The English Auxiliary *Do* in Verbal Morphology

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1 Introduction

The English verb *do* is supposed to have established its grammatical function as an auxiliary verb in around the 16th century (Ellegård 1953), and has maintained its independent status in modern English grammar. This auxiliary verb *do* needs to be analyzed as a purely functional word because it contains no inherent meaning in itself, and it can occur in various kinds of sentences, as shown below.

(1) a. John *did* not visit Paris.
b. *Did* John visit Paris?
c. John *díd* visit Paris.
d. "I visited Paris." "So *did* I."
e. John did not visit Paris, *did* he?
f. *Don't* forget your passport.
g. *Dó* be quiet in the museum.

Since the earliest stage of generative grammar it has been argued, mostly in terms of verbal morphology, how this variety of occurrences of the auxiliary *do* can be explained. This paper, also, deals with the same issue. In Section 2 we have a brief theoretical overview on the analysis of *do* in the history of generative grammar and then take up two recent analyses, Bobaljik (1994) and Shütze (2004), which differ in their treatment of *do*. Next, in Section 3 we compare their proposals and discuss some issues concerning verbal morphology, that is, argument—adjunct asymmetry and syntactic status of the negative *not*. Finally, Section 4 summarizes the discussion in this paper.

2 Previous Studies

In this section we survey how the auxiliary verb *do* has been analyzed in generative grammar. In Section 2.1 we begin with Chomsky's (1957) classical analysis of *do* in terms of his account of English verbal inflection and then view

Emonds' (1978) explanation of English and French verbal inflection. Then, in Section 2.2, we turn to two recent, antithetical analyses of *do* as reported by Bobaljik (1994) and Shütze (2004).

2.1 Earlier Accounts

Chomsky (1957) argues that inflectional affixes and verbs are originally separated and then realize inflected forms of the verbs by applying the following rule (2), later called Affix Hopping. (3) is an example of the application of this rule. (Here # shows a word boundary.)

(2) *Af*+ *v* → *v*+ *Af*# (Chomsky 1957: 39)
(3) John−*Af*[past]−visit−Paris → John *visited* Paris.

If there is no sequence *Af*+ *v*, the affixes cannot combine with verbs. This causes ungrammatical results under the morphological condition that bound morphemes cannot stand on their own as words. In this case, Chomsky argues, *do* is introduced as a verbal element which the remained affixes combine with, by applying the following obligatory transformational rule (4).[1]

(4) # *Af* → # *do*+ *Af* (Chomsky 1957: 62)

With the rules (2) and (4), he provides a uniform explanation of the occurrence of *do* in negative, interrogative, and affirmative sentences and so−do−subject constructions like (1a) to (1d), as shown below (In (5c) A shows a morpheme of contrastive stress.)

(5) a. John−*Af*[past]−not−visit−Paris → John *does* not visit Paris.
b. *Af*[past]−John−visit−Paris → *Did* John visit Paris?
c. John−*Af*[past]−A−visit−Paris → John *did* visit Paris.
d. so−*Af*[past]−I → So *did* I.

Since Emonds' (1978) study on verbal inflection in French, another way of the combination of inflectional affixes with verbs is explored. This is called Verb Raising, a syntactic operation raising verbs to a higher Tense position. Emonds points out that, taking *pas* in French to correspond to *not* in English, any verbs precede negation in French while only auxiliary verbs can do so in English as (6)

and (7) show.

(6) a. Jean ne visite *pas* t_v Paris.
b. Jean n'a *pas* t_v visité Paris.
(7) a. John does *not* visit Paris.
a'.*John visits *not* t_v Paris.
b. John has *not* t_v visit Paris.

Thus he concludes that Verb Raising is applied to all verbs in French, but in English it is limited only to auxiliary verbs, and Affix Hopping is applied to main verbs.

So far, we have seen that these two, essential operations in English verbal morphology are proposed in the earlier stage of generative grammar. As for the treatment of *do* in this period, the mainstream idea is the one of Chomsky's where *do* is inserted only when we fail to make inflectional affixes combined with verbs even by applying any rules. These important findings have become the theoretical basis and have been discussed repeatedly in the study of *do* in English verbal morphology in Government and Binding Theory and present Minimalist Program, as we will see in next section.

2.2 Recent Accounts

2.2.1 Theoretical Background

One of the remarkable changes in a transition from Phrase Structure-based theory to Government and Binding Theory is that sentence structures are analyzed like (8) by means of X'-theory in the latter (cf. Chomsky 1986), while in the former analyzed like (9) by means of PS-rules.

(8) IP(=S)→NP I'　　I'→Infl VP
(9) S→NP Aux VP　　Aux→Tense (Modal) (have-en) (be-ing)

Thus in GB Theory, Infl, an inflectional element, acquires an independent status in syntax, which may originate from Chomsky's (1957) separation of inflectional affixes from verbs. As for the combination of the affixes and verbs, it is assumed in Chomsky (1991, reprinted in Chomsky 1995) that on the one hand auxiliary verbs raise to Infl at S-structure; but main verbs, on the other hand, raise to Infl's

position at LF after the affixes lower to V at S—structure.

In Minimalist Program, English verbal inflection is explored by means of Checking Theory, thereby auxiliary verbs must raise overtly to Infl before Spell—Out and main verbs covertly at LF for checking a strong/weak V—feature in Infl. Concerning *do*—insertion, this is considered as a 'last resort' but there seems to be no essential difference between this idea and that of Chomsky (1957).

2.2.2 Morpho—phonological Adjacency

Bobaljik (1994), based on Halle and Marantz (1993), proposes that neither syntactic lowering nor LF—checking is necessary for affixation on main verbs and explains the occurrences of *do* and the way of the affixation by means of an alternative idea, *adjacency*.

(10) *The Adjacency Condition*

In order for an affix and a stem to be combined, they must be *adjacent*.

(Bobaljik 1994: 2)

Here *adjacent* means that there is no phonological element between an affix and a stem. Let us look at some examples.

(11) a. John [$_{I'}$ Infl[Past][$_{VP}$ visit Paris]] → John *visited* Paris.
(adjacent)

b. John [$_{I'}$ Infl[Past][$_{NegP}$ not [$_{Neg'}$ [$_{VP}$ visit Paris]]]]
(not adjacent)

→ John *does* not visit Paris.

c. John [$_{I'}$ Infl[Past][$_{VP}$ often [$_{V'}$ visit Paris]]] → John often *visited* Paris.
(adjacent)

In (11a) Infl and *visit* are combined because nothing intervenes between them while in (11b) they cannot because the negative *not* intervenes. Bobaljik follows Chomsky's (1957) treatment of *do*, so *do* is inserted for the stranded affix in (11b). Note that the two elements can combine together in spite of adverbs intervening like (11c); on this point he suggests that adverbs are not visible for the morphological relation of adjacency though negation is visible, and calls this fact *adjunct/argument asymmetry*. (We will refer to the validity of this again in Section

3.1.)

Given this adjacency, we can explain the occurrences of *do* in tag questions and affirmative/negative imperatives like (1e) to (1g) as (12) shows. (Here I follow Kaneko's (2001) assumption that AffP shows a projection of a contrastive stress Aff[Emph(asis)] and be/have cannot raise to Infl in imperatives because Mod_{Imp} has already raised.)

(12) a. John did not visit Paris, $[_{CP}$ Infl$[_{Past}][_{IP}$ he$[_{I'}$ $t_i[_{VP}$ e$]]]]$ → ..., did he?
(not adjacent, no stem)

b. $[_{IP}$ pro $[_{I'}$ Mod_{Imp} Infl $[_{NegP}$ not $[_{ModP}$ t_{Mod} $[_{VP}$ forget ...$]]]]$
(not adjacent)
→ Don't (Do not) forget your passport.

c. $[_{IP}$ pro $[_{I'}$ Mod_{Imp} Infl $[_{AffP}$ Aff[Emph] $[_{ModP}$ t_{Mod} $[_{VP}$ be quiet ...$]]]]$
(not adjacent)
→ *Dó* be quiet in the museum.

2.2.3 Do as a Modal

As we have seen so far, *do* has been analyzed as a 'last resort' device since Chomsky's classical analysis. But Schütze's (2004) proposal is quite different in that he considers *do* as one of modal auxiliaries and therefore situates it under M, a head of MP (Mood Phrase). This follows from the fact that the syntactic distribution of *do* is similar to that of modal auxiliaries. In addition, he points out that both of them are different from that of *have* and *be*, as (13) and (14) show.

(13) a. I want to *be* skiing by next week.
b. I want to *have* visited five different continents before I'm 30.
c.*I want to *can* ski by next week.
d.*I want to *do* not think about that for a while. (Schütze 2004: 508)

(14) a. The director said, "We'll have John *be* sitting down when Mary enters."
b. The director said, "We'll let John *have* finished his coffee when Mary enters."
c.*The director said, "We'll have John *can* hear Mary from the next room."
d.*The director said, "We'll have John *do* not answer the door until the second ring." (ibid.)

Thus he concludes that *do* is under the same category as modal auxiliaries and also distinguished from *have* and *be*.

Concerning English verbal inflection, Schütze accepts neither syntactic lowering nor morpho—phonological adjacency and instead explains this by overt Verb Raising. (15) shows sentence structures that he assumes and (16)—(18) summarize his explanation of the inflectional systems.

(15) [$_{MP}$ NP [$_{M'}$ M [$_{TP(=IP)}$ T(ense)(=Infl) [($_{NegP}$ not) [$_{VP}$ V ...]]]]]

(16) Main verbs can raise to T.[2]

[$_{MP}$ John [$_{TP}$ T[Past]+*visit* [$_{VP}$ *t*$_{V}$ Paris]]] → John *visited* Paris.

(17) Auxiliary *have* and *be* are base—generated under T.

[$_{MP}$ John [$_{TP}$ T[Past]+*have* [($_{NegP}$ not) [$_{VP}$ visit Paris]]]]

→ John *had* (not) visited Paris.

(18) Modal auxiliaries and *do* are under M, and T raises to M.

a. [$_{MP}$ John [$_{M'}$ *can*+T[Past] [$_{TP}$ *t*$_{T}$ [($_{NegP}$ not) [$_{VP}$ visit Paris]]]]]

→ John *could* (not) visit Paris.

b. [$_{MP}$ John [$_{M'}$ *do*+T[Past] [$_{TP}$ *t*$_{T}$ [($_{NegP}$ not) [$_{VP}$ visit Paris]]]]]

→ John *did* not visit Paris.

or,

→ John *did* visit Paris. (Here *do* is phonologically unstressed.)

Note that in the last example of (18) *do* appears without phonological stress. Though this unstressed *do* in affirmative sentences has been banned in the standard analysis, he admits it as 'spurious do', which is attested from 16th to 18th century, and also points out that even today we find it in formal utterances like (19).[3]

(19) a. I, John Hancock, *do* solemnly swear to uphold the duties of the office of President...

b. We, the employees of Unity Airlines, *do* hereby announce our attention to... (Shütze 2004: 497)

As we have seen above, Shütze's proposal is different from Bobaljik's. He poses a question as to the classical treatment of *do* and takes account of spurious *do*. In next section we compare their proposals and focus on the

problems of the analysis of *do* in English verbal morphology.

3 Discussion

3.1 Argument—Adjunct Asymmetry

According to Bobaljik's explanation, as we saw in 2.2.2, adverbs are not relevant to morpho—phonological adjacency while negation is relevant. But, why are adverbs regarded as irrelevant? Actually they are pronounced and sometimes even emphasized.

(20) [$_{IP}$ Mary [$_{I'}$ Infl[Pres] [$_{VP}$ néver [$_{V'}$ like carrots]]]].

→ a. Mary néver likes carrots.

→ b. *John does néver like carrots.

If emphasized néver is phonologically visible and thus it prevents both Infl and V from being combined, *do* must be inserted to Infl like (20b). But this is ungrammatical, nevertheless. Bobaljik does not present clear answer to this problem, so the adjacency condition needs reconsideration of how adverbs are taken to be phonologically irrelevant.

Though this is still under investigation among generative linguists, the adjacency—based approach may be supported by some evidence. First, Lasnik's (2003) observation of VP—ellipsis would be a key to solve it. He gives the following example and implies that adverbs can appear before Infl.

(21) John partially lost his mind, and Bill completely did. (Lasnik 2003: 16)

This fact leads us to assume that it would be possible that adverbs are generated before Infl, or they are raised from VP.

Second, we can assume from Kuroda's (1965) investigation into Japanese postpositional particles that the adjacency condition is a linguistically universal rule rather than a specific one to English. Kuroda finds that in Japanese the empty verb *si*- is introduced when a particle -*mo* is incorporated into the verb stem, as (22) shows.

(22) John-ga hon-o kai-mo *si*-ta

John bought books (and some other things happened). (Kuroda 1965)

Here *-mo* appears between a verb 'kau' and an inflectional affix '-ta', so, if we apply the adjacency condition, it blocks to combine them. Thus, the stranded '-ta' must be supported by *si*—insertion, which seems parallel to *do*—insertion in English.

3.2 Syntactic Status of the Negative *Not*

One of the differences between Bobaljik and Shütze's proposals is the position of *not* in NegP; the former assumes that *not* is in spec of NegP, while the latter in head of NegP. Though this is still a controversial issue among generative linguists, here I support the latter for two reasons.

First, it seems exceptional to assume that only *not* is in spec of NegP. This is because in the system of X'—theory a linguistic element X is commonly in head of XP as nouns, verbs, and inflectional elements are in head of NP, VP, and IP, respectively. On this view, it seems that Bobaljik situates *not* in spec of NegP simply because he must suffice the syntactic requirement for Verb Raising of *have* and *be*: as (23) shows, if *not* is in head of NegP in his theoretical framework, *have* and *be* raise from VP to Infl across head of NegP, which therefore violates ECP.

(23) John [$_{I'}$ have + Infl[Past] [$_{NegP}$ [$_{Neg'}$ not [$_{VP}$ t_{have} visit Paris]]]]

(ECP violation)

Second, some evidence as to VP—ellipsis presented by Potsdam (1997) supports that *not* is in head of NegP.

(24) a. Joe will taste the food if Mickey does.

b. *John didn't leave but Mary.

c. Ted hoped to vacation in Liberia but his agent recommended that he not ϕ.

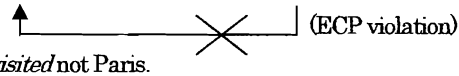
d. *Ted didn't want to vacation in Hawaii but his agent suggested that he ϕ. (Potsdam 1997)

According to his explanation, VP must be the complement of morphologically realized head when it is deleted (Potsdam 1997: 534). VP can be deleted in (24a) because Infl, a head of IP, is morphologically realized as *does*, while the deletion is impossible in (24b,d) because subjects are in spec of IP. Infl is not morphologically realized by *do*—insertion in present subjunctive clauses (24c,d), but VP—ellipsis is

possible in (24c). So we can assume that *not* is a head of NegP and allows its complement VP to be deleted.

It is important in Shütze's proposal to take *not* to be in head of NegP, because ECP eliminates ungrammatical derivations as to the word order of main verbs and *not* as (25) shows.

(25) [$_{MP}$ John [$_{TP}$ *visit*+T[Past] [$_{NegP}$ [$_{Neg'}$ not [$_{VP}$ *t*$_{V}$ Paris]]]]]



→ *John *visited* not Paris.

His assumption that main verbs can raise to T is on the right track so far, but in fact there is a problem. Consider the following derivation:

(26) [$_{MP}$ John [$_{TP}$ T[Past] [$_{VP}$ often [$_{V}$ *visit* Paris]]]]

→ [$_{MP}$ John [$_{TP}$ *visit*+T[Past] [$_{VP}$ often [$_{V}$ *t*$_{V}$ Paris]]]]

→ *John visited often Paris.

If we apply Verb Raising in (26), *visit* can raise to T across an adverb *often* in spec of VP. Though there should be no problem in the course of this derivation, it results in an ungrammatical sentence.

4 Summary

We have seen that the auxiliary *do* can occur in various kinds of sentences and to explain this phenomenon has been a controversial issue as well as a classical one in generative linguistics. Among recent explanations, Bobaljik (1994) and Shütze (2004) are influential, but antithetical: the former analyzes *do* as a last resort device while the latter analyzes it as a modal. Both have some theoretical problems to solve in terms of English verbal morphology and two of them, argument－adjunct asymmetry and syntactic status of the negative *not*, are discussed. On these points, we have seen that adjacency—based approach needs to reconsider its treatment of adverbs and the negative *not* should be situated in head of NegP. To solve the remained problems, further inquiry is needed in the future research.

Note

[1] Chomsky considers *do* not as an auxiliary verb, but a main verb such as 'John *does* his homework.'

[2] Shütze assumes that this raising is an optional operation and there is no choice to apply do−insertion iff M is empty and V does not raise to T.

[3] Shütze also shows that spurious *do* is attested in child language and can be analyzed similarly to 'spurious *tun*' in German.

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