

Optionality in Word Order : A Case Study of a Japanese Sign Language

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1. Introduction

It has been a controversial issue how to capture the phenomena of free word order which appear to involve optionality under the current framework of the Minimalist Program. The standard analysis of such phenomena uses the operation of Move in such a way that different word orders are derived from the optional application of Move to the underlying word order. For example, it has been standard since Whitman (1982) and Saito (1983, 1985) that the free word order observed in such a language as Japanese involves a movement rule called scrambling. Thus, in the following pair of Japanese examples, (1a) reflects the basic word order of this language whereas (1b) is derived from the underlying structure corresponding to (1a) by applying scrambling to *Mary-o* :

- (1) a. John-ga Mary-o aisiteiru.
 -Nom -Acc love
 ‘John loves Mary.’
 b. Mary-o_i John-ga _{t_i} aisiteiru.
 -Acc -Nom love

Although such an analysis successfully captures some relevant properties of the derived word order such as reconstruction effects of binding and numeral quantifiers, it still leaves a conceptual question unanswered under the conception of efficient computational system : What is the trigger of movement in the cases in question ? To the extent that the checking theory of movement widely assumed in the Minimalist Program is the right way to characterize the movement phenomena in general, scrambling, i.e., movement without any driving feature, appears to be extraneous to other movement operations.

In this paper, I would like to raise another question with respect to the phenomena of free word order : Are all such phenomena to be captured by scrambling ? Hale (1980) and Farmer (1980) propose that the free word order phenomena should be captured by phrase structure rules. Moreover, Hale (1983) puts forth what he calls configurationality parameter, which distinguishes, among others, those languages which have configurational structures from those which have flat structures. In the former type of language, the Projection Principle dictates that external and internal arguments are realized in designated positions, the subject position for external arguments and the object position for internal arguments, hence giving rise to configurational structures. In the latter type of language, on the other hand, the Projection Principle is off due to their non-configurationality, so that arguments may be realized at any order, as long as the head parameter is respected. This allows the non-configurational languages to exhibit the phenomena of free word order. This particular proposal is disputed by Whitman (1982) and Saito (1983, 1985), who provide a series of compelling evidence for the existence of VP in Japanese and thus indicate that this language also has configurational structures. Nonetheless, I would like to argue in this paper that some instances of optionality in word order are derivable from underlying phrase structure. I claim that such optionality is attributed to the underspecification of the head-complement order, following the idea of Haider (2005).

In demonstrating this, I will use the relevant data of a Japanese sign language obtained from a bilingual speaker of this sign language and Japanese, who has acquired the former language from her deaf parents.

2. Basic Word Orders in a Japanese Sign Language

The Japanese sign language I will deal with here basically has head-final properties. Thus, its basic word order of a clause is S-O-V, as illustrated below :

- (2) a. I – APPLE – EAT
 ‘I eat an apple.’
 b. *I – EAT – APPLE

Further, this language uses postpositions rather than prepositions, as illustrated below :

- (3) a. JOHN – TOKYO – FROM – COMMUTE
 ‘John commutes from Tokyo.’
 b. TOKYO – FROM – LETTER
 ‘a letter from Tokyo’

(3b) also illustrates the fact that the head of a noun phrase is located at the end of this phrase. Further data that show the head-final properties of this sign language come from the order of V-Neg-Tense, as illustrated below :

- (4) a. I – APPLE – EAT+PAST
 ‘I ate an apple.’
 b. I – APPLE – EAT+NOT+PAST
 ‘I didn’t eat any apple.’

Here, the + marker indicates that the following element is a bound morpheme. That the tense and negation markers are bound morphemes is demonstrated by the fact that adverbials cannot insert before these morphemes, as illustrated below :

- (5) a. (YESTERDAY) – I – (YESTERDAY) – APPLE – (YESTERDAY) –
 EAT+(*YESTERDAY)+PAST
 ‘Yesterday I ate an apple.’
 b. I – APPLE –EAT+(*YESTERDAY)+NOT+(*YESTERDAY)+PAST

(5a) shows that an adverbial appears in various positions rather freely, and yet it cannot appear between the verb and the tense ; (5b) further shows that it cannot appear before and after the negation morpheme, either. The order of V-Neg-Tense can be naturally captured by assuming that the tense and negation markers each function as independent heads and that the projections of the functional categories above VP are organized as follows :

- (6) [_{TP} ... [_{NegP} ... [_{VP} ... V] Neg] T]

Given the natural assumption that these heads are combined in this order in the morphological component, it follows that they are realized in the order of V-Neg-T.

Despite the overwhelming evidence shown above that this sign language

is head-final, there is an interesting array of data that appears to run counter to the conclusion so far : A certain class of verbs allow optionality in the head-complement order, as illustrated below :

- (7) a. I – JOHN – MARRY+PAST
 ‘I married John.’
 b. I – MARRY+PAST – JOHN
- (8) a. I – TOKYO – GO+PAST
 ‘I went to Tokyo.’
 b. I – GO+PAST – TOKYO

I have not been able to determine what distinguishes this class of verbs from the other, which does not allow such optionality, as illustrated in (2) ; I simply list some other verbs belonging to each class below :

- (9) a. [+Optional] : COME, SEE OFF, SWIM, HATE
 b. [– Optional] : SEE, WEAR, TAKE, SING, LIVE, CROSS

This distinction holds in the configuration in which DP appears in the complement position of these verbs. Thus, as listed in (9b), the DP complement of CROSS cannot appear postverbally, as illustrated below :

- (10) a. I – RIVER – CROSS+PAST
 ‘I crossed a river.’
 b. *I – CROSS+PAST – RIVER

On the other hand, when this verb takes Source and Goal arguments, the former argument must be accompanied with the postposition meaning ‘from’, as illustrated below :

- (11) I – JAPAN – FROM – U.S.A – CROSS+PAST
 ‘I went from Japan over to the U.S.A.’

Interestingly, in such a case, it is only the DP argument functioning as Goal that is prohibited from appearing postverbally, as illustrated below :

- (12) a. *I – JAPAN – FROM – CROSS+PAST – U.S.A
 b. I – U.S.A. – CROSS+PAST – JAPAN – FROM

Thus, it seems that even in those verbs which are classified as [– Optional], their PP arguments can appear postverbally. In accordance with these facts, those verbs which take clausal arguments seem to allow them to appear post-

verbally in general ; consider the following examples :

- (13) a. JOHN – [MARY – MARRY + PAST – (NOML)] – SAY – PAST
'John said that Mary got married.'
b. JOHN – SAY – PAST – [MARY – MARRY + PAST – NOML]
- (14) a. JOHN – [MARY – MARRY + PAST – (NOML)] – THINK
'John thinks that Mary got married.'
b. JOHN – THINK – [MARY – MARRY + PAST – NOML]

Here NOML stands for a nominalizer added at the end of an embedded declarative clause. Though the overt realization of this element is mandatory only when the embedded clauses appear postverbally, a curious property about which I have nothing interesting to say, these embedded clauses can appear in both sides of the main verbs. Again, this indicates that the classification of verbs made in (9) is applicable only to those verbs which take DP complements.

Ditransitive verbs, that is, verbs that take two DP complements, show an interesting pattern of word order ; consider the following data :

- (15) a. I – MARY – APPLE – GIVE/BUY + PAST
'I gave/bought Mary an apple.'
b. I – MARY – GIVE/BUY + PAST – APPLE
c. *I – APPLE – GIVE/BUY + PAST – MARY

This shows that ditransitive verbs allow optionality in the head-complement order but only with direct objects. Further, it is impossible to put both objects after the verb, as shown below :

- (16) a. *I – GIVE/BUY + PAST – MARY – APPLE
b. *I – GIVE/BUY + PAST – APPLE – MARY

Basically the same pattern of facts can be produced with the verb INTRODUCE, as shown below :

- (17) a. I – JOHN – MARY – INTRODUCE + PAST
'I introduced Mary to John.'
b. I – JOHN – INTRODUCE + PAST – MARY
c. *I – INTRODUCE + PAST – JOHN – MARY

Although the two objects of INTRODUCE are usually both humans, the native

speaker of this sign language has a strong intuition about which object alternates with the verb in their word order, i.e., the direct object ; hence MARY in (17b) must be interpreted as the direct object of INTRODUCE. (17c) shows that the two objects of INTRODUCE cannot appear after the verb together. It seems that these properties apply to ditransitives in general, as far as I can determine.

Finally, adverbials can appear after verbs irrespective of their classification in terms of the optionality of the head-complement order. Thus, a verb such as EAT which does not allow such optionality, as illustrated in (2) and reproduced here in (18a, b) with YESTERDAY added to each sentence, does allow an adverbial such as YESTERDAY to appear after the verb, as illustrated in (18c) :

- (18) a. I – YESTERDAY – APPLE – EAT + PAST
 ‘I ate an apple yesterday.’
 b. *I – YESTERDAY – EAT + PAST – APPLE
 c. I – APPLE – EAT + PAST – YESTERDAY

3. Hypotheses

In order to analyze the data presented in the preceding section, let us first outline the theory of phrase structure that I adopt in this paper, the one advocated by Abe (2001). In accordance with Fukui’s (1995) Functional Parametrization Hypothesis, which states that :

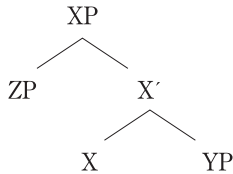
- (19) Lexical projections are uniform among languages and parametrization is attributed to functional categories.

Abe (2001) proposes that the head-parameter is encoded into only functional categories. His theory of phrase structure has a hybrid character in that lexical projections, typically VP, strictly obey some algorithm that maps hierarchical relations into linear orders in a determined way, as proposed by Kayne (1994) and Fukui and Takano (1998), whereas functional categories are equipped with the head parameter that determines the head-complement order independently of the algorithm of linearization in question. Abe proposes the following algorithm for linearization :

- (20) When α and β merge, α precedes β if α is visible and β is invisible.
where visibility is determined on the basis of the status of projection.

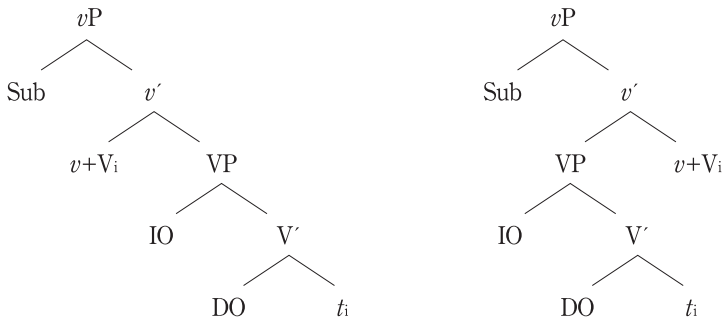
Abe follows Chomsky (1995, 242) in assuming that “bare output conditions make the concepts ‘minimal and maximal projection’ available [=visible] to C_{HL} ,” since only these projections are relevant to interpretation at the interface. Given these assumptions, it follows that in the following structure,

(21)



ZP precedes X' since the former is visible while the latter is invisible. A peculiar character of the algorithm given in (20) is that it is silent about the order of X and YP in (21), since both categories are visible. This makes room for the head-parameter, though Abe incorporates it in such a way that it applies only to functional categories. He then follows Pesetsky's (1995) suggestion, according to which English Cascade structure is universal (for VP structure) and the order of an OV language is derived from movement of the verb to the head of a right-headed functional category, and proposes that English and Japanese, for example, have the following clausal structure (omitting T and C projections above vP here) :

(22)



Abe follows Chomsky (1995) in assuming that v licenses an external argument (=Sub) and is also involved in checking of accusative Case when the V below it has this Case feature. As a functional category, v is equipped with the head-parameter and English takes the head-initial value while Japanese takes the head-final value. The difference in clausal structure between English and Japanese is now attributed to this value of the head-parameter encoded in functional categories such as v , T and C. Abe further assumes that if UG requires that lexical heads move obligatorily to higher functional heads, so that V obligatorily raise to v in (22), the indeterminacy of the head-complement order in lexical projections is resolved, since functional heads encode the head-parameter.

The empirical motivation for encoding the head parameter into functional categories is the following : First, Abe shows that the asymmetrical structure proposed by Kayne (1994) and Fukui and Takano (1998) is right for such a lexical projection as VP, since it shows the property that what precedes is structurally higher than what follows in both English and Japanese despite the difference in the head-complement order. Abe then argues that such an asymmetrical structure is untenable for functional projections of a clause, since there is ample evidence that what follows is structurally higher than what precedes. Reinhart (1976) provides many examples to show this, arguing that the hierarchical notion c-command must be a relevant notion for regulating

anaphoric relations. For example, she observes the contrast between sentential PPs and verb phrasal PPs, as shown below :

- (23) a. The chairman hit him_i on the head before the lecturer_i had a chance to say anything.
b. Rosa won't like him_i anymore, with Ben_i's mother hanging around all the time.
c. We sent him_i to West Point in order to please Ben_i's mother.
- (24) a. *I'm willing to give him_i 2 grand for Ben_i's car.
b. *Rosa tickled him_i with Ben_i's feather.
c. *It's time to put him_i in the baby_i's bed.

The grammaticality of the sentences in (23) suggests that the direct object *him* does not c-command the adverbial clauses that follow it, hence the latter clauses hanging above VP. Reinhart (1976) further provides examples of extraposition from subject position that shows the same point :

- (25) a. Nobody would ever call her_i before noon who knows anything about Rosa_i's weird sleeping habits.
b. Many people hate him_i who had the chance to work with Brando_i on a film.
c. So many people wrote to him_i that Brando_i couldn't answer them all.

In order to accommodate these cases, Abe argues that adjunction structure is necessary for functional projections. He follows Saito (1985), Fukui (1993), and Saito and Fukui (1998) in that adjunction is constrained by X'-theory ; that is, the direction of adjunction is constrained in such a way as to preserve the value of the head parameter, so that an element must be adjoined to the side of a category opposite to that of its head. Thus, head-initial languages such as English must conform to the X'-schemata given in (26a), so that only right-adjunction is possible, whereas head-final languages such as Japanese must conform to (26b), so that only left-adjunction is permitted.¹

1 I assume, following Abe (2001, 2002), that adjunction is allowed only to an intermediate projection of a functional category, as indicated in (26). Abe (2001) stipulates, borrowing the terminology of Fukui and Speas (1986) and Fukui (1986), that "a specifier 'close off' its projection ... in the sense that it does not allow adjunction to

- (26) a. $X' \rightarrow X/X' YP$
 b. $X' \rightarrow YP X/X'$

Given this option, there is a straightforward way to accommodate the cases given in (23) and (25), which are problematic for the asymmetrical structure hypothesis : the adjunct clauses in (23) and the extraposed clauses in (25) can be right-adjoined to clausal functional categories such as v' , T' , or C' , so that they may be outside the c-command domain of the object pronoun *him* or *her*.

Let us now address the question how to derive the word orders observed in the Japanese sign language under consideration, especially how to capture the optionality in the head-complement order. Recall first that Abe (2001) simply assumes without any independent motivation that V obligatorily raise to v in (22), so that the indeterminacy of the head-complement order in lexical projections is resolved. Contrary to this assumption, let us hypothesize the following universal principles :

- (27) a. A language has the option of not raising of a lexical head to the above functional head at least overtly.
 b. The unspecification of the head-complement order in a lexical projection is interpreted in the phonological component in such a way that both head-complement and complement-head orders are realized.

Given these principles, we can characterize the properties of the word orders of the sign language in question as follows :

- (28) a. This language takes the value of being head-final.
 b. Raising of V to v does not take place at least overtly in this language.

The characterization given in (28b) intends to capture the optionality in the head-complement order of this language, as illustrated in (7), (8), (13), (14) (15a, b) and (17a, b). Notice, however, that the alternation of word orders in question is strictly between V+T and O, not simply between V and O. The situation does not change if the negative morpheme is added between V and T,

occur any more within the projection in question.” (p. 13) See Abe (2001, 2002) for empirical motivations for this assumption.

as illustrated below :

- (29) a. I – JOHN – MARRY + NOT + PAST
'I didn't marry John.'
b. I – MARRY + NOT + PAST – JOHN
- (30) a. I – MARY – APPLE – GIVE/BUY + NOT + PAST
'I didn't give/buy Mary an apple.'
b. I – MARY – GIVE/BUY + NOT + PAST – APPLE

In order to capture these facts, let us hypothesize the following :

- (31) V(+Neg)+Past forms a complex morpheme by Neg and Past being adjoined to V in the morphological component.

It follows from this hypothesis that by the time a clausal structure is sent to the phonological component through the morphological component, the sequence V+Neg+Past is situated under the V node. Hence, the universal principle stated in (27b) dictates that the sequence of V+Neg+Past and its complement is linearized in either order. This explains the facts given in (7), (8), (13), (14) (15a, b) and (17a, b). The ungrammaticality of (15c) follows immediately under the present assumptions, since the alternation in word order is possible only between V and its complement, that is its direct object if any. This explanation presupposes that the base structure of VP in this language is just like English and Japanese, as given in (22). There is independent empirical motivation for this assumption. Let us first note that the order of IO and DO is optional before V in this language, as illustrated below :

- (32) a. I – MARY – APPLE – GIVE + PAST
'I gave Mary an apple.'
b. I – APPLE – MARY – GIVE + PAST

Unlike the free word order obtaining between V and its complement, there is evidence that the free word order between IO and DO should be captured by scrambling. This is concerned with the distribution of numeral quantifiers ; consider the following examples :

- (33) a. I – STUDENT – THREE + CL – BOOK – GIVE + PAST
'I gave a book to three students.'
b. I – STUDENT – BOOK – THREE – GIVE + PAST

‘I gave three books to a student.’

- (34) a. *I – STUDENT – BOOK – THREE + CL – GIVE + PAST
b. I – BOOK – STUDENT – THREE – GIVE + PAST

The distribution of numeral quantifiers in this sign language is very similar to that in Japanese, though their realization is peculiar in that this language seems to have only one classifier designated for humans which is attached to a numeral quantifier. That is why a classifier abbreviated as CL is attached to THREE in (33a) while THREE in (33b) is used in isolation. The ungrammaticality of (34a) seems to show that a numeral quantifier must be put in a position adjacent to its modifiee, but if so, we cannot account for the grammaticality of (34b), in which the numeral quantifier THREE is separated from its modifiee BOOK by STUDENT. These facts can, however, be captured straightforwardly by assuming (i) that the underlying word order of a clause in this language is S-IO-DO-V, just like those in English and Japanese, given in (22), and (ii) that the order S-DO-IO-V is derived from the underlying word order by scrambling DO before IO. Given these assumptions, the grammaticality of (34b) is attributed to the fact that the adjacency condition that is at work between a numeral quantifier and its modifiee is respected in (34b), since the trace of BOOK is located next to THREE.

Going back to the data under consideration, the ungrammaticality of the examples given in (16) and (17c) is straightforward, since the alternation of word order in question is only between V and its complement, hence IO never appearing after V. The grammaticality of (18c), on the other hand, suggests that adjuncts can appear in complement position, as claimed by Larson (1988). It is predicted under the present hypotheses that if an adjunct appears in the complement position of a verb, then other arguments, including its DO, cannot surface after the verb together with the adjunct. This is in fact borne out, as shown below :

- (35) a. I – YESTERDAY – JOHN – MARRY + PAST
‘I married John yesterday.’
b. I – YESTERDAY – MARRY + PAST – JOHN
c. I – JOHN – YESTERDAY – MARRY + PAST

- d. I – JOHN – MARRY+PAST – YESTEREDAY
- (36) a. *I – MARRY+PAST – JOHN – YESTERDAY
- b. *I – MARRY+PAST – YESTERDAY – JOHN

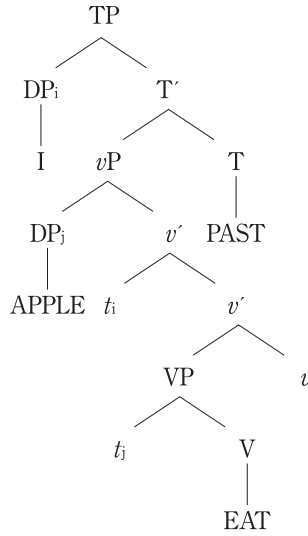
The examples in (35) show that not only DO but also an adjunct such as YESTERDAY can alternate with its verb in word order, indicating that adjuncts can appear in complement position, and those in (36) show that adjuncts cannot appear after V together with its DO, thus supporting our hypotheses.

One case that has remained untouched is the one involving the class of verbs that do not allow their DO to appear after them, as illustrated in (2), reproduced below :

- (37) a. I – APPLE – EAT
'I eat an apple.'
- b. *I – EAT – APPLE

Recall that this restriction only holds between V and its DP complement ; thus the alternation in word order between V and its PP complement or clausal complement is free, as illustrated in (11) and (12b), and (13) and (14). Based upon this observation, I suggest that the idiosyncrasy of this class of verbs can be attributed to their lexical property that they induce obligatory object raising to the Spec-*v*P. One possible implementation of this characterization will be (i) to classify *v* into two types, depending upon whether it carries an [EPP] feature, and (ii) to stipulate that this class of verbs requires being selected by the one that carries an [EPP] feature. If we further assume that an [EPP] feature is satisfied only by DP, then it follows that the target of obligatory raising to the Spec-*v*P is restricted to DP. Given the standard assumption that subject, which is base-generated in the Spec-*v*P, moves up to the Spec-TP, (37a) will then have the following structure :

(38)



Since the object APPLE obligatorily raises to the Spec-*v*P to check the [EPP] feature carried by *v*, it is impossible for this object to surface after the verb EAT.²

Recall that a verb such as CROSS cannot take its DP complement post-verbally, just like EAT, and yet allows its Source argument to appear postver-

2 One may wonder which class ditransitive verbs belong to, the one selected by *v* carrying an [EPP] feature or the one selected by *v* without it. It seems that we can go either way, as far as I can see. If we assume that these verbs are classified as the one demanding *v* without an [EPP] feature, then nothing will change in our account for the word orders involving these verbs. Suppose that these verbs are classified as the one demanding *v* carrying an [EPP] feature. In that case, one of the two objects will have to move to the Spec-*v*P. If IO moves there, this still allows the alternation between V and DO in word order. Recall that we observed with the examples given in (32) that the order of IO and DO is free, and I claimed that in this case, the DO-IO order is derived from the underlying IO-DO order by scrambling. Given the present assumption, it will be reasonable to claim that the relevant movement is not scrambling but rather object raising to the Spec-*v*P. See Section 5 for a relevant discussion.

bally, as illustrated in (12), reproduced below :

- (39) a. *I – JAPAN – FROM – CROSS+PAST – U.S.A
 b. I – U.S.A. – CROSS+PAST – JAPAN – FROM

The ungrammaticality of (39a) follows immediately under the assumption that like EAT, CROSS requires *v* that carries an [EPP] feature, which forces the DP complement U.S.A. to move to the Spec-*v*P, just like APPLE in (38), hence appearing preverbally. Under the present assumptions, (39b) can be analyzed in two ways : One is to assume that the Source argument is the “first argument” of CROSS, hence appearing in its complement position and being allowed to alternate with the verb in word order. The other is to assume that the “Source argument” is not a real argument but rather an adjunct, hence being allowed to appear in complement position, exactly like YESTERDAY, as demonstrated in (35). Either way will do, as far as I can determine.

Finally, let us consider a little more closely the morphology of the sequence of V(+Neg)+Past. Recall that we assumed the following, reproduced from (31) :

- (40) V(+Neg)+Past forms a complex morpheme by Neg and Past being adjoined to V in the morphological component.

We are tacitly assuming that there are two ways to combine V and Tense : one is to rely on syntactic head raising and in this case, V is located in T position. The other is to assume a morphological process of amalgamation and in this case, it is natural to assume that if T is a bound morpheme, it is attached to V, hence located in V position. It is natural to conjecture that since the sign language under consideration does not exploit head raising of V, it necessarily exploits the latter strategy. Given this reasoning, it is of some interest to examine cases involving complex verbs to see what word order is allowed in such cases. Let us consider causative constructions, which are illustrated below :

- (41) a. I – DAUGHTER – BOOK – READ+CAUSE+PAST
 ‘I made my daughter read a book.’
 b. I – DAUGHTER – READ+CAUSE+PAST – BOOK
 c. *I – BOOK – READ+CAUSE+PAST – DAUGHTER

In this language, the causative construction can be made by attaching the causative morpheme CAUSE to the end of a verb to make a complex predicate, as may be expected from the head-final property of this language. The pattern of facts shown in (41) is reminiscent of that of ditransitive verbs, as illustrated in (15) above in that only the “direct object” of the complex verb READ+CAUSE can appear postverbally, but not its “indirect object” (cf. (41b) vs. (41c)). A further parallelism is observed with respect to the impossibility of putting both objects postverbally ; compare the following examples with those given in (16) :

- (42) a. *I – READ+CAUSE+PAST – DAUGHTER – BOOK
 b. *I – READ+CAUSE+PAST – BOOK – DAUGHTER

How can we capture these facts ? The standard syntactic analysis of causative constructions will assume that they are biclausal, even in cases where the causative morpheme and the verb it attaches to appear to form a complex verb. Thus, following the standard analyses of Japanese causative constructions, which have a configuration similar to that of the causative construction of the sign language under consideration, (41a) will have either of the following structures :

- (43) a. I – [_{Clause} DAUGHTER – BOOK – READ] – CAUSE – PAST
 b. I – DAUGHTER – [_{Clause} PRO BOOK – READ] – CAUSE – PAST

Here I deliberately use the categorial label “Clause” to avoid the issue whether the clause bracketed with this label includes Tense, that is, whether it is VP or TP. The two structures given in (43) differ in how to treat the “indirect object” of the complex verb READ+CAUSE ; that is, either the subject of the embedded clause, as in (43a) or the internal argument of the causative verb, which controls the PRO subject of the embedded clause, as in (43b). Suppose that either one of the structures given in (43) is correct ; it does not matter which one, as far as the present discussion is concerned. Then, there are in principle two ways to derive the complex verb READ+CAUSE : either by syntactic head raising or by a morphological process of amalgamation, as noted above. Given that the sequence of V+Neg+T is created by the latter process in this sign language, it may be expected that the same process is involved in

deriving complex verbs. This is in fact the case. Suppose that READ is raised to CAUSE in the syntactic component in (43), so that both items are located in the position originally occupied by CAUSE. We would then predict that the linear order of READ+CAUSE and its complement, namely the phrase bracketed with the label “Clause” would be interchangeable. That this is the wrong result is obvious with structure (43a), which would give rise not only to the word sequences given in (41a) but also to those given in (42a). That the head raising analysis goes wrong even with such a structure as (43b) is demonstrated in the following examples :

(44) a. I – DAUGHTER – [_{Clause} PRO – SELF – ROOM – BOOK – READ] + CAUSE+PAST

‘I made my daughter read a book in her room.’

b. *I – DAUGHTER – READ+CAUSE+PAST – SELF – ROOM – BOOK

In (44a), the locative PP SELF ROOM is added to express the location of the event of ‘my daughter’s reading’. Then, when CAUSE and its complement are altered in its linear order, it results in the word sequences of (44b), the wrong result. Hence, the head raising analysis cannot capture the correct word orders involving complex verbs such as in causative constructions in this sign language.

The approach relying on the morphological process of amalgamation, on the other hand, can capture the relevant facts straightforwardly. Let us modify (40) into the following so as to include cases of complex verbs :

(45) $V_1 + \dots V_n(+\text{Neg}) + \text{Past}$ forms a complex morpheme by $V_2, \dots V_n$, Neg and Past being adjoined to V_1 in the morphological component.

Given this morphological process, the complex morpheme READ+CAUSE+PAST in (43) and (44a) is created by CAUSE and PAST being both adjoined to READ. Hence, the alternation in linear order should hold between this complex morpheme and the complement of READ, which is exactly observed in (41a, b). The ungrammaticality of (41c) and (42a, b) is thus immediately explained under this approach.³ This leads naturally to the conclusion that

3 We have seen above that adjuncts can appear in the complement position of V_i as shown in (35d) with the adjunct YESTERDAY. It is then predicted that in such a

the sign language under consideration does not utilize the syntactic head raising option even in the formation of complex verbs.⁴

A further confirmation of the present analysis can be provided with another type of causative construction of this sign language, which involves an independent item of causation selecting a nominalizer, as illustrated below :

(46) I – DAUGHTER – BOOK – READ – NOML – CAUSE + PAST

‘I made my daughter read a book.’

In this type of causative construction, CAUSE is separated from the embedded verb by a nominalizer, and hence it is natural to assume that it does not constitute a complex verb with this embedded verb. Given this, it is predicted that the alternation in word order in this type of construction should occur between CAUSE and its complement clause. This is in fact borne out ; observe the following examples :

(47) a. I – CAUSE + PAST – DAUGHTER – BOOK – READ – NOML

b. I – DAUGHTER – CAUSE + PAST – BOOK – READ – NOML

(48) *I – DAUGHTER – READ – NOML – CAUSE + PAST – BOOK

causative construction as given in (44a), the adjunct SELF ROOM should be able to appear after the complex verbal amalgamation READ+CAUSE+PAST. This is in fact the case, as shown below :

(i) I – DAUGHTER – BOOK – READ+CAUSE+PAST – SELF – ROOM

- 4 Though I used the label ‘Clause’ for the category selected by CAUSE in the representations given in (43), there is a piece of evidence that the category should be VP rather than *v*P or any other larger category. This is concerned with the fact that even with the class of verbs that do not allow their complements to appear postverbally, it is possible to put their complements after them when they are embedded as the complement of CAUSE, as illustrated below :

(ii) a. *DAUGHTER – EAT + PAST – APPLE

‘My daughter ate an apple.’

b. I – DAUGHTER – EAT + CAUSE + PAST – APPLE

‘I made my daughter eat an apple.’

This fact can be explained under the assumption that CAUSE selects VP as its complement and that it is selected by *v* that does not carry an [EPP] feature. The first assumption guarantees that the embedded verb EAT is not selected by any *v*, which in turn allows, together with the second assumption, that its complement is not forced to move to the Spec-*v*P, hence making it possible to alternate between the complex verb EAT+CAUSE+PAST and its complement.

The grammaticality of both sentences in (47) indicates that both structures given in (43) are available at least for this sign language. The ungrammaticality of (48) follows straightforwardly under the assumption that this type of causative construction does not involve formation of a complex verb.⁵

4. An Apparent Exception : Interrogative Clauses

We have considered only declarative clauses so far, but when we extend our observation to interrogative clauses, we find a number of interesting properties which differ from those found in declarative clauses. First of all, the sign language under consideration is like Japanese in that a *wh*-phrase can be in situ, so that no special change of word order is required to make an interrogative clause, as shown below :

- (49) a. YOU – WHO – MARRY + PAST + Q
 ‘Who did you marry ?’
 b. YOU – MARRY + PAST – WHO + Q

However, a *wh*-phrase can be put postverbally irrespective of the class of verbs. Thus, in an interrogative clause that involves a verb such as EAT, which does not allow its complement to appear postverbally in a declarative clause, as shown in (37b), DO can appear not only preverbally but also postverbally, as shown below :

- (50) a. YOU – WHAT – EAT + PAST + Q
 ‘What did you eat ?’
 b. YOU – EAT + PAST – WHAT + Q

5 Exactly the same pattern of facts can be replicated with the word meaning ‘also’ intervening between CAUSE and the embedded verb instead of a nominalizer. First observe the following example :

- (i) I – DAUGHTER – BOOK – READ – ALSO – CAUSE + PAST
 ‘I made my daughter also read a book.’

If we assume that the presence of ALSO prevents CAUSE from making a complex verb with the embedded verb, then the relevant facts about the alternation in word order are exactly as predicted under the present analysis, as shown below :

- (ii) a. I – CAUSE + PAST – DAUGHTER – BOOK – READ – ALSO
 b. I – DAUGHTER – CAUSE + PAST – BOOK – READ – ALSO
(iii) *I – DAUGHTER – READ – ALSO – CAUSE + PAST – BOOK

Furthermore, recall that in a declarative clause that involves a ditransitive verb such as GIVE and BUY, its IO cannot appear postverbally, as shown in (15), reproduced below :

- (51) a. I – MARY – APPLE – GIVE/BUY+PAST
 ‘I gave/bought Mary an apple.’
 b. I – MARY – GIVE/BUY+PAST – APPLE
 c. *I – APPLE – GIVE/BUY+PAST – MARY

This restriction, however, does not hold for interrogative clauses, as shown below :⁶

- (52) a. YOU – MARY – WHAT – GIVE+PAST+Q
 ‘what did you give to Mary ?’
 b. YOU – MARY – GIVE+PAST – WHAT+Q
 (53) a. YOU – WHO – APPLE – GIVE+PAST+Q
 ‘Who did you give an apple to ?’
 b. YOU – APPLE – GIVE+PAST – WHO+Q

These facts seem to indicate that an additional operation is involved in deriving an interrogative clause. Following the suggestion made by Hiroko Kimura and Humi Onodera (personal communication), I hypothesize the following :

- (54) A *wh*-phrase can be adjoined to a right-peripheral position.

I have not found any confirming evidence for exactly which functional category a *wh*-phrase is adjoined to, and yet I speculate that the adjunction site is *v*’. Recall that we assumed in the previous section that the direction of adjunction is constrained by the head parameter, that is, that a phrase can be adjoined to a functional category in such a way that the operation in question preserves the head-complement order dictated by the head parameter, as given in (26). Given that the Japanese sign language under consideration takes the value of being head-final, as I hypothesized above, this language should allow only left adjunction exactly like Japanese, which is in flat contradiction with the hypothesis stated in (54). I argued in Section 2 that the sequence of V+Neg+T is a reflection of the head final property of these func-

6 I credit the data given in (52) and (53) to Hiroko Kimura and Humi Onodera.

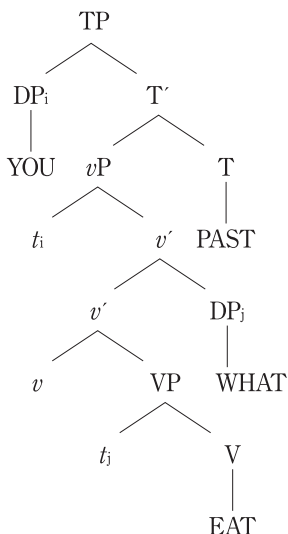
tional categories, but strictly this does not establish that all functional categories take the value of being head-final. Thus, I hypothesize the following :

(55) v is head-initial in this language.

This enables us to adopt (54) without contradiction ; that is, a *wh*-phrase is right-adjoined to v' . I speculate that this property is closely related to the fact that raising of V to v does not take place overtly in this language, since it may not be unnatural to claim that the mismatch of the values of the head-parameter among clausal functional categories blocks overt raising of V to v .

With these hypotheses, let us now consider the cases of interrogative clauses that show properties of word order different from those of declarative clauses. We observed that the class of verbs that do not allow their DO to appear postverbally in declarative clauses does allow this possibility in interrogative clauses, as shown in (50b). Under the present hypotheses, this example will have the following structure :

(56)



Let us assume, following Abe (2001, 2002), that the [EPP] feature borne by *v* can be checked with a DP not only in its Spec position but also in its adjoined position.⁷ Then, WHAT in (56) can correctly check the [EPP] feature of *v* that is required by the lexical property of EAT. According to (45), PAST under T in (56) is lowered to adjoin to V in the morphological component to make a complex morpheme, and this derives the right word order of sentence (50b). The same reasoning applies to (53b), whose word order will not be derived underlyingly, as indicated by the ungrammaticality of (51c). Thus, to derive the proper word order of this sentence, the *wh*-phrase WHO must be right-adjoined to *v'*. This will lead to the prediction that the alternation in word order between the V GIVE and its DO APPLE in (53b) should be maintained even if WHO appears postverbally. This is in fact borne out : the fol-

7 Abe (2001, 2002) argues that this assumption enables us to account for why a DP that undergoes Heavy NP Shift appears to violate the Case adjacency requirement imposed upon the DP and its Case-assigning verb.

lowing word order is permissible together with that given in (53b) :⁸

(57) YOU – GIVE+PAST – APPLE – WHO+Q

Notice that the other cases of interrogative clauses are derivable without application of rightward adjunction, which implies without further restriction that they have ambiguous derivations, depending upon whether they involve rightward adjunction or not. Since I have not been able to come up with any way to tease them apart to detect such an ambiguity, I simply assume that this is the case. A related question is what kind of movement the rightward adjunction is. There is a piece of evidence that it is a focus movement of some sort. The evidence is concerned with multiple interrogatives of this sign language, which are illustrated below :

(58) a. YOU – WHO – WHAT – GIVE+PAST+Q

‘lit. You gave what to who?’

b. YOU – WHAT – WHO – GIVE+PAST+Q

The alternation in word order between the IO WHO and the DO WHAT illustrated here parallels that observed in such declaratives as illustrated in (32). An interesting pattern emerges when one of the *wh*-phrases appear postverbally ; consider the following examples :

8 Notice also that the sign language under consideration allows not only (i) but also (ii) below :

(i) WHO – JOHN – MARRY+PAST+Q

‘Who married John?’

(ii) MARRY+PAST+Q – JOHN – WHO+Q

This is exactly what we expect, as long as the subject *wh*-phrase WHO is allowed to adjoin to the *v* projection. This indicates then that a *wh*-subject should be allowed to right-adjoin to *v*P after it is base-generated in the Spec of *v*P. Recall, however, that we are assuming, following Abe (2001), that adjunction is allowed only to an intermediate projection of a functional category, and that this is because “a specifier ‘close off’ its projection in the sense that it does not allow adjunction to occur any more within the projection in question.” (cf. footnote 1) We may remedy such a restriction on adjunction in such a way that a specifier ‘close off’ its projection only when it agrees or enters checking with its head. Then, a *wh*-subject is able to right-adjoin to *v*P right after it merges in its Spec position. Furthermore, the grammaticality of (ii) also suggests that subject does not always move to the Spec-TP, as has been assumed in the text.

- (59) a. YOU – WHO – GIVE+PAST – WHAT+Q
 b. *YOU – WHAT – GIVE+PAST – WHO+Q

These examples show that in multiple interrogatives involving ditransitives, the *wh*-phrase functioning as IO cannot appear postverbally, unlike that functioning as DO. Nothing assumed so far guarantees such a restriction, since (59b) ought to be derivable from the underlying structure corresponding to (59a) by applying rightward adjunction to WHO, as in the case of (53b).

Nonetheless, there is a natural way to capture the impossibility of such a derivation ; that is, by means of taking the ungrammaticality of (59b) as a violation of “superiority” which holds in multiple interrogatives of such languages as English, as illustrated below :

- (60) a. $whom_i$ did John persuade t_i [to visit $whom_j$]
 b. * $whom_j$ did John persuade $whom_i$ [to visit t_i]

This condition requires that when there are more than one *wh*-phrase in the domain of C' headed by a [+Q] complementizer, the structurally highest one must move to its Spec position. Chomsky (1995) suggests that this condition can be subsumed under an economy condition named Minimal Link Condition (MLC), which states that :

- (61) K attracts α only if there is no β , β closer to K than α , such that K attracts β .

Here “closeness” is measured in terms of c-command ; that is, α is closer to K than β iff α asymmetrically c-commands β . Thus, in the following underlying structure shared by the two sentences of (60),

- (62) [$_C$ did John persuade $whom_i$ [to visit $whom_j$]]

the target C' has two *wh*-phrases that it could attract to check its [+Q] feature, and since $whom_i$ is closer to C' than $whom_j$, the MLC dictates that $whom_i$ be attracted, thereby deriving (60a), but not (60b). That the c-command relation is crucial for one *wh*-phrase to block the attraction of the other in the superiority phenomena is shown by the following examples, taken from Fiengo (1980) :

- (63) a. *What $_i$ did you tell who about t_i ?
 b. What $_i$ did you talk to whom about t_i ?

Further examples are provided below (example (64) is taken from Fiengo et al (1988) and those in (65) from Oka (1993a, b)) :

(64) What did people from where try to buy *t* ?

(65) a. ?Whom did you persuade friends of *t* to buy what ?

b. ?What did you persuade friends of whom to buy *t* ?

In these cases, it is natural to claim that since the two *wh*-phrases do not c-command each other, neither one is closer to the matrix Spec-CP than the other, and hence attraction of either *wh*-phrase does not lead to a MLC violation.

I suggest that the MLC also excludes the derivation that leads to (59b). In so doing, let us first note that Chomsky (1995) assumes that attraction applies only to substitution. Thus, in order to rule out the derivation of (59b), we need to extend this operation to apply to adjunction as well. In fact, Abe (2001, 2002) makes such a proposal. In particular, Abe (2001) claims that the fact that IO cannot undergo Heavy NP shift, crossing DO, in English, as shown below, is accounted for by the MLC (sentence (66a) is taken from Pesetsky (1995) and (66b) from Lasnik (1995c)) :

(66) a. *Mary gave *t*_i a book [every student who didn't have one]_i.

b. *John gave *t*_i a lot of money [the fund for the preservation of VOS languages]_i.

First, Abe hypothesizes that the notion of “closeness” relevant for the MLC is modified in the following way :

(67) Adjoined positions are sensitive not to dominance but to precedence in evaluating “closeness.”

Thus, when adjunction is involved in attraction, closeness is measured in terms of linearity. This makes it necessary to distinguish right attraction from left attraction. Following Abe, let us express left attraction as (L)Attract and right attraction as (R)Attract. Then, “closeness” is defined in terms of linearity in the following way :

(68) Given that α , β are dominated by K, α is linearly closer to K than β if

(i) when K (L)attracts, α precedes β ; and

(ii) when K (R)attracts, α follows β .

Let us further assume for ease of discussion that Heavy NP Shift is an adjunction operation to v' . Then, we can account for the ungrammaticality of the sentences given in (66) as follows : the IOs cannot be (R)attracted by v' , since the DOs are possible candidates for the attraction in question and are linearly closer to v' than the IOs.

Much the same explanation carries over to the ungrammaticality of (59b), except for one caveat ; that is, it is only *wh*-phrases, as far as I can see, that can appear in the right-adjoined position of v' in the sign language under consideration, unlike English. Taking into consideration the fact that *wh*-phrases can be characterized as inherently focused, as witnessed, for example, in Serbo-Croatian interrogatives (see Stjepanovic (1995) and Boskovic (1997), among others), we may characterize the phrases that can be adjoined to v' as those which are inherently focused. Let us then assume that only inherently focused phrases can be attracted to the adjoined position of v' in this language. Then, the derivation that leads to (59b) is excluded as a violation of the MLC, since the IO WHO cannot be (R)attracted by v' due to the presence of the DO WHAT, which is a possible candidate for the attraction in question and is linearly closer to v' than WHO. Thus, the fact that rightward adjunction of *wh*-phrases is sensitive to the MLC in a way similar to the Heavy NP Shift in English may suggest that it is a focus movement.

A further similarity between the two adjunction operations is indicated by the fact that both constructions do not permit double application of rightward movement within a single clause. The following examples, taken from Lasnik and Saito (1991), illustrate the point with Heavy NP Shift :

- (69) a. *John built $t_i t_j$ yesterday [with a hammer]_i [the house that he will live in]_j.
 b. *John built $t_i t_j$ yesterday [the house that he will live in]_i [with a hammer]_j.

The same restriction holds for the rightward movement of *wh*-phrases in the sign language in question, as illustrated below :

- (70) a. *YOU – GIVE+PAST – WHO – WHAT+Q
 b. *YOU – GIVE+PAST – WHAT – WHO+Q

Abe (2001, 2002) claims that the sentences in (69) involve a violation of the MLC ; the MLC is violated when the DO *the house that he will live in* is (R) attracted by *v'*, crossing *with a hammer*, in (69a) and when *with a hammer* is (R) attracted by *v'*, crossing the DO *the house that he will live in*, in (69b). Exactly the same explanation holds true for the ungrammaticality of the sentences in (70).

Interestingly, rightward adjunction of *wh*-phrases in this sign language can take place within a declarative clause as long as a superordinate clause includes the question marker, as shown below :

- (71) a. YOU – [MARY – WHAT – EAT+PAST] – SAY+PAST+Q
 ‘What did you say that Mary ate ?’
 b. YOU – [MARY – EAT+PAST – WHAT] – SAY+PAST+Q
 (72) a. YOU – [JOHN – MARY – GIVE+PAST – WHAT] – SAY+PAST+Q
 ‘What did you say that John gave to Mary ?’
 b. YOU – [JOHN – APPLE – GIVE+PAST – WHO] – SAY+PAST+Q
 ‘Who did you say that John gave an apple to ?’
 c. YOU – [JOHN – GIVE+PAST – APPLE – WHO] – SAY+PAST+Q

All these sentences involve matrix questions with the embedded declarative clauses selected by the main verb *say*. The fact that WHAT appears after the verb EAT in (71b) and that the IO WHO appears postverbally in (72b) clearly indicates that these *wh*-phrases undergo rightward adjunction within the embedded clauses. Further confirmation of this claim is obtained by the grammaticality of (72c), in which the DO APPLE appears postverbally together with WHO. The superiority phenomena observed in (59) can also be replicated in such a configuration as given in (71) and (72) :

- (73) a. YOU – [JOHN – WHO – GIVE+PAST – WHAT] – SAY+PAST+Q
 ‘What did you say that John gave to who ?’
 b. *YOU – [JOHN – WHAT – GIVE+PAST – WHO] – SAY+PAST+Q

The ban on double application of rightward adjunction is also observed in this configuration, as shown below :

- (74) a. *YOU – [JOHN – GIVE+PAST – WHO – WHAT] – SAY+PAST+Q
 b. *YOU – [JOHN – GIVE+PAST – WHAT – WHO] – SAY+PAST+Q

All the data given in (71)-(74) clearly suggest that rightward movement of *wh*-phrases in the sign language under consideration is not a typical case of *wh*-movement but rather a focus movement, much like Heavy NP Shift in English.

A further confirmation of this claim comes from the restriction of clause-boundedness holding for such *wh*-movement. Thus, the *wh*-phrases in (71) and (72) cannot be moved all the way up to the right-peripheral position of the matrix clauses, as shown below :

- (75) *YOU – [MARY – EAT+PAST] – SAY+PAST – WHAT+Q
 ‘what did you say that Mary ate ?’
- (76) a. *YOU – [JOHN – MARY – GIVE+PAST] – SAY+PAST – WHAT+Q
 ‘What did you say that John gave to Mary ?’
 b. *YOU – [JOHN – APPLE – GIVE+PAST] – SAY+PAST – WHO+Q
 ‘Who did you say that John gave an apple to ?’

Under the present hypotheses, it is natural to attribute the ungrammaticality of these sentences to Ross’s (1967) Right Roof Constraint, which dictates that a phrase cannot move rightward across a tensed clause. That this constraint is operative for Heavy NP Shift in English is illustrated below (the example is taken from Lasnik and Saito (1991)) :

- (77) *John thought that [Mary would see *t*] until yesterday [the man that I had been telling you about].

Thus, the ungrammaticality of the sentences given in (75) and (76) suggests again that relevant *wh*-movement is rightward adjunction, just like Heavy NP Shift.⁹

9 A further indication of rightward movement of *wh*-phrases will be obtained from the fact that when NOML is present at the end of an embedded complement clause involving such a verb as EAT, a *wh*-phrase object cannot appear postverbally, as shown below :

- (i) a. YOU – [MARY – WHAT – EAT+PAST] – NOML – KNOW+Q
 ‘What do you know that Mary ate ?’
 b. *YOU – [MARY – EAT+PAST – WHAT] – NOML – KNOW+Q

Notice that since EAT does not allow its complement to appear postverbally in a declarative clause, WHAT in (ib) must have undergone rightward movement under the present hypotheses. The ungrammaticality of (ib) will then suggest that there is a constraint that prohibits rightward movement from taking place within a clause

5. Head-Initial Properties : Relative Clause Constructions

In the preceding section, I hypothesized the following :

(78) *v* is head-initial in this language.

In this section, I demonstrate that the relative clause constructions of this language exhibit head-initial properties, hence lending support to this hypothesis.

In one type of the relative clause constructions of this language, relative clauses are simply put before their head nouns with no agency of relative pronouns, as illustrated below :

- (79) a. [JOHN – HATE] – WOMAN
 ‘the woman who John hates’
 b. [HATE – JOHN] – WOMAN
 ‘the woman who hates John’

Interestingly, as is clear from the translations, (79a, b) are both interpreted only in one way, even though the verb HATE belongs to the class of verbs that allow their complements to appear both preverbally and postverbally, as illustrated below :

- (80) a. JOHN – MARY – HATE
 ‘John hates Mary.’
 b. JOHN – HATE – MARY

Given these facts, it would be expected that (79a) was ambiguously interpreted, depending on whether JOHN is taken as subject or object, but this is not the case. On the other hand, the facts will be as expected if we assume

ended with a nominalizer. That this speculation may be on the right track is suggested by the grammaticality of a sentence corresponding to (ib) but involving an embedded verb that allows its complement to appear postverbally in a declarative clause, as shown below :

- (ii) a. YOU – [MARY – WHO – MARRY+PAST] – NOML – KNOW+Q
 ‘Who do you know that Mary married?’
 b. YOU – [MARY – MARRY+PAST – WHO] – NOML – KNOW+Q

Deriving sentence (iib) does not require moving WHO rightward, and hence the contrast between (ib) and (iib) strongly suggests that the ungrammaticality of (ib) has something to do with rightward movement of WHAT in a complement clause ended with a nominalizer.

that the relative clauses under consideration are somehow assigned head-initial structures. This is further supported by the fact that the class of verbs that do not allow their complements to appear postverbally not only does allow this possibility but also must do so within the relative clauses under consideration, illustrated below :

- (81) a. [EAT+PAST – APPLE] – PERSON
 ‘a person who ate an apple’
 b. * [APPLE – EAT+PAST] – PERSON

The same pattern of facts is observed with such a ditransitive verb as GIVE, illustrated below :

- (82) a. [JOHN – GIVE+PAST – APPLE] – PERSON
 ‘a person who John gave an apple to’
 b. * [JOHN – APPLE – GIVE+PAST] – PERSON
 c. [JOHN – GIVE+PAST] – APPLE
 ‘an apple which John gave’
 (83) a. [GIVE+PAST – APPLE] – PERSON
 ‘a person who pro gave an apple to’
 b. * [APPLE – GIVE+PAST] – PERSON
 c. [GIVE+PAST – JOHN] – APPLE
 ‘an apple which pro gave to John’

In examples (82a, c), JOHN cannot be interpreted as the IO of GIVE but rather must be interpreted as its subject. The examples in (83) show that not only the DO APPLE but also the IO JOHN must appear after the verb GIVE in spite of the fact that in a declarative clause, the IO cannot appear postverbally. All these facts will follow naturally if the relative clauses under consideration have head-initial structures.¹⁰

Thus I hypothesize the following :

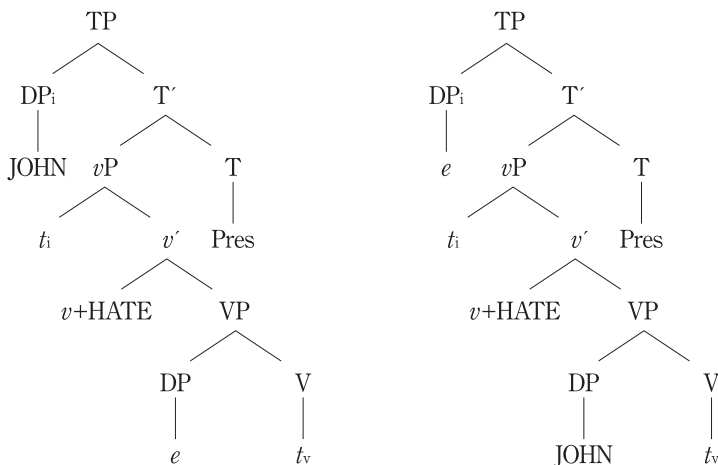
- (84) In the relative clauses of the Japanese sign language under consider-

10 Example (83a) should allow the interpretation of ‘a person who gave an apple to pro’ as well as the one indicated in the text, but this is not the case. I speculate that this is related to the distribution of pro, but I have not done enough research of this topic, so I have to leave it for future research.

ation, V raises overtly to *v*.

Though I do not have anything interesting to say about why V raises overtly to *v* in the relative constructions under consideration,¹¹ this hypothesis, together with that given in (78), can properly capture the above facts. Thus, the relative clauses given in (79) will have the following structures under the present hypotheses :¹²

(85)



According to the morphological process stated in (45), Pres is adjoined to the amalgamation of *v*+HATE in the morphological component in both (85a) and (85b). Hence, (85a) is spelled out as JOHN – HATE and (85b) as HATE – JOHN, the correct results.

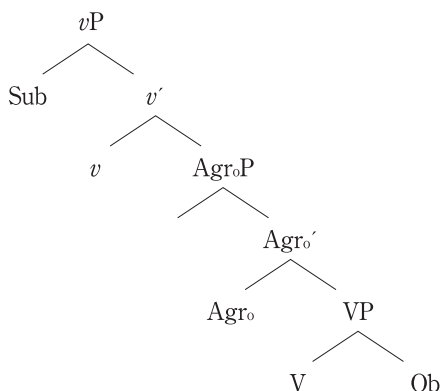
As for example (81a), we need a modification to derive the word order

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- 11 One possible line of reasoning will be to relate overt V raising to *v* to the existence of null operator movement occurring within the relative clause in question ; that is, operator movement to Spec-CP induces head raising, just like T-to-C movement in English interrogative sentences.
- 12 Since there seems to be no overt realization in C projections, I simply omit this projection just for simplicity. *e* appearing in object position in (85a) and in subject position in (85b) corresponds to the head of the relative clauses.

properly. Recall our assumption that the class of verbs that do not allow their complements to appear postverbally is selected by *v* carrying an [EPP] feature and hence that their complements must undergo raising into the Spec of *v*P. Given this assumption, the object APPLE in (81) should still precede the complex verb EAT+PAST, even though the latter is located in *v*, hence deriving the word order given in (81b), the wrong result. There are two possibilities that come to mind to get over this problem. One is to assume that when *v* attracts V overtly, it consistently lacks an [EPP] feature. The intuition behind this assumption will be that *v* needs to be morphologically identified and that there are two ways to satisfy this morphological requirement : one is to attract V and the other is to attract DP to its Spec position. This is reminiscent of Cheng's (1991) characterization of Comp, which is either manifested overtly or else requires a *wh*-phrase in its Spec position. With this assumption, we can correctly derive the word order given in (81a), since in this case, *v* attracts V and hence lacks an [EPP] feature.

The other possibility is to assume that overt raising of the complements of the class of verbs in question must be to a position lower than the head position occupied by the amalgamation of *v*+V. This is exactly the claim made by Johnson (1991), Koizumi (1993, 1995) and Lasnik (1995a, b, c), among others, who need this claim to maintain that overt object shift takes place in English, since in this language too, V precedes its complement even though the latter has undergone overt object shift. Let us, for concreteness, adopt the Split VP hypothesis proposed by Koizumi (1993, 1995) and assume, modifying Koizumi's original proposal slightly, that the clausal structure under TP is something like the following (order is irrelevant) :

(86)



In this structure, overt raising of object is assumed to be movement into the Spec of Agr_oP, and hence in such a head-initial language as English, V precedes this Spec position after it raises into *v*. Suppose that the sign language under consideration has the same clausal structure.¹³ Then, the word order displayed in (81a) follows exactly in the same way as English has the word order S-V-O.

Either possibility will do for the present purposes. Furthermore, they account for the word orders displayed in (82) and (83) straightforwardly as well. However, it will be claimed toward the end of this section that there is some reason to favor the first possibility.

It will be predicted under the present hypotheses that both IO and DO can follow their ditransitive verbs if they appear within the relative clause constructions in question, but this is not borne out with this particular construction, shown below :

- (87) * [GIVE + PAST – JOHN – APPLE] – PERSON
 'a person who gave an apple to John'

This may suggest that there is an independent constraint operative to this con-

13 Though we do not have any evidence, let us assume that Agr_o takes the value of being head-final.

struction which bans more than one phrase appearing postverbally. That this may be the case is indicated by the fact that another type of relative clause constructions does allow the word order corresponding to (87). Before presenting the relevant data, we need to explain this type of relative clause constructions briefly. In this construction, relative clauses function more like appositives connected to their heads by such expressions as WHO SAY and WHAT SAY, meaning roughly ‘who is said to be ...’ and ‘what is said to be ...’. Thus, consider the following examples :

- (88) a. I – HIT+PAST – WOMAN – WHO – SAY – [JOHN – HATE]
 ‘I hit a woman who John hates.’
 b. I – HIT+PAST – WOMAN – WHO – SAY – [HATE – JOHN]
 ‘I hit a woman who hates John.’
- (89) I – EAT+PAST – APPLE – WHAT – SAY – [JOHN – GIVE+PAST – MARY]
 ‘I ate an apple which John gave to Mary.’

In these examples, the bracketed phrases putting after the expressions WHO SAY and WHAT SAY function as relative clauses modifying the noun phrases putting before these expressions. Notice that the word orders displayed within these relative clauses are basically the same as we found with the other type of relative clause constructions : they have head-initial structures. Thus, (88a) is interpreted only in the way in which JOHN serves as the subject of HATE while in (88b) JOHN only serves as the object of HATE. Likewise, MARY in (89) cannot be put preverbally, even though this is possible and in fact mandatory in corresponding declarative clauses, as shown below :

- (90) *I – EAT+PAST – APPLE – WHAT – SAY – [JOHN – MARY – GIVE+PAST]

More examples are given below to make the same point :

- (91) a. I – HIT+PAST – PERSON – WHO – SAY – [JOHN – GIVE+PAST – APPLE]
 ‘I hit a person who John gave an apple to.’
 b. *I – HIT+PAST – PERSON – WHO – SAY – [JOHN – APPLE – GIVE+PAST]

- (92) a. I – HIT+PAST – PERSON – WHO – SAY – [EAT+PAST – APPLE]
'I hit a person who ate an apple.'
b. *I – HIT+PAST – PERSON – WHO – SAY – [APPLE –
EAT+PAST]

With this type of relative clause constructions, the one corresponding to (87) is grammatical, as shown below :

- (93) I – HIT+PAST – PERSON – WHO – SAY – [GIVE+PAST – JOHN –
APPLE]
'I hit a person who gave an apple to John.'

The word orders displayed in all these examples follow straightforwardly under the hypotheses given in (78) and (84).

There is one fact about word order in this type of relative clause constructions that does not follow under the present hypotheses : when IO and DO follow their ditransitive verbs, as in (93), they are not interchangeable in word order, so that the following sentence is ungrammatical :

- (94) *I – HIT+PAST – PERSON – WHO – SAY – [GIVE+PAST – APPLE –
JOHN]

Recall that the order of IO and DO is optional before V in this sign language, as illustrated in (32), reproduced below :

- (95) a. I – MARY – APPLE – GIVE+PAST
'I gave Mary an apple.'
b. I – APPLE – MARY – GIVE+PAST

Thus, with no further assumption, we would expect that both (93) and (94) were grammatical. One possible suggestion to solve this problem will be to elaborate the property of *v* with respect to its relevant formal features. Notice first that we have been neutral about the question whether or not ditransitive verbs belong to the class of verbs that require the above *v* to carry an [EPP] feature ; see footnote 2. Suppose that they belong to this class. Then, the alternation of IO and DO in word order, exemplified in (95), will follow, depending upon which object satisfies the [EPP] feature borne by *v*, as suggested in footnote 2. The crucial assumption here is that such movement as to satisfy an [EPP] feature is exempt from the effects of relativized minimality. On the

other hand, we stipulated in (84) that in the relative clauses of the Japanese sign language under consideration, *V* raises overtly to *v*. Recall further that we suggested the possibility that when *v* attracts *V*, it consistently lacks an [EPP] feature. Given this, it follows that when ditransitive verb constructions appear within relative clauses, neither object undergoes overt object shift. If we further assume that scrambling is not available in this language at all, the derived word order DO-IO will never be derived ; hence the illegitimacy of the word order within the relative clause given in (94).¹⁴

6. Concluding Remarks

I have argued, following the ideas of Hale (1980) and Farmer (1980), that phrase structure itself has partial responsibility for optionality in word order. Based upon the mechanism of phrase structure advocated by Abe (2001), I demonstrated that the alternation in word order between *V* and its complement observed in a Japanese sign language is best captured by underspecification of the linear order of these two entities, following the ideas of Haider (2005). According to Abe's (2001) mechanism of phrase structure, in which the head-parameter is encoded into only functional categories, the underspecification in question is resolved by *V* moving up to *v*, and hence those languages which have this *V*-raising do not exhibit the alternation in word order between *V* and its complement, as witnessed by many languages, including English and Japanese. The Japanese sign language considered in this paper is peculiar in that it does not have this option, hence giving rise to the word order alternation in question. I suggested that this peculiarity may be attributed to another unique property of this language, namely that only *v* has the head-initial value, unlike other functional categories such as *T* and

14 Even if we assume that short scrambling is universally available, as suggested by Takano (1998), so that the DO-IO order is derivable by scrambling, we can exclude the word order of the relative clause displayed in (94) by assuming that *v* acts as a probe with respect to ϕ - and Case-features as well as whatever feature is relevant to attract *V*. Given that *v* must check its Case-feature with that of IO, the intervention of DO will induce a violation of the MLC. See Takano (1998) for relevant discussion regarding the double object construction.

C. In order to support this claim, I argued that in this language, *wh*-phrases may undergo rightward adjunction which behave like English Heavy NP Shift. Given that the direction of adjunction must also obey the head-parameter, as claimed by Saito (1985) and Fukui (1993), the existence of rightward movement indicates that at least some functional category takes the head-initial value, which accords with the above claim that *v* takes such a value. I provided further support to this claim by demonstrating that relative clause constructions of this language exhibit head-initial structures and that this property can be captured straightforwardly by assuming that overt V to *v* raising takes place in these constructions.

Finally, let us speculate on whether there is any spoken language that is susceptible to the same analysis as we did to the Japanese sign language. So far I have come up with only one language, namely Chinese. Claiming that “the basic word order of a Chinese sentence is subject-verb-object,” (p. 26) Huang (1982) observes that “what is semantically (or thematically) the object of a predicate may precede or follow the main predicate in surface structure,” (p. 27) as illustrated below :

- (96) a. ta pian-le Lisi.
he cheat-ASP
‘He cheated Lisi.’
b. ta ba Lisi pian-le.
he BA cheat-ASP
- (97) a. ta hen gaoxing zhejian shi.
he very happy this matter
‘He is very happy about this matter.’
b. ta dui zhejian shi hen gaoxing.
he towards this matter very happy

We might claim that the alternation between the verbs and its objects observed in the above sentences is derived under the assumption that in Chinese, V does not raise to *v*, hence leaving its relation to its complement in linear order unspecified. One potential problem with this analysis is how to capture the fact, as noted by Huang (1982), that “an object occurs preverbally only when

embedded as part of a PP,” (p. 27) unlike an object that occurs postverbally, which can take the form of bare NP, as can be seen in (96) and (97) above. At this point, I cannot go as far as to offer detailed analyses of such data, only hinting at the possibility of analyzing them in the same way as the corresponding data in the Japanese sign language considered in this paper.

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