More syntactic movement

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1 A puzzle about the movement of subject interrogative clauses in English

We saw that Brazilian Portuguese may use an overt complementizer in sentences where the interrogative phrase moves.

(1) Brazilian Portuguese: constituent questions
   a. A Rosa criticou a Ana.
      the Rosa criticized the Ana
      ‘Rosa criticized Ana.’
   b. Quem que ____ criticou a Ana?
      who COMP criticized the Ana
      ‘Who criticized Ana?’
   c. Quem que a Rosa criticou ____?
      who COMP the Rosa criticized
      ‘Who did Rosa criticize?’

(2) Representation of (1b)

Recall: the relevance of the data is that the overt complementizer que gives us a hint of where the interrogative phrase is landing, namely to Spec-CP, the CP being headed by que.

Both subject and object interrogative phrases move to Spec-CP, as we can see in (1b) and (1c), respectively.

Consider now the following English sentences:

(3) a. ( ) Who(m) has Rosa visited ____?
   b. ( ) Who(m) Rosa has visited ____?
   c. ( ) Who has visited them?

Question

Contrast (3a) with (3b). What is causing (3b)’s ungrammaticality?
Given the obligatory auxiliary inversion in (3a), we can tell that the object interrogative phrase who(m) has moved. (We are assuming, of course, that auxiliary inversion is a 1-to-C movement.)

But what about (3c)? There are two hypotheses that are consistent with the observed linear order:

(4) **Movement hypothesis**

```
CP
  NP
     C'
        |   
      N'   C
        |   |
       has I'
       |
      VP
       |
      V'
```

(5) **No movement hypothesis**

```
CP
  C'
  IP
    NP
      N'
      C
      I'
      VP
       |
      V'
```

- If the movement hypothesis (4) is correct, the prediction is that the linear order is ..................................................................................................................
- If the no movement hypothesis (5) is correct, the prediction is that the linear order is ..................................................................................................................

Is there a way to distinguish the two hypotheses empirically? Yes: from *wh- the hell* phrases.¹

(6) a. **What** have you done ___?
    b. Who has done **what**?

(7) a. ( ) **What the hell** have you done ___?
    b. ( ) Who has done **what the hell**?

### Questions

- What is the observable difference between (7a) and (7b) regarding the position of *what the hell*?
- In sentences with multiple interrogatives phrases like (6b), the lower interrogative phrase (*what*) does not move. Based on that observation, what could we say about what has to happen to phrases like *wh- the hell*?

Based on that conclusion, let’s see what happens when the *wh- the hell* phrase is not the object, as in (7a) (and 7b)), but a subject.

(8) a. **Who the hell** has done that?
    b. **What the hell** will happen to this country?

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¹I learned this from D. Pesetsky.
Again, our two hypotheses make the same prediction regarding linear order.

\[\begin{align*}
\text{(9) Movement hypothesis} & \quad \text{(10) No movement hypothesis} \\
\end{align*}\]

But now we have more than linear order to account for.

**Question**
Given what we concluded about *wh-the hell* phrases in by comparing (7a) with (7b), which hypothesis is preferable?

2 Multiple interrogative elements

By now, we have seen some occasional instances of interrogative sentences with more than one interrogative element.

(11) a. Who will read what this morning?  
     b. Who will put what where?  

(from pset #5)

This type of sentence has restrictions:

(12) a. ( ) What will who read this morning?  
     b. ( ) What will who put where?  
     c. ( ) Where will who put what?

**Question**
What is an appropriate generalization to describe the data?

(13)
2.1 Multiple auxiliaries in English

With this generalization in mind, consider the following sentences:

(14) The winning side would have been paying you much better.

(15) a. ( ) Would the winning side ___ have been paying you much better?
    b. ( ) Have the winning side would ___ been paying you much better?
    c. ( ) Been the winning side would have ___ paying you much better?

Question
Can the generalization we arrived at in (13) cover this data too?

2.2 Multiple interrogative phrases in Romanian

In English, sentences with multiple interrogative phrases obey a further condition:

(16) a. Who will read what this morning? (from pset #5)
    b. ( ) Who what will read this morning?

(16b) shows that only one interrogative phrase moves to Spec-CP in English. Consider now Romanian:

Step 1 Romanian is a head-initial language:

(17) Am auzit că Mihai repară casa.
    I have heard COMP Mihai isfixing the.house
    ‘I have heard that Mihai is fixing the house.’

Step 2 Consider now interrogative sentences with multiple interrogative phrases:

(18) a. [ Cine ] [ pe cine ] a lovit? [ who.SUBJ ] [ OBJ who ] has hit
    ‘Who hit who(m)?’
    b. Cine cui a dat flori? [ who ] [ OBJ who ] [ who.SUBJ ] has given
    ‘Who gave flowers to whom?’

Question
Compare the English sentences in (16) and the Romanian ones in (18). What is remarkable about the
Romanian data?

Finally, consider the ungrammatical version of the sentences in (18):

(19) a. * [ Pe cine ] [ cine ] a lovit? [ OBJ who ] [ who.SUBJ ] has hit
    Intended: ‘Who hit who(m)?’
    b. * Cui cine a dat flori? to whom who has given flowers
    Intended: ‘Who gave flowers to whom?’

2 Romanian data adapted from these papers: LINK1 and LINK2
Question
Can (a version of) the generalization we arrived at in (13) cover this data too?

3 Head movement

3.1 German V2

We saw I-to-C movement of auxiliaries in English:

(20) Will the dog eat the watermelon?

We can employ the same operation to analyze V2 (‘verb second’) phenomena in German.

V2 in German: the verb or auxiliary in the main verb has to occupy a second position, following another constituent XP that moves to the first position.

First we have to note that German is a head-final language. We can see this in embedded clauses, where the V2 effect does not apply:

(21) Die Besucher denken, [CP dass sie einen Geist gesehen haben ].
    the visitors think [ COMP they a.OBJ ghost seen have ]
    ‘The visitors think that they saw a ghost.’

- The object einen Geist ‘a.OBJ ghost’ precedes the main verb gesehen ‘seen’.
- The main verb gesehen also precedes the auxiliary haben ‘have’.

(22) Structure for the embedded IP

Second-hand German data from a 24.902 (Introduction to Syntax) handout by Prof. David Pesetsky.
Now consider a simple sentence (no embedded clause) and its variants:

(23) a. \(\text{XP} = \text{object}\)
\[
\text{Den Mann hat die Frau gestern gesehen.}
\text{the.OBJ man has the.SUBJ woman yesterday seen}
\text{‘The woman saw the man yesterday.’}
\]
b. \(\text{XP} = \text{adverb}\)
\[
\text{Gestern hat die Frau den Mann gesehen.}
\text{yesterday has the.SUBJ woman the.OBJ man seen}
\text{‘The woman saw the man yesterday.’}
\]
c. \(\text{XP} = \text{subject}\)
\[
\text{Die Frau hat gestern den Mann gesehen.}
\text{the.SUBJ woman has yesterday the.OBJ man seen}
\text{‘The woman saw the man yesterday.’}
\]

We have enough clause structure to accommodate these movements:
- The verb in second position moves to C.
- The \(\text{XP}\) that occupies that first position moves to Spec-CP.

(23') a. \(\text{XP} = \text{object}\)
\[
[\text{CP Denn Mann} [C \hat{\text{hat}} [I_P \text{die Frau gestern gesehen }]]]]?
\]
b. \(\text{XP} = \text{adverb}\)
\[
[\text{CP Gestern} [C \hat{\text{hat}} [I_P \text{die Frau } \text{den Mann gesehen }]]]]?
\]
c. \(\text{XP} = \text{subject}\)
\[
[\text{CP Die Frau} [C \hat{\text{hat}} [I_P \text{gestern Denn Mann gesehen }]]]]?
\]

⇒ Takeaway: With our tools, we are able to account for V2 phenomena in German. The relevant tools are: movement and the general structure for a sentence, which includes a CP layer, with a head and a Spec position.

3.2 V-to-I movement in French

So far, we have seen I-to-C movement in interrogative sentences in English in German V2.

But our general clause structure has another head, V. A reasonable expectation seems to be that movement could involve V too.

This expectation seems to be met the position of inflected verbs in French.\(^4\)

\(^4\)Second-hand data from a 24.002 handout by D. Pesetsky. The original insight is from J-Y. Pollock.
   ‘Marie often speaks French.’
   b. *Marie souvent parle français.
      Int.: ‘Marie often speaks French.’

(26) a. Marie ne parle pas français.
      ‘Marie does not speak French.’
   b. *Marie ne pas parle français.

(For the present purposes, ignore ne.)

⇒ Order in French: [verb]-adverb/negation

Contrast the English counterpart of these sentences:

(27) a. ( ) Marie speaks often French.
   b. ( ) Marie often speaks French.

(28) a. ( ) Marie does not speak French.
   b. ( ) Marie does not speak French.

⇒ Order in English: ............................................................

How can we account for the contrast between French and English?

Step 1  Let’s assume that adverbs and negation occupy a modifier position in the VP.

Step 2  Let’s assume that verbs in French move from V to I, but verbs in English remain in V.

(29) French (25a)

(30) English (27b)

⇒ Takeaway: our tools (movement operation and general clausal structure) lead us to the expectation that there should be V-to-I movement. This seems to be exactly what we find in French.

4 Restrictions on movement

We had the following ambiguous sentence in the last recitation:

(31) Ariel saw a hiker with binoculars.
It seems reasonable to assume that *with binoculars* in (31) is a prepositional phrase (PP, [PP with [NP binoculars]]) in both readings and corresponding structures.

As such, our constituent tests should be able to target this PP in both structures underlying (31), since it should be a constituent in both.

However, the result of applying the fragment question test is unambiguous:

(33) With what did Ariel saw a hiker? [PP With binoculars].

Only reading available: 

In order to understand the disappearance of ambiguity in the sentences above after the application of a constituent diagnostic, consider the following sentences:

(34) Complement/Embedded clause
   a. Rosa thinks [that a child was playing with a jigsaw puzzle].
   b. ( ) With what does Rosa think [that a child was playing ___]? 

(35) Relative clause
   a. Rosa admires the child [who is playing with a jigsaw puzzle].
   b. ( ) With what does Rosa admire the child [who is playing ___]? 

(36) Subject clause
   a. [That the child is playing with a jigsaw puzzle] is surprising.
   b. ( ) With what is [that the child is playing ___] surprising?
(37) **Conditional clause**

a. [If the child is playing with a jigsaw puzzle], Rosa will be happy.

b. ( ) With what will [if the child is playing ___], Rosa be happy?

**Claim:** we cannot move constituents from just any chunk of the syntactic structure. There are certain types of clauses where we cannot move a constituent from: (i) Relative clauses (35); (ii) Subject clauses (36); (iii) Conditional clauses (37).

These structures are called **islands**.

With this background in mind, let’s go back to the fact that, after applying movement of an interrogative phrase, (31) only has a reading where Ariel uses the binoculars to see the hiker.

How could we explain the unavailability of the reading where the hiker has the binoculars?

**Hypothesis:** NPs are islands for movement.

We can now provide an explanation as to why (33) is unambiguous:

(38) *With what did Ariel see a hiker?*

(39) *With what did Ariel see a hiker?*

(i.e. binoculars as an instrument of seeing)

(i.e. the hiker had the binoculars)

$\Rightarrow$ **Takeaway:**

- (33) is unambiguous because the only legitimate derivation is one where *with what* is born as an adjunct to VP, as in (38).
- If *with what* is born as an NP adjunct, as in (39), we will be moving from a syntactic island, which is prohibited.