On Feature Checking in the Minimalist Program

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1 Introduction

Chomsky's (1992) recent theory, "the minimalist program", has greatly departed from his earlier framework in several respects. One of his new assumptions under discussion in the present paper is that we have two types of AGREEMENT (henceforce AGR) node——AGR-S and AGR-O. The former is the head of a clause, playing a central role in agreement between subject and verb, the latter doing so between verb and object. For example, the inflectional derivation of the sentence in (1) proceeds, according to Chomsky (1992), as follows: the verb *love* raises to the Tense position, making a complex Tense, which in turn raises to the AGR-S node, making a complex AGR-S, $[_{\text{AGR-S}}$ love-T-AGR-S]:

(1) John loves Mary.

In (1), the subject *John* is in SEPC-head relation in X-bar theoretic terms with the head of the complex AGR-S. Thus, we have a subject-verb agreement phenomenon in English, which is manifested on the -$(e)s$ morpheme for third person singular forms in the present tense.

English, however, has particular expressions which use a dummy auxiliary verb in negative and interrogative constructions——"*Do*-Support" operation. This verbal element, like normal lexical verbs but

unlike Modal auxiliaries, shows agreement for number and person with subject in finite clauses in the present tense:

(2)　a. I/we/you/they *do* not love Mary.

　　　b. John *does* not love Mary.

Chomsky (1991) assumes that the dummy *do* is inserted in a Modal position and argues that its inflectional derivation advances through adjunction of AGR and I(NFL) to *do*.　He, however, does not refer to the exact position *do* can occupy with no violation of X-bar principles.　The precise positioning of *do*, or for that matter, Modal auxiliaries, have consequence for feature checking proposed in Chomsky's minimalist approach.　I will discuss this topic in the next section.

　　In the minimalist program framework, Chomsky (1992) assumes that Case too is a feature which nouns bear in the lexicon.　If we adopt his assumption, then we will see that there might arise a problem with the number of Case features a given noun bears in the lexicon.　Since Chomsky does not impose any restriction on the number of Case features to be assigned in the lexicon, it follows that his theory allows a nominal item to bear more than one Case feature.　Thus, in (3), the subject NP *the man* will possibly have both Accusative and Nominative Case:

(3)　The man met the girl.

Here there is no problem with checking of Nominative since the subject NP is in the SPEC-head relation with AGR-S.　But if the NP bears Accusative Case feature at the same time, how is it checked in the subject position?　The SPEC-head relation is not available because AGR-S has
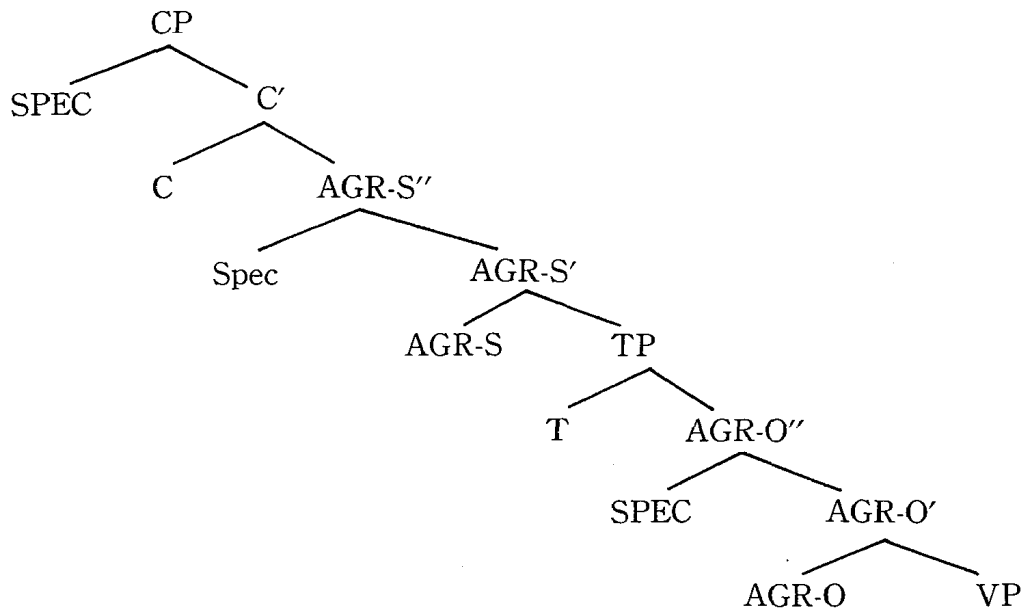
performed its part in checking Nominative Case feature and disappeared. The remaining possibility would be that the verb *met* checks the Accusative Case feature the subject NP has in the matrix specifier position. This, however, will be impossible since the verb checks the Accusative of the object NP *the girl* and does not have access to checking of the subject NP. Then the sentence in (3) should be regarded as deviant at LF by the condition of Full Interpretation (FI) if that principle is visible to a remaining feature of a lexical item. Of course the same argument holds for the object NP, where the offending Case feature is Nominative. How can these Case features be checked appropriately in Chomsky's approach? This is another topic I will discuss in the third section.

2 Do-Support

As I said in Section 1, Chomsky (1991) assumes that the English dummy verb *do* is inserted in a Modal position. Now let us see which position Modals ought to occupy in the framework of his minimalist program.

Chomsky (1992) takes the basic structure of the clause to be (4):

(4) (Chomsky's (2))

```
                    CP
                 ╱     ╲
           SPEC          C′
                      ╱     ╲
                   C          AGR-S″
                          ╱      ╲
                      Spec        AGR-S′
                                ╱      ╲
                            AGR-S        TP
                                      ╱    ╲
                                   T        AGR-O″
                                          ╱     ╲
                                      SPEC        AGR-O′
                                                 ╱    ╲
                                             AGR-O      VP
```

Where can (or should) the dummy *do* appear in (4)?   Before discussing this matter, we will take a brief look at where a Modal item can occur in the structure.

Chomsky (1992) adopts the generalized transformation (GT) to generate phrase-markers.   This is a substitution operation.   Furthermore, he says that GT and Move-α extend the target phrase-marker, for example, V′ to V″.   The requirement that the substitution operation always extends its target has great significance to my immediate discussion of the Modal position.

One of the consequences of "extension" requirement, according to Chomsky, is that we have a version of the strict cycle: that is, the violation of Head Movement Constraint (HMC) can be explained in terms of this notion.   In (5), we can raise *fix* to adjoin to C, later inserting *can* from the lexicon to form "fix John can *t* the car?" (violating HMC):
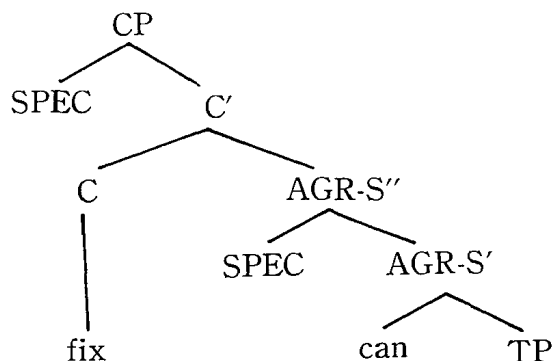
(5) [$_{C'}$ C [$_{VP}$ fix the car]] (Chomsky's (19ii))

(6) *Fix John can the car?

Chomsky does not give a detailed account of the reason why insertion of *can* causes the strict cycle effect in (5), so I will give my own idea of what he intends to say in (5).

Since the ungrammaticality of (6) is brought about by the violation of HMC, it will follow that *can* works as an intervening head which prevents *fix* from raising over it. See Chomsky (1992, fn. 27), where he says that the substitution operation inserting *can* violated the cycle yielding the HMC violation. Then it must be that *can* is inserted in a head position; otherwise we will have no HMC violation. The most plausible position for *can* in (4) should be AGR-S.[1] Because insertion operation is substitution, we will have no more AGR-S after inserting *can* in this place. Why does this lead to the HMC violation? Recall that GT extends the target phrase-marker. Insertion of lexical items is one such operation. Also recall my proposal that *can* is inserted in and substituted for AGR-S. Then we will have AGR-S″ node immediately dominating AGR-S′, which in turn, now, immediately dominates *can* instead of AGR-S. The relevant substructure of (6) would be (7):

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1 Of course the head of T could be an alternative candidate target position. But if it is true, in English, that Modals show morphological inflectional variation for tense, not for agreement, we may take AGR-S, which is indeed unpreferable, rather than T, for a target position for them. This is because the inserted *can* makes T completely disappear, and we therefore will have no tense-marker any more, as I say in the text.

(7)

```
                        CP
                      /    \
                  SPEC      C'
                          /    \
                        C        AGR-S''
                        |       /      \
                        |    SPEC       AGR-S'
                        |               /    \
                       fix            can      TP
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Now we have a clear violation of the strict cycle in (7) if we adopt the generally accepted argument that AGR-S″ (traditional IP or S) is a cyclic node.   The insertion of *can* after raising *fix* to C in the cyclic CP node is to operate back within a lower cycle, which can be reduced to the HMC violation, with *can* functioning as an intervening head.   Thus we are able to give an account for the HMC violation, good evidence that *can* is inserted in AGR-S position.

Now let us turn to the *Do*-Support phenomenon in English.   If my scenario above is correct, the Modal position is the head of AGR-S′ (and AGR-S″), which leads us to take the position of the dummy *do* as the head of AGR-S′ (and AGR-S″) under Chomsky's assumption that *do* is inserted in a Modal position.   But we encounter a serious problem with this idea.

Notice that English Modal auxiliaries realize no manifest morphological subject-verb agreement inflected upon them.   This will be no problem if we accept the structure in (7) as right since AGR-S has already been replaced by *can*, a Modal, and there is no agreement feature at this point.   But *do*, unlike Modals, shows subject-verb agreement, as we saw in (2), repeated here as (8):

(8) a. I/we/you/they *do* not love Mary.

　　b. John *does* not love Mary.

The grammaticality of the sentences in (8a) and (8b) illustates the unplausability of Chomsky's assumption that the dummy *do* is inserted in a Modal position. Then what is an alternative position? The remaining potential position is the head of TP. But this position suffers the same problem. See footnote 1. Since *do* also manifests tense inflection for present and past, the insertion of *do* in the TP head does not work well. The substitution operation forces Tense feature to disappear after inserting *do*.

　　All the considerations so far point to a possibility that the dummy *do* belongs to another subclass of auxiliaries. For example, Akmajian, Steele, and Wasow (1979) propose the following phrase structure rules (omitting here some of the rules irrelevant to our discussion):

(9) (Akmajian, Steele, and Wasow's (2))

$$\text{Aux} \rightarrow \left\{ \begin{array}{l} \text{Tense do} \\ \text{Modal} \end{array} \right\}$$

Tense→

$V^3 \rightarrow$ (have) V^2

$V^2 \rightarrow$ (be) V^1

$V^1 \rightarrow$ (be) V (NP)···

Ptting aside the validity of their argument for these PS rules, an important thing is that they seperate the dummy *do* from Modals. By contrast, Radford (1988) includes *do* in a class of Modals. He sets various syntactic criteria to test whether a verbal item should be regarded as a Modal

or as a Nonmodal.　He, then, concludes that the periphrastic (dummy) *do* must be an Modal auxiliary.　So we cannot entirely give up the assumption that the dummy *do* is inserted in a Modal position.

The analysis I made concerning the HMC violation in (5) and (6) seem to be preferable: the Modal *can* is inserted in the AGR-S position. The English dummy *do*, on the other hand, manifests inflectional variation for Tense and Agreement.　Therefore I conclude that it is inserted from the lexicon in the position dominated by T′ (or TP), that is, the head position of the (perhaps VP) complement of T.　This *do* raises to the T position, its Tense feature being checked by T, and next to the AGR-S position, its Agreement feature being checked by AGR-S.　This is a reverse process of Chomsky's (1991) assumption.　Of course if my conclusion has serious improper consequence for the modular system of UG theory, it must be rejected.　Whether or not this is the case, I leave open.

3　Case-Feature Checking

Chomsky (1992) assumes that lexical items bear features in the lexicon.　For example, the verb V may be taken to be a sequence $V = (\alpha, INFL_1, ..., INFL_n)$, where α is the morphological complex $[R\text{-}INFL_1\text{-}...\text{-}INFL_n]$. R a root and $INFL_i$ an inflectional feature.　When V is adjoined to a functional category F (say, AGR-O), the feature $INFL_1$ is removed from V if it matches F; etc.　If any $INFL_i$ remains at LF, the derivation crashes at LF.　In addition, he assumes that Case is also assigned to the noun N in the lexicon like other features (number, person, and gender).　See Section 1 of this paper.　These features are supposed to be checked by functional categories such as AGR and Tense at LF.　In other words, under his minimalist analysis, Case is not assigned at S-Structure, but checked at LF, the former syntactic level being dispensed

with as a superfluous level of representation. But if we make a careful examination into his theory, we will face an apparent problem with regard to Case, in particular, the number and type of Case features to be borne by N in the lexicon. The rest of this section is dedicated to the discussion of that topic.

One important thing relevant to my discussion here is that although Chomsky (1992) assumes the lexical item bears features (including Case) in the lexicon, he does not refer to the number and type of Case features the noun may take there. Do we need to stipulate them or do they follow as a natural consequence from general principles? I argue that the latter is right: that is, we can resort to the condition of FI, which will handle legal and illegal Case features of the noun, just as it accommodates V-features.

First, suppose that the number and type of Case features of N are fixed——single, and, tentatively, Nominative. Then, for instance, the NP *John* always has a single Case feature, and appears with Nominative in every position. There is no problem when it occurs in the subject position since in that position, Nominative feature is checked by AGR-S, satisfying the SPEC-head relation. However, the state of affairs is not so simple and clear. We have no restriction to the effect that the NP *John* must always occur in the subject position. It can freely appear as a complement of verbs (and other lexical items). A grammar that imposes such a constraint on NP's will be rejected or disregarded as unnatural. If so, then we will have a sentence in which the NP *John* is a complement of a verb, as is shown below:

(10) a. *John* hit Bill.

　　 b. Bill hit *John*.

The grammaticality of (10a) is straightfoward, as we saw above. But (10b) is problematic because of our supposition that *John* has Nominative Case feature alone. Why? The answer is that *John* is not in agreement relation with AGR-S. Though it is in agreement relation with AGR-O, this does not solve the problem. We will not be able to make use of the mechanism of Case checking by AGR-O itself since the element which checks the Case of *John* in (10b) is the verb *hit*. Admitting that we permit the Nominative Case to be checked by AGR-O, the feature *hit* bears to use to check the Case of its complement does not play its role and remains at LF. The remaining feature will cause the derivation to crash at LF if it is a member of the feature sequence of V.

　　At this point one might suggest that the feature verbs have with which to check the Case of their complement should not be limited to Accusative, that is, that verbs can check either Nominative or Accusative. So in (10b), one might propose that *hit* can check Nominative of its complement *John*. But this suggestion will make no theoretical sense since verbs have a basic X-bar structural relation with their complements, which must morphologically realized in an Accusative form, as is exemplified by pronouns:

(11) a. John loves *me*.

　　 b. *John loves *I*.

On the other hand, the category which checks Nominative and which is in X-bar theoretical relation with subject is Tense. Thus the claim that

verbs can check Nominative Case does not have empirical support, and we have strong evidence that V has a checking feature only for Accusative and not for Nominative.

Returning to (10b), then under the assumption that the NP *John* bears Nominative Case feature, its derivation is predicted to crash at LF, in contrast with its full grammaticality and acceptability. Incidentally, the same is true of (10a) when we suppose that *John* is assigned only Accusative Case. Here the subject *John* is in agreemrnt relation with Tense, the latter now being raised in the AGR-S position. Recall our arguemnt that T has only Nominative feature for checking. This feature does not match Accusative. So the Case feature of *John* remains at LF, and the derivation crashes. The degree of deviance of (10a) is more serious because we have a crash at PF as well. The reason is that T also cannot discharge its function and therefore remains itself at PF. To sum up, the limitation of the number and type of Case features of the NP to a single and specific one leads to inevitable deviant derivations. The derivations always crash at LF, at least.

The option for multiple Case features is clearly useless in solving the problem. Remember my claim that AGR has only one Case feature with which to check the corresponding feature of the NP. Even though one of the Case features of the NP is checked by AGR-S, the other Case feature(s) should always remain unchecked. The derivation crashes at LF. Thus the multiple-Case-feature analysis has no adequate validity owing to its inevitable violation of FI if we interpret that principle as being responsible for the checking of Case feature, too. Then how can we accomplish a legal derivation, a derivation that, in Chomsky's terminology, converges?

My early discussion of the single-Case feature analysis depended on

the assumption that the kind of Case feature to be assigned to an NP in the lexicon is fixed: when an NP bears, for example, Nominative in the lexicon, it appears in every position with that Case feature. This approach did not succeed. So let us suppose that the type of Case features is not fixed——arbitrary or unspecific, maintaining the claim that its number is limited to one. Then we will have several options for Case checking in the sentences in (10), repeated here as (12):

(12) a. *John* hit Bill.
     b. Bill hit *John*.

In (12a), when the NP *John* bears Nominative Case feature in the lexicon, it will be checked properly by AGR-S, and the derivation converges at LF. If *John* takes Accusative instead, the Case feature will not be checked by AGR-S, and the derivation crashes at LF. The converse process holds for (12b). Only when *John* bears Accusative in the lexicon does the derivation converge at LF. The same is true of the NP *Bill*. Then it follows that the derivations converge at LF when all the NP's in a sentence choose an appropriate Case feature in the lexicon. In (12a), for example, the derivation converges when *John* takes Nominative and *Bill* takes Accusative respectively; every other option leads to a deviant derivation which crashes at LF.

To summarize my discussion so far, we have seen that the number of Case features which NP takes in the lexicon must be limited to one, and that the type of its Case features should be unfixed. These two notions need not be stipulated. They follow will follow from the condition of FI if we interpret the principle to apply not only to the functional categories remaining at PF but also to the remaining features of lexical

items at LF.   Note that the second notion, the type of Case, might extend to other Case features as well as Nominative and Accusative: Oblique Case feature, and also Partitive Case feature if Belletti's theory of Partitive Case assignment is correct.   Thus Chomsky's (1992) minimalist approach raises no problem with Case checking, since we can have converged derivations if we adopt the analysis of arbitrary Case feature.

4 Conclusion

In this article, I took up and discussed two topics which have much to do with the feature checking proposed by Chomsky (1992).   In Section 2, I focused attention on so-called "*Do*-Support" phenomenon, arguing that the English dummy *do* is inserted in the Tense position.   The evidence in support of this claim comes from the fact that it manifests different inflections for agreement and tense realized phonetically.   This fact cannot be accounted for under the assumption that *do* is inserted in a Modal position if insertion of Modals is a substitution operation, which, in my opinion, will cause a complete removal and disappearance of AGR-S.   Then we will have no element to check the agreement feature of *do*, though no such problem will arise with pure Modals, which show no agreement relation between subject and them, at least in English.

In Section 3, I discussed a problem with the number and type of Case features to be borne by nouns in the lexicon, and concluded that it is an apparent one.   They will follow from the condition of FI if we extend and interpret the principle to apply to features (including Case) of lexical items.   When an NP contains an improper and superfluous feature remaining at LF, the derivation crashes and interpreted as deviant by FI.   Therefore the feature cheking system proposed by Chomsky (1992) will have a theoretically valid status.

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