?  
 b. I wonder has the monkey washed his feet.  
 c. They asked me could I talk to Owen.  
 d. \*Frank denied could he have taken a flight to Dallas.

- These varieties also allow *if/whether* in embedded interrogatives.

- (7.24) a. I wonder if the monkey has washed his feet.  
 b. They asked me whether I could talk to Owen.

- But they don't allow *if/whether* as well as subject-auxiliary inversion.

- (7.25) a. \*I wonder if has the monkey washed his feet.

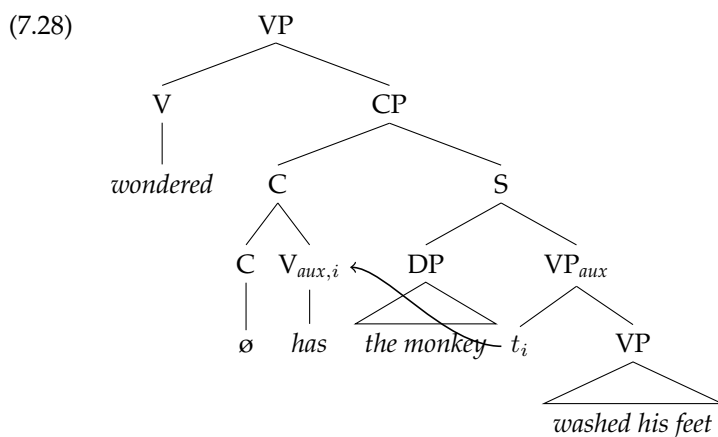
b. \*They asked me whether could I talk to Owen.

- Here we have a case of complementary distribution: we see interrogative complementizers *if/whether* whenever we don't see SAI, and vice versa.
- What could we say to account for this complementary distribution?
- Let's assume a category of C-heads which are [+Q] (for interrogatives). We have the familiar overt ones.

$$(7.26) \begin{bmatrix} \text{Cat:} & C_{[+Q]} \\ \text{Bar:} & 0 \\ \text{Select:} & S \end{bmatrix} \rightarrow \textit{if/whether}$$

- But what about the one responsible for SAI? It seems like here, the auxiliary is acting as the complementizer.
- A way to spell out this intuition: the auxiliary head moves to the complementizer position, occupied by a null C.

$$(7.27) \begin{bmatrix} \text{Cat:} & C_{[+Q]} \\ \text{Bar:} & 0 \\ \text{Select:} & S \end{bmatrix} \rightarrow \emptyset$$



- This gets the right results but it conflicts with our definition of head movement. Why?

– Let's press on and come back to this.

- Next, what do the following data show (ungrammatical in both varieties of English):

(7.29) a. \*I wonder talk she might to Owen.

c. \*I wonder washed the monkey his feet.

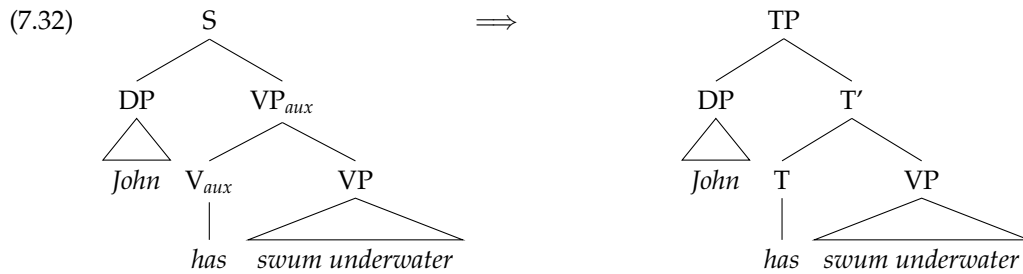
(7.30) b. \*I wonder washed the monkey has his feet.

d. \*They asked me been she had running the washing machine.

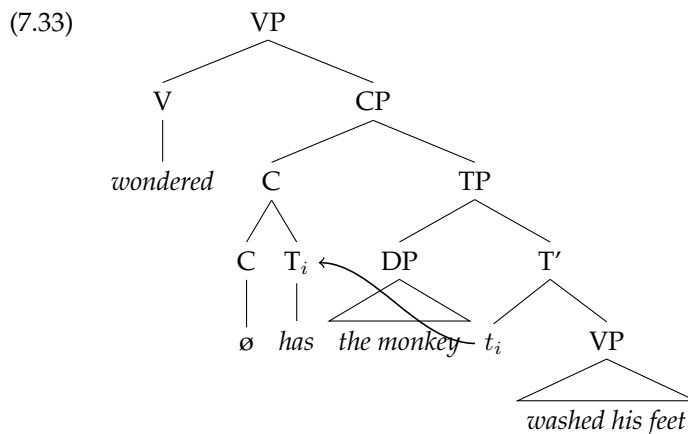
### 7.3.2 Eliminating S

- S keeps getting us into trouble:
  - It's an exception to Lexicality. Why?
  - It's an exception to Succession. Why?
  - Our SAI rule above violates our definition of head movement.
- Let's solve all three problems in one fell swoop by the following hypothesis:

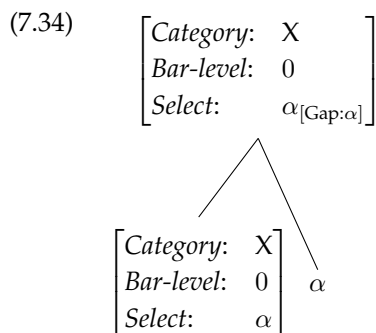
(7.31) English finite sentences are headed by the tensed auxiliary (to be modified shortly)



- Now there are no longer any exceptions to Lexicality and Succession.
- Let's see if we have also resolved the HMC-violation above.

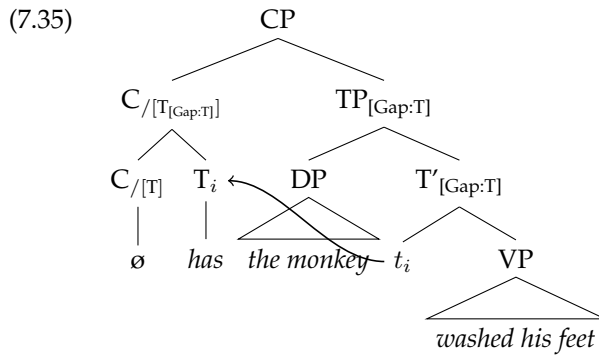


- Is this T-C complex conforming to our definition of head movement below?



- With a little more detail filled in below, we can see it solves this HMC problem. The auxiliary's trace is the head of C's complement.



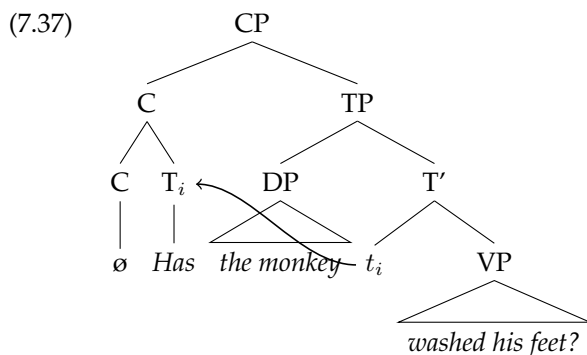


- We'll flesh out the structure of TP shortly, for now we can just assume the leftmost auxiliary occupies T, and moves to C for questions.

- (7.36)
- (Will) the farmer (will) feed the pigs.
  - (Have) the pigs (have) eaten the corn.
  - (Is) the farmer (is) feeding the pigs.
  - (Should) the farmer (should) have been feeding the pigs.

### 7.3.3 Root polar questions

- We can now give an analysis of matrix questions (in both Standard American and other varieties of English).
- The gist: matrix questions are just like embedded questions in non-Standard English.
- A necessary assumption: the root node of a matrix question is CP.



- Thus the difference between SAE and NSE: NSE has an extra embedded complementizer. ([+Q] means interrogative, [+R] means root clause)

- (7.38)
- Interrogative embedded C
 

Cat:	$C_{[+Q,-R]}$	}	→ if, whether, ∅ (NSE only)
Bar:	0		
Select:	S		
  - Interrogative root C
 

Cat:	$C_{[+Q,+R]}$	}	→ ∅
Bar:	0		
Select:	S		

- What about declarative CPs? We know there's *that* and a null declarative C, which unlike the null interrogative C, doesn't trigger head movement.

- (7.39) a. I don't think (that) the monkey is crazy.  
 b. You imagined (that) John swam underwater.  
 c. Harry claimed (that) he was innocent.
- So we have  $\emptyset_{+Q}$  which triggers head movement, and  $\emptyset_{-Q}$  which doesn't. NB: *if* and *whether* also never trigger head movement.
  - So we need some way to represent the obligatory movement of head movement.
- (7.40) a. Interrogative C (root in SAE, root/embedded in NSE) triggers head movement

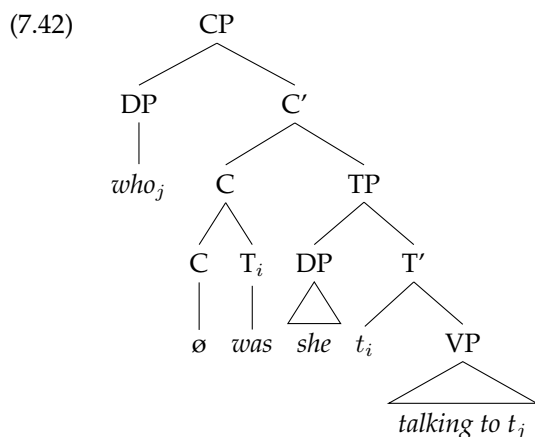
$$\begin{bmatrix} \text{Cat:} & C_{[+Q]} \\ \text{Bar:} & 0 \\ \text{Select:} & T_{[\text{Gap:T}]} \end{bmatrix} \rightarrow \emptyset$$

- b. Declarative C doesn't trigger head movement

$$\begin{bmatrix} \text{Cat:} & C_{[-Q]} \\ \text{Bar:} & 0 \\ \text{Select:} & T \end{bmatrix} \rightarrow \emptyset$$

### 7.3.4 Subject-auxiliary inversion in *wh*-questions

- In NSE we observe SAI in embedded *wh*-clauses as well. How would we describe the word order of embedded *wh*-questions in NSE and SAE?
- (7.41) a. I wonder who was she talking to. (vs. I wonder who she was talking to)  
 b. He asked me where was I going. (vs. He asked me where I was going)
- Given that we have analyzed inverted auxiliaries as being adjoined to C, how should we analyze *wh*-phrases?



- Now we are in a position to posit a lexicon of complementizers for SAE and NSE. What's the proposal in the final row?

	Phon	Cat	Select	Dialect
	<i>that</i>	$C_{[-R,-Q]}$	T	NSE, SAE
	$\emptyset$	$C_{[-R,-Q]}$	T	NSE, SAE
	<i>if</i>	$C_{[-R,+Q]}$	T	NSE, SAE
	<i>whether</i>	$C_{[-R,+Q]}$	T	NSE, SAE
	$\emptyset$	$C_{[-R,+Q]}$	$T_{[\text{Gap:T}]}$	NSE
	$\emptyset$	$C_{[+R,+Q]}$	$T_{[\text{Gap:T}]}$	NSE, SAE
	$\emptyset$	$C_{[+R,-Q]}$	T	NSE, SAE

(7.43)

## 7.4 French and English auxiliaries and negation

- A recap of a very influential analysis of clause structure, Pollock 1989, comparing English and French auxiliary/negation systems.

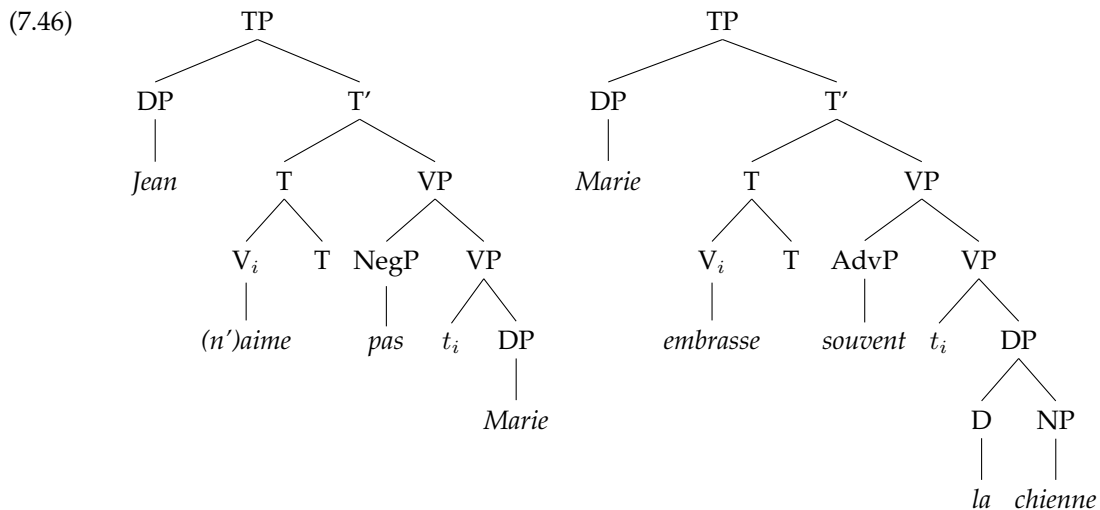
- What do we learn from the following?

- (7.44) a. \*John likes not Mary  
b. Jean (n')aime pas Marie

- (7.45) a. \*John kisses often Mary  
b. Jean embrasse souvent Marie  
c. John often kisses Mary.  
d. \*Jean souvent embrasse Marie

- Pollock's central question: can French and English be given parallel structures despite the word order differences. In Pollock's terminology, do they have the same D-structure?

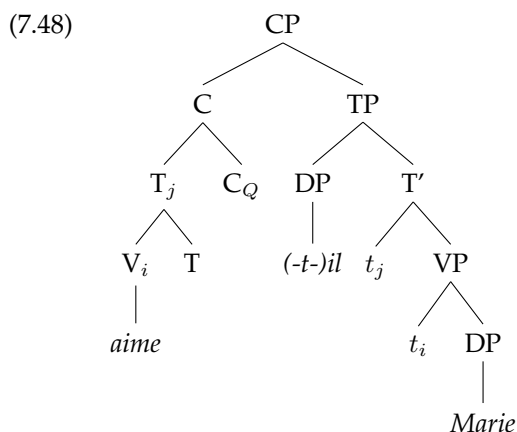
- Pollock's proposal about French: (all) verbs move to T. Does this explain (d)?



- Like English, French uses inversion for questions, with an important difference:<sup>1</sup>

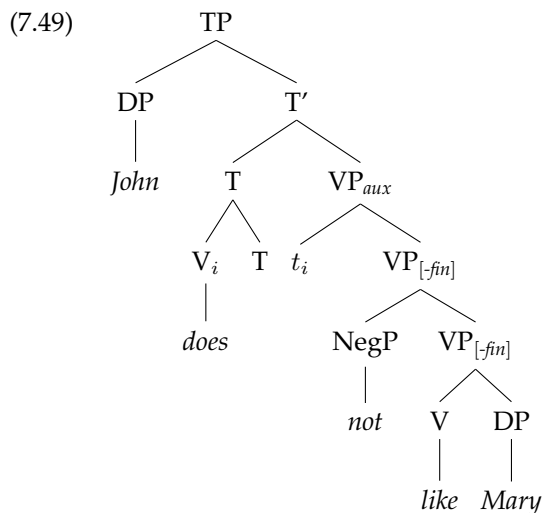
- (7.47) a. \*Likes he Marie?  
b. Aime-t-il Marie?

- Assuming French has just the same interrogative C as English (null and triggers head movement of T), we correctly predict that main verbs invert as well as auxiliaries.



<sup>1</sup>Additionally it's only possible with pronoun subjects, which is an observation we don't derive in this handout.

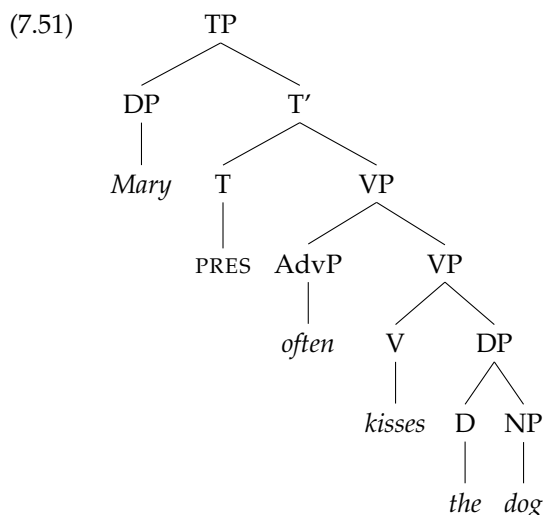
- This is an instance of “roll-up” head movement, where the complex head in C is formed by multiple iterations of head movement.
- What about English? We already had an explanation of *do*-support with negation in English. Can we remind ourselves?
- Here, we make the additional step of assuming *does* head-moves to T. Why?



- The biggest challenge for us is generating the following contrasts in French/English.
- We’ve suggested that the French observations can be derived by V-to-T movement. But what about English?

- (7.50)
- \*John kisses often Mary
  - Jean embrasse souvent Marie
  - John often kisses Mary.
  - \*Jean souvent embrasse Marie

- Pollock’s idea: French and English underlyingly have the same structure, but English non-auxiliaries don’t move to T.<sup>2</sup> For now, PRES is a silent present tense marker.



- In English, only auxiliaries undergo V-to-T movement.

<sup>2</sup>Pollock says they move to T “covertly”, but that’s not something we need/want to adopt.

- This immediately explains why only auxiliaries under go T-to-C movement (SAI inversion): they are the only verbs in T.
- Pollock's prediction: if an English verb inverts in questions (undergoes T-to-C movement), it should pattern like French verbs with respect to negation and adverbs.
- We can see this prediction at play with (formal?) BrEng vs. AmEng possessive *have*. How can we explain the dialectal difference here?

- (7.52) a. Do you have any wool?/Does John have enough money? [AmEng]  
 b. You don't have any wool./He doesn't have enough money.  
 c. John seldom has enough money./He doesn't really have much money.  
 b. They all have nice homes to go back to./My kids each have a new pet.

- (7.53) a. Have you any wool?/Has John enough money? [BrEng]  
 b. You haven't any wool./He hasn't enough money.  
 c. John has seldom enough money./He hasn't really very much money.  
 b. They've all nice homes to go back to./My kids have each a new pet.

- When a French verb doesn't raise to T (for example, if it is non-finite), it shows an English type syntax.

- (7.54) a. Jean (ne) comprend pas le document.  
 (John (NEG) understands not the document)  
 b. Jean (n')a pas compris le document.  
 (John (NEG) has not understood the document)  
 c. Jean comprend souvent les documents.  
 (John understands often the documents)  
 d. Jean a souvent compris les documents.  
 (John has often understood the documents)

- How can we understand this pattern? Let's draw a tree for (d).

(7.55)

- A final point: we said in English, only things that have moved to T can move to C (via the HMC).
- T-to-C movement entails V-to-T movement. This makes an empirical prediction:

(7.56) **English T-to-C entails V-to-T:**

*In English, any verb that can invert in questions can also appear left of negation/adverbs.*

- As far as I know this is true.
- Interestingly, the reverse implication need not hold. Nothing predicts that V-to-T entails T-to-C. So it's possible that things which appear to the left of the verb cannot invert in questions.
- Modals appear to the left of negation (i.e., undergo V-to-T), but the set of modals which can invert in questions differs dialectally.

- (7.57)
- a. Could John leave tomorrow?
  - b. Must John leave tomorrow?
  - c. Must John be the murderer?
  - d. Can John leave tomorrow?
  - e. Might John leave tomorrow?
  - f. Might John be the murderer?
  - g. Shall John leave tomorrow?
  - h. Shall this cliff face erode eventually?
  - i. May John be the murderer?

## 7.5 Turkish clause structure

### 7.5.1 Nominal structure

- Some basics
  - in (most) Turkish suffixes, the backness of the suffix vowel is determined by the backness of the preceding vowel; for high vowels in suffixes, there is a similar assimilation in rounding. A result of this is that suffix vowels generally need to be specified only L (low) or H (high).
  - There are some other fairly obvious alternations, such as that a suffix-initial stop assimilates in voicing to the preceding segment; and there is systematic syllable-final stop devoicing.

- (7.58)
- a. *maymun* "the monkey"
  - b. *mutlu maymun* "the happy monkey"
  - c. *güzel mutlu maymun* "the beautiful happy monkey"
  - d. *bu (şu, o) mutlu maymun* "this (that, yonder) happy monkey"
  - e. \**bu maymun mutlu*  
 \**güzel maymun mutlu*  
 \**mutlu bu maymun*  
 \**bu şu maymun*  
 \**maymun mutlu bu*  
 These are grammatical, but only as sentences, not as DPs.
  - f. *muz* "the banana"
  - g. *lezzetli muz* "the delicious banana"
  - h. *pahalı araba* "the expensive car"
  - i. *bu güzel araba* "this beautiful car"
  - j. *şu pahalı araba* "this/that expensive car"
  - k. *maymun-un muz-u* "the monkey's banana"
  - l. *maymun için* "for the monkey"

- m. *bu pahalı araba ile* "with this expensive car"
- n. *şu pahalı maymun-un uzun kuyruğ-u gibi*  
"like that expensive monkey's long tail"
- o. *güzel kız-ın pahalı maymun-u-nun lezzetli muz-u için*  
"for the beautiful girl's expensive monkey's tasty banana"
- p. *bir maymun* "a monkey"
- q. *mutlu bir maymun* "a happy monkey"
- r. *çok mutlu bir maymun* "a very happy monkey"
- s. *bir muz* "a banana"
- t. *pek pahalı bir araba* "too expensive a car"
- u. *biraz pahalı bir araba* "a somewhat expensive car"
- v. *\*bir mutlu maymun*
- w. *\*bir çok güzel kız*
- x. *\*şu bir pahalı maymun*

- What can you say about (i) head-complement order, (ii) adjunct-head order, (iii) specifier-head order in Turkish?
- Propose a structure for (n).

(7.59)

### 7.5.2 Clausal structure

- Understanding Turkish clause structure requires understanding the morphology. Remember H and L mean high and low vowel, which harmonizes to the backness/roundness of the vowels in the root.
- Suffix-initial stops assimilate to the voicing of the preceding segment.
- Suffix-initial /y/ deletes before consonants.

#### (7.60) Cases

Nominative (NOM)	-∅ (no overt marking)
Genitive (GEN)	-nHn
Accusative (ACC)	-(y)H
Dative (DAT)	-DL
Ablative (ABL)	-DLn

#### (7.61) Tenses

Past (PST)	-DH
Cond (CND)	-sL

#### (7.62) Aspects

Future (FUT)	-yLcLğ
Prog (PROG)	-Hyor
Aorist (AOR)	-Lr (but -Hr after polysyllabic stems)
Evid (EVID)	-mHş
Necess (NEC)	-mLıH

- Some simple structures in Turkish. Is Turkish Subj-V or V-Subj?

- (7.63)
- mutlu maymun güliüyor* "the happy monkey is laughing"
  - pahalı muz düştü* "the expensive banana fell"
  - şu gayet güzel domuz ölecek* "that rather beautiful pig will die"
  - büyük ağaç düşmüş* "the big tree fell (evidently)"
  - güzel bir kız geliyor* "a beautiful girl is coming"

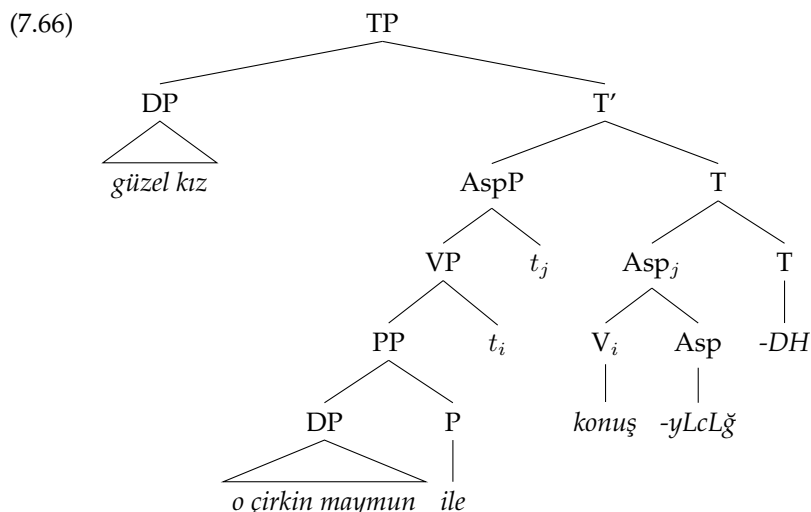
- Some structures with transitive verbs taking nominal objects. SVO or SOV?

- (7.64)
- maymun muzu istiyor* "the monkey wants the banana"
  - muz maymunu istiyor* "the banana wants the monkey"
  - güzel maymun mutlu domuzu görüyor*  
"the beautiful monkey sees the happy pig"
  - maymun her-zaman domuzu sataşüyor*  
"the monkey always teases the pig"

- What do the following tell you about verb morphology?

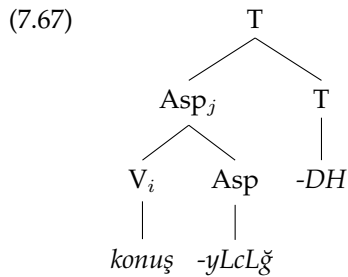
- (7.65)
- çok pahalı bir maymun o büyük ağaçtan düşerse*  
"if a very expensive monkey were to fall from that big tree"
  - maymun güzel kızın muzunu için ağaca çıkıyordu*  
"the monkey was climbing the tree for the beautiful girl's banana"
  - güzel kız maymun için şarkıyı söyleyecekse*  
"if the beautiful girl was going to sing the song for the monkey"
  - güzel kız arabadan çıkıyordu*  
"the beautiful girl was getting out of the car"
  - güzel kız o çirkin maymun ile konuşacaktı*  
"the beautiful girl was going to talk with that ugly monkey"

- A potential structure for (e): the verb takes on affixes via head movement.



- Question: how similar is this notion of Asp and our existing notion of  $V_{aux}$ ?
- Because of analyses like these, head movement is considered a theory of the syntax-morphology interface, it provides an explanation of how roots come to combine with affixes, i.e., in the syntax, via head movement.
- The Turkish complex V-Asp-T structure is fed into the morphology, the syntactic bracketing determining the morphological bracketing.





(7.68)  $[[\textit{konuş} \textit{-yLcLğ}] \textit{-DH}] \rightsquigarrow [\textit{konuşacağ} \textit{-DH}] \rightsquigarrow \textit{konuşacaktı}$  (talk-FUT-PAST)

- Alternatively, V and Asp could remain in their base position, and affixation could be handled all in the morphology,
  - though we lose the connection between syntactic bracketing and morphological bracketing then.
- But this analysis would predict that right branching modifiers between V and T would interrupt the affixation. We'd need more examples to test this.
- We will come back to Turkish.

## 7.6 Further readings

- The key resources on head movement, especially as a theory of roots and affixes, comes originally from Travis 1984, Baker 1984, and Baker 1988. Baker 1988 is also a key reference and the most famous for a theory of noun incorporation. See Gribanova and Harizanov 2018 for a discussion of some contemporary theoretical issues.
- As mentioned in previous handouts, the ideas behind this theory of the English auxiliary system come from Chomsky 1957 under the name “affix hopping”. This theory has been refined into its present form by Pollock 1989 (and also Iatridou 1990), who in turn builds on Jackendoff 1972 and Emonds 1976.
- There are numerous alternative theories of auxiliary systems. By far the most famous is Gazdar et al. 1985, which has a modern successor in the Construction Grammar framework in Sag et al. 2019. See also Kim and Sag 2002 who discuss French and English negation without the use of head movement. Also see Grimshaw 1997 who combines a head movement theory with Optimality Theory.
- Head movement has formed a key part of many analyses of clause structure cross linguistically, see Bailyn 1995 and Gribanova 2017 on Russian, Han et al. 2007 on Korean, McCloskey 1991, 2011 on Irish, Ritter 1988 on Hebrew, den Besten 1983 and Vikner 1995 on various Germanic languages, and many others.
- For more on Turkish clause structure, see Kelepir 2001 and Kornfilt 2001, 2003.

## 7.7 Possible paper topics

- Kim and Sag 2002 and Sag et al. 2019 provide several critiques of head movement analyses of French and English. Can a similar critical perspective be brought against any other phenomenon standardly analyzed as involving head movement, such as the incorporation phenomena discussed by Baker 1988, or the clause structural analyses cited above.

- Under the analysis we have put forward for Turkish, all functional heads above the verb are clause final, such that they end up linearly adjacent. So for languages with this structure, it is difficult to give evidence that head movement has taken place (see Han et al. 2007 on Korean and Toosarvandani 2009 on Persian for explicit discussion of this point). Are there other ways of understanding how affixes attach to roots in verb-final languages without movement?
- Similarly, in the verb-final language Turkish, the Asp head seems to be doing the same work as the English modal/aspectual auxiliaries. This is especially interesting as under our analyses they occupy the same relative height in the clause. However, in Turkish, these heads are affixes, but are distinct words in English. Does the verb-finality of Turkish play a role here? Is there a diachronic explanation?
- Head movement is at the center of debate of whether morphology should be done in the lexicon or in the syntax. A “lexicalist” would assume that all affixation is done in the lexicon, and the verb in Turkish would enter into the syntax fully inflected. Are there arguments for or against these points of view? Breuning 2018 offers some argument against lexicalism based on English, while Kiparsky 2017a,b offers some arguments for lexicalism based on Finnish and Basque.

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