

# Clause Structures and Adverbial Positions\*

Eiji KAJIWARA

## 1. Introduction

The study of clause structures is one of the most fundamental concerns which generative grammar, including both GB theory and Minimalist Program, must deal with. As generative grammar has developed, analyses of clause structures have also changed. This section gives a brief outline of the suggested analyses of clause structures. In Chomsky (1981), for example, a simple transitive verb construction is assigned a structure like (1), where Subj = subject and Obj = object:

(1) [<sub>S</sub> COMP [<sub>S</sub> Subj INFL [<sub>VP</sub> V Obj]]]

Extending X-bar theory to functional categories such as S' and S, Chomsky (1986) suggests a structure like (2) in place of (1):

(2) [<sub>CP</sub> [<sub>IP</sub> Subj [<sub>I</sub> I [<sub>VP</sub> V Obj]]]]]

Then Pollock (1989) proposes the Split IP Hypothesis, which states that IP consists of two maximal projections, Agreement Phrase (AgrP) and Tense Phrase (TP). Adopting this important hypothesis, Chomsky (1989, 1992) advances an analysis of clause structure as in (3):

(3) [<sub>CP</sub> [<sub>AgrSP</sub> Subj [<sub>AgrS'</sub> AgrS [<sub>TP</sub> T [<sub>AgrOP</sub> [<sub>AgrO'</sub> AgrO [<sub>VP</sub> t<sub>Subj</sub> [<sub>V'</sub> V Obj]]]]]]]]]]]

In (3), AgrP is further divided into two separate AgrPs, subject Agreement Phrase (AgrSP) and object Agreement Phrase (AgrOP). It must be noted here that the VP Internal Subject Hypothesis (VPISH) plays a crucial role in this analysis of clause structure.<sup>1</sup> According to this hypothesis, Subj is base-generated in the Specifier position of VP ([Spec, V]) and then overtly raises to [Spec, AgrS] in order to check its Nominative Case. With respect to Obj,

it raises to [Spec, Agr<sub>O</sub>] at LF for its Accusative Case checking.

Since the middle of 1980s, a number of variants of structures (2) and (3) have been proposed and developed (Fukui (1986), Fujita (1993), and Koizumi (1993, 1995)). In the literature, structure (3) is widely accepted by many linguists to explain a wide range of data.

To pursue explanatory adequacy, however, Chomsky (1995) proposes a new analysis of clause structure, following Larson's (1988, 1990) VP shell structure:

(4) [CP [TP Subj [T T [<sub>VP</sub> t<sub>Subj</sub> [<sub>v'</sub> v [<sub>VP</sub> V Obj]]]]]]

In (4), *v* is a light verb to which V overtly raises. This structure is simpler than (3), in that it lacks both Agr<sub>O</sub> and Agr<sub>S</sub>. Chomsky (1995) holds that Agr, which has no intrinsic properties utilized at LF, is eliminated from Universal Grammar (UG). Furthermore, Chomsky suggests a Multiple – Spec structure like (5):

(5) [<sub>XP</sub> Spec<sub>1</sub> [<sub>X'</sub> Spec<sub>2</sub> [<sub>X'</sub> X ...]]] (Chomsky 1995:286)

In (5), the head X has two Specs, Spec<sub>1</sub> (the outer Spec) and Spec<sub>2</sub> (the inner Spec).<sup>2</sup>

Structure (4) is preferable to structure (3) because the functional category Agr is not needed. Since structure (4) is motivated only for this reason, it is necessary to consider whether this structure is empirically supported. Thus, a central concern in this paper is to examine this structure in light of linguistic data within the framework of the Minimalist Program.

In this paper, I will examine the analysis of structure (4) by considering Exceptional Case-Marking (ECM) constructions. Then, I will critically examine Chomsky's assumptions about adverbial positions and point out that the analysis of structure (4), together with these assumptions, is not adequate in that we cannot account for derivation of unaccusative verb constructions.

## 2. ECM Constructions

Over the past few decades a considerable number of studies have been made on ECM constructions containing *believe*-type verbs such as *believe*, *consider*, *declare*, and *prove*.<sup>3</sup> In this section, I will examine ECM constructions to determine whether the analysis of

structure (4) is empirically supported.<sup>4</sup> Let us start by considering a typical example like (6).

(6) I believe [<sup>\*</sup>he / him to be honest]

As (6) shows, the subject of the ECM construction (ECM subject) is marked not with Nominative Case but with Accusative Case. This enables us to assume that an ECM subject behaves like an object of a transitive verb construction.<sup>5</sup>

If we adopt structure (4), example (6) is assigned a structure like (7) at Spell-Out.<sup>6</sup>

(7) [<sub>TP</sub> [<sub>Subj<sub>1</sub></sub> [<sub>T'</sub> [<sub>T</sub> [<sub>vP</sub> [<sub>tSubj<sub>1</sub></sub> [<sub>v'</sub> believe<sub>V-v</sub> [<sub>VP</sub> [<sub>tv</sub> [<sub>TP</sub> [<sub>himSubj<sub>2</sub></sub> [<sub>T'</sub> [<sub>v'</sub> to [<sub>VP</sub> [<sub>be</sub> [<sub>AP</sub> [<sub>tSubj<sub>2</sub></sub> honest]]]]]]]]]]]]]]]]]]]]]]

In (7), the ECM subject *him* remains in the embedded [Spec, T]. With respect to its Case checking, Chomsky (1995) assumes the following LF configuration:

(8) [<sub>TP</sub> [<sub>Subj<sub>1</sub></sub> [<sub>T'</sub> [<sub>T</sub> FF (*him*) [<sub>T</sub> FF (*believe-v*) [<sub>T</sub> T]]]] [<sub>vP</sub> [<sub>tSubj<sub>1</sub></sub> [<sub>v'</sub> believe<sub>V-v</sub> [<sub>VP</sub> [<sub>tv</sub> [<sub>TP</sub> [<sub>himSubj<sub>2</sub></sub> [<sub>T'</sub> [<sub>v'</sub> to [<sub>VP</sub> [<sub>be</sub> [<sub>AP</sub> [<sub>tSubj<sub>2</sub></sub> honest]]]]]]]]]]]]]]]]]]]]]]

In (8), FF (*him*) is a collection of *formal features* of the lexical item *him*, such as the categorial feature [N],  $\phi$ -features, and Accusative Case feature. It also has A-position properties, including the ability to serve as a controller or binder. Instead of Move  $\alpha$ , Chomsky (1995) proposes Move F, which moves F a feature of lexical item LI along with FF (LI) the set of formed features of the lexical item and, in overt raising, a full category LI as required for PF convergence. Since overt raising of V and Obj does not occur in English, both FF (V) and FF (Obj) raise to the matrix T for feature checking, as shown in (8). Thus, the [Accusative Case] feature in FF (*him*) in (8) is checked with the [(assign) Accusative Case] feature in FF (*believe-v*).

With this much as background, let us consider the case where an ECM subject causes a violation of binding theory.<sup>7</sup> The contrasts in grammaticality between the following pairs of examples indicate that the ECM subject raises at the relevant point of the derivation.<sup>8</sup>

(9) a. Joan believes (that) [<sub>he<sub>i</sub></sub> is a genius] even more fervently than Bob<sub>i</sub> does

- b. \*Joan believes [ $him_i$  to be a genius] even more fervently than  $Bob_i$  does
- c. Tom proved (that) [ $she_i$  was telepathic] just as easily as  $Joan_i$  did
- d. \*Tom proved [ $her_i$  to be telepathic] just as easily as  $Joan_i$  did

(Postal 1974:120)

In (9a) and (9c), the pronouns  $he_i$  and  $she_i$  in the embedded subject position can be freely coreferential with the r-expressions  $Bob_i$  and  $Joan_i$ , respectively. In (9b) and (9d), on the other hand, the ECM subjects  $him_i$  and  $her_i$  cannot be coreferential with  $Bob_i$  and  $Joan_i$ , respectively. If we adopt structure (4), example (9b) is assigned a structure like (10) at LF:

- (10) [<sub>TP</sub> Joan<sub>Subj</sub> [<sub>T</sub> [<sub>T</sub> FF ( $him$ ) [<sub>T</sub> FF (believe- $v$ ) [<sub>T</sub> T]]]] [<sub>vP</sub> t<sub>Subj</sub> [<sub>v'</sub> believe<sub>v-v</sub> [<sub>VP</sub> [<sub>v'</sub> t<sub>v</sub> [<sub>TP</sub>  $him_i$  to be a genius]] [even more fervently than  $Bob_i$  does]]]]]]]

In (10),  $Bob_i$  is bound by FF ( $him$ ),<sup>9</sup> violating Condition C. Thus, this structure is predicted to be ill-formed; hence the ungrammaticality of (9b).

Let us next consider the case where an ECM subject binds a reciprocal in the matrix adjunct and the case where an ECM subject licenses a negative polarity item in the matrix adjunct, as in the following:

- (11) a. ?the DA proved [the defendants<sub>i</sub> to be guilty] during each other<sub>i</sub>'s trial
- b. ?the DA accused the defendants<sub>i</sub> during each other<sub>i</sub>'s trial

(Lasnik & Saito 1991:328)

- (12) a. ?the DA proved [none of the defendants to be guilty] during any of the trials
- b. the DA accused none of the defendants during any of the trials

(Lasnik & Saito 1991:329)

The contrasts in grammaticality between (11a) and (11b), and between (12a) and (12b) indicate that the ECM subject behaves like the object of a transitive verb. If we adopt structure (4), FF (*defendants*) and FF (*none*), which are adjoined to the matrix T at LF, bind and license *each other<sub>i</sub>* and *any*, respectively. Thus, the analysis of structure (4) enables us to account for the grammaticality of examples (11a-b) and (12a-b).

### 3. Adverbial Positions

With respect to adverbial positions, let us consider examples (13a-c).

- (13) a. \*John reads *often* books (Chomsky 1995:330)  
 b. \*Paul opened *quickly* the door  
 c. \*Jenny read *quietly* her book ((b) - (c): Stowell 1981:113)

These examples indicate that the adverb cannot intervene between the verb and its object. If we adopt structure (4), example (13a) is assigned a structure like (14) at Spell-Out:

- (14) [<sub>TP</sub> John<sub>Subj</sub> [<sub>T</sub> T [<sub>vP</sub> t<sub>Subj</sub> [<sub>v'</sub> read<sub>V-v</sub> [<sub>VP</sub> often [<sub>v'</sub> t<sub>V</sub> books]]]]]]]]

It should be noted that the adverb *often* appears in [Spec, V], as shown in (14). At LF, FF (*books*) cannot raise to T because of the closer intervening element *often*.<sup>10</sup> Since the Case of *books* is not checked, the derivation crashes at LF; hence the ill-formedness of (14) (= (13a)).

If we assume that adverbs appear in [Spec, V], we can also account for the ungrammaticality of the following examples.

- (15) a. \*Gray believes *sincerely* Mikey to be intelligent  
 b. \*I consider *probably* John a liar

Examples (15a-b) indicate that the matrix adverb cannot intervene between the verb and its ECM or SC (Small Clause) complement. If we assume structure (4), examples (15a-b) are assigned structures like (16a-b) at Spell-Out, respectively:

- (16) a. [<sub>TP</sub> Gray<sub>Subj</sub> [<sub>T</sub> T [<sub>vP</sub> t<sub>Subj</sub> [<sub>v'</sub> believe<sub>V-v</sub> [<sub>VP</sub> sincerely [<sub>v'</sub> t<sub>V</sub> [<sub>TP</sub> Mikey to be intelligent]]]]]]]]]]  
 b. [<sub>TP</sub> I<sub>Subj</sub> [<sub>T</sub> T [<sub>vP</sub> t<sub>Subj</sub> [<sub>v'</sub> consider<sub>V-v</sub> [<sub>VP</sub> probably [<sub>v'</sub> t<sub>V</sub> [<sub>TP</sub> John a liar]]]]]]]]]]

In (16a-b), the adverbs *sincerely* and *probably* block the movement of FF (*Mikey*) and FF (*John*) at LF, respectively. The Case of *Mikey* and *John* are not checked, and the derivations

crash.<sup>11</sup>

The account of the ungrammaticality of examples (13a-c) and (15a-b) is largely based on the assumption that adverbs originate in [Spec, V]. This assumption, however, makes it impossible to derive examples such as following.

- (17) a. John *nearly* drowned (in the sea)  
b. the ground *suddenly* sank under his feet  
c. this cheese *really* melts in the mouth  
d. his conduct has *greatly* altered  
e. everything will *inevitably* break  
f. a watched pot *never* boils  
g. his influence *slowly* decreased  
h. the temperature has *suddenly* dropped to 40 degrees F  
i. the clothes will *soon* dry  
j. the flowers will *soon* fade  
k. this lake *usually* freezes in winter  
l. your English has *rapidly* improved  
m. his influence *gradually* increased  
n. the snow *sometimes* slips, forming snowslides  
o. it will *probably* thaw today

Chomsky (1995:316) assumes that “only unaccusatives lacking agents would be simple VP structures.” According to this assumption, example (17a) is assigned a structure like (18) at Spell-Out, if adverbs appear in [Spec, V]:

- (18) [<sub>TP</sub> T [<sub>VP</sub> *nearly* [<sub>V</sub> drown John]]]

In (18), the adverb *nearly* in [Spec, V] blocks the overt movement of *John* to [Spec, T]. The Case of *John* and the strong D-feature of T are not checked,<sup>12</sup> and the derivation crashes. Thus the generation of grammatical example (17a) is disallowed.

The grammaticality of examples (17a-o) poses the question of where an adverb appears in structure (4). With respect to adverbial positions, Chomsky (1995:330) assumes that

“adverbials cannot be adjoined by Merge to phrases that are  $\theta$ -related (arguments or predicates),” and that “they can be ‘base-adjoined’ only to X’ or to phrases headed by  $v$  or functional categories.”

If we follow his first assumption about adverbial positions, the adverb *nearly* in (17a) cannot be adjoined to VP, because it is a  $\theta$ -related phrase. If we follow his second assumption, it is unclear where the adverb *nearly* appears, because the unaccusative verb *drown* is a simple VP structure lacking  $vP$ . It cannot be adjoined to Agr either, because structure (4) lacks an Agr projection. If it is adjoined to V’, the structure of example (17a) is represented at Spell-Out as in (19):

(19) [<sub>TP</sub> T [<sub>VP</sub> [<sub>V</sub> nearly [<sub>V</sub> drown John]]]]

Since the adverb *nearly* c-commands *John*, the former is closer to T than the latter. Thus the overt movement of *John* to [Spec, T] is blocked, and its Case and the strong D-feature of T remain unchecked, causing the derivation to crash.

It follows that if we adopt structure (4) and Chomsky’s assumptions about adverbial positions, we cannot account for the derivation of unaccusative verb constructions such as examples (17a-o). Furthermore, the grammaticality of examples (17a-o) indicates that Chomsky’s account of the ungrammaticality of examples (13a-c) and (15a-b) is untenable.<sup>13</sup>

#### 4. Conclusion

To summarize, I have examined the latest analysis of clause structures and given a critical examination of Chomsky’s assumptions about adverbial positions. It has been shown that if we adopt Chomsky’s account of the ungrammaticality of examples such as (13a-c) on the basis of the assumption that adverbs appear in [Spec, V], we cannot account for the derivation of unaccusative verb constructions. It has also been shown that even if we adopt Chomsky’s (1995:330) assumptions that “adverbials cannot be adjoined by Merge to phrases that are  $\theta$ -related (arguments or predicates),” and that “they can be ‘base-adjoined’ only to X’ or to phrases headed by  $v$  or functional categories,” we cannot account for the derivation of unaccusative verb constructions.

The foregoing discussion indicates that the Minimalist Program must be refined to provide an appropriate adverbial position in structure (4).

## Notes

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1. For detailed arguments for the VPISH, see Fukui & Speas (1986), Kuroda (1988), and Koopman & Sportiche (1991).

2. Chomsky (1995:286) assumes that Spec<sub>1</sub> “allows an escape hatch for Relativized Minimality violations and scrambling with A-position properties (binding, obviating weak crossover effects, etc.)” See also Kajiwara (1996) for relevant discussion.

3. For further details of ECM constructions, see Postal (1974), Radford (1988), Lasnik & Saito (1991), and Branigan (1992).

4. See also Ishikawa (1994) for a different analysis of ECM constructions.

5. The assumption that an ECM subject serves as an object is corroborated by the following examples.

(i) a. Joan<sub>i</sub> was believed [<sub>t<sub>i</sub></sub> to be famous] by Jack (passivization)

b. Jack<sub>i</sub> believed [\*him<sub>i</sub>/ himself<sub>i</sub> to be immoral] (reflexivization)

c. they<sub>i</sub> believed [each other<sub>i</sub> to be honest] (reciprocal marking)

(Postal 1974:40, 42; Lasnik & Saito 1991:325)

In a passive sentence, a passive verb is not a Case-assigner, so that the NP, which originates in object position, moves to subject position to have its Case checked. Since the ECM subject *Joan<sub>i</sub>* in (ia) moves to the matrix subject position by passivization, its base-generated position (= *t<sub>i</sub>*) is treated as an object position. In (ib-c), the reflexive *himself<sub>i</sub>* and the reciprocal *each other<sub>i</sub>* appear in the ECM subject position. Since these anaphors appear in object position of a verb or a preposition, the ECM subject position in (ib-c) is treated as an object position.

6. Chomsky (1995) assumes that transitive verb constructions have a double VP structure like *vP-VP*. Since the embedded verb *be* in (6) is not a transitive verb, it is a simple VP structure lacking *vP*. He also assumes that *him<sub>Subj2</sub>* in (6) raises from the predicate-internal subject position *t<sub>Subj2</sub>* to the embedded [Spec, T]. For further details of adjectival



constructions, see Chomsky (1995:353-354).

7. The set of relevant notions is defined as follows:

(i) binding theory (Chomsky & Lasnik 1995:96)

A. An anaphor must be bound in a local domain

B. A pronoun must be free in a local domain

C. An r-expression must be free

(ii) binding (Chomsky & Lasnik 1995:93)

$\alpha$  binds  $\beta$  if  $\alpha$  c-commands  $\beta$  and  $\alpha, \beta$  are coindexed

(iii) c-command (Chomsky & Lasnik 1995:35)

$\alpha$  c-commands  $\beta$  if  $\alpha$  does not dominate  $\beta$  and every  $\gamma$  that dominates  $\alpha$  dominates  $\beta$

8. Though grammatical judgments of examples (9), (11), and (12) may vary among native speakers, I accept the grammatical judgments of them provided by Postal (1974), and Lasnik & Saito (1991).

9. Chomsky (1995:272) assumes that the features adjoined to T “have A-position properties, c-commanding and binding in the standard way.”

10. Chomsky (1995:390, Note 104) assumes that adverbs have features that the [T, V] complex can attract. I adopt this assumption in this paper. Since the adverb *often* is closer to the [T, V] complex than *books*, FF (*books*) cannot be attracted. The notions “attract” and “close” are defined as in (i) and (ii), respectively.

(i) K *attracts* F if F is the closest feature that can enter into a checking relation with a sublabel of K (Chomsky 1995:297)

(ii)  $\beta$  is *closer* to the target K than  $\alpha$  if  $\beta$  c-commands  $\alpha$  (Chomsky 1995:358)

11. The following examples are problematic:

(i) a. \*Gray believes Mikey *sincerely* to be intelligent (Johnson 1991:587)

b. \*I consider John *probably* a liar

Examples (ia-b) indicate that the matrix adverb cannot intervene between the ECM or SC subject and its predicate. Contrary to the grammatical judgment of example (ia), some native speakers find examples (ia-d) acceptable, although my informants find them unacceptable.

(ii) a. I have found Bob *recently* to be morose (Postal 1974:146)

b. I believe John *sincerely* to be the best student in my class (Dérez 1989:460)

c. I believe him *irrefutably* to be a liar

d. I suspect him *strongly* to be a liar ((c) - (d): Authier 1991:729)

Furthermore, Japanese counterparts of examples (15a) and (ia) are acceptable.

(iii) a. Gray-wa *kokorokara* Mikey-o soumei da to omotta

b. Gray-wa Mikey-o *kokorokara* soumei da to omotta

Since the Minimalist Program cannot provide an appropriate adverbial position in structure (4), we cannot account for the ungrammaticality of (ia-b) and the grammaticality of examples (iia-d) and (iiia-b).

12. In English, T is assumed to have a strong D-feature, which causes overt Subj raising to [Spec, T], so as to satisfy the Extended Projection Principle (EPP). See Chomsky (1995) for further discussion.

13. The contrast in grammaticality between examples (ia-c) and (iia-c) may cast doubt on the feasibility of the analysis of structure (4).

(i) a. \*we understood nobody to have found the body after hearing any testimony

b. ?\*the audience believed Bill and Mary to have committed the crime during each other's speeches

c. ?\*the jury imagined every defendant to have killed the parson during his initial appearance on the stand

(ii) a. the DA demonstrated nothing to be certain during any of his speeches

b. the DA proved Bill and Mary to be guilty during each other's interrogations

c. the jury declared every defendant to be guilty during his final appearance

(Branigan 1992:58)

Branigan (1992) holds that the ECM subject cannot bind the element in the matrix adjunct when the matrix verb is a factive, whereas it can when the matrix verb becomes more causative or performative. I will leave this problem for future research.

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