

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) or *sharing* structures. This has led to a number of attempts to make the LCA compatible with MD (Citko, 2005; Gračanin-Yukseš, 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.

The argument I present proceeds as follows: first, I present evidence that in some non-MD structures, an element is pronounced so that it follows rather than precedes the material that it c-commands. The relevant examples come from the behavior of the Croatian third person singular auxiliary clitic *je*. Unlike other auxiliary clitics, *je* follows pronominal clitics in a clitic cluster,

but it can be shown that its syntactic position is higher than that of pronominal clitics (Bošković, 2001; Stjepanović, 1998). Given this, it seems that LCA alone cannot account for the linear order of sentences containing *je*, which leads to a conclusion that the linear order of elements in the terminal string is to an extent independent of the structure. Rather, if we are to retain a general view that linearization is computed based on asymmetric c-command, then the cases such as the ordering of *je* must be handled in some post-syntactic component.

Next, I show examples which show that this problem arises in MD structures as well. I discuss two such cases: Croatian multiple wh-questions where wh-phrases seem to be coordinated at the left periphery of the clause, which I refer to as Q&Q's, and German *Subjeklücke in finiten Sätzen* ('subject lacking in finite clauses [SLF]). In relevant Q&Qs, there is an unshared element, namely the clitic *je*, which is linearized so that it follows some shared material, even though it c-commands this material in the syntactic structure. In SLF constructions, there is a shared element, the subject, linearized so that it follows some unshared material, even though it c-commands it. This again leads to a conclusion that linear order is, at least to a point, independent of the structure. If this conclusion is on the right track, then linearization cannot be

the factor that determines *syntactic* well-formedness of MD structures.

If this reasoning is correct, we are left with the question: “What *does* constrain MD?” I propose that MD is constrained by a constraint which I refer to as the *Constraint On Sharing* (COSH), originally proposed in Gračanin-Yukseš (2007).

(1) *Constraint on Sharing*

If a node α has more than one mother node, but does not have a unique highest mother (a single mother of α not dominated by any of its other mothers), all the mother nodes of α must completely dominate the same set of terminal nodes.

We will see that all of the examples that are not linearizable under the asymmetric c-command approach to linearization, but are nevertheless grammatical, obey COSH. However, as it is stated, COSH is a condition that is specific to MD. We would like to derive it from principles independent of MD. Towards the end of the paper, I present an attempt to do so.

2. Clitic *je* in non-MD structures

Croatian clitics fall into two classes: pronominal clitics and auxiliary clitics.

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). If a clause contains more than one clitic, the whole clitic cluster appears in the second position in the clause. Within the cluster, clitics appear in the order in (2), illustrated in (3).

(2) AUX < DAT < ACC

(3) Mi SMO VAM GA pokazali.

we Aux.1PL you.PL.DAT he.ACC shown

‘We showed him to you.’

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

(4) *Mi GA SMO vidjeli.

we he.ACC Aux.1PL seen

‘We saw him.’

The only exception to this is the third person singular auxiliary clitic *je*. Unlike all the other auxiliaries, *je* always appears following all the pronominal clitics in the cluster. This is shown in (5).

(5) a Petar GA JE vidio.

Petar he.ACC Aux.3SG seen

‘Petar saw him.’

b *Petar JE GA vidio.

Petar Aux.3SG he.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; Tomić, 1996). However, based on data from VP ellipsis, Stjepanović (1998) shows that the *syntactic* position of *je* is the same as the syntactic position of other auxiliary clitics.¹ Assuming that in VP ellipsis, the elided structure is syntactically lower than the pronounced remnant, the fact that in the environment of VP ellipsis *je* behaves the same as other auxiliary clitics indicates that it occupies an equally high syntactic position. This is shown in (6) and (7).²

(6) a Mi smo mu ga dali, a i vi ste
we Aux.1PL he.DAT he.ACC given and also you Aux.2PL
~~mu~~—~~ga~~—~~dali~~ (takoder).
he.DAT he.ACC given too
‘We gave it to him, and you did too.’

b *Mi smo mu ga dali a i vi mu ga
we Aux.1PL he.DAT he.ACC given and also you he.DAT he.ACC
~~ste~~—~~dali~~ (takoder).

Aux.2PL given too

- (7) a On mi ga je dao, a i ona je
he me.DAT he.ACC Aux.3SG given and also she Aux.3SG
~~mi~~—~~ga~~—~~dala~~ (takoder).
me.DAT he.ACC given too
‘He gave it to me, and she did too.’

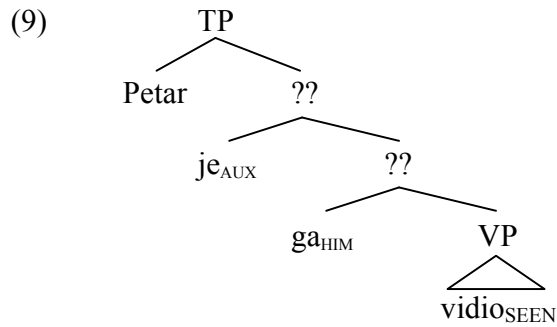
- b *On mi ga je dao, a i ona mi ga
he me.DAT he.ACC Aux.3SG given and also she me.DAT he.ACC
~~je~~—~~dala~~—(takoder).
Aux.3SG given too

Assuming a high syntactic position for *je*, there are at least two ways in which we can explain its exceptional placement with respect to pronominal clitics. One is to say that all auxiliary clitics in Croatian, including *je*, are merged in the position higher than the pronominal clitics in a clitic cluster, and *je* is then placed into the position where it surfaces by some purely PF mechanism that operates on the surface string and is independent of the underlying structure. Under this view, the sentence in (5a), repeated here as (8), has the structure in (9).³

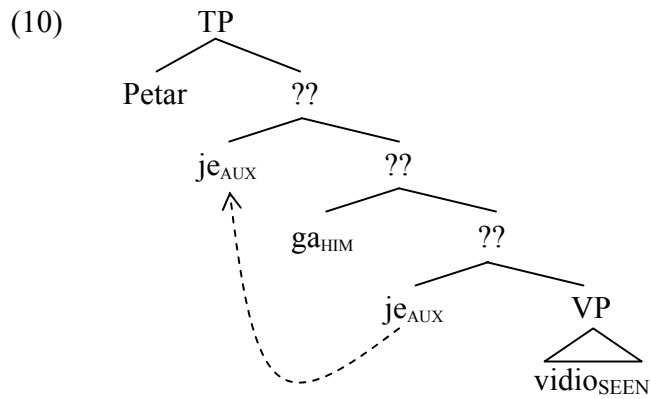
- (8) Petar GA JE vidio.

Petar he.ACC Aux.3SG seen

‘Petar saw him.’



Another possibility is to propose that all auxiliary clitics in 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 solution is argued for in Bošković (2001). Bošković proposes that the placement of *je* is an instance of a more general strategy employed by languages to spell-out a lower copy in a chain whenever spelling-out the highest one leads to a PF violation.⁴ On this view, (5a)/(8) has the structure in (10). In the rest of the paper, I will assume that this structure is correct, but the arguments presented apply equally to the structure in (9).



Importantly, regardless of which of these explanations we adopt for the placement of *je*, we still face a problem of how to linearize the structure relying solely on the LCA: the correspondence between the asymmetric c-command and precedence is lost. This is taken as evidence that the surface order of terminals in a string is to a certain extent independent of the structure.

In the following sections, I discuss consequences of this conclusion for MD structures. As noted in the Introduction, the LCA in its original form is incompatible with MD. However, attempts have been made to reconcile the asymmetric c-command view of linearization with MD (Citko, 2005; Gračanin-Yukseš, to appear; 2007; Wilder, 1999; 2008). We will see, however, that the problem of the lack of correspondence between the asymmetric c-command and precedence discussed above re-emerges even under the modified, MD-compatible version of the LCA. The conclusion we

will be forced to reach is that even in MD environments, the linear order of terminals does not entirely depend on the structure. This will in turn be taken as evidence that linearization is not a constraining factor on MD.

The relevant structures that I will discuss are Q&Qs in Croatian and SLF in German.

3. Q&Qs in Croatian

I use the term Q&Q to refer to multiple wh-questions in which wh-phrases seem to be coordinated at the front of the clause. A simple example of a Q&Q is given in (11).

(11) Što i kada Ivan jede?

what and when Ivan eats

‘What and where is Ivan eating?’

A Q&Q in Croatian can also contain clitics, which may appear after each wh-phrase, as in (12).

(12) Što će i kada će Ivan jesti?

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

‘What and where will Ivan eat?’

Following Gračanin-Yuksek (2007), I assume that in Croatian, Q&Qs like the

one in (12), in which clitics follow each wh-phrase, are necessarily derived from the bi-clausal underlying structure in (13).

(13) [&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 (14).⁵

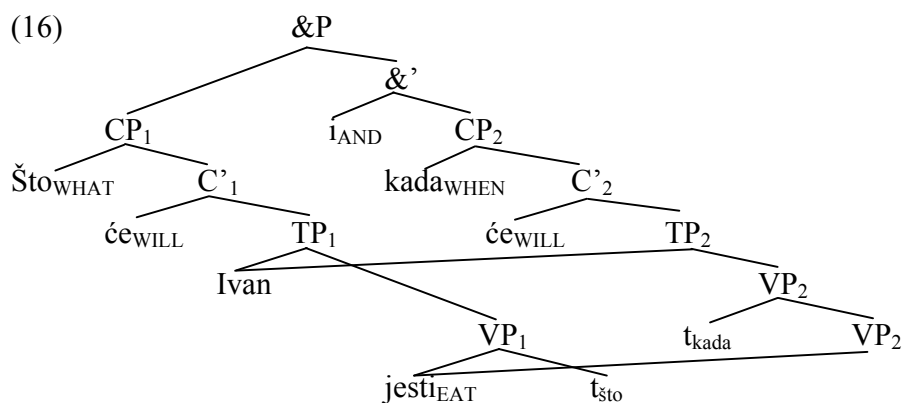
(14) Što će Ivan ~~jesti~~ i kada će Ivan jesti?
what will.3SG Ivan ~~eat~~ and when will.3SG Ivan eat
'What and where will Ivan eat?'

The analysis receives additional support from the fact, noted in Gračanin-Yuksek (2007), that Q&Qs with two (sets of) clitics, in which one of the wh-phrases is a direct object cannot contain an obligatorily transitive verb, such as *kupiti* 'buy'. This is because on this view, the conjunct introduced by a wh-adjunct *kada* 'when' does not contain a direct object, which is required by the verb.⁶ Thus, (12) and (14) contrast with (15) below.⁷

(15) *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, a 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 Gračanin-Yuksek (2007).⁸ In (16), the Q&Q contains two CPs which share everything except the wh-phrases (and clitics). Wh-phrases and clitics (unshared material) are pronounced within the respective conjuncts where they are merged, while the subject and the verb (shared material) are pronounced only once, following all the unshared material.



The shared string *Ivan jesti* ‘Ivan eat’ does not form a constituent to the exclusion of the lower copies of wh-phrases. Consequently, the two terminals may not be shared in *bulk* (i.e. at the TP level). Instead, each must be shared individually. I call this kind of sharing *non-bulk sharing*.

The structure can be linearized by the linearization algorithm proposed by Gračanin-Yuksek (to appear), which preserves the general antisymmetric

approach to linearization and builds on proposals by Wilder (1999; 2008) in proposing modifications to the LCA which make it compatible with MD. The algorithm is summarized as follows:

(17) a Linearization

If α asymmetrically c-commands β , every node completely dominated by α precedes every node completely dominated by β .

b C-command

α c-commands β iff $\alpha \neq \beta$, α does not dominate β , and every highest mother of α dominates β (where a highest mother of α is a mother of α not dominated by any other mother of α)

c Complete dominance (from Fox and Pesetsky, In preparation)

α completely dominates β iff every path from β upwards to the root goes through α .

This algorithm yields the following order within CP_1 :

(18) CP_1 : *što* < *će* < *Ivan* < *jesti*

Similarly, the algorithm computes the following order of terminals in CP_2 :

(19) CP_2 : *kada* < *će* < *Ivan* < *jesti*

Since the conjunction &⁰ asymmetrically c-commands everything contained in CP_2 , we obtain the following:

(20) $\&'$: $i < kada < \acute{c}e < Ivan < jesti$

Next, CP_1 asymmetrically c-commands $\&^0$, yielding (21).

(21) $\acute{s}to \acute{c}e < i$

CP_1 also asymmetrically c-commands CP_2 and everything it dominates.⁹ Both CP_1 and CP_2 each completely dominate only the wh-phrase ($\acute{s}to$ ‘what’ and $kada$ ‘when’ respectively) and the auxiliary clitic $\acute{c}e$ ‘will’. This yields (22):

(22) $\acute{s}to \acute{c}e < kada \acute{c}e$

The ordering statements in (18) through (22) result in the unique and non-contradictory order of terminals given in (23):

(23) $\acute{s}to < \acute{c}e < i < kada < \acute{c}e < Ivan < jesti$

Given this result, it seems that structures along the lines of (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. This is a welcome result.

We will next look at Q&Qs that contain clusters of clitics.

3.1. Clitic clusters in Q&Qs

In Croatian Q&Qs, each wh-phrase may be followed by a cluster of clitics, as in (24).

- (24) Što SI MU i zašto SI MU pjevao?
 what Aux.2SG he.DAT and why Aux.2SG he.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 (25) and (26).

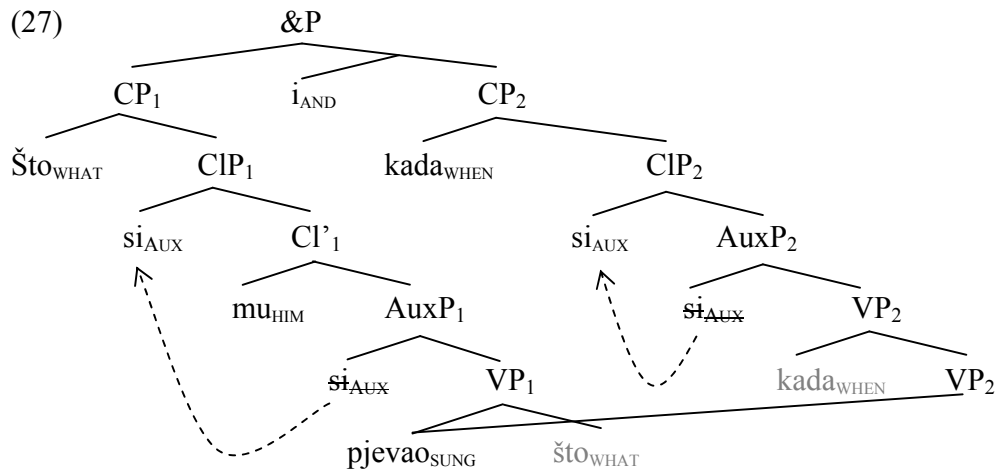
- (25) Što SI MU i kada SI pjevao?
 what Aux.2SG he.DAT and when Aux. 2SG sung
 ‘What did you sing to him and when did you sing?’

- (26) Što SI i kada SI MU pjevao?
 what Aux.2SG and when Aux.2SG he.DAT sung

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

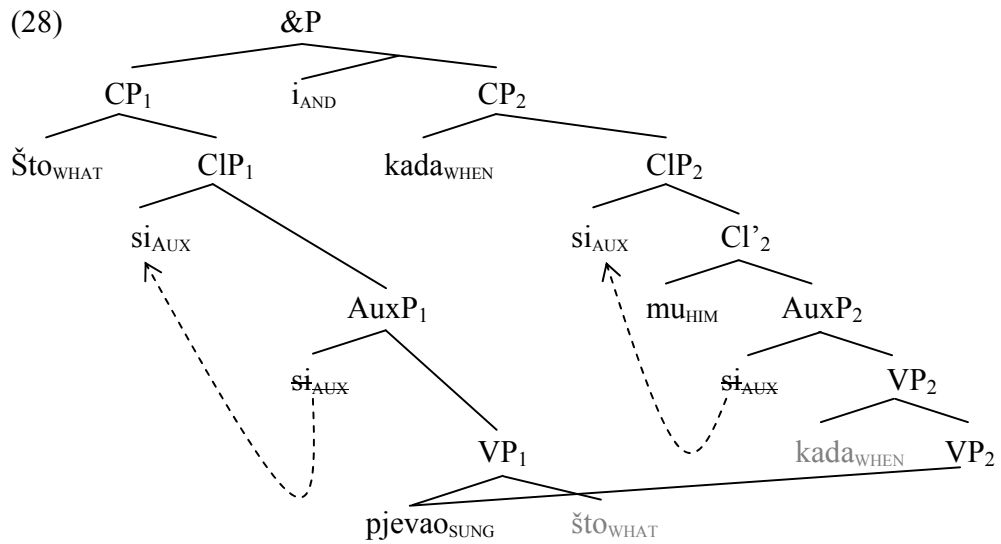
Reading 2: ‘What did you sing *to him* and when did you sing *to him*?’

In (25), 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 (25) thus has a structure in (27).¹⁰

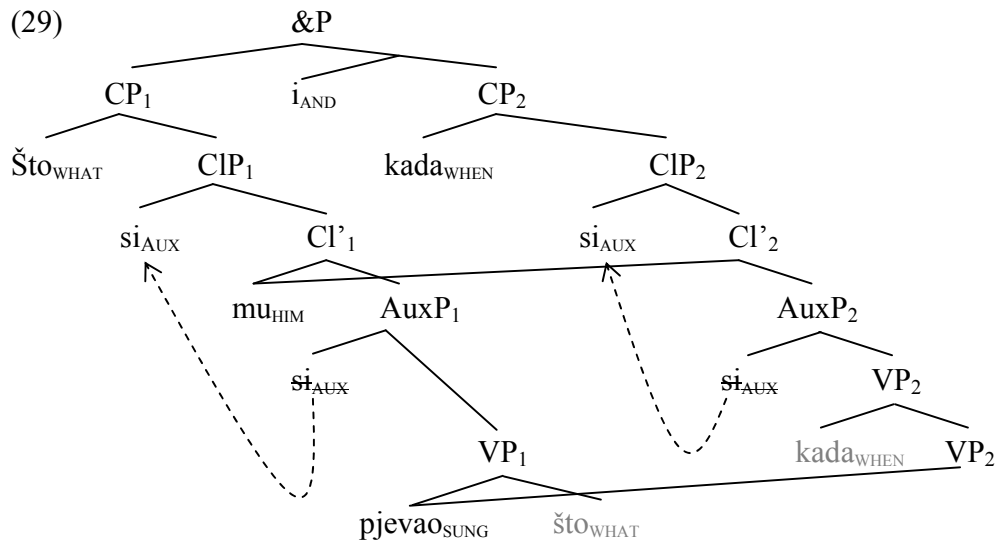


The only shared node in the structure is the verb *pjevao* ‘sung’, which is pronounced following all the unshared material (wh-phrases and clitics). The auxiliary clitic, as discussed above, moves from the site where it is externally merged (labeled the Auxiliary phrase) to its derived position in the clitic cluster (labeled the Clitic phrase). If there is a pronominal clitic in the structure, the auxiliary ‘jumps over’ it as it moves upwards.

The situation in (26) 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 (26) with reading one, given in (28), is in a sense a mirror image of (27). 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 (26). Here, the pronominal clitic is interpreted in both conjuncts, although it is only pronounced in the second one. This indicates that the clitic is shared between the conjuncts. Example (26) with reading two thus presumably has the structure in (29).



3.2.Q&Qs with clitic clusters containing *je*

What happens when the auxiliary clitic in the clitic cluster is *je*? First, note that the counterpart of (26) with the third person singular clitic *je* shows the same ambiguity, as shown in (30).

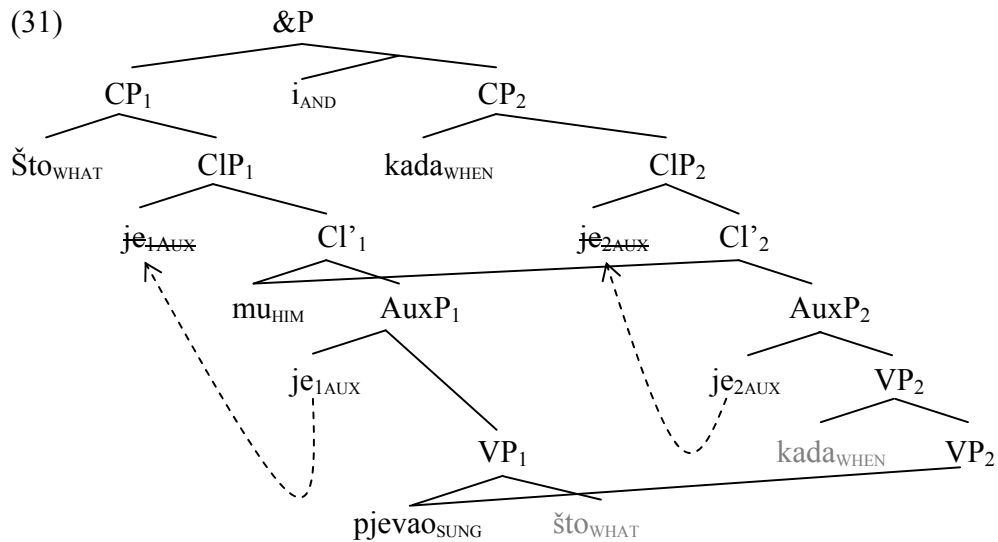
(30) Što JE i kada MU JE pjevao?

what Aux.3SG and when he.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 (30) is again an indication that the pronominal clitic *mu* ‘him’ may be shared between the conjuncts. Thus, on this reading, the Q&Q receives the representation in (31).



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 (31) by the strikethrough.¹¹ In particular, in the second conjunct, *je* must follow the pronominal clitic *mu* 'him'.

This order, however, is non-derivable by our assumed algorithm. In the second conjunct in particular, the clitic je_2 c-commands the pronominal clitic *mu*, since it is true that every highest mother of je_2 , and there is only one (CIP_2), dominates *mu* 'him'. Thus, the algorithm predicts that je_2 should precede *mu*.

On the other hand, the pronominal clitic *mu* ‘him’ c-commands neither of the auxiliary clitics (je_1, je_2), either in their base positions, or in their derived positions. In order for *mu* ‘him’ to c-command je_2 , it would have to be the case that every highest mother of *mu* ‘him’ dominates je_2 . This is clearly not the case for the derived position of je_2 . It is also not the case for the base position of je_2 , given that *mu* ‘him’ has two highest mothers, Cl'_1 and Cl'_2 . While Cl'_2 does dominate je_2 , Cl'_1 does not. We can conclude more generally that a shared node with more than one highest mother can c-command an unshared node. Consequently, a shared node should never precede an unshared node. And yet, in the second conjunct of (30), *mu* ‘him’ precedes je_2 .

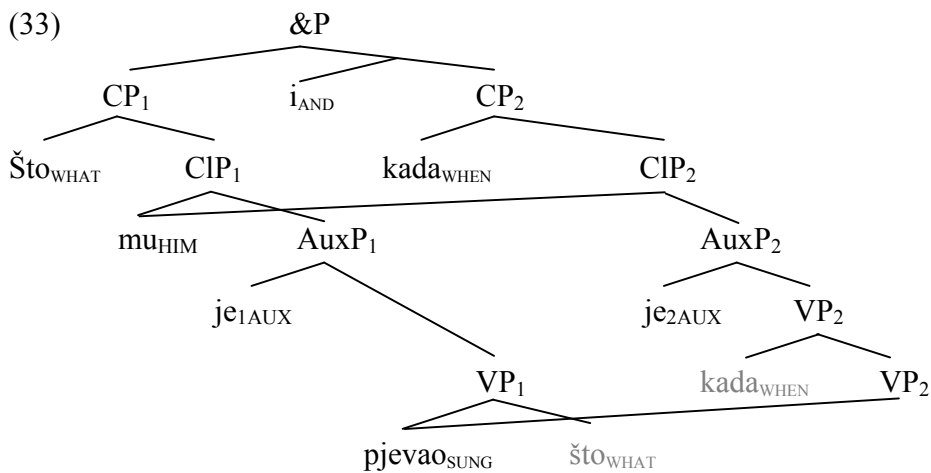
This discrepancy between asymmetric c-command relations that hold in the structure and the linear order of terminals in the final string again point to the conclusion that the structural relations among the non-terminal nodes in the structure are not all that is responsible for the linear order of terminals. This is the conclusion that we have reached in section 2, where we looked (in less detail) at a non-MD structure containing *je*. Some mechanism (partially) independent of syntax must be involved.

Crucially, it is not the case that the structure in (31) is not linearizable at all. The linearization algorithm operating on (31) yields a unique, total, and

non-contradictory order in (32). It is just that this order happens not to be attested.

(32) *Što < je₁ < i < kada < je₂ < mu < pjevao*

We seem to be left with the situation where, if we posit the syntactic movement of *je* in (31) on reading two, the structure can only be incorrectly linearized as (32).¹² So, perhaps positing this movement is wrong after all. Obviously, if *je* did not move over *mu* (or were not merged above *mu*), it would not c-command *mu*, and consequently would not have to precede it. This possibility is illustrated in (33).



However, despite the appeal of this possibility, it would not solve the problems associated with the linearization of (31).¹³ In fact, such a structure cannot be mapped onto any linear order at all. In (33), the unshared auxiliary

clitics je_1 and je_2 do not (asymmetrically) c-command the shared clitic mu . However, as we saw above, neither does mu c-command either je_1 or je_2 . Recall from above that a shared node with more than one highest mothers never c-commands an unshared node, regardless of the structural position of either of them. 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.

We thus have the following: the Q&Q in (30) is grammatical with the reading two. We examined two plausible structures that might underlie this reading. One is linearizable, (31), but the computed order is unattested, and the other, (33), cannot be linearized at all. Given that (33) also runs into problems in accounting for the VP ellipsis facts discussed in section 2, it seems warranted to dismiss it as a possible syntactic representation of (30). We are thus left with (31).

The fact that a legitimate output of the linearization algorithm yields an ill-formed sentence indicates that there is no absolute correlation between syntactic well-formedness and linearizability. Consequently, linearization cannot be what constrains the possible range of phrase markers in human language. In other words, it seems not to be the case that only those phrase

markers in which all terminals can be linearized based on asymmetric c-command are legitimate outputs of a syntactic computation.

This is equally true of both non-MD and MD representations. However, it is particularly worrying in consideration of MD structures, since these are the ones where the possibilities of over-generation are literally countless. We thus need a condition which will constrain the possible range of MD representations.

Before going on to propose a possible condition of this sort, I would like to discuss another example of a structure in which the shared node is spelled-out in the position not predicted by the linearization procedure. The case in point is a phenomenon from German, which has been called SLF (*Subjeklücke in finiten Sätzen* – ‘subject lacking in finite clauses’).

4. German *Subjeklücke in finiten Sätzen*¹⁴

The term SLF refers to ‘ coordinations of V2 clauses that contain only one subject’ (Mayr and Schmitt, 2008). An example of the SLF is given in (34).

(34) Hans hat die Katze gestreichelt und wird jetzt den Hund füttern.

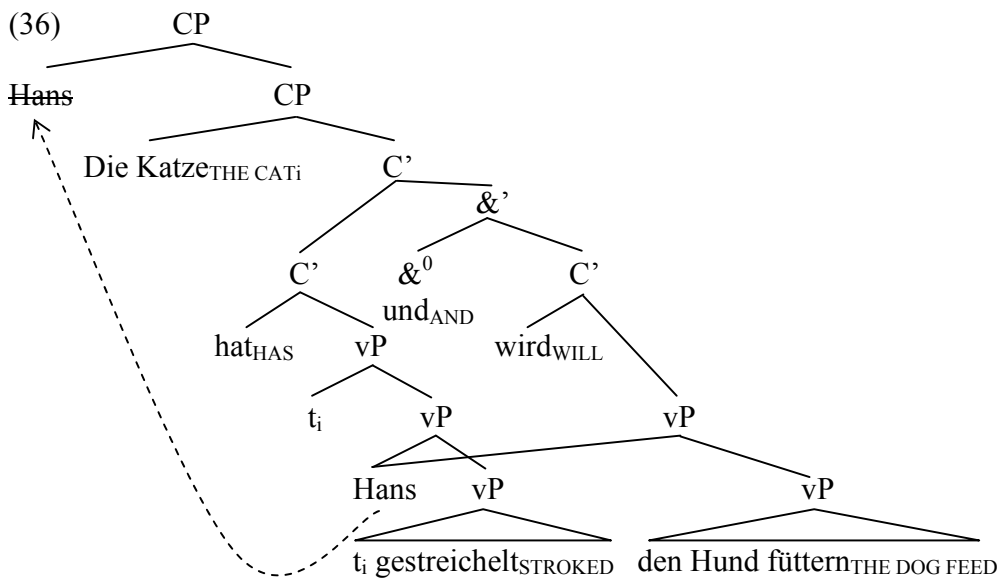
Hans has the cat stroked and will now the dog feed

‘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 (35).

- (35) Die Katze_i hat Hans t_i gestreichelt und wird jetzt den Hund füttern.
 the cat has Hans stroked and will now the dog feed
 ‘The cat, Hans stroked and will now feed the dog.’

Mayr and Schmitt (2008) propose that in (35), 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 (36).¹⁵



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 (37) the existential must scope below both negation and the modal. This indicates that *niemand* ‘no one’ may not undergo QR from its base position.

(37) 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 (38) is ill-formed. This indicates that in grammatical SLF constructions, the subject indeed undergoes QR, i.e. that the representation in (36) is on the right track.

(38) $\#*$ 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 (36) is in a sense a mirror image of the situation in (31). The subject *Hans* is pronounced only once, but 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 this position 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. Evidence from quantificational subjects indicates that the subject in fact occupies a high syntactic position which is outside of the coordination. From this position it c-commands all the material within both conjuncts.

However, if the movement of the subject is posited, we would expect it to be linearized so that it precedes the rest of the sentence, rather than to be sandwiched between the auxiliary and the vP in the first conjunct. This is not what we find. Thus, German SLF constructions are another case where the syntactic MD structure needed to capture the semantic properties of the sentence seems to be well-formed, even though the result of the linearization procedure that operates on this structure, while in principle derivable, is unattested. Yet again, we see the absence of the correlation between the syntactic well-formedness and linearization. Given this observation, we can again conclude that linearization is not the crucial factor that constrains possible MD representations.

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. In the next section, I propose and discuss a condition that derives this result.

5. Constraint On Sharing

One possible candidate for the constraining factor on MD is the Constraint on Sharing (COSH), proposed in Gračanin-Yukseš (2007). An informal definition of COSH is given in (39), repeated from (1).

(39) *Constraint on Sharing (COSH)*

If a node α has more than one mother node, but does not have a unique highest mother (a single mother of α not dominated by any of its other mothers), all the mother nodes of α must completely dominate the same set of terminal nodes.

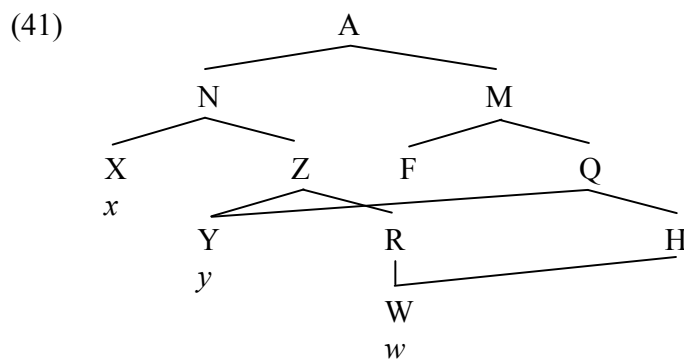
Recall the definition of complete dominance from (17c):

(40) Complete dominance (from Fox and Pesetsky, In preparation)

α completely dominates β iff every path from β upwards to the root goes through α .

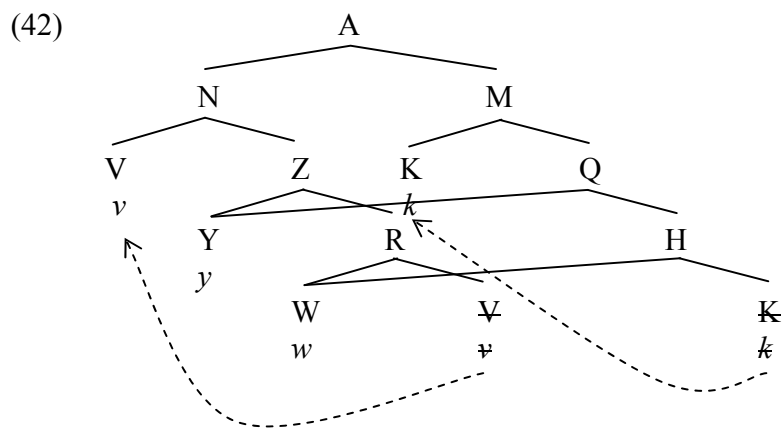
COSH predicts the well-formedness of any structure which is *in principle* linearizable by the antisymmetric approach to linearization, regardless of whether the derived word order is attested or not. To see how this obtains, we need to determine when the multiple highest mothers of a shared node completely dominate the same set of terminal nodes. In fact, this is true only

when the relevant sets are empty. This in turn may come about in two situations. One is when all the terminal nodes dominated by the multiple highest mothers of a shared node are themselves shared. This is illustrated by the abstract representation in (41).



In (41), Y and W are the relevant shared nodes. Multiple highest mothers of Y are Z and Q. Z dominates terminal nodes y and w , but it completely dominates neither of them, since it is not the case that every path from either Y or W upwards to the root (A) contains Z (there is an alternative path that contains Q, but not Z). Similarly for Q, there is a path from both y and w to the root that contains Z, but not Q. Thus, the set of terminal nodes completely dominated by both Z and Q is empty. The same reasoning applies to the multiple highest mothers of W, namely R and H. Since all highest mothers of any shared node in (41) completely dominate the same set of terminal nodes, namely the empty set, the structure does not violate COSH.

The other way in which a structure that contains shared nodes which do not have a unique highest mother can satisfy COSH is when the nodes dominated by the multiple highest mothers of a shared node move to a position higher than the highest shared node. This is illustrated in (42).

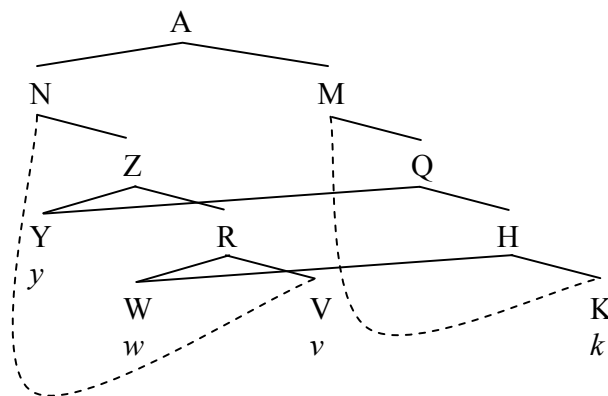


In (42), we have the same shared nodes, Y and W. Let us consider W. It has two highest mothers, R and H. Both of these nodes dominate the terminal w , but not completely, as discussed above. However, R dominates the unpronounced copy of V (seemingly completely) and H dominates the unpronounced copy of K (also seemingly completely). Thus, the set of terminals completely dominated by R seems to be $\{\psi\}$, while the set of terminals completely dominated by H seems to be $\{k\}$. Since COSH does not make reference to *overt* terminal nodes, but to all terminal nodes, it seems that

(42) violates COSH.¹⁶

I would like to claim that this is, in fact, not the case. To this end, I assume, together with Engdahl (1986), Frampton (2004), Gartner (1999; 2002), Kracht (2001), Starke (2001), De Vries (2007) among others that internal Merge (or Move) does not involve creating a copy and (subsequently?) moving the original element, but rather re-merging the same element into a new position, creating multiple *occurrences*, rather than multiple copies of the ‘moved’ element. Under this assumption, the structure in (42) is better represented as in (43).

(43)



On this view, neither R nor H completely dominates anything. R no longer completely dominates *v*, since it is not the case that every path from V to the root includes R. There now exists a path from V to A that traces the dotted line, which does not include R. For the same reason, H no longer completely

dominates *k*. Consequently, COSH is satisfied.

According to COSH, both structures we have discussed above, the Q&Q in (31) and the SLF in (36) are well formed. In (36), the only shared node, the subject *Hans*, has a unique highest mother (the highest CP), so the structure trivially satisfies COSH. In (31), on the other hand, there are two shared nodes: the pronominal clitic *mu* ‘him’ and the verb *pjevao* ‘sung’, and neither has a unique highest mother. COSH requires that every mother of each shared node completely dominates the same set of terminal nodes. For highest mothers of the verb, this is satisfied given that they each dominate only the shared verb and an occurrence of the wh-phrase which has ‘moved’ to a position higher than the highest shared node. For highest mothers of *mu* ‘him’, the condition is again satisfied, since they dominate the pronominal clitic and the verb (both shared) and an occurrence of the auxiliary clitic *je*, which has moved to a position higher than all shared material. Thus, neither of the multiple highest mothers of any shared node completely dominates anything.

A question now arises as to what forces the effects of COSH? In other words, can COSH be derived from a more basic set of principles? In particular, can it be divorced from MD *per se*? I believe that this is possible, and that the place to look for answers to these questions is the LCA itself. Below is the

definition of the LCA from Uriagereka (1998):

(44) Linear Correspondence Axiom

A category α precedes a category β iff (a) α asymmetrically
[c-]commands β or (b) γ precedes β and γ dominates α . (pg. 200)

By tying linear order to structural relations (c-command) that hold in a syntactic tree, LCA in effect constrains a possible range of phrase markers in human language. Namely, only those phrase markers in which all terminals can be linearized based on asymmetric c-command are legitimate outputs of a syntactic computation. I believe that this is both correct and incorrect. Let me explain what I mean by this.

We have seen that some MD representations seem to be well-formed, and allowed by COSH, even though their word order is not predicted by the (modified) LCA. COSH is thus independent of the *actual* linearization of any particular structure. This indicates that the well-formedness requirement is not tied to the PF interface, as the LCA leads us to believe. Rather, the constraint seems to be syntactic in nature. On the other hand, COSH-compliant structures are those that are *in principle* linearizable by the LCA. This points to a conclusion that the LCA is correct in stating that nodes in a possible phrase marker must stand in certain structural relations to one another.

What is required, then, is what I call *Transcendence*, as defined in (45), which is derived from (44).

(45) Transcendence

A node α transcends a node β iff (a) α asymmetrically c-commands β ,
or (b) γ asymmetrically c-commands β and γ completely dominates α .

COSH rules out all representations in which transcendence does not obtain, without making any claims about the linear order of terminals onto which these representations map. Note also that transcendence is a requirement that holds equally of non-MD and MD representations. The MD-specific nature of COSH is thus dispensed with.

6. 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 to 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-Yukseš, 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 particular, according to these proposals, well-formed MD representations are those that can be linearized by the (modified) LCA. In this paper I argued against this claim by examining the placement of the third person singular auxiliary clitic *je* in Croatian Q&Qs, and the placement of the subject in German SLF constructions.

I first showed that the LCA runs into problems in linearizing Croatian non-MD structures that contain the third person singular clitic *je*. Unlike other auxiliary clitics in the language, *je* follows rather than precedes pronominal clitics in a clitic cluster, even though it can be shown to occupy a syntactic position which is higher than that of the pronominal clitics. Consequently, the LCA was shown to predict a wrong word order.

I then introduced Q&Qs, structures where two wh-phrases seem to be coordinated at the front of the clause, and showed that each wh-phrase may be followed by a second-position clitic. 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 based on the LCA, but compatible with MD, which computes the linear order of terminals based on the asymmetric c-command relations among the non-terminals.

Next, 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 that of the 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 adopted Mayr and Schmitt’s (2008) analysis of SLF, on which the subject is shared between the two conjuncts and undergoes a covert QR to a position higher than the coordination phrase. I showed that the actual word order of such constructions, in which the subject surfaces between the auxiliary and the vP material in the first conjunct only, is not derivable. This again led to the conclusion that syntactic well-formedness of an MD structure is independent of linearization, arguing against the claim that linearization is what constrains MD.

I suggested that well-formedness of both structures may be accounted for if we adopt a constraint along the lines of COSH, proposed in Gračanin-

Yukse (2007). COSH is formulated as a syntactic constraint that requires all multiple highest mothers of a shared node to completely dominate the same set of terminal nodes. I proposed that this condition derives from a requirement, which I called Transcendence, that any two nodes in a syntactic structure either stand in asymmetric c-command relation, or one of them be completely dominated by a node that asymmetrically c-commands the other.

If the reasoning presented in this paper is correct, we may have ended up with more questions than answers. For example, the question remains how syntactic structures, and in particular MD structures are linearized at all. If we keep the antisymmetric approach to linearization, it must be amended by a set of post-syntactic PF rules which should apply in strictly defined environments. An alternative is to propose an algorithm which is entirely independent of asymmetric c-command (perhaps along the lines of De Vries 2009). Another question is what forces the requirement of Transcendence, if it is not linearization, as I have argued. Is this an (LF?) interface requirement, is it part of universal grammar, or is it tied to more general principles of efficient computation (Chomsky, 2007)? While not providing answers to these questions, I hope that the arguments presented in the paper might at least provide future research with a stepping stone in the right direction.

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¹ Bošković (2001) presents evidence to the same effect from VP fronting, parenthetical placement, and placement of subject-oriented adverbs.

² Examples in a) are from from Stjepanović (1998), while those in b) are mine.

³ The structures in (9) and (10) are simplified reflecting the fact that I abstract away from the question of how the entire clitic cluster ends up in the second

position. It may well be that clitics are adjoined to one another within the cluster. The relevant thing for us is the relative ordering of *je* and the pronominal clitics, which is problematic for the LCA.

⁴ Bošković proposes that the PF violation in the case of *je* arises due to the fact that *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. If the lower copy of *je* is spelled out, the pronominal clitics do not have to cliticize across *je* and the problem is avoided.

⁵ Here, I use the strikethrough to indicate a non-pronunciation of material, without committing myself to an ellipsis analysis.

⁶ For further arguments in favor of a bi-clausal analysis of Q&Qs with repeated clitics, see Gračanin-Yuksek (2007).

⁷ A corresponding Q&Q that does not contain two (sets of) clitics is well-formed with the 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?'

⁸ For reasons of space, I do not argue here for the MD representation of Q&Qs in (16). 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 Gračanin-Yukseš (2007).

⁹ CP₁ does not c-command the subject and the verb, since it dominates them.

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

¹¹ Alternatively, as mentioned above, *je* might be merged only in the higher position, and not undergo movement. It would then be placed in the position following *mu* 'him' by some PF rule. This would still be problematic for the LCA approach to linearization.

¹² The same result obtains if we assume that *je* occupies only the position higher than the pronominal clitic(s).

¹³ We would also have a hard time explaining the VP ellipsis possibilities pointed out by Stjepanović (1998), discussed in section 2.

¹⁴ The data and the analysis presented come from Mayr and Schmitt (2008).

¹⁵ See Mayr and Schmitt (2008) for arguments that conjuncts are C 's.

¹⁶ Consequently, Q&Q representations in (27), (28), (29), and (31) would also seem to violate COSH, since in each of them there is at least one shared node whose multiple highest mothers do not dominate the same set of terminals.

Namely, there is always a situation where one of the mothers dominates a copy of wh_1 , and the other a copy of wh_2 .