

Clitic Placement and Multidominance
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1. Introduction

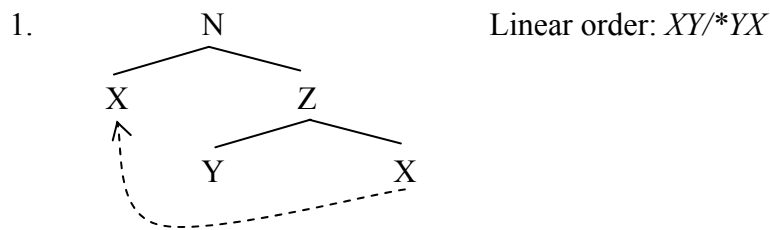
Ever since Kayne's (1994) Linear Correspondence Axiom (LCA), it has been a fairly common assumption in the literature that linear order of terminals in a syntactic structure is determined based on asymmetric c-command relations that hold among non-terminal nodes in the structure. The LCA, however, in its original form cannot linearize multidominance (MD) structures. This has led to a number of attempts to make the LCA compatible with MD (Citko, 2005; Gračanin-Yukse, 2007; Wilder, 1999; 2008) All these proposals make the claim that all and only MD structures that are linearizable are well-formed. Thus, linearization emerges as a crucial factor that constrains MD. In this paper, I argue against this view.

I adopt the general antisymmetric approach to linearization. I assume that linear order of terminals in a sentence indeed reflects asymmetric c-command relations that hold among non-terminals in the structure.¹ I adopt the linearization algorithm developed in Gracanin-Yukse (to appear), which is

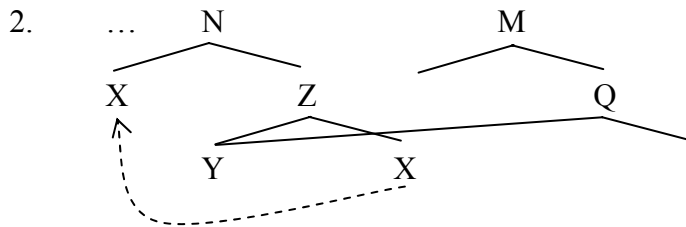
¹ For the purposes of this paper, I assume, following Kayne, that asymmetric c-command uniformly translates into precedence, but see Gracanin-Yukse (to appear) for a related but different view.

capable of linearizing multiply dominated nodes *in situ*, as well as in derived positions. I then show that under this approach to linearization, it is impossible to derive the linear order of terminals in certain well-formed MD constructions. This leads me to a conclusion that well-formedness of MD structures is independent of linearization. Alternatively, the results of the paper might be viewed as evidence that linear order should not be computed on the basis on asymmetric c-command.

The argument I present hinges on the fact that in an antisymmetry approach, if a constituent X moves to a position where it asymmetrically c-commands a constituent Y, X must be pronounced such that it *precedes* Y. In other words, a Kayneian approach to linearization does not allow for the spellout of a lower copy (or trace) of a moved element. Thus, the abstract representation in (1), necessarily maps onto the string *XY*, and not *YX*.



Suppose now that a constituent X is part of an MD structure, as in (2), and that the structure is not linearizable (in ways which will be made precise) unless X moves across a multiply dominated or *shared* constituent Y.² After the movement, X asymmetrically c-commands Y. In such circumstances, X should be pronounced before Y, and not after Y. If we find a case where X syntactically behaves as in (2), but is pronounced such that it follows Y, we have evidence against the claim that linearization is the only factor that constrains MD.



In what follows, I argue that Croatian multiple wh-questions where wh-phrases seem to be coordinated at the left periphery of the clause, which I refer to as Q&Qs, are the case in point. I show that auxiliary clitic *je* in certain well-formed Q&Qs, syntactically behaves exactly like X does in (2), but is pronounced *after* the constituent it moves across.

² A node is shared if it has more than one mother, or if it is dominated by a shared node.

2. Q&Qs in Croatian

A simple example of a Q&Q is given in (3).

3. Što i kada Ivan jede?

what and when Ivan eats

‘What and where is Ivan eating?’

However, a Q&Q in Croatian can also contain clitics, which may appear after each wh-phrase, as in (4). Clitics in Croatian are second-position elements; they follow the first prosodic word or the first maximal projection in their own clause (Franks and Progovac, 1994; Halpern, 1995; Progovac, 1996 among others).

4. Što će i kada će Ivan jesti?

what will.3sg. and when will.3sg. Ivan eat

‘What and where will Ivan eat?’

Following Gracanin-Yukse (2007), I assume that in Croatian, Q&Qs like that in (4), in which clitics follow each wh-phrase, are necessarily derived from the bi-clausal underlying structure in (5).

5. [_{&P} [_{CP1} WH₁ ... t_{WH1}] and [_{CP2} WH₂ ... t_{WH2}]]

A bi-clausal analysis of such Q&Qs offers a natural explanation for why they contain two (sets of) clitics: each (set) is part of its own clause, and each (set) appears in the second position in that clause, as shown in (6).

6. Što će Ivan jesti i kada će Ivan jeo?
what will.3sg. Ivan eat and when will.3sg. Ivan eat
'What and where will Ivan eat?'

The analysis receives additional support from the fact that such Q&Qs cannot contain an obligatorily transitive verb, such as *kupiti* 'buy', since on this view, the conjunct introduced by a wh-adjunct *kada* 'when' does not contain a direct

object, which is required by the verb.³ Thus, (4) and (6) contrast with (7) below.⁴

7. *Što će i kada će Ivan kupiti?

what will.3sg. and when will.3sg. Ivan buy

*‘What and where will Ivan buy?’

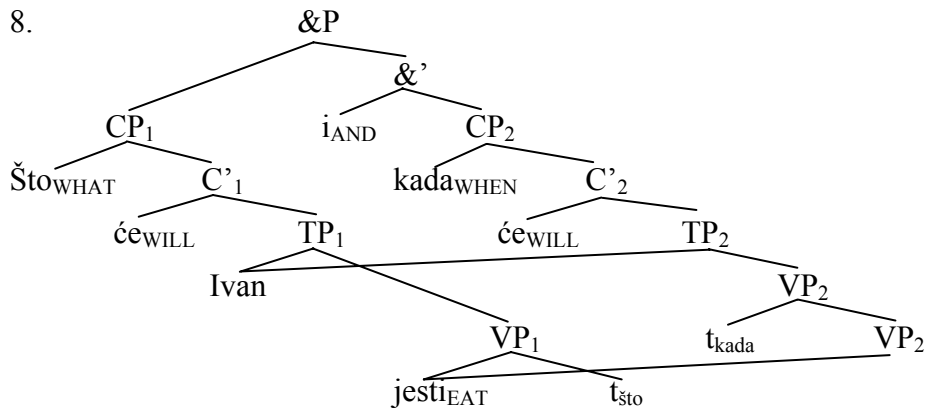
If Q&Qs with repeated clitics are bi-clausal, the question arises as to how the surface form is derived from the larger underlying structure. I assume without discussion the following MD representation for bi-clausal Q&Qs, proposed in

³ For further arguments in favor of a bi-clausal analysis of Q&Qs with repeated clitics, see Gracanin-Yuksek (2007).

⁴ A Q&Q that does not contain two (sets of) clitics is well-formed with a verb *kupiti* ‘buy’.

- (i) Što i kada Ivan kupuje?
what and when Ivan buys
*‘What and when does Ivan buy?’
- (ii) Što će i kada Ivan kupiti?
what will.3sg and when Ivan buy
*‘What and when will Ivan buy?’
- (iii) Što i kada će Ivan kupiti?
what and when will.3sg Ivan buy
*‘What and when will Ivan buy?’

Gracanin-Yukse (2007).⁵ In (8), the Q&Qs contains two CPs which *share* everything except the wh-phrases (and clitics).



The shared string *Ivan jesti* ‘Ivan eat’ does not form a constituent.

Consequently, the two terminals may not be shared in a *bulk*. Instead, each must be shared individually. I call this kind of sharing *non-bulk sharing*.

In the next section, I apply the linearization algorithm from Gracanin-Yukse (to appear) to linearize MD structures like (8).

⁵ For reasons of space, I do not argue here for the MD representation of Q&Qs in (**Error! Reference source not found.**). For arguments in favor of such a structure, and against alternative analyses that might be responsible for deriving the surface string of a Q&Q from the underlying structure, see Gracanin-Yukse (2007).

3. The linearization algorithm (Gracanin-Yukse, to appear)

As noted above, the LCA, stated in (9) is incompatible with MD.

9. *Linear Correspondence Axiom*

$d(A)$ is a linear ordering of T ,

(T the set of all terminal elements; A the set of ordered pairs of non-terminals, where the first member asymmetrically c-commands the second; $d(A)$ the set of terminals dominated by A .)

The linearization algorithm adopted here builds on the LCA, but can linearize a wide range of MD structures. The proposal crucially adopts Wilder's (1999) amendment to the LCA, according to which in ordering two complex constituents A and B , where A asymmetrically c-commands B , only those terminals that are *completely* dominated by A are ordered with respect to terminals that are completely dominated by B . The following are the definitions of $d(A)$ and complete dominance.

10. $d(A)$: the unordered set of terminals completely dominated by A .

11. *Complete dominance*

α completely dominates β if every path from β upwards to the root includes α .

Fox and Pesetsky (in preparation)

Finally, I propose the following definition of c-command:

12. C-command

α c-commands β iff

- (i) α does not (reflexively) dominate β ,
- (ii) β is not a highest sister of α ,
- (iii) for every highest mother M of α , one of the shortest paths from β to the root includes M .

The notions *highest sister* and *highest mother* are defined as follows:

13. *Highest sister of α*

A sister of α , whose mother is a highest mother of α .

14. *Highest mother of α*

A mother M of α not dominated by a mother of α other than M .

Before we see how this algorithm computes the linear order of terminals in (8), it is necessary to explicitly state how the length of a path P is computed.

I propose the statement in (15):

15. A path P from X to the root is shorter than path P' from X to the root iff P' contains P .

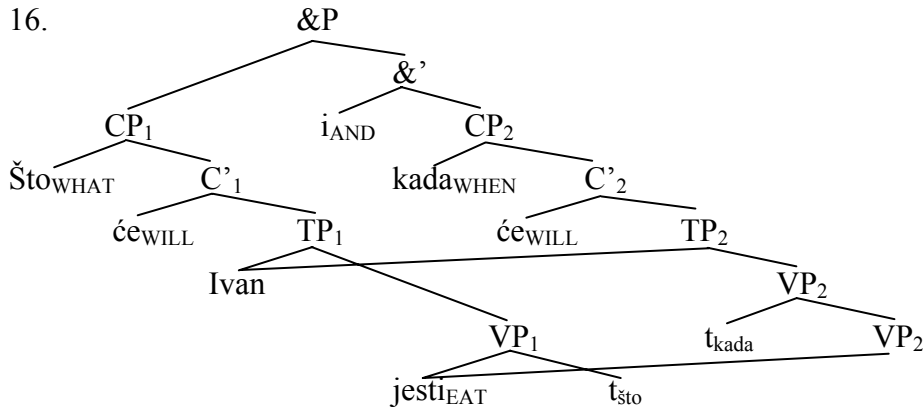
Finally, we add the stipulation that those ordered pairs in the set A in which at least one member is neither a head nor a maximal projection do not result in any ordering statements.⁶

We are now ready to see how a representation such as (8) is linearized by the proposed algorithm.

⁶ This stipulation has as a consequence the fact that the specifier precedes the bar-level of its phrase, even though the two nodes symmetrically c-command each other. Kayne (1994) achieves the same result by building the notions *category* and *segment* into the definition of c-command.

4. Linearizing a Q&Q

The structure of the Q&Q we would like to linearize is repeated in (16) below for convenience.



We first compute the linear order in CP₁. The wh-phrase *što* ‘what’ asymmetrically c-commands the auxiliary *će* ‘will’ (in C⁰), TP₁, the subject *Ivan*, VP₁, and the verb *jesti* ‘eat’. The wh-phrase c-commands the shared subject, for example, since there are two paths from the subject to the root: path P, which contains nodes: TP₁, C’₁, CP₁, and path P’, which contains nodes: TP₂, C’₂, CP₂, and &’. Since neither of these paths contains the other, both are shortest paths. The subject does not c-command the wh-phrase, because there is only one (shortest) path from the wh-phrase to the root, and it does not contain either of the highest mothers of the subject (TP₁ and TP₂).

Following the same reasoning, we conclude that the set A (set of ordered pairs of non-terminal nodes such that the first member asymmetrically c-commands the second) associated with CP_1 is the one in (17).⁷

$$17. A_{(CP_1)}: \{ \langle WH, C_1^0 \acute{c}e \rangle, \langle WH, TP_1 \rangle, \langle WH, DP_{IVAN} \rangle, \langle WH, VP_1 \rangle, \langle WH, V^0 \rangle, \\ \langle C_1^0 \acute{c}e, DP_{IVAN} \rangle, \langle C_1^0 \acute{c}e, VP_1 \rangle, \langle C_1^0 \acute{c}e, V^0 \rangle, \langle DP_{IVAN}, V^0 \rangle \}$$

Based on the ordered pairs in this set, we obtain the following ordering statements:

| | | |
|-----|---|---|
| 18. | $\langle WH, C_1^0_{JE} \rangle$ | $\acute{s}to < \acute{c}e$ |
| | $\langle WH, TP_1 \rangle$ | no ordering statements; TP_1 completely dominates nothing |
| | $\langle WH, DP_{IVAN} \rangle$ | $\acute{s}to < Ivan$ |
| | $\langle WH, VP_1 \rangle$ | no ordering statements; VP_1 completely dominates nothing |
| | $\langle WH, V_{JEO} \rangle$ | $\acute{s}to < jesti$ |
| | $\langle C_1^0_{JE}, DP_{IVAN} \rangle$ | $\acute{c}e < Ivan$ |

⁷ I am abstracting away from ordered pairs in which one member is neither a head, nor a maximal projection.

| | |
|--|---|
| $\langle C_{1\text{JE}}^0, VP_1 \rangle$ | no ordering statements; VP1 completely dominates nothing |
| $\langle C_{1\text{JE}}^0, V^0 \rangle$ | $\acute{c}e < jesti$ |
| $\langle DP_{IVAN}, V^0 \rangle$ | $Ivan < jesti$ |

These statements translate into the following order of terminals in CP₁:

19. CP₁: $\acute{s}to < \acute{c}e < Ivan < jesti$

Similarly, the algorithm computes the following order of terminals in CP₂:

20. CP₂: $kada < \acute{c}e < Ivan < jesti$

Since the conjunction &⁰ asymmetrically c-commands everything contained in CP₂, we obtain the following:

21. &': $i < kada < \acute{c}e < Ivan < jesti$

We now turn to the c-command relations that hold between CP₁, &’, and CP₂. Since CP₁ and &’ are highest sisters, neither c-commands the other. However, CP₁ asymmetrically c-commands CP₂ and everything it dominates. This is shown in (22).⁸

22. A(&P): {⟨CP₁, CP₂⟩, ⟨CP₁, WH_{KADA}⟩, ⟨CP₁, C₂⁰_{JE}⟩, ⟨CP₁, TP₂⟩, ⟨CP₁, VP₂⟩}

Since both CP₁ and CP₂ completely dominate only the wh-phrase (*što* ‘what’ and *kada* ‘when’ respectively) and the auxiliary clitic *će* ‘will’ each, these pairs yield the following ordering statements:

| | | |
|-----|--|---|
| 23. | ⟨CP ₁ , CP ₂ ⟩ | <i>što</i> < <i>kada</i> |
| | | <i>što</i> < <i>će</i> ₂ |
| | | <i>će</i> ₁ < <i>kada</i> |
| | | <i>će</i> ₁ < <i>će</i> ₂ |
| | ⟨CP ₁ , WH _{KADA} ⟩ | <i>što</i> < <i>kada</i> |
| | | <i>će</i> ₁ < <i>kada</i> |
| | ⟨CP ₁ , C ₂ ⁰ _{JE} ⟩ | <i>što</i> < <i>će</i> ₂ |

⁸ CP₁ does not c-command the subject and the verb, since it dominates them.

| | |
|------------------------------|--|
| | $\acute{c}e_1 < \acute{c}e_2$ |
| $\langle CP_1, TP_2 \rangle$ | no ordering statements; TP_2 completely dominates nothing |
| $\langle CP_1, VP_2 \rangle$ | no ordering statements; VP_2 completely dominates nothing |

The ordering statements in (19), (20), (21), and (23), result in the following unique and not contradictory order of terminals in (24):⁹

24. *što < će < i < kada < ce < Ivan < jesti*

Given this result, it seems that structures along the lines in (8)/(16) are in principle linearizable. The assumed linearization algorithm allows for the shared material to remain *in situ*. However, it linearizes all the shared terminals so that they follow all the unshared terminals.

The next question we will consider is whether it is correct to claim that linearization is what constrains MD in general. We will see that the answer to

⁹ The linearization algorithm adopted here correctly linearizes non MD structures with and without movement, as well as various MD structures that contain bulk sharing (such as RNR, for example). See Gracanin-Yukse (to appear) for details.

this question is negative. Namely, we will see that the order of terminals in some well-formed Q&Qs is simply non-derivable by the assumed algorithm.

The argument involves Q&Qs in which what follows each wh-phrase is a clitic cluster which contains a third person singular auxiliary clitic *je*.

5. Clitic clusters with *je*

Croatian clitics fall into two classes: pronominal clitics and auxiliary clitics. If a clause contains more than one clitic, the whole cluster of clitics appears in the second position in the clause. Recall from section 2 that the first position in the clause is defined either as the first prosodic word, or the first maximal projection. Within the cluster, clitics appear in the order in (25), as illustrated in the example (26).

25. AUX < DAT < ACC

26. Mi SMO VAM GA pokazali.

we.nom Aux.1pl. you.pl.dat him.acc shown

‘We have shown him to you.’

Crucially for our purposes, the auxiliary clitic cannot follow a pronominal clitic.

27. *Mi GA SMO vidjeli.

we.nom him.acc Aux.1pl. seen

‘We have seen him.’

The only exception to this is the third person singular auxiliary clitic *je*. The behavior of *je* in a clitic cluster is the topic of the next section.

Unlike all the other auxiliaries, *je* always appears following all the pronominal clitics in the cluster. This is shown in (28).

28. a. Petar GA JE vidio.

Petar him.acc Aux.3sg. seen

‘Petar saw him.’

b. *Petar JE GA vidio.

Petar Aux.3sg. him.acc seen

One possible explanation for the positioning of *je* in a clitic cluster is that in the syntax, *je* occupies a different (lower) position than other auxiliary clitics (Franks and King, 2000; Franks and Progovac, 1994; Tomic, 1996). However, based on arguments from VP ellipsis, parenthetical placement and placement of subject-oriented adverbs, Bošković (2001) argues that the *syntactic* position of *je* is the same as the syntactic position of other auxiliary clitics. What makes *je* follow rather than precede pronominal clitics in a cluster is its phonological (PF) placement. Bošković proposes that all auxiliary clitics in (Serbo-)Croatian are generated below pronominal clitics and subsequently move to a higher position. What is special about *je* is that it is pronounced in the tail rather than in the head of the chain. This is an instance of a more general strategy employed by languages, which Bošković argues for, to spell-out a lower copy in a chain whenever spelling-out the highest one leads to a PF violation.

What PF violation is involved in spelling-out the highest copy of *je*? According to Bošković, *je* is in the process of losing its cliticness. It is sufficiently a non-clitic to block cliticization across it, but is not yet non-clitic enough to be able to provide a host for other clitics. This is schematized in (29).

29. [1st position] *je* pron.cl. *je*...

cliticization
⏟
✱

If a lower copy of *je* is spelled-out, the pronominal clitic does not have to cliticize across *je*, and the problem is avoided.

30. [1st position] *je* pron.cl. *je*...

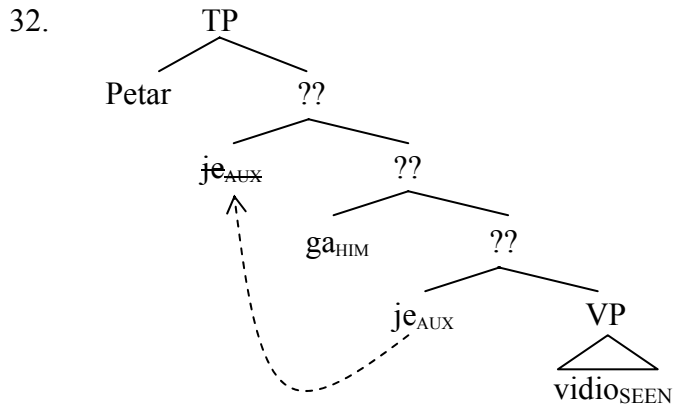
cliticization
⏟

If we adopt this proposal as an explanation of the exceptional behavior of *je*, the sentence in (28a), repeated here as (31), has the structure in (32).

31. Petar GA JE vidio.

Petar him.acc Aux.3sg. seen

‘Petar saw him.’



In the rest of the paper, I will assume that this is correct. This assumption will have important consequences for our argument that linearization does not constrain MD.

6. Clitic clusters in Q&Qs

As mentioned above, in Croatian Q&Qs, each wh-phrase may be followed by a cluster of clitics, as in (33).

33. Što SI MU i zašto SI MU pjevao?

What Aux.2sg him.dat and why Aux.2sg him.dat sung

‘What did you sing to him and why did you sing to him?’

However, it is not necessary that both conjuncts contain both clitics. It is possible for one conjunct to contain both clitics and the other only one. The patterns of clitic distribution are illustrated in (34) and (35).

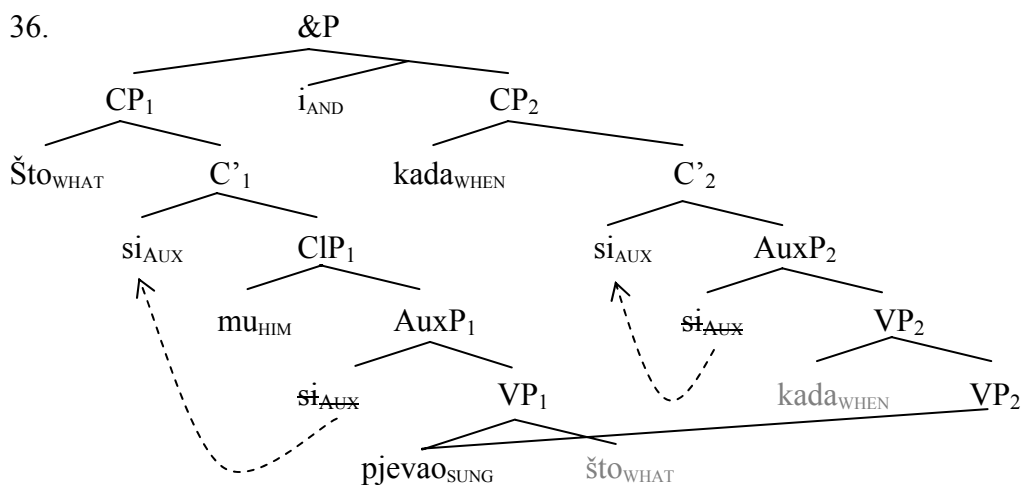
34. Što SI MU i kada SI pjevao?
what Aux.2sg him.dat and when Aux. 2sg sung
'What did you sing to him and when did you sing?'

35. Što SI i kada SI MU pjevao?
What Aux.2sg and when Aux. 2sg him.dat sung
Reading 1: 'What did you sing and when did you sing to him?'
Reading 2: 'What did you sing *to him* and when did you sing *to him*?'

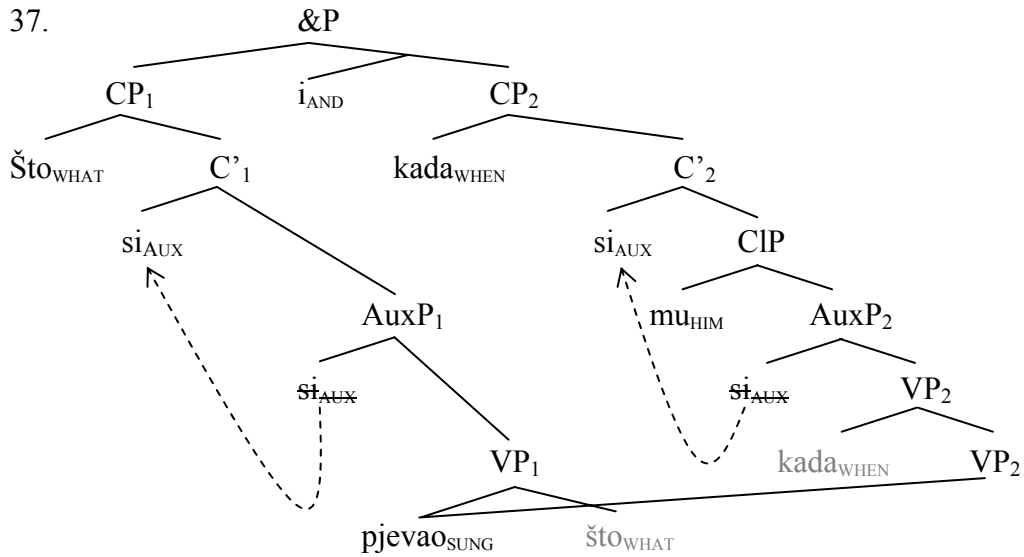
In (34), the dative pronominal clitic *mu* 'him' is present only in the first conjunct and it is *interpreted* only in the first conjunct. This indicates that this clitic is syntactically not present in the second conjunct. The Q&Q in (34) thus has a structure in (36).¹⁰ The only shared node in the structure is the verb *pjevao* 'sung'. Our linearization algorithm places the verb after all the unshared material in both conjuncts. The auxiliary clitic, as discussed above, moves from

¹⁰ I omit the null *pro* subjects from the representations.

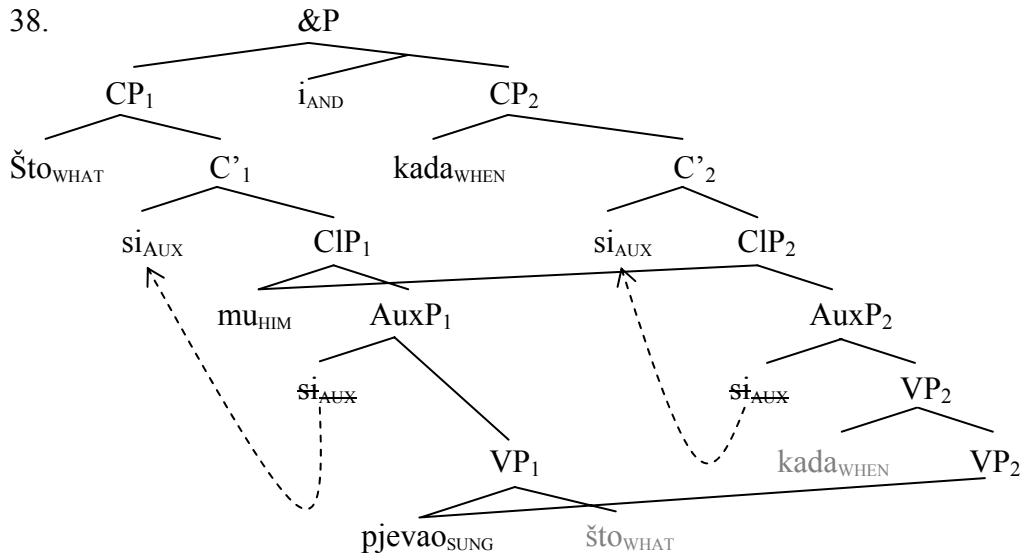
the site where it is externally merged (labeled an Aux(iliary) phrase) to its derived position in the clitic cluster (labeled the Cl(itic) phrase). If there is a pronominal clitic in the structure, the auxiliary ‘jumps over’ it as it moves upwards.



The situation in (35) is somewhat more complicated. The pronominal clitic surfaces only in the second conjunct, and on the first reading, it is interpreted only in the second conjunct. Thus, the structure of (35) with reading one is in a sense a mirror image of (36). Again, the only shared node is the verb *pjevao* ‘sung’, and it follows all the unshared material in the structure.



The interesting case is the second reading in (35). Here, the pronominal clitic is interpreted in both conjuncts, although it is only present in the second one. This indicates that the clitic is shared between the conjuncts. Example (35) with reading two thus presumably has the structure in (38). The structure is linearizable, since all of the shared material, the pronominal clitic *mu* ‘him’ and the verb *pjevao* ‘sung’, follow all the unshared material.



What happens when the auxiliary clitic in the clitic cluster in *je*? First of all, the counterpart of (35) with the third person singular clitic *je* instead of the second person singular clitic *si* shows the same ambiguity, as shown in (39).

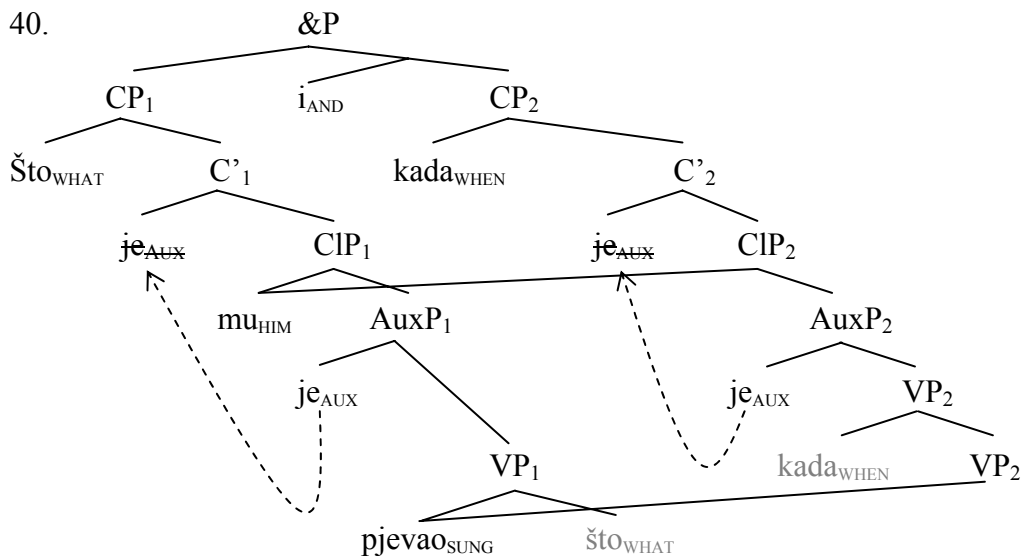
39. Što JE i kada MU JE pjevao?

What Aux.3sg and when him.dat Aux. 3sg sung

Reading 1: ‘What did he sing and when did he sing to him?’

Reading 2: ‘What did he sing *to him* and when did he sing *to him*?’

The availability of reading two in (39) is again an indication that the pronominal clitic *mu* ‘him’ is shared between the conjuncts. Thus, the Q&Q receives the representation in (40).



In line with Bošković’s proposal about the movement of the auxiliaries in (Serbo-)Croatian, we posit the syntactic movement of *je* across the shared pronominal clitic in each conjunct, but phonology is instructed to spell-out the lower rather than the higher copy, as indicated in (40) by the strikethrough. In particular, in the second conjunct, *je* must follow the pronominal clitic *mu* ‘him’. In the following section we will see that the linearization algorithm, which is capable of correctly linearizing a variety of Q&Qs, including those in

(36), (37) and (38) above cannot derive this word order. This is taken as evidence that linearization is not what constrains MD.

7. Linearizing *je* in Q&Qs

We will start by looking at the order computed for the first conjunct. Recall that asymmetric c-command is computed based on the following definition of c-command, repeated from (12).

41. C-command

α c-commands β iff

- (i) α does not (reflexively) dominate β ,
- (iv) β is not a highest sister of α ,
- (v) for every highest mother M of α , one of the shortest paths from β to the root includes M .

According to (12)/(41), the set A of CP_1 in (42) contains the following ordered pairs:¹¹

¹¹ The null *pro* subject is omitted, since it being null, does not affect the linear order of terminals.

42. $A_{(CP)_1}$: $\{\langle WH, C_{1_{JE}}^0 \rangle, \langle WH, CIP_1 \rangle, \langle WH, Cl_{MU} \rangle, \langle WH, AuxP_1 \rangle, \langle WH, VP_1 \rangle, \langle WH, V^0 \rangle, \langle C_{1_{JE}}^0, Cl_{MU} \rangle, \langle C_{1_{JE}}^0, AuxP_1 \rangle, \langle C_{1_{JE}}^0, VP_1 \rangle, \langle C_{1_{JE}}^0, V^0 \rangle, \langle Cl_{MU}, V^0 \rangle\}$

It is important to note that the pronominal clitic *mu* ‘him’ does not c-command the auxiliary clitic *je*, since *mu* has two highest mothers, CIP_1 and CIP_2 .

However, there is only one (shortest) path from *je* to the root – it is the path which includes the nodes C'_1 , CP_1 , and $\&P$.¹² Thus, since the third clause in the definition of c-command is not met, *mu* does not c-command *je*. It does c-command the verb *pjevao* ‘sung’, since there are two paths from the verb to the root: path P along the spine of the tree in the first conjunct, and path P’ along the spine of the tree in the second conjunct. Since neither of these paths includes the other, both are shortest paths, and each one contains a highest mother of the pronominal clitic: path P includes CIP_1 and path P’ includes CIP_2 . We can conclude more generally that a shared node can never c-command an unshared node, since the third clause in the definition of c-command is never satisfied in a situation where a shared node occupies a position which is structurally higher than the position of some unshared node.

¹² Since c-command is a relation that makes reference to *syntactic* hierarchy, it is computed based on the *syntactic* placement of a node. Thus, if in the course of a derivation, a constituent moves, this constituent enters c-command relations in its highest position. That this is so is ensured by the fact that the third clause in the definition of c-command makes reference to *highest* mothers of any node.

The clitic *je*, on the other hand, c-commands the pronominal clitic *mu*, since it is true that for every highest mother of *je*, and there is only one (C'_1), one of the shortest paths from *mu* to the root includes C'_1 – this is the shortest path which includes the nodes CIP_1 , C'_1 , CP_1 , and &P.

The set $A(CP_1)$ yields the order of terminals stated informally in (43).

43. CP_1 : *što < je < mu < pjevao*

By the same reasoning, the set A in the second conjunct contains the ordered pairs in (44), which yield the order in (45).

44. $A(CP_1)$: $\{\langle WH, C_{2JE}^0 \rangle, \langle WH, CIP_2 \rangle, \langle WH, Cl_{MU} \rangle, \langle WH, AuxP_2 \rangle, \langle WH, VP_2 \rangle, \langle WH, V^0 \rangle, \langle C_{2JE}^0, Cl_{MU} \rangle, \langle C_{2JE}^0, AuxP_2 \rangle, \langle C_{2JE}^0, VP_2 \rangle, \langle C_{2JE}^0, V^0 \rangle, \langle Cl_{MU}, V^0 \rangle\}$

45. CP_2 : *kada < je < mu < pjevao*

Adding the conjunction, which asymmetrically c-commands everything in the second conjunct, we obtain the order in (46).

46. &': $i < kada < je < mu < pjevao$

In addition, CP_1 asymmetrically c-commands $\&'^0$, CP_2 , WH_2 , C'_2 , C^0_{2JE} , ClP_2 , $AuxP_2$, and both layers of VP_2 . In other words, $A_{(\&P)}$ contains the pairs in (47).¹³

47. $A_{(\&P)}$: $\{\langle CP_1, \&'^0 \rangle, \langle CP_1, CP_2 \rangle, \langle CP_1, WH_2 \rangle, \langle CP_1, C'_2 \rangle, \langle CP_1, C^0_{2JE} \rangle, \langle CP_1, ClP_2 \rangle, \langle CP_1, AuxP_2 \rangle, \langle CP_1, VP_2 \rangle, \langle CP_1, VP_2 \rangle\}$

According to our linearization algorithm, everything completely dominated by CP_1 must precede everything completely dominated by every node that it asymmetrically c-commands. Thus, no ordering statements are obtained from pairs $\langle CP_1, ClP_2 \rangle$ and $\langle CP_1, VP_2 \rangle$, since neither ClP_2 nor VP_2 completely dominates anything. In effect, what is computed from (47) is (48).

48. $\check{s}to < i$
 $\check{s}to < kada$
 $\check{s}to < je_2$

¹³ Again, pairs $\langle CP_1, Cl_{MU} \rangle$ and $\langle CP_1, V^0 \rangle$ are not part of $A_{(\&P)}$ because CP_1 dominates both the pronominal clitic and the verb.

$je_1 < i$

$je_1 < kada$

$je_1 < je_2$

Ordering statements in (48) are coupled with the partial orders in (45) and (46), repeated below.

49. CP₁: $\check{s}to < je < mu < pjevao$

50. &': $i < kada < je < mu < pjevao$

There is a unique and non-contradictory order that can be computed from these: it is given in (51) as the final output of the linearization algorithm for the structure in (40).

51. $\check{S}to < je_1 < i < kada < je_2 < mu < pjevao$

Unfortunately, this order is not correct. The auxiliary clitic je_2 in (51) should follow, not precede the pronominal clitic mu (cf. 39). However, the

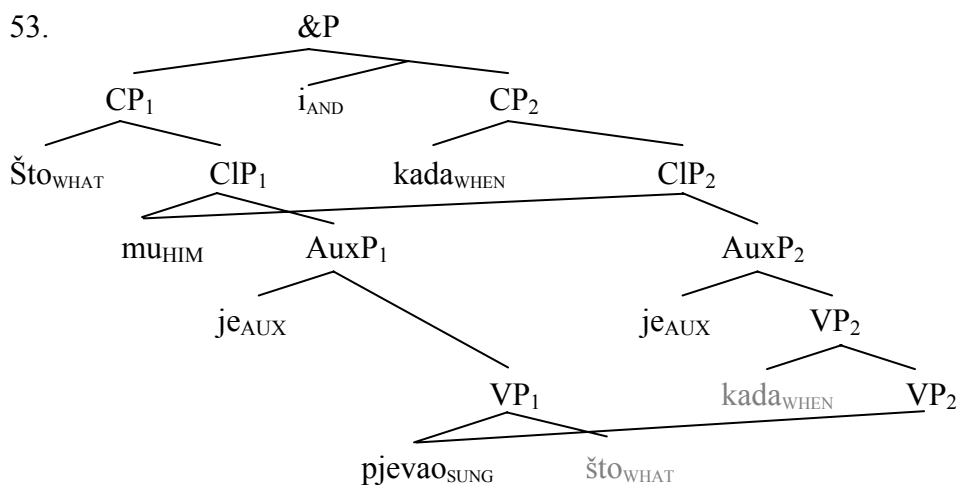
order in which this would be the case, given in (52), contradicts the ordering statements in (46)/(50), which requires that *mu* follow *je*.

52. $\check{S}to < je_1 < i < kada < mu < je_2 < pjevao$

Thus, if we posit the syntactic movement of *je* in (40), the structure can only be incorrectly linearized as (51). So, perhaps positing this movement is wrong after all. Obviously, if *je* did not move over *mu*, it would not c-command *mu*, and consequently would not have to precede it.

However, despite the appeal of this possibility, it would not solve the problems associated with the linearization of (40). In fact, as we will see shortly, such a structure, illustrated in (53) below, cannot be mapped onto any linear order at all. In (53), the unshared auxiliary clitic *je* does not (asymmetrically) c-command the shared clitic *mu*. However, neither does *mu* c-command *je* – recall from above that a shared node never c-commands an unshared node, regardless of the structural position of either of them. In (53), there is only one (shortest) path from the auxiliary clitic *je* in each conjunct to the root. The pronominal clitic *mu*, however, has two highest mothers: CIP₁ and CIP₂. Thus, it is not the case that for every highest mother M of *mu*, one of the

shortest paths from *je* to the root includes M. Consequently, *mu* does not c-command *je*. Since the order of the two clitics cannot be deduced from any other asymmetric c-command relation in the structure, the whole representation is non-linearizable.



The fact that the Q&Q in (39) is grammatical with the reading two, and yet the corresponding structure in (40) cannot be linearized, argues against the claim that linearization is the only constraining factor on MD. Instead, we need the grammar to allow for the well-formedness of (40), despite the fact that it might not be linearizable by an algorithm that relies on asymmetric c-command. However, MD must be constrained by something, since it is not the case that any MD structure that may in principle be generated by syntax is well-

formed. One possible candidate for the constraining factor on MD is the Constraint on Sharing (COSH), proposed in Gracanin-Yukse (2007). An informal definition of COSH is given in (54).

54. *Constraint on Sharing*

If a node x has more than one mother node, but does not have unique highest mother - a single mother that dominates all of its other mothers, all the mother nodes of x must completely dominate the same set of terminal nodes.

Due to the restrictions of space, I omit here the discussion of COSH and its effects, noting only that (40), does not violate COSH. There are two shared nodes in the structure, the pronominal clitic *mu* ‘him’ and the verb *pjevao* ‘sung’. Each has two mothers: CIP_1 and CIP_2 are mothers of *mu*, while VP_1 and VP_2 are mothers of *pjevao*. Neither CIP_1 nor CIP_2 completely dominates anything. Both completely dominate the same, empty set of terminal nodes. The same is true of VP_1 and VP_2 . Thus, (40) conforms to COSH, as desired.¹⁴ However, the fact that (40) is not linearizable indicates that COSH cannot be derived from linearization.

¹⁴ Note, however, that the structure in (**Error! Reference source not found.**) violates COSH, since there CIP_1 completely dominates je_1 , while CIP_2 completely dominates je_2 .

8. German *Subjeklücke in finiten Sätzen*

In previous sections we saw evidence from the placement of the auxiliary clitic *je* in Croatian Q&Qs, which argued against the claim that MD is constrained by linearization. Here, we will see another example of a structure in which the shared node is spelled-out in the place where it should not be linearizable. The case in point is a phenomenon from German, which has been called *Subjeklücke in finiten Sätzen* ('subject lacking in finite clauses' [SLF]).¹⁵ SLF is illustrated in (55).

55. Hans hat die Katze gestreichelt und wird jetzt den Hund füttern.

Hans has the cat stroked and will now the dog feed

'Hans stroked the cat and will now feed the dog.'

Interestingly, SLF examples allow for an asymmetric extraction of material from one conjunct only, in the apparent violation of Coordinate Structure Constraint, as shown in (56).

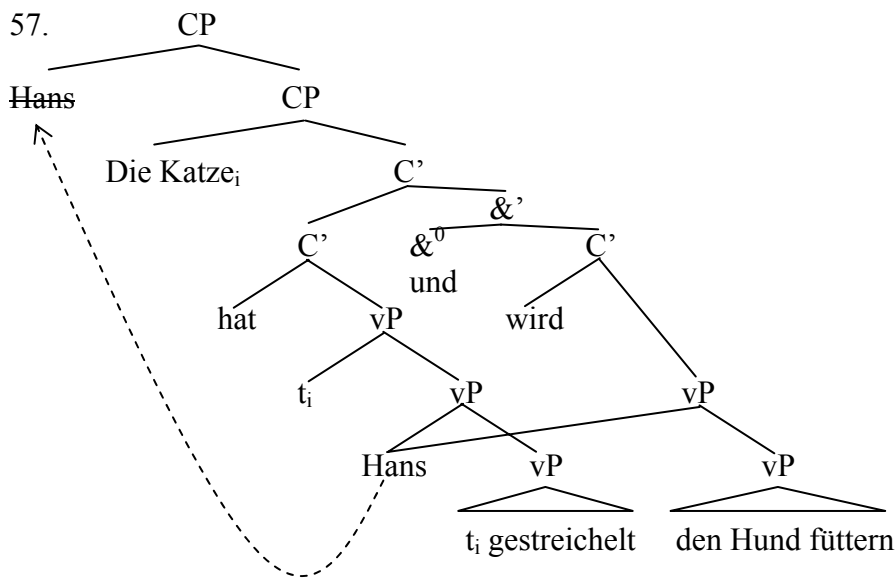
¹⁵ The data and the analysis presented here come from Myer and Schmitt (2008).

56. Die Katze_i Hans hat t_i gestreichelt und wird jetzt den Hund füttern.

the cat Hans has stroked and will now the dog feed

‘The cat, Hans stroked and will now feed the dog.’

Myer and Schmitt (2008) propose that in (57), the subject *Hans* is shared between the conjuncts and undergoes covert QR to a position above the coordination. If we assume single output syntax, this is equivalent to saying that the subject moves to a position above the coordination, and that its lower copy is spelled-out. This is illustrated in (57).¹⁶



¹⁶ See Myer and Schmitt (2008) for arguments that conjuncts are C's.

One piece of evidence that Mayr and Schmitt show in favor of the movement of the subject comes from quantificational subjects such as *no one*. They show that in (58) the existential must scope below both negation and the modal.

58. Die Katze darf niemand schlagen. $(\neg < \diamond < \exists)$, $*(\neg \exists < \diamond)$, $\#(\diamond < \neg \exists)$

the cat may no one hit

‘No one may hit the cat.’

Since the QR of the subject is prohibited for independent reasons, the SLF in () is ill-formed:

59. #*Die Katze darf niemand schlagen und muss sich danach hinlegen.

the cat may no one hit and must REFL. after lie-down

‘No one may hit the cat and must afterwards lie down.’

The situation in (57) is parallel to the situation in (40). The subject *Hans* is interpreted in both conjuncts, an indication that it is shared. The structure is non-linearizable if the shared subject remains *in situ*, since from there it neither c-commands nor is c-commanded by the unshared material contained in either vP. Thus, no order can be established between the subject and the vP-internal

material. Furthermore, there is evidence that the subject occupies a high syntactic position which is outside of the coordination, from where it c-commands all the material within both conjuncts. Given this observation, we would expect the subject to be linearized such that it precedes the rest of the sentence, rather than to be sandwiched between the auxiliary and the vP in the first conjunct, contrary to fact. German SLF thus constitutes another piece of evidence for the claim that MD is not constrained by linearization.

Note that (57) does not violate COSH. Since the shared subject Hans has the unique highest mother (CP), COSH is vacuously satisfied. Consequently, the structure is well-formed.

9. Conclusion

What acts as a constraining factor on MD is an important question in contemporary syntactic theory if MD is to be considered a legitimate part of grammar. In recent years, the fact that an increasing number of authors successfully adopt MD to account for various cross-linguistic phenomena seems to indicate that the question is worth exploring (Bachrach and Katzir, 2009; Kasai, 2007; Van Riemsdijk, 2006; Vries, 2007; Wilder, 2008 to name but a few). It is clear that some constraints on MD must be in place, because

otherwise MD would lead massive generation of unattested sentences. Another consideration that is at the heart of the discussion of MD is how MD structures are linearized. It has been claimed in the literature (Citko, 2005; Gračanin-Yukse, 2007; Wilder, 1999; 2008) that the answer to the latter question provides the answer to the former, namely, that what constrains MD is linearization. In this paper I argued against this claim by examining the placement of the third person singular auxiliary clitic *je* in Croatian Q&Qs.

I first showed that in Croatian Q&Qs, each *wh*-phrase may be followed by a second-position clitic, arguing for the claim that such Q&Qs are derived from a larger underlying structure. I adopted an MD structure for a Q&Q in which the two CP conjuncts share everything except the *wh*-phrases and repeated clitics. The structure was shown to be linearizable by an algorithm that computes the linear order of terminals based on the asymmetric *c*-command relations among the non-terminals.

Next, we saw that what follows each *wh*-phrase in a Q&Q may be a clitic cluster, in which clitics appear in the same order they assume in any grammatical sentence: $AUX < DAT < ACC$. We noted that the third person singular auxiliary clitic *je* behaves exceptionally compared to other auxiliary clitics, in that it must follow rather than precede pronominal clitics.

Finally, I presented data from Q&Qs where the *wh*-phrase in the first conjunct is followed by an auxiliary clitic only, while the *wh*-phrase in the second conjunct is followed by both the auxiliary clitic and the pronominal clitic. Interestingly, the pronominal clitic, which surfaces only in the second conjunct, may be interpreted in both conjuncts, indicating that it is shared. Crucially, this reading was shown to be available even for the Q&Qs in which the auxiliary clitic is *je*. This was taken as evidence that *je* occupies the same syntactic position as other auxiliaries; a position which is structurally higher than pronominal clitics. I adopted the analysis proposed in Bošković (2001), that *je*, like all other auxiliary clitics in (Serbo-)Croatian, originates in a position lower than the pronominal clitics and subsequently moves across them. It ends up following the pronominal clitics because it is spelled-out in the tail of the movement chain, rather than in the head.

However, we saw that the linearization algorithm I adopted cannot map the structure onto the correct linear string. In particular, it was impossible for the Q&Q to be linearized so that the pronominal clitic in the second conjunct precedes the auxiliary clitic *je*. Moreover, it was shown that if the ‘covert’ movement of *je* were not posited, the structure would not be linearizable at all. Given the fact that a well-formed Q&Q structure could not be mapped onto the

correct linear order, I concluded that linearization, and in particular the approach to linearization that builds on Kayne's (1994) LCA, is not the constraining factor on MD.

Finally, I showed that the problem of the placement of *je* in Croatian Q&Qs is replicated in German SLF constructions. I briefly suggested that well-formedness of both structures may be accounted for if we adopt a constraint along the lines of COSH, proposed in Gracanin-Yukseki (2007).

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