NOTES ON COVERT WH-AGREEMENT

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Many languages exhibit wh-agreement within the movement domain of a wh-phrase. The languages which allow wh-agreement can be generally divided into two types: those employing syntactic operations and others employing a special morphology. Standard English belongs to the former in that wh-movement induces T-to-C movement. In the embedded clause from which a wh-phrase is extracted, however, T-to-C movement never occurs. It seems prima facie that the failure of the movement indicates disappearance of wh-agreement in the embedded clause. However, some languages exhibit T-to-C movement in the embedded clause from which a wh-phrase is extracted. This fact suggests occurrence of wh-agreement in the clause domain which a wh-phrase moves through.

This paper envisages the possibility that in the languages where overt wh-agreement does not occur, it occurs covertly in LF, and demonstrates that that-trace effect is accounted for as a consequence of the analysis of the covert wh-agreement. A more curious but nevertheless prevalent feature of the that-trace effect is that an apparent complementizer-trace configuration is allowed in many languages. This paper also focuses on this fact and shows that the disappearance of the that-trace effect is ascribed to the presence of syntactic amalgamation of a complementizer

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and another functional word.

Standard English exhibits *wh*-agreement by employing syntactic operations such as T-to-C movement. In (1), a *wh*-phrase forms a Spec-head relation with the head of CP and agrees with its *wh*-feature.

\[
(1) \quad [\text{CP What} \text{ did}, \text{ [TP you ti, [VP buy tj]]}]\]

*Wh*-agreement is not confined to syntactic operations. Some languages can trigger complementizer alternation in the clause from which a *wh*-phrase is extracted, which is represented by a phenomenon occurring in Irish, where the clause from which a *wh*-phrase is extracted can have the special interrogative or relative complementizer *aL* rather than the neutral complementizer *goN* (see Chung and McCloskey (1987)), and other languages exhibit a morphological change of INFL accompanied by *wh*-movement. The languages which manifest a morphological change of INFL include Kikuyu, Paluan, Hausa, Moore, etc. According to Haïk (1990), in these languages the clause from which a *wh*-phrase is extracted can trigger irrealis morphology in INFL, and the irrealis morphology appears only in the domain between its S-structure position and the variable it binds. Some examples in Kikuyu are as follows:

\[
(2) \quad \begin{align*}
\text{a. } & n\text{o}-\delta_i \text{ ó-γ w-eciíri-a [ } \text{ Ngóγe a-úγ-íře [ \text{ áte ti} ]} \\
& \text{ Fp-who Sp-T-think-T Ngui Sp-say-T that (irrealis) (irrealis)} \\
& \text{ o-On-írě Kaanake]} \\
& \text{Pp-see-T Kaanake (irrealis)} \\
& \text{‘Who do you think Ngugi said saw Kaanake?’}
\end{align*}
\]

\[
\begin{align*}
\text{b. } & \text{ ó-γ w-lecíiri-á [n\text{o-òi Ngóγe a-úγ-íře [ \text{ áte ti} ]} \\
& \text{ (realis) Fp-who (irrealis)} \\
& \text{ o-On-íře Kaanake]} \\
& \text{ (irrealis)} \\
& \text{‘Who do you think Ngugi said saw Kaanake?’}
\end{align*}
\]

(Haïk (1990: 352))

A common property which lies behind the phenomena accompanied by *wh*-movement presented above is that *wh*-agreement, whether it be syntactic or morphological, is exhibited in the domain between the moved *wh*-phrase and its original position. In Standard English, when a *wh*-phrase in an embedded clause moves up to a matrix clause, T-to-C movement never occurs in the embedded clause. From this, we have a hunch that *wh*-agreement does not occur in the embedded clause.
However, some varieties of English (e.g. Belfast English) allow T-to-C movement in the domain between the moved wh-phrase and its original position (see Henry (1995)).

(3) a. Who do you think [did John convince t [that Mary went]]?
   b. *Who do you think [did John convince t [did Mary go]]?
   (Henry (1995: 118))

If it is on the right track that every language has the same interface level between the computational system and the performance system (the conceptual-intentional level), then the languages which do not exhibit overt wh-agreement have wh-feature checking implemented in LF. Thus in Standard English, wh-feature checking including T-to-C movement in the embedded clause from which wh-phrase is extracted is implemented in LF.

With this background, let us take a look at the detailed mechanism of wh-feature checking in Standard English.

(4) What do you think [cp what that [TP John T [wh [VP bought t]]] (LF)

In (4), the wh-phrase in the CP-SPEC of the embedded clause is reproduced as the intermediate trace of the fronted wh-phrase. According to Stowell's (1982) and Rizzi's (1996) suggestion that tense bears wh-feature, wh-feature is specified in T in (4).

Although T in an embedded clause which a verb takes as an indirect question in its complement can bear Q-feature as well as wh-feature, we assume that the T in the embedded clause of (4) bears only wh-feature, since the matrix verb does not take a genuine interrogative sentence in its complement. We also assume that covert properties of wh-feature checking are due to Procrastinate. The wh-feature of the embedded clause in (4) is erased in LF after it is checked off. The reproduced wh-phrase in the CP-SPEC of the embedded clause in (4) disappears after the wh-feature checking with the C head of the embedded CP which bears wh-feature brought by T-to-C movement in LF, since it loses semantic properties after the checking and provides no instructions which the conceptual-intentional system requires. The failure of this series of wh-feature checking leads to the wh-feature being left unchecked and thus the derivation will crash.¹

Having seen the possibility of LF wh-feature checking in an embedded clause from which a wh-phrase is extracted, we show that that-trace effect is explained as a consequence of the wh-feature checking presented above.

(5)  
   a. *Who do you think \([\text{CP } t' \text{ that } [\text{TP } t \text{ saw John}]]\)?
   b. Who do you think \([\text{CP } t' [\text{TP } t \text{ saw John}]]\)?

(5a), which exhibits the that-trace effect, is totally ungrammatical in Standard English. The LF structures of (5a, b) will be (6a, b) respectively.

(6)  
   a. Who do you think \([\text{CP who that } [\text{TP } t \text{ saw John}]]\)
   b. Who do you think \([\text{CP who } \phi [\text{TP } t \text{ saw John}]]\)

(7)  
Who do you think \([\text{CP who } \phi [\text{wh} [\text{TP } t; \text{T [wh] [VP saw John]]}]\)? (LF)

In (6b), where that does not occupy the head of the embedded CP, according to Rizzi’s (1990) suggestion that in English a tensed complementizer can be realized as that or Agr and Agr induces agreement, the null-COMP can agree with the wh-phrase who in CP-SPEC which is the reproduction of its intermediate trace. There can be another possible agreement relation in the case of (7). Across languages agreement can involve a head and its specifier or a head and its complement. Some cases of agreeing C show that C agrees with the local subject and with INFL. A case in point is West Flemish (for details, see Haegeman (1991, 1992)).

(8)  
... \([\text{CP } [\text{C' da/*dan [TP den inspekteur da boek gelezen that the inspector that book read eet]}]]\).

In (8), the perfective auxiliary eet agrees with its subject den inspekteur. The complementizer da agrees with the subject and with the INFL, and the complementizer dan, which does not agree with the subject and with the INFL, is ruled out. Unlike West Flemish, English does not have an overt agreeing C, and thus a null-COMP serves as agreeing C. Once the null-COMP undergoes agreement with the wh-phrase who in the embedded CP-SPEC in (7) and bears the same grammatical features as the wh-phrase, it establishes an agreement relation with its local T, since the wh-phrase has the same grammatical features as the T. In this case, the null-COMP also has the wh-feature the T bears (cf. Chomsky (2001a, b) and Pesetsky and Torrego (2001)) and can check the wh-feature of the wh-phrase without T-to-C movement.
A crucial point of this checking is that it is implemented without movement. Economy principles favor more economical operations. In wh-movement of a subject, in fact, T-to-C movement does not occur as follows:

\[(9) \ *[_{CP \ Who_j \ did_j \ [_{TP \ t_i \ t_j \ buy \ the \ carpet}]?] \ (no \ emphatic \ reading)\]

We assume then that a derivation crashes if a more economical operation is not chosen.

With this, let us take a look at the *that*-trace effect.

\[(10) \ \text{Who}_i \ \text{do you think \ } [_{CP \ who_i \ that \ [_{TP \ t_i \ T \ [_{VP \ saw \ John}]}}]\ (LF)\]

In (10), *that* occupies the head of the embedded CP and does not agree with the embedded T. The failure of agreement blocks the supply of *wh*-feature from the embedded T to the C. T-to-C movement is employed to carry out *wh*-feature checking between the C and the *wh*-phrase in the CP-SPEC. This operation, however, is not economical, since it falls back on movement. Under economy principles, an economical operation such as *wh*-feature transfer from an embedded T to a null-COMP by agreement takes precedence over T-to-C movement when *wh*-feature checking between the C and the *wh*-phrase in the CP-SPEC is implemented in (10). However, the economical operation is blocked by the presence of the complementizer *that*, which causes the derivation to crash. This is why a sentence which exhibits the *that*-trace effect is totally ungrammatical in Standard English.$^2$

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$^2$ In the case of extraction of an object *wh*-phrase as in (i), T-to-C movement in LF is required to implement *wh*-feature checking between the embedded C and the intermediate *wh*-phrase in CP-SPEC.

\[(i) \ \begin{align*}
\text{a. & \text{What}_i \ \text{do you think \ } [_{CP \ \text{what}_i \ that_k \ [_{TP \ \text{John}_j \ T_j \ [_{VP \ repaired \ t_i}]}}]}
\text{b. & \text{What}_i \ \text{do you think \ } [_{CP \ \text{what}_i \ \phi_j \ [_{TP \ \text{John}_j \ T_j \ [_{VP \ repaired \ t_i}]}}]
\end{align*}\]

In (ia), *that* in the head of the embedded CP does not agree with its embedded T. The failure of agreement hinders the supply of *wh*-feature from the embedded T to the C. T-to-C movement is employed to carry out *wh*-feature checking between the C and the *wh*-phrase. In (ib), where a null-COMP occupies the head of the embedded CP, the null-COMP can agree with the *wh*-phrase in the CP-SPEC. But choice of supply of *wh*-feature in the embedded T to the null-COMP by agreement is radically impossible because of discrepancy of the grammatical features of the null-COMP and the embedded T, which induces T-to-C movement to carry out *wh*-feature checking between the null-COMP and the *wh*-phrase. Both cases of (i), whether *that* occupies the head of the embedded CP or not, fall back on T-to-C movement and thus are equivalent in derivation, predicting the extraction possibilities from non-subject positions in sentences with or without overt complementizers.
The that-trace effect, however, does not always induce ungrammaticality; an apparent complementizer-trace configuration is allowed in many languages.\(^3\) For example, the languages which allow a that-trace configuration are Bavarian, Dutch, Icelandic, Hebrew, etc.

(11) Wer moanst du \([t' \text{ dass } [t \text{ d'Emma mog}]\)] (Bavarian)
who think you that Emma loves
‘Who do you think loves Emma?’ (Bayer (1984: 210))

(12) Wie zei je dat \(t\) Hans gezien heeft? (Dutch)
who said you that Hans seen has
‘Who did you say has seen Hans?’ (Sobin (1987: 37))

(13) Hver sagði hann, að væri kominn til Islands? (Icelandic)
who said he, that was come to Iceland
‘Who did he say came to Iceland?’ (Sobin (1987: 39))

(14) Mi at ma’amina ᵃ- lo ohev salat xacilim?
(Hebrew)
who you believe that NEG like salad eggplants
‘Who do you believe doesn’t like salad eggplants?’
(Shlonsky (1988: 191))

In these languages, the presence of a complementizer renders the complementizer and its local T inert for agreement and a non-economical operation such as T-to-C movement is chosen to carry out wh-feature checking between the C and the wh-phrase in the CP-SPEC in LF, which causes the derivation to crash. Thus a question remains about

\(^3\) Based on the feature deletion of an uninterpretable T feature (henceforth uT) on C, Pesetsky and Torrego (2001) discuss that-trace effect. They assume that C in a finite clause bears uT, and the complementizer that is not an element of C but an instance of T that moves to C for the purpose of deleting the uT on C. In the case of the null-that clauses, the nominal subject bearing uT, but not that, moves up to CP-SPEC and deletes the uT on C. The following illustrates this mechanism.

(i) Mary expects \([\text{CP } [\text{that}]_j +[C, \text{uT}]_j [\text{TP Sue will, buy the book}]]\).

(ii) Mary expects \([\text{CP } [\text{Sue, uT}]_j +[C, \text{uT}]_j [\text{TP t will buy the book}]]\).

In the case of extraction of a wh-subject, when the wh-subject moves up to CP-SPEC, it deletes the uT on C and thus the T-to-C movement of that is not required. The redundant movement results in the that-trace effect.

(iii) Who do you think \([\text{CP } t_1 [C, \text{uT}]_j [\text{TP t saw John}]]\)

However, the analysis of the that-trace effect is not well-supported in that there are attested examples where the that-trace effect is allowed as in (11)–(14), and requires modifications to provide a straightforward account for the variable acceptance of the that-trace effect.
why these languages allow the *that*-trace effect. However, if the complementizer is moved and the C position is emptied, the C can agree with its embedded T as in (7). Hebrew has a case in point. In this language, the presence of the complementizer *še* does not block the extraction of an embedded subject, as shown in (14). According to Shlonsky (1988), *še* moves from the head of CP and cliticizes to that of TP in overt syntax. If this analysis is on the right track, the C position from which *še* moves is occupied by a null-COMP and the null-COMP can agree with the *wh*-phrase in the CP-SPEC and with its embedded T as the English case of (7). The agreement between the C and its embedded T provides the *wh*-feature the T bears for the C. This leads to the successful *wh*-feature checking between the C and the *wh*-phrase in the CP-SPEC without T-to-C movement in LF, predicting the well-formedness of the derivation.

Cliticization of a complementizer to the head of TP is a kind of amalgamation of a complementizer and another functional word. This amalgamation is crucial to absence of the *that*-trace effect. We assume

4 Across languages a complementizer-trace configuration is allowed by employing a specialized complementizer in the C position. These languages include French, Norwegian, Danish, and so forth. In French, the complementizer *qui* not *que* is introduced in the C position in the clause from which a *wh*-subject has been moved; in Norwegian *som*; in Danish *der*. Otherwise, the sentences are ruled out.

(i) Qui crois-tu {*que/qui*} viendra? (French)
‘Who do you think will come?’

(ii) Vi vet [hvem *(som) [t snakker med Mart]] (Norwegian)
‘We know who that talks with Mary.’ (Rizzi (1990: 57))

(iii) Jeg ved ikke hvem du tror {*som/der} har gjortdet. (Danish)
‘I don’t know who you believe has done it.’ (Vikner (1991: 119))

The specialized complementizer appears only in the C position of the clause from which a *wh*-subject is extracted in these languages. A question arises about why a complementizer-trace configuration is allowed by employing the specialized complementizer in these languages. Possible explanation is that the specialized complementizer is a morphological reflex of extracting its local *wh*-subject and bears the same grammatical features as the subject. In this case, the specialized complementizer agrees with the local embedded T, which provides *wh*-feature for the complementizer. It agrees in a SPEC-head relation with the intermediate *wh*-subject and can check its *wh*-feature without T-to-C movement in LF, predicting the well-formedness of the derivation.
then that parameterization of the cross-linguistic variation of the that-trace effect depends on whether a complementizer can coalesce with another functional word in a language in question. With this, let us consider Middle English (henceforth, ME). In early ME, a complementizer for in infinitives formed an amalgam with to in the head of TP as for-to. A similar amalgamation was observed in the complementizer system in ME. More precisely, the complementizer that immediately follows something which is unquestionably in C (i.e. “doubly-filled COMP”), as shown in (15).

(15) Whan that ye wylle, we shal alle goo with yow.
when that you will we shall all go with you
(William Caxton, The History of Reynard the Fox, p. 55, ll. 14–15)

Since ME can form an amalgam of functional words as shown above, it is expected that ME would undergo cliticization of the complementizer that to the head of TP just as Hebrew and thus allow the that-trace effect. In fact, ME tolerates the that-trace effect as in (16).

(16) Thenne sayde the foxe who that saith that I am a
Then said the fox who that says that I am a
traitour or a morderar.
traitor or a murderer
(William Caxton, The History of Reynard the Fox, p. 96, ll. 8–9)

Dutch and Icelandic also permit doubly-filled COMP just as ME.

(17) Ik vraag me af of dat Ajax de volgende ronde halt.
I ask me PRT if that Ajax the next round reaches
‘I ask myself if Ajax reaches the next round.’
(Bayer (2004: 65))

As an anonymous reviewer points out, the presence of cliticization of the complementizer that to the head of TP in ME needs to be supported by independent evidence. Although the matter demands empirical arguments, I leave it to future research for lack of space.

Bergh and Seppänen (1992: 132) cite an example of that-trace configuration in Reynard the Fox as in (i) (no mention of which edition of Reynard the Fox is used and where the cited passage is).

(i) grymbert who wolde ye that sholde goo and daye hym to come
Grymbert, who wish you that should go and do him to come
(18) Ég veit ekki hvort að petta er í lagi. (Icelandic)
'I know not whether that this is all right'
‘I don’t know whether this is all right.’
(Vikner (1995: 122))
Thus these languages tolerate the that-trace effect, as shown in (12) and (13).

In marked contrast to ME, present-day English does not allow doubly-filled COMP. This suggests that present-day English lacks presence of syntactic amalgamation of a complementizer and another functional word and thus cliticization of a complementizer that to the head of TP does not occur, predicting the that-trace effect. A similar contrast is observed between Standard German and Bavarian (the southern variant of German spoken in Bavaria). Standard German does not exhibit doubly-filled COMP, while Bavarian does in a most consistent way.

(19) bis daß kumm is d’Suppn schö koid (Bavarian)
until that come is the soup already cold
(Bayer (1984: 232))
In Standard German, a COMP-trace configuration results in the ungrammaticality as in (20), but not in Bavarian as already shown in (11).

(20) *Wer glaubst du [t’ daß [t Emma liebt]]? (Standard German)
who think you that Emma loves
‘Who do you think loves Emma?’ (Bayer (1984: 209))
To sum up, covert realization of wh-feature checking in the clause domain which a wh-phrase moves through can be reduced to Procrustinate. In Standard English, wh-feature checking in the embedded clause from which a wh-phrase is extracted is implemented in LF. The that-trace effect is explained as a consequence of the mechanism of the wh-feature checking. The variable acceptance of that-trace configuration depends on whether the complementizer that can coalesce with another functional word to agree with its local T or not.

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**Middle English Text**

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