VP-Internal Object Shift

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1. Introduction

This paper concerns the problem of identifying the positions of objects within VP in English and Japanese. Fukui (1986, 1988) forwards the hypothesis that the syntactic properties of lexical categories hold constant across languages and that language variation reduces to different properties of functional categories and the head parameter. Here, I pursue this intuition. I argue that both English and Japanese have short scrambling within VP, but that only English has 'forced' scrambling as well as optional scrambling, because of the property of Agr checking accusative Case. By examining closely the syntactic properties of double complement constructions in English and Japanese, I will show that this proposal can account for various facts that otherwise remain mysterious.

2. Double Complement Constructions

English has two types of double complement construction exemplified in (1).

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(1)a.  John gave/sent/showed Mary a book.
b.  John gave/sent/showed a book to Mary.

I will refer to cases like (1a) as the 'double DP frame' and cases like (1b) as the 'DP-PP frame'. Larson (1988) argues that the contrasts in (2) and (3) (and other similar cases he discusses) can be analyzed as structural asymmetries.

(2)a.  I showed Mary herself.
b.  *I showed herself Mary. (cf. Barss and Lasnik 1986)
(3)a.  I showed Mary to herself.
b.  *I showed herself to Mary. (Larson 1988)

Specifically, he proposes a so-called 'VP-shell' structure and claims that the DP-PP frame reflects the base structure and that the double DP frame results from a passive-like transformation applied within VP:

(4)a.  [v' gave [vp a book [v' ti to Mary]]] (DP-PP frame)
b.  [v' gave [vp Mary] [v' [v' ti] a book]] (double DP frame)

The structures in (4) correctly account for the contrasts in (2) and (3), since the theme phrase asymmetrically c-commands the goal phrase in the DP-PP frame, while the goal phrase asymmetrically c-commands the theme phrase in the double DP frame.

Note that in this proposal, Larson crucially adopts the thematic hierarchy given in (5).¹

(5)  Theme > Goal

This claim poses a nontrivial problem, however, if we consider double complement constructions in Japanese. Unlike English, Japanese has only one type of double complement construction. However, since Japanese has scrambling, there are always two possible surface forms of the construction, as in (6).


¹Larson also assumes Baker's (1988) UNIFORMITY OF Θ-ASSIGNMENT HYPOTHESIS, given below:

(1)  Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure.

See Baker (1993) and references cited there for different views of the thematic hierarchy.

The only difference between the two forms is their surface order. Hoji (1985) extensively discusses the syntactic properties of the two forms, and concludes that (6a) reflects the base structure, while (6b) reflects scrambling of the theme phrase. One piece of evidence for this conclusion comes from asymmetries observed between the goal phrase and the theme phrase with respect to pronominal variable binding.² Consider the examples in (7).

(7)a.  Mary-ga [subete-no tyosya]-ni [soitu]-no hon-o] okutta.
   -NOM all-GEN author-DAT he-GEN book-ACC sent
   'Mary sent every author his book.'
b.  *Mary-ga [sore]-no tyosya]-ni [subete-no hon]-i o okutta.
   -NOM his GEN author-DAT all-GEN book-ACC sent
   'Mary sent his every book.'
c.  ?Mary-ga [soitu]-no hon-o [subete-no tyosya]-i ni okutta.

The example in (7a) shows that in the goal-theme (dative-accusative) order, a pronominal element contained in the theme phrase can be bound by a quantifier in the goal phrase. The example in (7b) shows that in the same order, a pronominal element in the goal phrase cannot be bound by a quantifier in the theme phrase. However, as (7c) shows, if the order of the two complements is reversed, a pronominal element contained in the theme phrase can be marginally bound by a quantifier in the goal phrase, despite the fact that the pronoun precedes its antecedent, just as in (7b).

Hoji argues that the contrast between (7a) and (7b) follows if the goal phrase is higher than the theme phrase in the base structure, as shown in (8a), and further that the marginal acceptability of (7c) follows from so-called CONNECTIVITY (or reconstruction effects) if the theme phrase scrambles from a position lower than the goal phrase, as shown in (8b).

(8)a.  [vp Mary-ni [v' hon-o [v' ageta]]]
   -DAT book-ACC gave
b.  [vp hon-o [vp Mary-ni [v' ti ageta]]]

Hoji's conclusion thus supports the thematic hierarchy given in (9).

(9)  Goal > Theme

²Hoji (1985) presents other evidence related to quantifier scope and condition (C) effects to show the same point.
A problem clearly arises here. The thematic hierarchy in (9) is incompatible with the hierarchy in (5), which Larson adopts for English. Given the current working hypothesis on parameter variation, it is quite unlikely that English and Japanese are subject to different conditions on thematic prominence. Therefore (5) and (9) cannot both hold.

3. Connectivity within VP

In fact, as Kitagawa (1994) claims, close examination of the English cases leads us to a conclusion exactly opposite to Larson's. Consider (10) and (11).

(10a) a. *I gave each other's mothers the babies.
    b. *I showed each other's parents the boys.
(11a) a. *I gave each other's babies to the mothers.
    b. *I showed each other's parents to the boys.

Here there is a systematic contrast between the double DP frame and the DP-PP frame with respect to anaphor binding. Thus an anaphor contained in the goal phrase can never be bound by the theme phrase in the double DP frame, whereas an anaphor contained in the theme phrase can be marginally bound by the goal phrase in the DP-PP frame.2

Similar contrasts are found with pronominal variable binding as well. Relevant data follow in (12) and (13).4

(12a) a. *I gave his; mother every baby.;
    b. *I sent its; author every book.;
(13a) a. *I gave/returned his; paper to every student;.
    b. *I sent his; book to every author;.

One reasonable way of capturing these contrasts immediately suggests itself. Following Aoun and Li (1989) and Kitagawa (1994), suppose that the double DP frame reflects the bare structure and that the DP-PP frame involves movement of the theme over the goal, as illustrated in (14).

(14a) [VP1 give; [VP2 Mary [V2 to a book;]]]
    b. [VP1 give; [α a book; [VP2 to Mary [V2 to i;j]]]]

I will return to the question exactly to where the theme phrase moves.

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2The fact that cases like (11) are better than standard condition (A) violations was first noted by Burzio (1986). See also Zubizarreta 1992 and Pesetsky 1995 for similar observations.
4See Chierchia 1993 and Pica and Snyder 1995 for discussion of similar cases.

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This analysis correctly captures the contrasts observed in (10)-(13); the cases in (10) and (12) are ungrammatical because the element within the goal phrase can never be c-commanded by the theme phrase, as shown in (14a); the marginal acceptability of (11) and (13) can be traced to Connectivity, induced by movement of the theme phrase, shown in (14b). Regarding the marginality of these cases, it seems generally true that the effect of Connectivity is somewhat weaker with NP-motion than with wh-motion, as evidenced by contrasts like the one between (15) and (16) (see also Burzio 1986, Mahajan 1990, and Kitagawa 1994).

(15) a. Which of each other's friends did they talk to?
    b. Which of his pictures does every man like?
(16) a. *Each other's mothers seem to the boys to be smart.
    b. *Some friend of his; mother seems to every boy; to be smart.

This indicates that (17) generally holds.

(17) Movement to a NON-L-RELATED DOMAIN induces a strong effect of Connectivity, whereas movement to an L-RELATED DOMAIN induces a weak effect of Connectivity.5 (cf. Johnson 1994)

Given this generalization, the marginal status of (11) and (13) can now be treated on a par with the marginal status of the Japanese example in (7c).

Let us now turn to the question what is the exact nature of the movement of the theme in (14b). Aoun and Li (1989) and Kitagawa (1994) propose that the movement is a result of a passive transformation applied within VP, much in the spirit of Larson's original proposal. In other words, they claim that (14b) is a passive counterpart of (14a). However, movement of the theme seems to be a much more general phenomenon than their analysis suggests. Let us consider the examples in (18) and (19), which involve different types of DP-PP frames.

(18) a. I introduced the students to each other's friends.
    b. I put every dress; on it's; owner.
    c. I borrowed every car; from its; owner.
    d. I bought every book; for its; author's son.
(19) a. *I introduced each other's friends to the students.
    b. *I put each other's dresses on the girls.
    c. *I borrowed each other's pictures from the boys.
    d. *I bought each other's pictures for the boys.

5Roughly speaking, an element is in an L-related domain if it is in the projection of a head with lexical features (typically, a lexical head, Tense and Agp); otherwise, it is in a non-L-related domain. See Chomsky 1993.
The examples in (18) show that the theme DP is structurally higher than the other internal argument. The status of the examples in (19) parallels that of the examples in (11), and this strongly suggests that Connectivity is involved here, too. Note that the cases in (19a-c) do not have double DP counterparts. Note also that the effect of movement of the theme DP is seen regardless of the type of the B-role assigned to the non-theme argument (goal, source, benefactive, etc.). Given these observations, the correct generalization seems to be that movement of the theme DP is just a general property of cases having a DP and a PP as internal arguments (see also Pesetsky 1995 for a similar suggestion; see Zubizarreta 1992 for a different position).

This conclusion is also supported by evidence from Japanese equivalents of (18) and (19), given in (20)-(23).

(20a) Mary-ga subete-no gakusei-j-ni soituj-no sensei-o
-NOM all-GEN student-DAT he-GEN teacher-ACC syoojkaaisita.
introduced
'Mary introduced his teacher to every student.'

b. *Mary-ga soituj-no sensei-ni subete-no gakusei-o
-NOM he-GEN teacher-DAT all-GEN student-ACC syoojkaaisita.
introduced
'Mary introduced every student to his teacher.'


(21a) Mary-ga subete-no kodomo-j-ni soituj-no huku-o kiseta.
-NOM all-GEN child-DAT he-GEN clothes-ACC put
'Mary put his clothes on every child.'

b. *Mary-ga sorei-no motinsi-ni subete-no dorei-o kiseta.
-NOM it-GEN owner-DAT all-GEN dress-ACC put
'Mary put every dress on its owner.'


(22a) Mary-ga subete-no gakusei-kara soituj-o syoasis-o
-NOM all-GEN student-from he-GEN picture-ACC karita.
borrowed
'Mary borrowed his picture from every student.'

b. *Mary-ga sorei-no tyosya-kara subete-no hon-o karita.
-NOM it-GEN author-from all-GEN book-ACC borrowed
'Mary borrowed every book from its author.'

c. ?Mary-ga [soituj-no syoasis-o] subete-no gakusei-kara ij karita.

(23a) Mary-ga subete-no kodomoj-ni soituj-o syoasis-o katta.
-NOM all-GEN child-DAT he-GEN picture-ACC bought

'?Mary bought his picture for every child.'

b. *Mary-ga sorei-no tyosya-ni kodomo-ni subete-o hon-o
bought
'Mary bought every book for its author's child.'


Let us take (20) as an example. Here the contrast between (a) and (b) indicates that the theme is lower than the other internal argument in the base structure. Further, the marginal status of (c) shows a weak effect of Connectivity induced by short scrambling (i.e. scrambling to VP) of the theme phrase. The same account holds for (21)-(23).

Thus all these considerations point to the conclusion that English and Japanese are subject to the same thematic hierarchy given in (24) and further that (25) holds.

(24) non-Theme > Theme (cf. Pesetsky 1995)
(25) In the English DP-PP frame, the theme DP always moves over the other internal argument.

In other words, the theme DP always undergoes OBJECT SHIFT within VP in the English DP-PP frame and this object shift has properties parallel to short scrambling in Japanese.

4. Economy and Partial Object Shift

Assuming with Emonds (1978) and Pollock (1989) that main verbs stay within VP in English, we see that the object shift in English is 'partial' in the sense that the object does not out of VP. Extending Pollock's (1989) 'split-Infl' approach to clausal structure, Chomsky (1995) proposes a unified treatment of nominative and accusative Case according to which accusative Case is checked by Agr(0), located above VP, just as nominative Case is checked by Agr(0), located above TP. Adopting this 'Agr-based' Case Theory and recalling that object shift in English shows similar behavior to short scrambling in Japanese, let us suppose that the English DP-PP frame indeed involves short scrambling of the theme DP, as shown in (26).

(26) [Agr [VP 1 subj [V1 gave] [VP2 a book] [VP2 to Mary [V2 ij]ij]]]

In (26) the theme DP a book adjoins to VP2, as a result of short scrambling (see Saito 1985 for the claim that scrambling is an adjunction operation).

This analysis correctly accounts for the contrast between (3a) and (3b), noted by Larson (1988).
I also propose that the 'least effort' nature of Economy (Chomsky 1991) tries to minimize the part of an element that undergoes movement.

Let us call this the MINIMAL AFFECTER CONDITION:

(30) Minimal Affectee Condition (MAC):
Affect the smallest part of an element.

Given the MAC, head movement is always preferred over XP movement. However, it is an obvious fact that a whole noun phrase, but not just a noun head, moves in English. A plausible interpretation of this fact is that noun incorporation yields a PF structure that is illegitimate in English. As a result, overt movement of a whole noun phrase is allowed as a last resort in English. Then, in general, XP movement is possible only when PF restrictions force it. This implies that LF movement is always head movement in all languages, since PF considerations are irrelevant in LF.7,8

Now let us go back to the derivation in (26). As we have already seen, the scrambling of the theme DP a book is cost-free. Assuming that D has a Case feature to be checked by Agr, the D head of the raised DP moves to Agr in LF for Case checking, in accordance with the MAC. Note that this LF movement of D is costly, since, before movement, the D head is not in the minimal domain of any other head. Thus LF movement of D can never be cost-free.

Now let us consider another derivation given in (31).

(31) *[Agr [VP1 t subj [V'1 give; [VP2 to Mary [V'2 t; a book]]]]]

On the basis of minimalist considerations of movement operations, Chomsky (1995) proposes a similar move but goes further. He proposes that given the idea that movement operations are driven by the necessity of feature checking, the minimal operation should move just features, and accordingly calls the operation 'Move-F' in place of traditional 'Move-α'. The rest of the reasoning is essentially the same as given in the text. Thus Move-F carries along just enough material for convergence and hence 'pied-piping' is allowed only to guarantee convergence at PF. As a result, covert movement is always movement of features.

This proposal immediately explains why pied-piping is not allowed in LF, as often noted in the literature. Thus, under the standard there-replacement analysis proposed by Chomsky (1986, 1991), it is not clear why the following is ungrammatical:

(i) *There seems to him to be [a picture of John] in the room.

If the 'associate' DP as a whole moved to there in LF, the example would be saved from violation of condition (C). If what moves in LF is just the head D, on the other hand, condition (C) violation is expected. See Lasnik and Saito 1991 for discussion of other similar cases.

6For Fukui (1993), the relevant notion is directionality of movement. Here I essentially follow the idea of Fukui (1986), expressed in different terms and on different assumptions.
The derivation yields the surface form *gave to Mary a book*, which is ungrammatical. Here the theme DP *a book* does not undergo overt scrambling. As a result, the D head of the in-situ DP moves all the way up to Agr in LF for Case checking. As noted before, this movement is costly.

Comparing (26) and (31), we see that LF movement of D is shorter in (26) than in (31) (to determine the length of movement, let us assume that we count the nodes on the path of movement), and hence that the derivation in (26) is more economical than the derivation in (31) in terms of the Shortest Move Condition. Since overt scrambling of DP in (26) is cost-free, it does not add any cost to the derivation (D gets a "free ride"). It follows then that the derivation in (26) is more economical than the derivation in (31). As a result, the former blocks the latter.

Suppose that the goal PP to Mary undergoes scrambling as well as the theme DP. This is shown in (32).

(32) *[Agr [VP1 ssubj [v1] gave [VP2 to Mary] k [VP2 a book]] [VP2 k [v2 ti ti]]]]

Here the scrambling of the goal PP is cost-free, just like the scrambling of the theme DP. However, this creates another VP2 segment above the theme DP, thereby making LF movement of the D head of the theme DP longer here than in (26). Therefore the derivation in (32) is also blocked by the derivation in (26).

In effect, Economy selects (26) as the only possible derivation by excluding all other derivations. Thus apparent obligatoriness of object shift of the theme DP now follows from Economy.

This analysis extends naturally to the so-called ADJACENCY REQUIREMENT on accusative DPs in English, as exemplified below:

(33a) I gave the book slowly to Mary.
(33b) *I gave slowly the book to Mary.
(34a) John solved the problem quickly.
(34b) *John solved quickly the problem.

Thus the derivations yielding (33b) and (34b) are blocked by the derivations yielding (33a) and (34a), respectively, given that the latter derivations involve shorter LF movement of D (see Stowell 1981, Johnson 1991, Koizumi 1993, and Chomsky 1994 for other approaches).

One important question arises in this connection. Why does the theme DP not adjoin to VP1 in (26), appearing to the left of the verb *gave*? Since it yields the wrong surface order, the possibility must somehow be excluded. Based on certain empirical considerations of participle agreement in French (cf. Kayne 1989, Sportiche 1990, Branigan 1992), Chomsky (1994) suggests a modification of the concept of the minimal domain to the effect that a position adjoined to XP is not in the minimal domain of the head X. Given this modification, a position adjoined to VP1 is outside the minimal domain of the chain headed by *gave*. Then movement of the theme DP to VP1 is not cost-free and therefore the theme DP cannot adjoin to VP1 without violating Last Resort.

Recall that VP-internal object shift under consideration has three properties, repeated in (35), that need to be explained.

(35) VP-internal object shift is: (i) adunction to VP2, (ii) overt, and (iii) obligatory.

These properties now follow under this analysis. In effect, this analysis implies that derivations are optimized by maximizing cost-free movement. Recall that cost-free movement must take place within the same minimal domain. Given Economy (Shortest Move), the theme DP must move to the closest possible position to Agr, to minimize the length of LF movement of D. Given these conditions, adunction to VP2 is the best move, thus accounting for property (i). Recall also that the MAC forces all instances of LF movement to be head movement. This ensures that covert XP movement (including scrambling) is impossible. This derives property (ii). Finally, Economy forces' movement of the theme DP by excluding all other derivations. Thus property (iii) also follows.

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9Here I assume with Chomsky (1994) that derivations can be compared by Economy only if they involve the same choices of elements from the lexicon.
10Similarly, the derivation yielding (1b) is blocked by the derivation yielding (1a) since LF movement of the D head of *Mary* is shorter in the latter (here I simply assume that the theme DP in the double DP frame has nonstructural Case, licensed in some other way than checking by Agr).
11Thanks to Phil Branigan for suggesting this possibility to me.
12Note that PROCRASTINATE is irrelevant here, since it is designed to choose an LF option over an overt option whenever both options are available and there is no LF option in this case, because of the MAC.
13Note that the idea that English has overt object shift within VP is far from new. Johnson (1991) proposes that all accusative DPs undergo overt object shift within VP in English. Koizumi (1993) incorporates Johnson's idea within the Agr-based Case Theory under his 'split VP hypothesis'. However, the present approach differs from these approaches in that it treats object shift as an instance of the general process of scrambling rather than movement into a Spec position where the moved object is licensed for its Case (the relevant position is Spec VP for Johnson and Spec Agr(o)P for Koizumi). As Kyle Johnson (personal communication) notes, one empirical advantage of the present approach over the others is that it easily accounts for the fact that the shifted object allows extraction out of it, given that extraction is generally possible out of a scrambled element (see Saito 1983). The same simple account will not be
Let us turn now to Japanese. Unlike the English DP-PP frame, the Japanese double complement construction allows optional scrambling within VP, as shown in (36).

(36)a. \[VPI \text{Subj} [V_1 [VP2 Mary-ni \ [V_2 \text{hon-o} \ [t_j]] \text{agetaj}]] \]
-b. \[VPI \text{Subj} [V_1 [VP2 \text{hon-o}] [VP2 Mary-ni \ [V_2 [t_j]] \text{agetaj}]] \]

If accusative Case were to be checked by Agr in Japanese as well, then the derivation in (36b) would block that in (36a), since LF movement of the D head of the theme DP would be shorter in (36b). Suppose that accusative Case is not checked by Agr in Japanese. Then the D head of the theme DP need not move to Agr in LF. Since short scrambling in (36b) is cost-free, it does not add any cost to the derivation. Thus the derivations in (36a) and (36b) will be equally economical.

These considerations lead us to a conclusion suggested by Takahashi (1993):

(37) Accusative Case is not checked by Agr in Japanese.

The conclusion also supports Fukui's (1986, 1988) claim that Agr does not play any significant role in Japanese syntax.

5. Short Scrambling in English and Japanese

This proposal also leads to the prediction that the English theme phrase will behave just like the Japanese theme phrase if it need not be checked by Agr. The prediction is in fact correct: English does have a construction that shows properties quite similar to the Japanese double complement construction, namely the 'double PP' frame, as given below:

(38)a. I talked to John about Mary.
-b. I talked about Mary to John.
(39)a. I heard from John about Mary.
-b. I heard about Mary from John.

The two forms in (38) and (39) are both grammatical, a fact that suggests the possibility of optional scrambling within VP. Thematic considerations suggest that the (b) cases derive from the (a) cases (I assume that the to-phrase has a goal role and the about-phrase a theme role; see Jackendoff 1972). In fact, (40)-(42) provide empirical evidence for the claim that short scrambling is involved in the derivations of (38b) and (39b).

(40)a. I talked to the boys about each other's mothers.
-b. I heard from the boys about each other's mothers.
(41)a. *I talked to each other's children about the men.
-b. I heard from each other's mothers about the boys.
(42)a. I talked about each other's mothers to the boys.
-b. I heard about each other's mothers from the boys.

The sharp contrast between (40) and (41) (cf. Postal 1971, Jackendoff 1990) indicates that (38a) and (39a) reflect the base structure. The familiar contrast between (41) and (42) suggests that Connectivity is responsible for the status of (42). Thus the cases in (40)-(42) support the claim that (38b) and (39b) result from short scrambling of the theme phrase.

These results lead to the following conclusion:

(43) English has both 'forced' and optional short scrambling, whereas Japanese has only optional short scrambling.

The difference between English and Japanese in this regard follows from their respective difference in Case systems. Before concluding, note that the present proposal is not compatible with the claim that wh-phrases in situ undergo LF movement. Under our assumptions, LF wh-movement must be head movement, perhaps movement of D (Chomsky 1993). Now consider the following:

(44)a. Who talked to Bill about what?
-b. Who talked about what to Bill?

We have just observed that (44b) involves short scrambling of the about-phrase. If so, the putative LF movement of the D head of the wh-phrase would be shorter in (44b) than in (44a), because of overt scrambling. This predicts that the derivation yielding (44b) would block that yielding (44a), contrary to fact (exactly the same holds for wh-in-situ in Japanese).

This suggests that wh-phrases in situ do not move in LF. Therefore the present analysis supports a nonmovement approach to wh-in-situ going back to Baker (1970). The same conclusion holds for QR. Thus the general conclusion is that there is no LF operator movement except operator-variable formation, discussed by Chomsky (1993).

6. Conclusion

To conclude, I have argued the following:

(f) English and Japanese are subject to the same thematic hierarchy: non-Theme > Theme.

available, as Branigan (1992) points out, if the shifted object occupies a Spec position, which is expected to show the same properties as Spec IP, a typical position for subjects. See Takano 1995 for more discussion of this matter.
(II) Economy (i) allows cost-free movement within the same minimal domain and (ii) prefers head-movement over XP movement unless PF restrictions force the latter.

(III) In the English DP-PP frame the accusative DP always undergoes overt scrambling to VP, which is 'forced' by Economy under the Agr-based Case Theory.

(IV) Accusative Case is not checked by Agr in Japanese. As a result, short scrambling is always optional in Japanese.

(V) English has both 'forced' and optional short scrambling.

(VI) There is no operator movement in LF.

The general conclusion that is drawn from this discussion is that English and Japanese are identical with respect to the syntactic properties within VP; all the observed differences reduce to differences related to the properties of Agr and the head parameter. This conclusion thus strongly supports Fukui's (1986, 1988) hypothesis that syntactic properties of lexical categories are invariant across languages.

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