

On Multiple Spec-CP Structures*

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Yu, Chong-Taek. 1998. On Multiple Spec-CP Structures. *Linguistics*, 6-1, 273-292. The [+wh]-features of *wh*-words should be checked against the [+Q]-feature of C in the computational system (C_{HIL}) in order to obey both the Last Resort (LR) and the Condition on the Feature-checking of Multiple *Wh*-words (CFM). Bulgarian, Serbo-Croatian, Korean, Japanese, Chinese and English languages are sure to obey the CFM in the multiple Spec-CP structures. According to the Condition on the (Multiple) Spec-CP Structure of an English Question (CSEQ), an English question should contain a (multiple) Spec-CP structure at least such as NQ: [CP a *wh*-word ([C: FF_(a wh-word) [C: ...]) (an aux.) C [TP ...]](I)] or EQ: [CP FF_(a wh-word) ([C: FF_(a wh-word) [C: ...]) (FF_(an aux.)) C [TP ...]](I)]. (Howon University)

I. Introduction

All the grammatical operations in C_{HIL} are assumed to be triggered by feature-checking requirements. Here is the principle of Last Resort (LR) assumed in Collins (1997):¹

(1) Last Resort

Move raises α to the checking domain of a head H with a feature F only if the feature F of H enters into a checking relation with a feature of F of α .

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1. Collins (1997) Justifies this particular formulation of Last Resort like the following: First, this definition of Last Resort is local. Second, it allows him to account for ECM and successive cyclic movement. Third, using it, he can account for cases of improper movement.

Features visible at LF are accessible to the C_{HL} throughout, whether checked or not, whereas features invisible at LF are inaccessible to C_{HL} once checked. Thus all the [\pm Interpretable] features of lexical items are checked against the features of targets in C_{HL} , obeying the LR.

Nevertheless, there seem to be *wh*-words in situ which remain unchecked even at LF and apparently violate the LR. Let us now examine some infinitival idiolects taken from Postal (1974) and their logical forms:

- (2) a. We believe him to be guilty.
 b. We [_{VP} FF_{(him)_i} believe-v [_{INFP} him_{(t)_i} [_{INF'} [_{INF}^{OMAX} to INF] [_{INFP} t_i be guilty]]]]
 c. He is believed to be guilty.
 d. [_{CP} He_i is believed [_{INFP} t'_i to [_{INFP} t_i be guilty]]]]
 e. Who believes who to be guilty?
 f. [_{CP} Who_k [_{VP} t_k FF_{(who)_j} believes-v [_{INFP} who_{(t)_j} to [_{INFP} t_i be guilty]]]]?

Here (2b, d, f) are the logical forms of (2a, c, e), respectively. In (2b), a *believe*-verb merges with not a CP, but an infinite phrase (INFP).² The formal features (FF) of an infinitival subject *him* —FF_(him)— move covertly to the Spec of vP in a matrix verb, checking its D- and ϕ -features (including Case) against those of a complex verb *believe*-v. In

2. As already pointed out in Morin (1979), verbs like *believe* have the strange property of being able to assign a Case across a sentence boundary to their complement subject. Chomsky (1981) assumes that English has a marked rule of S-bar deletion for complements of verbs of the *believe*-category, permitting the verb to govern the subject of embedded complement, thus excluding PRO and permitting phonetically-realized NP. On the contrary, Kayne (1984) assumes following Chomsky & Lasnik (1977) that *believe*-type-verbs take a Φ complementizer which has the essential property of transmitting government. Yu (1996a, b, 1997) assumes following Chomsky (1981) that a *believe*-type verb selects an INFP-complement.

(2d), an infinitival subject *he* moves overtly to a subject position in a matrix passive sentence. Likewise, the $FF_{(who)}$ in (2f) also moves covertly to the Spec of vP in a matrix verb, checking its D- and ϕ -features (including Case) against those of a complex verb *believe-v*. However, it seems to me that the [+*wh*]-feature of $FF_{(who)}$ is left unchecked at LF. It cannot move to the Spec-CP in a matrix sentence, since the other *wh*-word *who* has already took it up. As the result, the sentence (2e) comes to violate the LR, but it is convergent without fail. If we are to follow Groat & O'Neil (1996), a solution to such a syntactic problem is very simple: the *who* in situ is licensed by an LF process of absorption.³ In fact, such an assumption seems to lack explanatory power, since it has never established what is called 'a feature-absorber.' If so, then I cannot but ask the following question to myself: "How has the [+*wh*]-feature of $FF_{(who)}$ been checked?" A possible answer to the question is that the [+*wh*]-feature of $FF_{(who)}$ should continue to move to the other *wh*-word *who* in the matrix Spec-CP to obey the LR. I therefore conjecture that English questions can also contain multiple Spec-CP structures like some other languages.

2. Multiple Spec-CP structures

Let us first find evidence of the presence of the multiple Spec-CP structure in English. To be sure, the Minimal Chain Condition (MCC) explains the Superiority Condition, as shown below:

- (3) a. [_{CP1} Whom_i did John persuade t_i [_{CP2} [_{INFP} PRO to visit whom]]]?
 b.*[_{CP1} Whom_i did John persuade whom [_{CP2} [_{INFP} PRO to visit t_i]]]?

3. Groat & O'Neil (1996) assumes following Watanabe (1992) that, as in English, only one phrase is moved to the Spec-CP; others remain in situ and are licensed by an LF process of absorption. At LF, the DP out of which the null operator moved adjoins to the operator in the Spec-CP.

Sentences (3a-b) are derived from the same numeration (N). In (3a), an object *whom* in a matrix clause is attracted to the Spec-CP₁, whereas, in (3b), an object *whom* in a subordinate clause is attracted to the Spec-CP₁. As the result, the former operator-chain is shorter than the latter operator-chain. That is why a derivational structure (3a) is convergent, but a derivational structure (3b) is unconvergent. Thus (3a) obeys the MCC, whereas (3b) violates it.

As pointed out in (3), the MCC, which is the Principle of Shortest Move, applies strictly to an operator-chain. Nevertheless, there seem to be some counterexamples containing multiple *wh*-words:

- (4) a. i. [CP What_t did [TP you buy t_i where]]?
 ii. [CP Where_t did [TP you buy what t_i]]?
 b. i. [CP What_t did [TP you buy t_i when]]?
 ii. [CP When_t did [TP you buy what t_i]]?
 c. i. *[CP Where_t did [TP who go t_i]]?
 ii. *[CP When_t did [TP who go t_i]]?

Derivational structures (4a i - ii, b i - ii) are all convergent, but (4c i - ii) are both unconvergent. Here (4a i) and (4b i) follow the MCC without fail, whereas (4a ii) and (4b ii) violate it exceptionally. It is because *wh*-words such as *where* and *when* can cross over another *wh*-word *what* which is in shorter distance from the Spec-CP than they. Contrary to (4a ii) and (4b ii), derivational structures (4c i - ii) must obey the MCC, since *wh*-words such as *where* and *when* cannot cross over a subject *who* which is in shorter distance from the Spec-CP than they.⁴ We therefore come to an assumption that the subject *who* pied-piping EPP- and [+*wh*]-features should be checked overtly against

4. As mentioned in Kuno & Robinson (1972), time and place *wh*-words, such as *when* and *where*, can cross over another *wh*, but they cannot cross over the *wh* in the subject position. They call such a constraint *Wh Crossing Constraint*.

C prior to the feature-checking of another *wh*-word. If time and place *wh*-words such as *when* and *where* cross over another *wh*-word freely, violating the MCC, it shows us that the MCC cannot be a perfect principle in Minimalist Theory. As exemplified in (3a-b), each pair in (4a, 4b) are derived from the same N, respectively. Such a syntactic phenomenon tells us that *wh*-words such as *when* and *where* always select their own [+*wh*]-features from lexicon (Lex) for N. Nevertheless, if one *wh*-word *where* in (4a ii) is attracted overtly to the Spec-CP, violating the MCC, we expect that the other *wh*-word *what*, which has already selected a [+*wh*]-feature from Lex like (4a i), will lose it so that *where* can obey the MCC. It may be a wrong operation, since it refers to not morphological local algorithm but look-ahead global complexity. I therefore propose the Condition on the Feature-checking of Multiple *Wh*-words (CFM):

(5) Condition on the Feature-checking of Multiple *Wh*-words (CFM)

[+*Wh*]-features of multiple *wh*-words are checked against the [+Q]-feature of C in C_{HL}.

If so, how are multiple [+*wh*]-features in situ checked except for the first one in the Spec-CP? An expected answer to the question is that they should be checked against the [+Q]-feature of C in the Spec-CP. In case of English, their feature-checking cannot be realized in overt syntax. That is why double dislocation is responsible for the crash of a derivation:⁵

- (6) a.*[_{CP} Where_j what_i did [_{TP} you do t_i t_j]]?
 b.*[_{CP} What_j who_i [_{TP} t_i did t_j]]?

5. It seems clear that double dislocation is responsible for the ungrammaticality of a sentence containing two moved *wh*-words. It might be for the same reason that only one *wh*-word can be preposed in question. See Kuno & Robinson (1972).

- c.*[_{CP1} What_i did [_{TP} John say [_{CP2} t'_i where_j [_{TP} he bought t_j t_j]]]]?
 d.*[_{CP1} Where_i did [_{TP} John say [_{CP2} t'_i what_j [_{TP} he bought t_j t_j]]]]?

In (6a-b), two disorderly moved *wh*-words yield unconvergent derivations, since they violate what is called the Constraint on Double dislocation of *Wh*-words (CDW). Both *what* attracted to a CP₁ in (6c) and *where* attracted to a CP₁ in (6d) also violate the CDW, the very moment they pass through their own Spec-CP₂. Although the head C can check its [+Q]-feature against the interpretable [+wh]-features of multiple *wh*-words, English has not yet permitted the CDW.

Nevertheless, there are peculiar constructions containing *wh*-words that pass through a *wh*-conjunction *whether* in the Spec-CP. They are very similar to the multiple *wh*-questions that have not yet permitted the CDW. Let us in turn examine *whether*-questions diachronically:

- (7) a. [_{CP1} Ech man loke [_{CP2} whether [_C^{OMAX} that C] [_{TP} I ly]]].
 ...about 1395, *Plowman's T*, 834
 (Each man looks whether I lie down.)
 b. [_{CP} Whether does [_{TP} Doubting consist in embracing the Alternative or Negative Side of a Question]]?
 ...1713, *Berkeley Hylas & Phil* 1, (1725). 5
 c. [_{CP} Whether do [_{TP} you demonstrate these things better in Homer or Hesiod]]?
 ...about 1822, *Shelley Ion Pr. Wks*, 1888 II, 115
 d. [_{CP1} Which books_i are C₁ [_{TP} you not sure [_{CP2} whether t'_i C₂ [or not] [_{TP} you should read t_i]]]]?
 ...Kuno & Robinson (1972)
 e.?[_{CP1} Who_i did C₁ [_{TP} you wonder [_{CP2} whether t'_i C₂ [_{TP} Bill saw t_i]]]]?
 ...Radford (1981)

As mentioned in Yu (1995), *whether* in the Spec-CP merges with a

relative or conjunctive subordinant just like *if* since Old English (OE).⁶ By the suppression of the second alternative did a *wh*-conjunction *whether* in (7a) introduce a simple dependent question, and become the ordinary sign of indirect interrogation before *that* or $\Phi_{(that)}$ (PPSF) in both OE and ME. A *wh*-conjunction *whether* in (7a-b) had expressed a doubt between alternatives as an interrogative particle introducing a disjunctive direct question from OE till late ModE. It had behaved just like the other interrogative *wh*-words during those periods. Although both *which books* in (7d) and *who* in (7e) are attracted to their own Spec-CP₁, passing through their own Spec-CP₂, their derivational structures seem to be convergent or less convergent. Since one attracted *wh*-word should pass through the other *wh*-conjunction *whether* in situ, I will call such a computational operation the Quasi-double Movement of *Wh*-words (QMW).⁷ In short, violating the CDW always causes a derivation unconvergent, whereas following the QMW causes it to be convergent or less convergent. If so, *which books* in (7d) checks its [+*wh*]-feature against the [+Q]-feature of C in the Spec-CP₂ and subsequently against that of C in the Spec-CP₁. Likewise, *who* in (7e) checks its [+*wh*]-feature against the [+Q]-feature of C twice. As mentioned in Yang (1998), an attracted *wh*-word to the Spec-CP₂ is proliferated beneath *whether* by Tuck-in, which is a movement that is exempted from the Extension Condition due to the Principle of Minimal Compliance (PMC).⁸ Both CFM and QMW show us

6. Relative or conjunctive subordinants in ME were often reenforced by *þat* (*that*) or *as*: *how that, whan (when) that, which that, which as, where as, þer (there) as, whaym (who) that, if that, though þat, sith (since) þat, after þat, bycause þat, also soone as at*, etc. See *The Oxford English Dictionary* (OED), Cassidy & Ringler (1971) and Mosse (1975)

7. The pseudo-double movement of *wh*-words seems to violate the *Wh*-Island Condition; clauses introduced by a *wh*-phrase (*who, whether*, etc.) are islands. Although most of native speakers think the derivation is rather awkward, I cannot help but recognize this phenomenon as an significant syntactic change in late ModE, which had never happened during the OE and ME periods. See Chomsky (1962, 1981).

that even in ModE may the [+wh]-features of multiple *wh*-words be attracted overtly to the Spec-CP and checked against the [+Q]-feature of C cyclically.

There are some languages in the world that permit the feature-checking of multiple *wh*-words in overt or covert syntax. Let us first examine Bulgarian and Serbo-Croatian multiple *wh*-fronting constructions, as exemplified in Koizumi (1994):

- (8) a. Zavisi od tova, [_{CP} kog koko C [_{TP} pruv e udaril]].
 depends on it who whom first is-CL hit
 (It depends on who hit whom first.)
 b.*Zavisi od tova, [_{CP} kog pruv koko C [_{TP} e udaril]].
 depends on it who first whom is-CL hit
 (It depends on who hit whom first.)
- (9) a. Zavisi od tova [_{CP} ko koga C [_{TP} prvi udari]]?
 depends on it who whom first hits
 (It depends on who hit whom first.)
 b. Zavisi od tova [_{CP} ko C [_{PolP} prvi koga Pol [_{TP} udari]]?
 depends on it who first whom hits
 (It depends on who hit whom first.)
 c. Zavisi od tova [_{CP} ko [_{AdvP} prvi] koga C [_{PolP} [_{TP} udari]]?

Among multiple *wh*-fronting languages, Bulgarian as well as Romanian permits the double dislocation of *wh*-words, as illustrated in (8a), and sequences of preposed *wh*-phrases cannot be interrupted by an adverb (and/or a clitic), as illustrated in (8b). In (8a), the [+wh]-features of *kog* (English *who*) is checked against the [+Q]-feature of C by the MCC, and that of *koko* (English *whom*) is subsequently checked against the

8. According to Extension Condition proposed in Chomsky (1995), Merge and Move extend K to K*, which includes K as a proper part. According to the Richards' (1997) PMC, a constraint need not be satisfied more than once with respect to a head in a cycle. See Yang (1995, 1996) in detail.

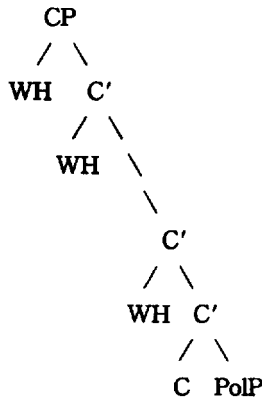
[+Q]-feature of C by Tuck-in movement. Serbo-Croatian permits the double dislocation of *wh*-words like Bulgarian, as illustrated in (9a), and it also permits the interruption of an adverb (and/or a clitic) unlike Bulgarian, as shown in (9b). As the result, he assumes that the first attracted *ko* (English *who*) checks its [+*wh*]-feature against the [+Q]-feature of C in a CP, but the second attracted *koga* (English *whom*) checks its [+*wh*]-feature against the feature of Pol in a PolP.⁹ However, it seems that this assumption lacks explanatory power. It is because a head *Pol* has no [+Q]-feature except for [Top(ic)]- and [Neg(ative)]-features. If an AdvP is tucked optionally in the Serbo-Croatian Spec-CP irrespective of Extension Condition, both of them may have the same multiple Spec-CP structures. I therefore assume that the logical form of (9a) is not (9b) but (9c). In short, Bulgarian and Serbo-Croatian languages are sure to obey the CFM as well as the LR.

The following is the layered specifiers analysis of multiple *wh*-fronting:

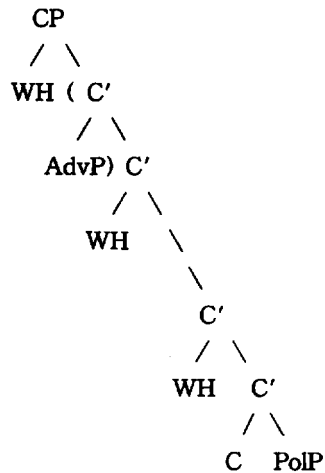
9. Johnson (1989) assumes that there is a polarity phrase (PolP) between IP and VP, as illustrated in (1a). Notice that *so*, *too*, and *not* all relate to the polarity of the clause: *too* and *so* asserting the validity of the clause, and *not* asserting its falsehood. Contrary to him, Authier (1992) assumes an iterated CP to be there instead of a PolP, as illustrated in (1b):

- (1) a. Becky said [_{CP} that [_{PolP} these books [_{Pol'} only with great difficulty [_{Pol'} can [_{AGR_{NP}} she carry]]]]]
 b. John swore [_{CP} that [_{CP} [_{Spec} under no circumstance] [_C would] he accept their offer]]

(10) a. Bulgarian/Romanian



b. Serbo-Croatian/Czech



Contrary to Koizumi (1994), Serbo-Croatian as well as Bulgarian has the layered specifiers, as shown above so that a head C may check its [+Q]-feature overtly against the [+wh]-features of multiple *wh*-words.¹⁰ These diagrams show us that only a head C can attract *wh*-words in all languages.

Let us secondly examine Korean and Japanese multiple *wh*-fronting constructions, as illustrated in (11) and (12), respectively:

- (11) a. [_{CP} Nu-ka mues-ul enchey edise eddekey oay C [_{TP}
 who-NOM what-ACC when where how why
 hay-ss- o]]?
 do- PST-INT
 (*Who what when where how why did?)

10. When Bulgarian multiple *wh*-words move overtly to the Spec-CP, only the first *wh*-movement obeys Extension Condition, Superiority, Subjacency, etc., and the other subsequent *wh*-moments attracted by the same C are free from the constraints that the first has already obeyed in the cycle. Confer Yang (1998).

- b. [_{CP} Nu-ka C [_{TP} hay-ss- o, mues-ul enchey edise
 who-NOM do- PST-INT what-ACC when where
 eddekey oay]]?
 how why
 (?Who did what when where how why?)
- c. [_{CP} C [_{TP} Hay-ss- o, nu-ka mues-ul enchey edise
 do- PST-INT who-NOM what-ACC when where
 eddekey oay]]?
 how why
 (*Did who what when where how why?)
- (12) a. [_{CP} Darey-ka nani-o iz dogodey dousidey nazey C
 who- NOM what-ACC when where how why
 [_{TP} si-da- no]]
 do-PST-INT
 (*Who what when where how why did?)
- b. [_{CP} Darey-ka C [_{TP} si- da- no, nani-o iz dogodey
 who-NOM do- PST-INT what-ACC when where
 dousidey nazey]]
 how why
 (?Who did what when where how why?)
- c. [_{CP} C [_{TP} Si-da- no, darey-ka nani-o iz dogodey
 do-PST-INT who- NOM what-ACC when where
 dousidey nazey]]
 how why
 (*Did who what when where how why?)

As exemplified in (11a), a Korean *wh*-word *Nu-ka* (English *who*) is attracted overtly to the Spec-CP by the MCC, and the rest are attracted overtly there by Tuck-in movement. Thus their [+*wh*]-features can be checked against the [+Q]-feature of C.¹¹ Although Korean multiple

11. As assumed in Yeo (1977), Korean has a multiple Case construction. The

The difference in the selectional restrictions of the matrix verbs is reflected in the scope of the *wh*-phrase in the embedded clauses. For example, a verb *xiangzhidao* 'wonder' requires either an indirect or a direct interrogative complement: an indirect one as in (13a) and a direct one as in (14a). Whether the embedded question is direct or indirect, it should contain the same multiple Spec-CP structure as that of Bulgarian. Multiple *wh*-words *shei* 'who' and *weishenm* 'why' in (13a) check their [+*wh*]-features overtly against the [+Q]-features of C. As the result, the indirect question has only one meaning such as (13b). In (14a), either *shei* or *weishenmo* in a CP₂ is attracted covertly to a CP₁, representing (14b) or (14c), respectively.

So far, I have assumed that an English multiple question contains the same multiple Spec-CP structure as that of Bulgarian,¹² in which multiple *wh*-words check their [+*wh*]-features against the [+Q]-feature of C. It is sure that an English normal question (NQ) permits one of multiple *wh*-words to be attracted overtly to the Spec-CP contrary to an echo question (EQ). And it also permits the rest to be attracted to the Spec-CP, tucked in the Spec-CP. As mentioned in Yang (1998),

12. Besides, Imbabura Quechua appears to be similar to Spanish and English in that *wh*-words are obligatorily fronted, as illustrated in (1). But in Ancash Quechua *wh*-words may appear either fronted like English and Spanish or in situ like Chinese, as illustrated in (2). See Cole & Hermon (1994) in detail.

- (1) a. Ima-ta-taji, ya-ngui [Juan e_i randishka-ta]?
 what-ACC-Q think-1PL Juan bought-ACC
 (What do you think Juan has bought?)
 b. *Ya-ngui [Juan ima-ta-taji, randishka-ta]?
 think-2PL Juan what-ACC-Q bought-ACC
 (What do you think Juan has bought?)
- (2) a. May-man-taqi, [Jose munan [Maria e_i aywanan-ta]]?
 where-to-Q Jose wants Maria will go-ACC
 (Where does Jose want Maria to go?)
 b. [Jose munan [Maria may-man, aywanan-ta]]?
 Jose wants Maria where-to will go-ACC
 (Where does Jose want Maria to go?)

only the first *wh*-movement, which is overt, obeys Subjacency and the other subsequent *wh*-movements, which are covert, attracted by the same C are free from Subjacency, which the first has already obeyed in the cycle according to the Strongly Cyclic Hypothesis (SCH).¹³

3. The Feature-checking of *wh*-words

All the grammatical operations in C_{HL} are due to features. I have accordingly assumed that covert movements should occur in *wh*-in-situ languages. As examined above, it is to the Spec-CP that the [+*wh*]-features of multiple *wh*-words are attracted by the [+Q]-feature of C.

Let us now examine the NQs taken from Kuno & Robinson (1972):

- (15) a. What book did Albert buy?
 b. $[_{CP} \text{What book}_i \text{ did C } [_{TP} \text{Albert buy } t_i]]?$
- (16) a. Who gave what to whom?
 b. *Who what gave to whom?
 c. $[_{CP} \text{Who}_i [_{C1} \text{FF}_{(what)_j} [_{C2} \text{FF}_{(whom)_k} \text{ C } [_{TP} t'_i \text{ gave } t_i \text{ what}_{(ij)} \text{ to whom}_{(ik)}]]]]?$
- (17) a. Who told you where we should buy which books?
 b. *We're not sure whether who Bill saw
 c. $[_{CP1} \text{Who}_j \text{ C}_1 [_{TP} t'_j \text{ told } t_j \text{ you } [_{CP2} \text{where}_i [_{C'} \text{FF}_{(which \text{ books})_k} \text{ C}_2 [_{TP} \text{we should buy which books}_{(ik)} t_i]]]]]]?$

Here (15b), (16c) and (17c) are logical forms of (15a), (16a) and (17a),

13. The SCH is that everything is cyclic in grammar. In the Strongly Cyclic Model, Spell-Out applies cyclically and syntax and phonology interacts cyclically. The Cyclic Spell-Out Hypothesis solves the paradox that the uninterpretable ϕ -feature of T should delete right after the checking of the subject and yet it shows up in PF. According to it, the uninterpretable ϕ -feature of T is copied into phonology right before it deletes in syntax.

respectively. Since an English *wh*-word can occur clause-initially, only one *wh*-phrase *what books* is attracted overtly to the Spec-CP, as illustrated in (15b). If a *wh*-word *what* is tucked in overtly beneath a *wh*-word *who*, violating the CDW, the question will be ungrammatical, as in (16b). In (16c), a head C checks its [+Q]-feature overtly against the [+*wh*]-feature of *who* in the outer Spec-CP, and covertly against those of FF_(what) in the first inner Spec-C'₁ and FF_(whom) in the second inner Spec-C'₂ cyclically, forming the multiple Spec-CP structure.¹⁴ Contrary to (7d-e), if a *wh*-word *who* is tucked in beneath a *wh*-conjunction *whether* in an embedded clause, the question will be ungrammatical, as in (17b). A CP₂ in (17c) also contains a multiple Spec-CP, in which a head C checks its [+Q]-feature covertly against the feature of FF_(which books).

Let us in turn consider the multiple Spec-CP structures in EQs. The following are EQs taken from Sobin (1990):

- (18) a. U: Bill married Greta Garbo.
 b. E: Bill married who?
 c. E: Who did Bill marry?
 d. [CP FF_(who) C [TP Bill married who_(i)]]?
 e. [CP FF_(who) FF_(did)_k C [TP Who_(ij) did_(ik) Bill married t_i]]?¹⁵
- (19) a. U: Does Frieda like chocolate worms?
 b. E: Does who like chocolate worms?
 c. E: Does who like what?
 d. [CP FF_(who) FF_(Does)_k C [TP Does_(ik) who_(ij) like t_i chocolate worms]]?
 e. [CP FF_(who)_j [C' FF_(what)_k FF_(Does)_m C [TP Does_(tm) who_(ij) like t_i what_(tk)]]?

14. All the specifiers are in the checking domain of C, entering into the checking relation with the head. Confer Koizumi (1994) and Chomsky (1996).

15. In this paper, I will leave the curious feature-checking structure of EQs open for the next study.

- (20) a. U: Where does Shostakovich sell T-shirts?
 b. E: Where does who sell what?
 c. [_{CP} FF_{(where)m} [_{C'} FF_{(who)l} [_{C'} FF_{(what)n} FF_{(does)q} C [_{TP} Where_{(tm)k} does_(tq) who_{(tj)h} sell _{t_i} what_(tn) _{t_k}]]]])?

Here E is an EQ response to an utterance U. In case of (18a), there are two types of EQs found in discourse: a syntactic EQ (18b) and a pseudo EQ (18c). And (18d-e) are the logical forms of EQs (18b-c), respectively. Here the [+wh]-feature of each *who* FF_(who) is attracted covertly to the Spec-CP by the [+Q]-feature of C. It is sure that even the first *wh*-word in EQs is attracted covertly to the Spec-CP due to what is called 'COMP-freezing.'¹⁶ And (19b-c) are syntactic EQs to (19a), and (19d-e) are logical forms of (19b-c), respectively. In (19d), the [+wh]-feature of in-situ *who* FF_(who) is attracted covertly to the Spec-CP. In (19e), that of in-situ *what* FF_(what) is tucked in beneath FF_(who) irrespective of any condition. And (20b) is a syntactic EQ to (20a), which is a direct *wh*-question. (20c) is a logical form of (20a), whose multiple Spec-CP structure consists of three *wh*-features such as FF_(where), FF_(who) and FF_(what) attracted covertly to the Spec-CP by C. In short, I assume that all the [+wh]-features in EQs are attracted covertly to the multiple Spec-CP structures. On the basis of examples such as those above, I propose the following condition:

- (21) Condition on the (Multiple) Spec-CP Structure of an English Question (CSEQ)

An English question should contain a (multiple) Spec-CP structure at least such as

NQ: [_{CP} *wh*-word ([_{C'} FF_(wh-word) [_{C'} ...] (an aux.) C [_{TP} ...]](I) or

16. Sobin (1990) divides EQs into two syntactic types: pseudo EQs, which involve completely usual questioning strategies and syntax, and syntactic EQs, which involve a discourse strategy called COMP-freezing and unselective binding of in-situ *wh*-phrases.

EQ: [CP FF_(wh-word) ([C' FF_(wh-word) [C' ...] (FF_(an aux.)) C [TP ...]](I)]

Let us finally take a careful look at the Spec-CP structures of questions with the CSEQ:

- (22) a. *Who what gave to whom?
 b. [CP Who [C' what [C' FF_(to whom) C [TP gave to whom_(ti)]]]]?
- (23) a. *I don't know who expects that who will marry Mary?
 b. [CP₁ I don't know [CP₂ who C [TP expects [CP₃ FF_(who) that C [TP who_(ti) will marry t_i Mary]]]]?
- (24) a. *What did John say where he bought?
 b. [CP₁ What_i did [TP John say [CP₂ t'_i where_j [TP he bought t_i t_j]]]]?
- (25) a. Who believes who to be guilty?
 b. [CP Who [C' FF_(who) C [vP t'_j believes [INFP who_(ti) to [InfP t_i be guilty]]]]?
- (26) a. Who remembers where we bought which books?
 b. [CP₁ Who C [TP remembers [CP₂ where_i [C' FF_(which books) C [TP we bought which books_(tj) t_j]]]]?

Questions (22-24) are all ungrammatical, but questions (25-26) are both grammatical. In (22b), two *wh*-words *who* and *what* are attracted overtly to the Spec-CP₁, so that the question violates the CSEQ. As shown in (23b), the Spec-CP₃ containing *only* FF_(who) violates the CSEQ, since it does not form the multiple Spec-CP structure. Of course, (24b) does not contain it, either, so that it violates the CSEQ. However, (25b) obeys the CSEQ, since a *believe*-verb can merge with an INFP-complement which has no Spec-CP structure. If so, then FF_(who) can be attracted to the multiple Spec-CP in the *matrix* clause for its feature-checking. It seems that (26b) also contains a multiple Spec-CP structure at least, obeying the CSEQ.

4. Conclusion

The Minimal Chain Condition (MCC), which is the Principle of Shortest Move, explains the Superiority Condition, but time and place *wh*-words such as *where* and *when* cross over another *wh*-word freely, violating the MCC in overt syntax. The fact shows us that all the [+*wh*]-features of multiple *wh*-words are selected from lexicon for numeration. I assume that those features should be checked against the [+Q]-feature of C in C_{HL} in order to obey both the Last Resort (LR) and the Condition on the Feature-checking of Multiple *Wh*-words (CFM). As examined in peculiar *whether*-constructions, the [+*wh*]-features of multiple *wh*-words may be often attracted overtly to the Spec-CP and checked against the [+Q]-feature of C cyclically.

There are some languages in the world that permit the feature-checking of multiple *wh*-words in overt or covert syntax. Bulgarian and Serbo-Croatian languages are sure to obey the CFM in the Spec-CP structures. Likewise, Korean and Japanese multiple *wh*-words are overtly or covertly tucked in a CP for their feature-checking. Whether the Chinese embedded question is direct or indirect, it contains the same multiple Spec-CP structure as that of Bulgarian. When multiple *wh*-words are attracted to the Spec-CP, only the first *wh*-movement, which is overt, obeys Subjacency and the other subsequent *wh*-movements, which are covert, attracted by the same C are free from Subjacency, which the first has already obeyed in the cycle according to the Strongly Cyclic Hypothesis. According to the Condition on the (Multiple) Spec-CP Structure of an English Question (CSEQ), an English question should contain a (multiple) Spec-CP structure at least such as NQ: [_{CP} *wh*-word ([_C FF_(wh-word) [_C ...]) (an aux.) C [_{TP} ...]](I) or EQ: [_{CP} FF_(wh-word) ([_C FF_(wh-word) [_C ...]) (FF_(an aux.)) C [_{TP} ...]](I).

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