Nicholas LaCara · University of Toronto

lin331 · 26 July 2018

The Linear Correspondence Axiom

1 Conceptual assumptions: Why is there linearization?

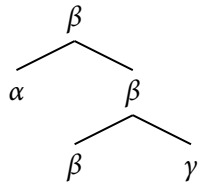
- Syntactic structures are two-dimensional objects.
  1. Sisterhood (breadth)
  2. Domination (height)

  And this is clearly represented in our two-dimensional tree diagrams. Much of what a syntactician does is try to tease out the two dimensional structure from evidence in the one-dimensional string.
- Spoken utterances are one-dimensional objects, ordered by linear precedence.
  - The reason for this seems to be physiological. The vocal apparatus is not particularly suited to represent two dimensions.
  - Given this, it would seem to be a requirement of the Articulatory–Perceptual (A–P) system that words come in a linear sequence.
- Therefore, it must be a PF requirement that words be linearized in order to satisfy an interface requirement imposed by the A–P system.
- Once we adopt the view that linearization is a PF requirement in order to give the A–P interface a legible object, we should want to understand why things are linearized in the way that they are.
- A common assumption is that trees themselves do not actually encode any ordering information.
  - As noted above, they only encode dominance and sisterhood.
  - The order of sisters is not stipulated in the tree.

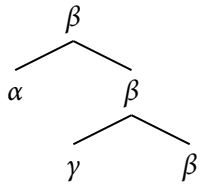
  The fact that one sister comes to the left or right of the other is merely an artifact of having to write trees down on paper.
- The issue here is that there are many possible ways to linearize a tree. A phrase with complement and a specifier allows four possible orders:

  Trees (1)–(4) are *structurally* identical.

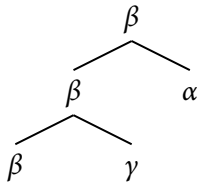
(1) $\alpha \frown \beta \frown \gamma$



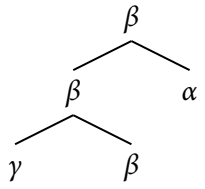
(2) $\alpha \frown \gamma \frown \beta$



(3) $\beta \frown \gamma \frown \alpha$



(4) $\gamma \frown \beta \frown \alpha$



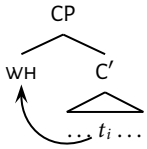
- How, though, does a language determine which of these orders to use?
- The GB answer is that there are *directionality parameters* that impose an order between the head and the complement (5) and the specifier and the rest of the phrase (6).

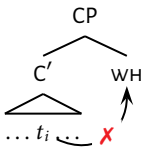
  Two orders $\beta \frown \alpha \frown \gamma$ and $\gamma \frown \alpha \frown \beta$ are ruled out by the structure, since we assume lines cannot cross.

(5) *Headedness parameter*:
   a. $X' \rightarrow X^{o}$ COMP
   b. $X' \rightarrow$ COMP X^{o}

(6) *Specifier parameter*:
   a. $XP \rightarrow$ SPEC X'
   b. $XP \rightarrow X'$ SPEC

- Languages set each of these parameters to either the (a) or (b) setting, and that was it.
- The problem is that this seems to overpredict the patterns we find in language.





2 Parameter problems

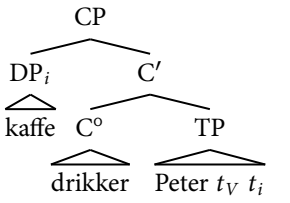
- The issue with using parameters to determine word orders is that is seems to imply that it seems to suggests that things with different word orders but the same (putative) structures should always behave the same.
- But there is evidence that that might not be the case.

2.1 No rightward *wh*-movement or anti-V2

- While there are a lot of languages that appear to permit *wh*-movement to the left, there is no clear case of *wh*-movement to the right.
  - However, if (6b) is a valid parameter setting there should be languages with right-specifiers and *wh*-movement to the right.
- Additionally, there appear to be languages that have a verb second pattern, where a single maximal projection moves to SpecCP and the verb moves to C^{o}.

(7) Kaffe drikker Peter om morgonen.
coffee drinks Peter in morning.DEF
'Peter drinks coffee in the morning.'

Danish:Vikner 1995



- There are no known languages, however, that have the reverse pattern, where the TP is followed by the verb and then a single XP (*i.e.*, there's no 'anti-V2').

(8) *TP–V–XP

There are languages like Malagasy, though, that appear to postpose a single XP to the end of most sentences (Pearson 2007). It's a bit of a controversial case, though.

2.2 Agreement asymmetries

- Another issue is that word order seems to interact with other syntactic processes.

- We've seen already the case of Hungarian postpositions, which agree with their possessors.

(9) a. én -mögött -em
I behind POSS.1.SG
'behind me'

b. te -mögött -ed
you behind POSS.2.SG
'behind you'

Hungarian

- Prepositions, however, do not agree.

(10) át a hídon
over the bridge.SUP
'over the bridge'

- If this were just a question about how the P element was linearized, its not clear why only postpositions should agree.

2.3 Extraction asymmetries

- We also see assymmetries for movement. Basque allows both pre- and post-verbal CPs:

Basque is typically thought of as a head-final language, but it has a very complex syntax.

(11) a. Jonek uste du [$_{CP}$ Mirenek bera maite duela]
Jon.ERG think AUX Miren.ERG he.ABS love AUX.COMP
'Jon thinks that Miren loves him.'

b. Jonek [$_{CP}$ Mirenek bera maite duela] uste du
Jon.ERG Miren.ERG he.ABS love AUX.COMP think AUX
'Jon thinks that Miren loves him.'

- However, extraction out of pre-nominal CPs is impossible:

(12) a. Nor$_i$ uste du Jonek [esan duela Mirenek [Aitorrek t_i maite duela]]?
who.ABS think AUX Jon.ERG said AUX.COMP Miren.ERG Aitor.ERG love AUX.COMP?
'Who does Jon think that Miren said that Aitor loves?'

b. ??Nor$_i$ uste du Jonek [[Aitorrek t_i maite duela] esan duela Mirenek]?
who.ABS think AUX Jon.ERG Aitor.ERG love AUX.COMP said AUX.COMP Miren.ERG ?
'Who does Jon think that Miren said that Aitor loves?'

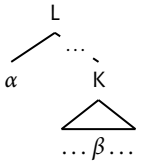
- Again if this were just about linearizing the verb before or after its CP complement, we would not expect this assymmetry.

The parameter analysis does not allow us to account for this difference in any clear way.

- To summarize the above, we have several cases of two strings with the same putative *structures* but different word *orders* do not behave the same for every syntactic process.

3 The Linear Correspondence Axiom

- To solve these problems, we will pursue the idea that the word order can just be read off of the syntactic structure with information already encoded there.
- Rather than imposing a word order based on parameters like (5) and (6), the claim is that the word order is detemrined by assymmetries already found in the the syntactic structure.
  - At PF, if an element α precedes β, then β does not precede α, an asymmetrical relation.
  - The equivalent in the syntax will be asymmetric c-command: If α c-commands β, but β does not c-command α, then α precedes β.



- The attempt to link these things is known as the Linear Correspondence Axiom, which was initially developed in the work of Kayne (1994).

However, you will often hear it called by the name ANTISYMMETRY.

- There are some kinks in formulating this, of course, but it allows us to do away with word-order parameters.
- The result is that word order variation must be understood with movement.

3.1 The first pass: Linearizing lexical items

- We can take a first pass at the LCA by defining it over individual lexical items:

(13) *Linear Correspondence Axiom* (Version 1):
A lexical item α precedes a lexical item β iff α asymmetrically c-commands β

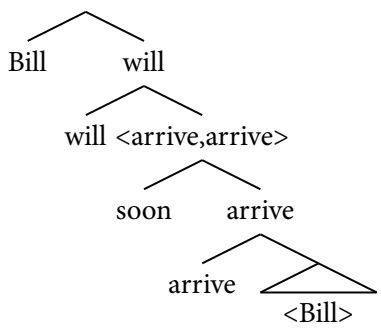
(14) *C-Command*:
α c-commands β iff
  a. α is a sister of β, *or*
  b. α is a sister of γ and γ dominates β.

The old definition of *dominate*.

- This allows us to map lexical items in a tree into a linear order. Every item will be in a precedence relation with every other, given the tree in (15):

For the sake of discussion, lets assume that linearization ignores unpronounced copies and that adjuncts c-command the material to which they adjoin.

(15)



i. *soon* > *arrive*
ii. *will* > *soon*
will > *arrive*
iii. *Bill* > *will*
Bill > *soon*
Bill > *arrive*

- The precedence relation – indicated by > – is transitive and irreflexive.

(16) *Transitivity*:
If $\alpha > \beta$ and $\beta > \gamma$, then $\alpha > \gamma$.

(17) *Irreflexivity*:
If $\alpha > \beta$, then $\beta \not> \alpha$.

Together, this means that if $\alpha > \beta$ and $\beta > \gamma$, then $\gamma \not> \alpha$.

- We can take the relative ordering of each element in (15) and produce the total ordering:

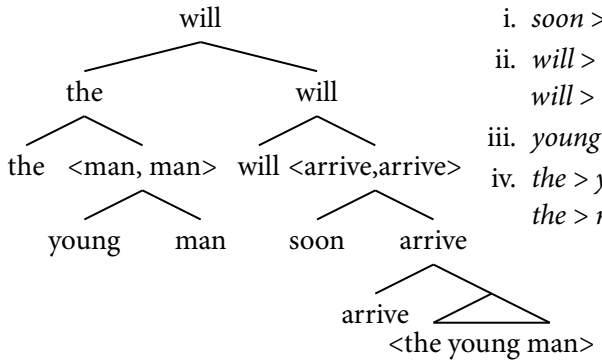
(18) *Bill* > *will* > *soon* > *arrive*

- Under the definition in (13), > also means 'asymmetrically c-commands'.

3.2 Phrasal specifiers and modifiers: A complication

- The formulation in (13) captures the idea that we want, but it only gets us so far.
- Take, for example the tree in (19). It is not possible, using the formulation in (13), to establish precedence relations between every lexical item in the tree.

(19)



i. *soon* > *arrive*
ii. *will* > *soon*
will > *arrive*
iii. *young* > *man*
iv. *the* > *young*
the > *man*

Notice that *young*, *man*, and *the* have no ordering with regard to *will*, *arrive*, and *soon*.

- The problem is that no lexical item in the subject c-commands a lexical item in the rest of the TP.
  - Thus there is no way to establish any precedence relation between the lexical items in SpecTP and the rest of the TP.
  - As such, a total ordering is impossible here.

3.3 A solution: Refer to maximal projections

- We revise the LCA to take into account the *maximal projections* of lexical items.

(20) *Linear Correspondence Axiom* (Version 2):
A lexical item α precedes a lexical item β iff
  i. α asymmetically c-commands β, *or*
  ii. a maximal projection dominating α c-commands β.

- Applying this to the tree in (19), the maximal projection of *the* (DP) dominates the material in SpecTP and c-commands the rest of the material in TP.

It will still capture (15), as well!

(21) i. *soon* > *arrive*

ii. *will* > *soon*, *will* > *arrive*
iii. *man* > *will*, *man* > *soon*, *man* > *arrive*
iv. *young* > *man*, *young* > *will*, *young* > *soon*, *young* > *arrive*
v. *the* > *young*, *the* > *man*, *the* > *will*, *the* > *soon*, *the* > *arrive*

- Essentially, (20ii) ensures that all parts of an XP precede whatever that XP c-commands.
- This allows us to derive a total ordering of (19):

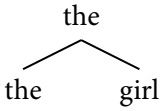
(22) *the* > *young* > *man* > *will* > *soon* > *arrive*

- As discussed by Hornstein et al. (2005: 227–228), the definition cannot refer to intermediate projections because this allows for orderings that violate irreflexivity, leading to a contradiction in ordering.
  - For instance, looking back at (19), if we included intermediate projections, we would wind up with both the statement *the* > *will*, but also *will* > *the*.
  - By transitivity, this would mean *will* > *will* and *the* > *the*. But orderings must be irreflexive!
- Let us now turn to a second, more difficult problem.

4 Problems with symmetrical Merge

- The problem is that not every element in a tree will stand in an asymmetrical c-command relation with another element.
- In fact, given the way Merge works, *any tree*, in principle, could have at least one pair of lexical items in a *symmetrical* c-command relation.
- To see this, see what happens when we merge a determiner directly with a noun:

(23) Merge(*girl*, *the*) ⇒ {*the*, {*the*, *girl*}}



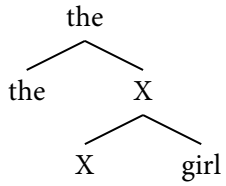
- In the resulting structure, *the* c-command *girl* and *girl* c-commands *the*. The maximal projection of *the* does not c-command *girl*.
- So there is no asymmetry here, and no precedence order can be established between these elements.
- There are three broad solutions to this problem: null heads, movement, and morphological reanalysis. None of these is the perfect solution.

4.1 Null heads

- One solution to the problem above is to assume that there are null heads in structures like the one above and maintain our assumption that linearization ignores elements with no phonological material.
- Thus, the DP *the girl* actually contains a null element of some sort:.

Within DP, there are probably a lot of null heads, bearing features such as [NUM] or [GEN]

(24)



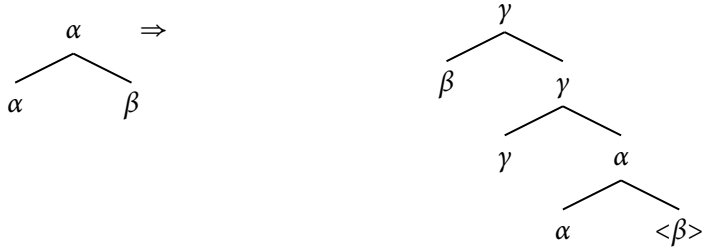
- Here, *the* definitely asymmetrically c-commands *girl*, and so must precede it.
- Since we can ignore X for the purposes of linearization, we do not need to establish a precedence relation between X and *girl*.
- Everything will work out, then, since we can establish the order of *the* and *girl* and ignore the ordering of X and *girl*.
- But notice that this means every instance of a first-merge pair will have to contain a null head.
  - Do we want that? It might work for DPs, since there are probably several null heads in them.
  - But what about verbs? What is the null head in a VP like *like him*?

Another issue is that many modern theories of morphology argue that the phonological form of lexical items is not determined until after Spell Out. This means the derivation would have no way of knowing whether a head would eventually be null!

4.2 Movement

- Another thing that can get around this issue is overt movement, since this changes c-command relations before PF.
- In the schematic trees below, no order can be established between α and β at first. But once γ merges (be it null or otherwise), β can move to Specγ and thereby establish an order with α

(25)



This is the form of the trees in (15) and (19).

- Hornstein et al. (2005: 230–231) give adjectival modification as a potential example of this.
- The trouble with this assumption is that we cannot be totally sure that something will always move when we need it to.
  - This is just a technical possibility. Movement can fix the problem, but it's not clear that it is always the appropriate thing to do so.

The example is kind of opaque, though, and the assumptions are totally unclear. Why can't a full AP move to the stipulated SpecXP? Why does the full AP sister to N not get linearized to the left, since it is an adjunct?

4.3 Morphological reanalysis

- The final possibility is that we try to hide one of the lexical items from the LCA.
- The idea is that some complements can be reanalyzed into a single morphological unit, bypassing the linearization problem.
- For instance, some object pronouns in English can be reduced when they are the complement of a verb and cliticized onto that verb.

(26) I like him. → [ˈlʌj.km̩]

(27) I like her. → [ˈlʌj.kɹ̩]

(28) I like them. → [ˈlʌj.km̩]

This is known as MORPHOLOGICAL REANALYSIS; see Nunes 2004.

- For the purposes of linearization, the cliticized pronoun and the verb (two sisters) act as a single unit, and so there is no need to determine a precedence relation between them.
- This, of course, will not work when the pronoun receives focus stress:

(29) I like HIM. → [ˈlʌjk ˈhɪm]

Except the reduced pronoun *still* follows the verb! It's not clear that this actually solves the problem without some further assumptions.

4.4 Summary

- There are ways around the symmetrical Merge problem, all of which involve stipulating that movement, null elements, or morphology happen.
- Unfortunately, there does not appear to be a general solution here.

5 Word order variation

- To summarize where we are, the LCA replaces the word-order parameters of GB.
  - Instead, word order is determined by the syntactic structure itself.
  - Asymmetries in c-command relations determine precedence relations.
  - There is no need to stipulate the orders of heads and complements and the direction of specifiers.
- This means that any variation in word order within a language or between languages must be derived by some other means.

  - We assume that all languages build structures that only have two dimensions – dominance and sisterhood – and that there is no inherent ordering between sisters.
  - The LCA tells us that the only determinant of word order is c-command.
  - Thus, the only way to affect word order is to change the c-command relations between elements. This is most effectively done with overt movement.

Notice this is also one of the solutions to the symmetrical Merge problem.

- Here we look at two alternations from above – adpositions in Hungarian and extraction from CPs in Basque – as well as pattern predicted by word-order parameters, but unattested (anti-V2).
  - The first two can be derived by movement, whereas it is unclear how anti-V2 can be derived.

5.1 Hungarian again

- Recall that Hungarian appears to have both prepositions and postpositions.
- Only the postpositions appear to agree (30), while prepositions do not (31).

Again, these data should be taken with a grain of salt, since it's not clear that *mögött* is really an adposition.

(30) a. én mögött -em
I behind POSS.1.SG
'behind me'

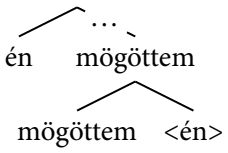
b. *mögött-em én
behind-POSS.2.SG I
Intended: 'behind me'

(31) a. át a hídon
over the bridge
'over the bridge'

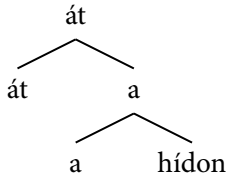
b. *a hídon át
the bridge over
Intended: 'over the bridge'

- Under the LCA, the only way to derive the different orders is with movement.
- In the case of postpositions (32), the DP moves to some position that c-commands the PP.

(32)



(33)



- The proposal that these PPs have different structures may allow us to understand why postpositions agree, but not prepositions.
- Languages are known to show different verbal agreement patterns depending on the position of the element they (might) agree with.
- Some dialects of Brazilian Portuguese do not display number agreement with post-verbal subjects:

Hornstein et al. (2005) the appearance of agreement is due to establishing a spec–head relation between the object of the preposition in the position to which it moves; see the Case Configurations handout. How this would work now that we've eliminated Agr° heads is unclear.

(34) *Brazilian Portuguese*:

a. Alguns problemas apareceram
some.PL problems appeared.PL
'Some problems appeared.'

b. Apareceu alguns problemas
appeared.SG some.PL problems
'Some problems appeared.'

- A similar pattern is observed in Standard Arabic: Number agreement can occur only in subject–verb orders.

(35) *Standard Arabic* (Aoun et al. 1994):

a. Naama l-ʔawlaad-u
slept.3MASC.SG the-children-NOM
'The children slept.'

b. *Naamuu l-ʔawlaad-u
slept.3MASC.PL the-children-NOM
'The children slept.'

c. ʔal-ʔawlaad-u naamuu
the-children-NOM slept.3MASC.PL
'The children slept.'

d. *ʔal-ʔawlaad-u naama
the-children-NOM slept.3MASC.PL
'The children slept.'

- Perhaps, then, the same thing that happens in Portuguese clauses happens in Hungarian PPs.

5.2 Basque again

- Recall again from last time that Basque apparently allows both preverbal and postverbal CPs:

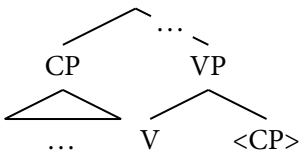
Basque is generally thought to be a head-final language, so we might expect CPs to precede verbs, but the language's syntax is notoriously complex.

(36) a. Jonek uste du [Mirenek bera maite duela]
Jon.ERG think AUX Miren.ERG he.ABS love AUX.COMP
'Jon thinks that Miren loves him.'

b. Jonek [Mirenek bera maite duela] uste du
Jon.ERG Miren.ERG he.ABS love AUX.COMP think AUX
'Jon thinks that Miren loves him.'

- Under the LCA, the only way this difference in order can occur is if preverbal CPs have undergone movement to a higher position that c-commands the verb:

(37)



- Additionally, recall that extraction is only possible out of postverbal CPs:

(38) a. Nor$_i$ uste du Jonek [esan duela Mirenek [Aitorrek
who.ABS think AUX Jon.ERG said AUX.COMP Miren.ERG Aitor.ERG
t_i maite duela]]?
love AUX.COMP?

'Who does Jon think that Miren said that Aitor loves?'

b. ??Nor$_i$ uste du Jonek [[Aitorrek t_i maite duela] esan
who.ABS think AUX Jon.ERG Aitor.ERG love AUX.COMP said
duela Mirenek]?
AUX.COMP Miren.ERG ?
'Who does Jon think that Miren said that Aitor loves?'

- These extraction facts actually provide independent empirical support for the movement analysis.
  - Extraction of material from inside of specifier positions is banned cross-linguistically:

Ross (1967) refers to this as the Left Branch Condition. See Huang 1982 for an influential view of how this works in GB.

(39) a. Who$_i$ did [$_{TP}$ you [$_{VP}$ take [$_{DP}$ a picture of t_i]]]?
b. *Who$_i$ was [$_{TP}$ [$_{DP}$ a picture of t_i]$_k$ [$_{VP}$ taken t_k]?

- If a preverbal CP is in a specifier position, as it would be if it moved, extraction out of that CP should be blocked, as we observe.

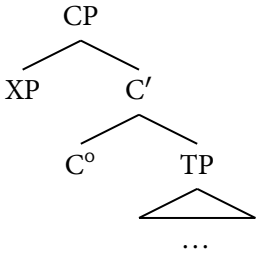
5.3 *Wh*-movement and V2

- The LCA also explains why there is no rightward *wh*-movement and no verb-second-to-last language.
- The logic of the LCA requires that all movement is to the left.
  - Movement targets a position that (asymmetrically) c-commands its trace.
  - Consequently, a moved element will always preceded moved material in the derivation.

This fact is currently derived from the Extension Condition.

- Thus *wh*-movement will always be leftward. Since SpecCP necessarily c-commands the rest of the material in a clause, it always precedes the rest of the clause.

(40)



- By the same token, there can be no anti-V2 (verb-second-to-last) language.
  - C° will also always asymmetrically c-command the rest of the clause.
  - Because of this C° (along with SpecCP as above) will always precede TP.

Unless, of course, TP moves to a position c-command C° or SpecCP.

6 Deriving unpronounced copies from the LCA

- Let us return now to the question why there are unpronounced copies.
- Under GB and its predecessors, traces were unpronounced because traces were unpronounced.
- Under the Copy Theory of Movement, we do not have that luxury. If we take seriously the idea that the things we once called traces are actually unpronounced copies, we have to understand:

  i. Why *any* copies can be left unpronounced at PF, and
  ii. Why certain copies are pronounced instead of others.

- The idea we will follow below is that deleting some copies at PF will ensure that we do not run into any issues with linearization.

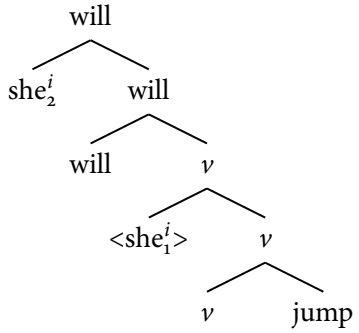
  – By hypothesis, two copies of the same element cannot be linearized relative to each other.
  – In order to avoid this problem, one of the two copies can be deleted at PF.
  – The copy that checks the most features (usually the highest one) is the one that is pronounced.

The idea here, in fact, follows work by Nunes (2004), one of the co-authors of the textbook.

6.1 Irreflexivity

- Let us consider the simple tree in (41). The question is why this is not pronounced **She will she jump*.

(41) She will jump.



I've used a superscript index to show that these are copies of the same element, and subscripts so we can refer to specific copies. This is just a notational aid for us; I assume, following the Inclusiveness Condition, that these elements are not actually in the tree.

- For some reason, the lower copy of *she* (in Spec*v*P) cannot be pronounced.
- Assuming that the lower copy were pronounced, consider the linearization statements that the LCA produces, bearing in mind the

(42) 1. she^{i}_{2} > *jump*
2. *will* > she^{i}_{1}, *will* > *jump*
3. she^{i}_{2} > *will*, she^{i}_{2} > she^{i}_{1}, she^{i}_{2} > *jump*

- Several statements require copy 2 of *she* to precede copy 1, either directly or by transitivity.

(43) *Transitivity*:
If $\alpha > \beta$ and $\beta > \gamma$, then $\alpha > \gamma$.

(44) *Irreflexivity*:
If $\alpha > \beta$, then $\beta \not> \alpha$.

- But this is a potential issue for Irreflexivity:
  - If we have more than one copy of a given lexical item in the structure, this lexical item doesn't have a single position in the tree but as many positions as there are copies.
  - Since it occupies so many potential positions, the lexical item will have to be linearized relative to copies of itself.
  - That is, because of the way Merge works (as noted above) the new copy will always asymmetrically c-command the new one.
- If we are taking seriously the Inclusiveness Condition, there is no way to introduce any information to the derivation that would allow linearization to be able to distinguish one copy from another!
  - As far as the LCA can tell, it is trying to linearize a single lexical item relative to itself.
  - This leads to the irreflexivity violations in (42) above. Since strings are one-dimensional, there is no way to create a string where *she* precedes *she*, or where *will* precedes *she* and *she* precedes *will*.
- An interesting consequence of this problem is that it must be the case that a structure cannot be linearized unless every copy but one is left unpronounced.
  - As we assumed last time, phonetically null elements need not be linearized.
  - If we allow all but one copy to be unpronounced (*e.g.*, by deleting it phonologically), then we avoid the precedence paradox created by trying to linearize copies of a single element relative to itself.

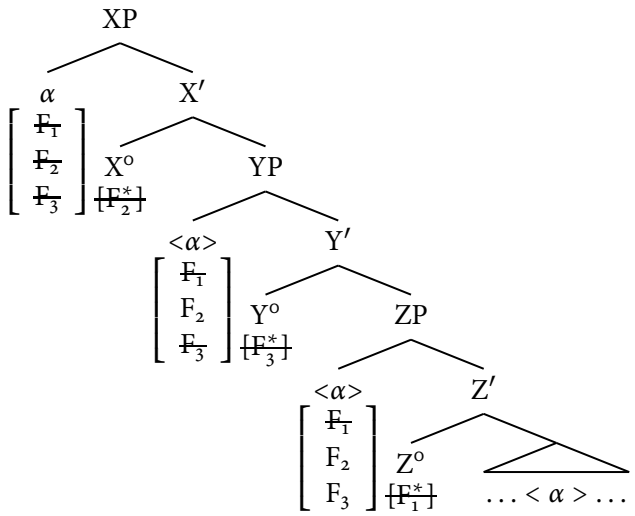
There is a bit of a question about how to handle separate copies of the same lexical item when they were merged from separate elements in the numeration. The LCA must be able to distinguish these in some way.

Go back to the orderings in (42), and see if eliminating statements referring to she_1^i allows for an irreflexive total ordering.

6.2 Which copies get pronounced?

- If we adopt the view that copies get deleted at PF to allow for linearization to occur, we must answer the question why some copies are deleted and not others.
- Let's start by maintaining the assumption that overt movement happens in order to check a strong feature before PF.
- If we move some element α with several features to check features against several other heads, only the highest copy of α will have all of its features checked.

(45)



- In other words, the more features that can be checked by an element, the better.
- If this is on the right track, we need not stipulate that only lower (*i.e.*, asymmetrically c-commanded) copies are phonologically null.
- Instead, we say the one that checks the most features is the one that ought to be pronounced.
- And there is some good evidence we don't want to do this. In many languages with multiple *wh*-movement, all *wh*-words must be fronted to SpecCP, including Romanian:

The book sort of glosses over an important consequence of this reasoning. Covert movement can also check features, but what if covert movement is just pronunciation of a lower copy?

(46) a. Cine ce precede?
Who what precedes
'Who precedes what?'

b. *Cine precede ce?
Who precedes what
'Who precedes what?'

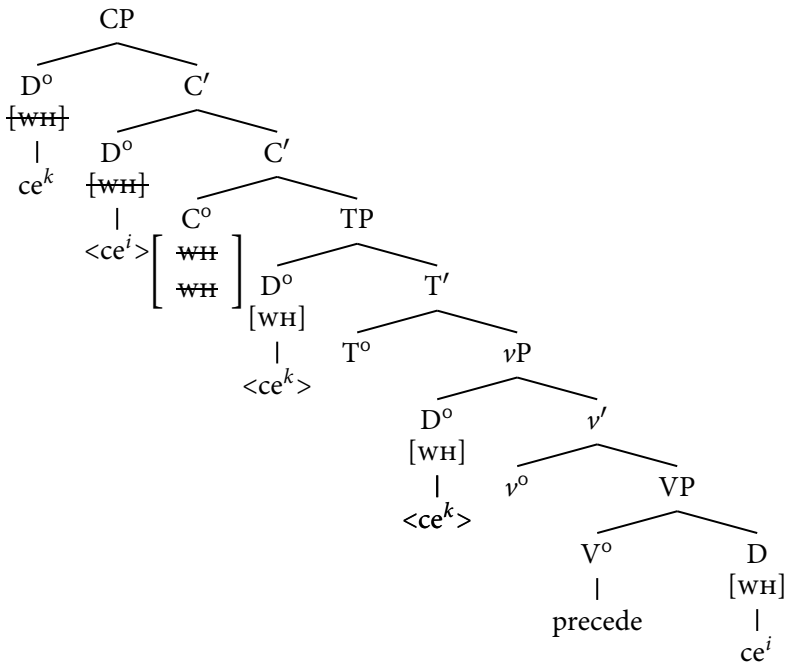
- However, when the two *wh*-elements have the same phonological form, the second one must be pronounced in its base position:

(47) a. *Ce ce precede?
What what precedes
'What precedes what?'

b. Ce precede ce?
What precedes what
'What precedes what?'

- It seems that there is a general ban on pronouncing two linearly adjacent identical elements. When this configuration occurs, the language requires pronunciation of a lower copy:

(48)



Notice that in this tree the [WH]-feature on the lowest copy of ce^i is not checked. But it still gets pronounced anyway.

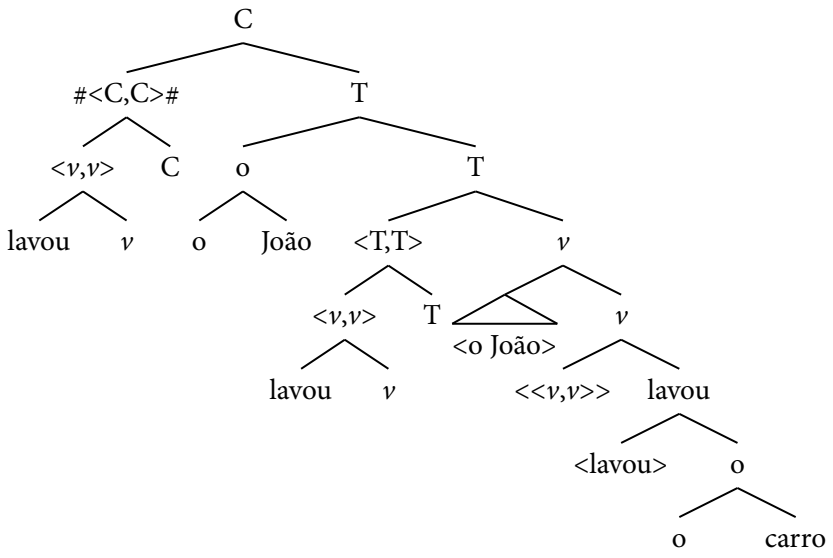
- We might also get to pronounce a copy other than the highest one are cases where a copy has been rendered invisible to the LCA– the MORPHOLOGICAL REANALYSIS idea discussed in Section 4.3.
- Under this circumstance, we will pronounce more than one copy.
- This has been argued to be at work in cases of verb fronting. Here is a case from Portuguese, similar to the one from last week:

(49) lavar o João lavou o carro.
wash-INF the João wash-PST.3SG the car
'As for washing, João washed the car.'

Bastos 2001

- Bastos (2001) argues, following work by Nunes that cases such as these can be accounted for by morphologically reanalysis.
  - A copy of *v*° is merged with T° and then another copy is merged with C°.
  - The copy of the verb in C° is reanalyzed (symbolized with # marks):

(50)



You may have noticed that this does not quite get the morphology right. We have to make other assumptions about morphology to do this, namely that the tense/agreement suffix originates in T° and the the infinitival *-ar* suffix is an allomorph of *v*°.

- If we did not morphologically reanalyze at least one copy of *v*°, the LCA would try to linearize each copy relative to the other, again violating irreflexivity.
- Consequently, Nunes's Morphological Reanalysis allows us to get the right results.

Shameless plug: LaCara (2016) argues that this is not the right way to do it, though. There is no good independent evidence for Morphological Reanalysis in this configuration, and invoking it here is a stipulation.

7 Two open questions

7.1 Adjuncts again

- It remains unclear what to do with adjuncts, since it appears as though they can be linearized to the left *or* to the right of their hosts.

(51) a. Sally will [$_{vP}$ soon [$_{vP}$ scam Bill]].
b. Sally will [$_{vP}$ [$_{vP}$ scam Bill] soon].

- Do we want to move *v*Ps in order to get right-adjuncts? That seems counterintuitive at best.

7.2 SOV and head-final languages

- A plurality of the world's languages have an SOV order. But if complements are always linearized to the right of heads, getting languages with this word order requires more work.
- The LCA predicts that all head-final orders are derived by movement, so SOV must always be derived, suggesting that such languages have very different structures at Spell Out from SVO languages.

This means that, in some sense, all languages are underlyingly SVO and SOV is derived by movement.

- This also seems very counterintuitive, and though they hint at it, this might explain why Hornstein et al. (2005) avoid directly addressing the question in this chapter.

References

Aoun, Joseph, Elabbas Benmamoun, and Dominique Sportiche. 1994. Agreement, Word Order, and Conjunction in Some Varieties of Arabic. *Linguistic Inquiry* 25:195–220.

Bastos, Ana Cláudia Pinto. 2001. Fazer, eu faço! Topicalização de constituintes verbais em português brasileiro. Master's thesis, Universidade Estadual de Campinas.

Hornstein, Norbert, Jairo Nunes, and Grohmann. 2005. *Understanding Minimalism*. Cambridge University Press.

Huang, Cheng-Teh James. 1982. Logical Relations in Chinese and the Theory of Grammar. Doctoral Dissertation, Massachusetts Institute of Technology, Cambridge, Mass.

Kayne, Richard. 1994. *The Antisymetry of Syntax*. MIT Press.

LaCara, Nicholas. 2016. Verb phrase movement as a window into head movement. *Proceedings of the Linguistic Society of America* 1:17:1–14.

Nunes, Jairo. 2004. *Linearization of Chains and Sideward Movement*. Number 43 in Linguistic Inquiry Monographs. Cambridge, Mass: MIT Press.

Pearson, Matt. 2007. Predicate fronting and constituent order in Malagasy. URL http://academic.reed.edu/linguistics/pearson/papers/VOSpaper.pdf, ms., Reed College.

Ross, John Robert. 1967. Constraints on Variables in Syntax. Doctoral Dissertation, Massachusetts Institute of Technology.

Vikner, Sten. 1995. *Verb Movement and Expletive Subjects in the Germanic Languages*. Oxford Studies in Comparative Syntax. New York: Oxford University Press.