Restructuring and a Concept of
Syntactic Transformation*

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1. Introduction.

In recent transformational-generative investigations, a particular attention has been paid to the idea of syntactic restructuring (re-analysis or readjustment). Such structural change differs from the true transformational process in that the former, instead of affecting the terminal strings of the phrase-marker, works to alter the dominance relations of the upper structure. As is well known, the original argument for restructuring was made in relation to the mapping of surface structures onto phonological representations; it was thought that some structural readjustment was necessary to convert syntactically motivated surface structure to a form which is appropriate for use by the phonological component. But researchers now seem to be making attempts to apply the notion of restructuring to syntactic and semantic descriptions as well. More specifically, they are assuming that the use of restructuring process will make it possible for the rules and conditions of the syntactic and semantic components to work without losing generality on descriptive level.

The current idea of restructuring is closely associated with the issues of bounding and government. And actually, there are at least

* In writing this paper, the author is greatly benefited from the discussions with Masayuki Oishi.
three types of restructuring rules which has been proposed so far to handle exceptional cases to such conditions. First, Chomsky (1977) suggests that given a base structure like (1a), it should be restructured into (1b) by some rule so that *wh*-movement may apply obeying the subjacency condition (bounding).

(1) a. \[[S [\text{comp }] [S [\text{he} [\text{VP} \text{ saw} [\text{NP} \text{ a picture} [\text{PP} \text{ of who}]]]]]]\]
b. \[[S [\text{comp }] [S [\text{he} [\text{VP} \text{ saw} [\text{NP} \text{ a picture} [\text{PP} \text{ of who}]]]]]\]

(2) \[[S [\text{comp Who}] [S [\text{did he} [\text{VP} \text{ see} [\text{NP} \text{ a picture} [\text{PP} \text{ of t}]]]]]\]

Needless to say, the subjacency condition stipulates that transformations be allowed to remove constituents across at most one bounding node. If S and NP are bounding nodes, as Chomsky (1977) assumes, the movement of the *wh*-phrase in (1a) will have to cross two bounding nodes. To avoid such an undesired situation, Chomsky resorts to a restructuring rule like PP extraposition which is supposed to take place prior to *wh*-movement.

A second restructuring process to be mentioned is \(\overline{S}\)-deletion. The motivation of this rule stems from the necessity for assigning case to the complement subject NP in a sentence like (3).

(3) I believe [John to be a fool]

According to Chomsky (1980), case-assignment is clause-bound, being done in terms of the relation of government which can be defined as (4).

(4) \(\alpha\) is governed by \(\beta\) if \(\alpha\) is c-commanded by \(\beta\) and no major category boundary appears between \(\alpha\) and \(\beta\). (Chomsky 1980: 25)\(^{1}\)

\(^{1}\) In Chomsky (1980), case-assignment is assumed to follow the principles given below.

(i) NP is oblique when governed by P and certain marked verbs.
(ii) NP is objective when governed by V.
(iii) NP is nominative when governed by Tense.
That is, the governee (α) is assigned a case from the governor (β) which is realized as such lexical categories as V and P or a formative Tense. From the definition (4), the embedded subject of (3) will be assigned no case, because there is no governor in the embedded clause and the clause boundary wards off the influence of the matrix verb believe. In order to assign objective case to John correctly, Chomsky proposes to specify believe as a marked verb by using a feature [+F], which permits the matrix verb to govern the embedded subject NP over the clause boundary. Chomsky (1981) makes this idea clearer by appealing to the rule of S-deletion. Namely, Chomsky presumes that S acts as an absolute boundary against government and the deletion of this node will facilitate the exceptional case-assignment in (3).

Thirdly, Chomsky (1980) advances a restructuring rule which works to bring some VP-internal nodes together for prepositional passives. Here again, the issue concerns case-assignment. From the case-assignment convention in Chomsky (1980), oblique case is assigned in the base while nominative and objective cases are assigned after NP movement and before wh-movement. If, under such convention, a prepositional object NP is moved to the subject position in passive formation (i.e. by NP movement), there will occur a case conflict because the removed NP, which has already been assigned oblique case in the base, has to receive nominative case from the subject position. On the other hand, there is no such conflict in the NP-movement of post-verbal NPs, since they do not have any case when NP movement applies but are assigned nominative case in the newly-occupied subject position after NP movement. This means that passives like (5) would be impermissible, contrary to factual observation.

(5) a. John was laughed at by the passengers.
    b. Her talents were taken advantage of by many officers.
Chomsky says that such difficulty can be solved if the portion [V... P] of VP is restructured into a complex verb in the base structure. Thus, the target NP will be prevented from the mis-assignment of oblique case in the base and can receive the correct case of nominative from the subject position. We can readily see that this restructuring process is intended to offer a solution to the recalcitrant problems which have long bothered traditional transformationalists.

2. PROBLEMS.

As mentioned above, the three restructuring rules are closely related to highly technical issues. It seems to me, however, that except for S-deletion, the first and the third restructurings are conceivable intuitively as well, apart from technical considerations. If we take notice of the structural changes which these restructuring rules are responsible for, we may say, though roughly, that the process of extraposing PP is "structure-disintegrating" while that of collecting VP-internal nodes into a complex verb is "structure-integrating." What is of particular interest here is that the former is necessary for wh-movement and the latter is required for NP-movement respectively. Given the current hypothesis that transformations can be defined to fall under the schema "move α," this correspondence may be said to reveal a more linguistically-significant generalization, than Chomsky assumes.

Unfortunately, however, little is known about the theoretical status of restructuring operations. Indeed the necessity for some restructuring process is pointed out quite often. But it cannot be said that they are given any definite place in the over-all organization of (core) grammar. If restructurings are independent "rules," it is necessary to specify at least the stage of derivation where they are to apply. But, for the alleged restructuring rules, even such fundamental requirement is not fulfilled.

Concerning the extraposition of PP (structure-disintegration), for
Restructuring and a Concept of Syntactic Transformation

instance, Chomsky (1977) says simply that it works "before" wh-movement. However, this is quite inadequate if we consider the following examples.

\[(6)\]
\[
\begin{align*}
\text{a. You discovered [the solution to which problem]} \\
\text{b. Which problem did you discover the solution to}\?
\end{align*}
\]

\[(7)\]
\[\ast \text{I discovered to the problem an extremely complex and ridiculously unlikely solution.}\]

It might be true that in order to derive \((6b)\) from \((6a)\) by wh-movement without violating the subjacency condition, the extrapolation of PP must apply before wh-movement. But if an NP like \([\text{the solution to the problem}]\) were to be disintegrated as \([\text{the solution} \text{[to the problem]}\) in every occasion, there will be no principled reason to block the application of complex NP shift, as in \((7)\). It is possible, indeed, to take care of \((7)\) if complex NP shift precedes wh-movement and the restructuring works between them. Such extrinsic ordering is not well-motivated, however. One might argue, alternatively, that the restructuring applies "optionally" before wh-movement and that wh-movement is permitted to work only in case the structure of the object NP is disintegrated in advance. Nevertheless, this cannot offer an satisfactory explication to the question why the restructuring is optional. More important, it cannot be made clear at all why the restructuring is necessary for the particular transformation of wh-movement while it is not allowed to apply before non-structure-preserving rules like complex NP shift.

The same can be said about the restructuring by structure-integration for passivization (NP movement). As was touched upon above, Chomsky says that this restructuring occurs in the base, among other idiom rules. Such specification is desirable, indeed, in that it makes a step forward to defining the class of possible restructuring.

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2) These examples are cited from Rodman (1977).
rules and to restricting their descriptive ability. And yet, it seems untenable to claim straightforwardly that structure-integration works in the base. Consider (8).

(8) This report cannot be depended on.

If the restructuring be assumed to apply in the base, the structure of the base-generated VP would have to change as in (9), regardless of whether NP movement follows or not.

(9) $[\text{vp } V [\text{pp } P \text{ NP}]] \quad \Longrightarrow \quad [\text{vp } [v \text{ V P} \text{ NP}]]$

However, the configuration of the base-generated VP must be preserved in case NP movement does not operate later, as is seen from the possibility of inversion in (10).

(10) a. The whole argument $[\text{vp depends } [\text{pp on this}]]$

   b. $[\text{On this} \text{ depends the whole argument.]}$

This demonstrates that the P and the NP in the VP constitutes a single constituent (PP) when inversion applies, contrary to the prediction that the P has already been incorporated into a complex verb by structure-integration. One might claim that the structure-integration is optional, as Chomsky says, so that NP movement is permitted to apply only if the VP is restructured and it cannot operate when the VP is left as it was generated by base rules. But this seems to make an unnatural claim about syntactic structure that base-generated configuration can be restructured quite arbitrarily. That is, in the same way as in the case of structure-disintegration, we cannot explain why the restructuring by structure-integration is necessary only if NP movement is to apply subsequently.

3. A NEW PROPOSAL.

In view of the above considerations, I will propose to modify the notion of restructuring rules by assuming that restructuring is a sub-
Restructuring and a Concept of Syntactic Transformation

process of transformation. Suppose that all transformations are defined as "move $\alpha$" in universal grammar. If restructuring is incorporated into transformation, the internal structure of transformation can be represented approximately as (11).

(11) $T: RESTRUCTURING \beta + MOVE \alpha$

Note that the definition (11) contains two parameters: $\alpha$ and $\beta$. But if the supposition is correct that structure-integration is necessary for NP movement while structure-disintegration is required for $wh$-movement, the value of $\beta$ can be automatically determined by fixing $\alpha$. Thus, we can specify the following transformations for English.

(12) a. $T_1$: Structure-Integration + Move NP
    b. $T_2$: Structure-Disintegration + Move $Wh$-Phrase
    c. $T_3$: Null Restructuring + Non-Structure-Preserving Movement

From the assumption that a transformation is a compound of a restructuring process and a movement operation, it follows that the relation of restructuring (R) and movement (M) in derivation must always appear as (13).

(13) ...... RM, RM, RM, ......

At the same time, the following possibilities are precluded, as a logical consequence.

(14) a. M applies although R has not worked.
    b. M does not apply although R has worked.

It is difficult to demonstrate completely that the cases (14) do not exist, but I think that our new concept of transformation is correct for the most part. In what follows, I will concentrate on the interaction of restructuring and movement, showing how the working of restructuring facilitates the operation proper in many cases.
4. STRUCTURE-INTEGRATION AND NP MOVEMENT.

Under the current hypothesis of EST, the transformation of NP movement is involved in such processes as passivization, raising and there-insertion. I assume that for such transformational processes, the restructuring subcomponent of NP movement has the following effect on the environment structure.

\[
\begin{align*}
\text{VP} & \quad V \quad \text{(PRT)} \quad \text{(NP)} \quad PP \quad \text{P} \quad \text{NP} \\
\text{VP} & \quad V^* \quad \text{(PRT)} \quad \text{(NP)} \quad \text{P} \quad \text{NP}
\end{align*}
\]

As was touched upon earlier, this restructuring is understood to put together all the VP-internal nodes to the left of the target NP into a complex verb, thereby the target NP being attached immediately to the VP node.

From the manner of such regrouping, it is readily inferred that the newly-formed complex verb expresses a unitary meaning as a derived semantic property. In addition, we may reasonably conjecture that the strings of the complex verb is frozen syntactically, prohibiting any reordering into and out of the integrated verbal expression.

4.1. PASSIVIZATION. Since the advent of transformational grammar, the derivation of prepositional passives has raised tough problems to grammarians. The traditional treatment of such passives was to allow the post-verbal preposition to work as a constant term in the structural description of passive transformation.

\[(16) \quad X, \text{NP}, \text{Aux}, V, P, \text{NP}, Y\]

Note that the factoring of (16) does not specify anything about the derived structure of passivization. This means that there is no reason to prohibit subsequent reordering operations on the derived structure.

The fact is, however, that reordering in passive construction is
Restructuring and a Concept of Syntactic Transformation

severely restricted. Consider (17) and (18).

(17) a. The company paid twice for everything.
    b. *The company paid for twice everything.

(18) a. *Everything was paid twice for by the company.
    b. Everything was paid for twice by the company.

As is seen from (17), the adverbial twice can intervene between the verb and preposition, but not between the preposition and the object NP. This indicates that in the active construction the preposition and the NP constitute a constituent (PP) in the VP. If NP movement is an operation which simply removes the prepositional object NP and preserves the preposition as it is, it is impossible to block in a principled way the interpolation of the adverbial between the verb and preposition in the passive construction, as in (18 a). Under our assumption, the ill-formedness of (18 a) can be easily accounted for, because in (18 a) the adverbial twice occurs in the sequence of the verb and preposition, which is to be frozen by the application of NP movement (precisely, because of the restructuring by structure-integration). If NP movement does not apply, there will be no possibility that the restructuring works, and so, the base-generated VP configuration will be kept intact as [V [P NP] ]. Thus, we can predict correctly that the verb and the PP can be separated by the adverbial, as in (17 a).

A firm support is offered to our assumption when we consider constructions which allow double passives. Observe the following examples, which involve semi-idiomatic expressions.

(19) a. No one took advantage of her talents.
    b. Not much advantage was taken of her talents.
    c. Her talents weren't taken advantage of.

(20) a. No one could find fault with Inge's performance.

3) These examples are cited from Bresnan (1980).
b. No fault could be found with Inge's performance.
c. Inge's performance couldn't be found fault with.

If the VP configuration of these sentences are of \([V \ NP [P \ NP]]\) in base structure, there is no problem in deriving (b) sentences; when NP movement applies to yield (b) sentences, it is not necessary, or not possible, to integrate the VP-internal elements into a complex verb, because the target NP is in the position immediately after the verb and there is no element to be dragged leftward by the restructuring. In other words, we may say that the restructuring for NP movement works vacuously. What necessitates the actual application of the restructuring is the derivation of (c) sentences. Take (19 c) for example. Given a VP structure like (21 a) below, NP movement structures it as (21 b) first, and after removing the object NP her talents, a derived structure like (22) will be produced.

\[
(21) \quad \text{a. } [VP \text{ took } [NP \text{ advantage }] [PP \text{ of } [NP \text{ her talents}]]] \\
\text{b. } [VP \text{ [v took advantage of] } [NP \text{ her talents}]]
\]

\[
(22) \quad [VP \text{ [v taken advantage of] [NP t] ]}
\]

The structure of (22) indicates that the integrated verbal expressions are frozen, prohibiting any internal element from being extracted by a subsequent transformation. This is confirmed by (23), in which an element of the complex verb is extracted by \(wh\)-movement.

\[
(23) \quad *\text{What advantage, were her talents, } [VP \text{ [v taken t of] t] ]
\]

On the other hand, such extraction is not completely prohibited in a passive structure like (19 b), where no restructuring is effected by NP movement.

\[
(24) \quad *\text{Whose talents, was much advantage, } [VP \text{ taken } t_1 \text{ [PP of } t_1]]
\]

The reason is that no material is syntactically frozen within the
Restructuring and a Concept of Syntactic Transformation

The examples (19)–(20) contain more or less idiomatic expressions which seem to have an inherent tendency to behave as a semantic and syntactic unit. One might presume from this that it is this tendency that makes it possible to integrate a fairly large quantity of structure (V-NP-P) into a single lexical category. If so, the possibility of structure-integration would be determined lexically as idiosyncratic information. However, such restructuring is also possible when non-idiomatic expressions are involved.

(25) a. "He paid too much for his coat." "Well, lots of things are paid too much for nowadays. You have to expect it."

b. How does it feel to be aimed a gun at?

These sentences can be uttered only under appropriate conditions. According to Bolinger (1974), the passive (25 a) is possible because there is a preceding sentence which has the same verbal expression; (25 b) can be used if the interlocutor has an experience that he had a gun aimed at him. Note that such expressions as pay too much for, aim a gun at, etc. cannot be considered lexical semantic units. However, if Bolinger’s observation is correct, it will turn out that certain contextual and pragmatic conditions have a function to turn such expressions into some semantic units. That is, as for (25 a), the speaker of the second sentence may feel the expression pay too much for to be a single predicate because it has already occurred in the first sentence; and the speaker of (25 b) is apt to regard aim a

4) It is true that the sentence (24) sounds slightly odd and the actual use of it is limited. But what is to be noted is the difference in acceptability between (23) and (24); my informants say that compared with (24), the sentence (23) is hopelessly anomalous. Moreover, if the restructuring were to apply in the base, as Chomsky (1980) assumes, the difference in (23) and (24) cannot be explained in a principled way.
gun at as a unitary expression because he presupposes that the hearer has already experienced the dreadful situation.

It is important to note here that the semantic unitariness of these expressions is a derived property which arises typically in passive construction (after NP movement). It is not impossible, indeed, that such unitariness is observed in active sentences. But in active constructions, whether these expressions are semantic units or not cannot be determined uniquely. This is shown by the fact that in active constructions, the expressions in question are not frozen syntactically, as is seen from the possibility of wh-movement.

(26) a. How much did you pay $t$ for your coat?
   b. Which gun did he aim $t$ at you?

By contrast, passive constructions prohibit such wh-movement, indicating that the verb-preposition sequence is frozen.

(27) a. *How much was your coat paid $t$ for?
   b. *Which gun does it feel dreadful to be aimed $t$ at?

Thus, the property of semantic unitariness, which is correlated with syntactic frozenness, cannot be determined by lexical information. Instead, it is to be derived through the restructuring process of NP movement under appropriate contextual and pragmatic conditions.5)

4.2. Raising. The above considerations of passives lead us to infer that the restucturing by structure-integration obtains for raising, a second descriptive category of NP movement. The class of predicates for raising is rather small (e.g. seem, prove, likely), and interestingly enough, most of them are single predicates.

It seems to me that the only phrasal predicate for raising is

5) Theoretically, the integrating process is assumed to work blindly, and the plausibility of semantic unitariness is to be checked at some low level of derivation by referring to contextual and pragmatic conditions.
turn out. Consider (28) and (29).

(28) John turned out to be a vampire.

(29) [NP e] [VP [v turned] [PRT out] [S John be a vampire]]

In order to derive (28) from a base structure like (29), the embedded subject John has to move over the sequence of a verb and a particle to the matrix subject position. In view of the behavior of the NP movement for passives, it is not unreasonable to suppose that the NP movement for raising will also have a similar effect on the verb-particle sequence.

(30) [NP John] [VP [v turned out] [S t to be a vampire]]

This can be confirmed by the fact that no adverbial can be introduced into the sequence in question, as in (31).

(31) *John turned suddenly out to be a vampire.

If raising does not apply, on the other hand, the base structure (29) will be realized as (32), with a derived structure like (33).

(32) It turned out that John was a vampire.

(33) [NP It] [VP [v turned] [PRT out] [S that John was a vampire]]

Note that in (33) the verb-particle sequence is not restructured into a single verb because no NP movement has applied. Therefore, adverbial interpolation is not completely prohibited.

(34) ?It turned suddenly out that John was a vampire.

In fact, (34) might not be considered perfectly acceptable, but what is important to our discussion is the difference between (31) and (34), which is qualitative, not simply a matter of degree.

4.3. There-Insertion. The formation of there-sentence provides another case for structure-integration. We are concerned here with there-sentences which contain other verbs than be. Grammarians agree that, in general, the verbs which can appear in such sentences
are a small class of intransitive verbs that express the meanings of existence or appearance (e.g. exist, lie, appear, emerge).

Emonds (1976) argues that there-sentences with such verbs be derived by moving the subject NP to the post-verbal position under the structure-preserving principle and by inserting there into the evacuated position.

\[
(35) \quad [s \, NP_i \, [vp \, V \, ]] \rightarrow [s \, there \, [vp \, V \, NP_i]]
\]

(36) a. A girl appeared on the stage.
    b. There appeared a girl on the stage.

However, such derivation is inadequate for there-sentences in which a transitive verb appears with its object NP.

(36) a. At this point there hit the embankment a shell from our lines.
    b. From this there reached them the rumbling of many vehicles.
    c. Among the rest, there overtook us a little elderly lady.

In the derivation of these sentences, NP movement cannot operate in the fashion of (35) because the VP of the base structure has an internal structure (37).

\[
(37) \quad [vp \, V \, NP]
\]

Since in (37) the post-verbal position is filled by the object NP, the movement of the subject NP to that position is to be prohibited by the structure-preserving principle.

This difficulty can be overcome by assuming that the restructuring process of NP movement works to integrate the verb-NP sequence into a complex verb.

\[
(38) \quad [vp \, V \, NP] \rightarrow [vp \, [v \, V \, NP]]
\]

If the VP is restructured as in (38), there is no problem in moving the subject NP to the right of the complex verb, because the struc-
ture-preserving principle is not violated at all.

If the process of (38) is correct, it should follow that the verbal sequence is syntactically frozen, immune to any reordering operation.

(39)  a. *There hit suddenly the embankment a shell from our lines.
    b. *I was watching the embankment, which there hit t a shell from our lines.

Moreover, the integrated verbal expression seems to constitute a sort of semantic unit. Kajita (1976) suggests that the sentences of (36) share a common meaning of "appearance" which cannot be determined simply from the sum of the individual lexical items. This meaning is supposed to arise concommitantly when the verb and the object are amalgamated by semantic rules, as non-compositionally-determined semantic property. I suppose that such an idea can be made clearer by assuming that the derived meaning in question is due to the structure of V-NP sequence which is formed through the restructuring by structure-integration.

On the other hand, the meaning of appearance is not necessarily observed in the sentences of (40), counterparts of (36).

(40)  a. A shell from our lines hit the embankment.
    b. The rumbling of vehicles reached us.
    c. A little elderly lady overtook us.

Of course, I do not deny a possibility that these sentences denote appearance of some referent, but what is important is that it cannot be determined uniquely. The reason may be that in (40) the V-NP sequence is not integrated into a complex verbal. This is confirmed by the possibility of reordering operations.

(41)  a. A shell from our lines hit suddenly the embankment over there.
    b. Which embankment did a shell from our lines hit t?
Thus, we may say reasonably that structure-integration works in the formation of *there*-sentences.

5. STRUCTURE-DISINTEGRATION AND WH-MOVEMENT.

If syntactic transformation is a "dynamic" process which works by making the environment structure accessible to movement operation, it must be that not only NP movement but also *wh*-movement has a restructuring function. But these two transformational rules show remarkably different behaviors. Although both rules are defined to be cyclic and to obey the subjacency condition in the same way, *wh*-movement has, in a sense, a stronger extracting power than NP movement: the former can remove PP and AP as well NP to the COMP position whereas the latter can only move NP to NP positions. This seems to offer a good reason to assume that the restructuring for *wh*-movement may differ in some way from that for NP movement.6)

As was indicated earlier, I suppose that *wh*-movement has a restructuring subcomponent whose function is to disintegrate VP-internal structures, as in (42).

6) Despite this well-grounded supposition, there are many arguments in recent literature that NP movement and *wh*-movement be associated with the same restructuring process. For instance, Hornstein and Weinberg (1981) propose that the two transformations be preceded in the same way by a restructuring rule which works to put together VP-internal elements into a complex verb (i.e. structure-integration). According to this proposal, the sentences (i) will have derived structures like (ii).

(i) a. Harry was talked to about politics.
    b. What did John talk to Harry about?

(ii) a. Harry was [VP [v talked to] [NP [t]] [PP about politics]]
    b. What did John [VP [v talk to Harry about] [NP [t]]]

However, such idea cannot be said to work. First, if restructuring by structure-integration be necessary for both NP movement and *wh*-movement, there will be no principled reason to preclude an ill-formed passive like (iii).

(iii) a. Harry was talked to by John about politics.
    b. What did John talk to Harry about?
Restructuring and a Concept of Syntactic Transformation

(42) \[ \begin{array}{c}
V \\
X \quad Y \\
Z \\
\end{array} \quad \Rightarrow \quad \begin{array}{c}
V \\
X \\
Y \quad Z \\
\end{array} \]

X: major category (NP, AP)

The working of this disintegrating process is, in a word, to free some constituent from the domination of the upper major category, so that the freed constituent may be attached directly to the VP node. In the following subsections, I will demonstrate that such restructuring facilitates the movement from Z and of Y in (42) at the same time.

5.1. Movement from Freed Constituent. Remember that the original idea of structure-disintegration as restructuring comes, as Chomsky (1977) says, from the possibility of wh-movement from stacked NPs.

(43) a. You [VP saw [NP a picture [PP of who]]]
   b. You [VP saw [NP a picture] [PP of who]]

(44) Who did you see a picture of t?

If wh-movement has a restructuring function which converts the VP structure of (43a) to (43b) in the fashion of (42), there will be no

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(iii) *Politics was [VP [v talked to Harry about] [NP t]]

Secondly, if the derived structures (ii) be correct, the complex verbals would have to be frozen in the same way. But the fact is that the frozenness can be observed only in passive construction.

(iv) a. *Everything was paid twice for.
   b. *Your books were gone most thoroughly over.

(v) a. That's something I would have paid twice for.
   b. These are the books that I would have gone most thoroughly over.

Thus, it is inconceivable that structure-integration works for NP movement and wh-movement in the same way. For further arguments against Hornstein and Weinberg's proposal, see Inada (1981).
problem in deriving a sentence like (44); who can be safely extracted without violating the subjacency condition.

The restructuring by structure-disintegration can take care of familiar exceptions to the complex NP constraint (subjacency). Since Ross (1967), it has often pointed out that a sentence like (45) can be derived from an underlying structure (46) in apparent violation of the complex NP constraint.

(45) *What* did John make a claim that he saw *t*?

(46) John [VP made [NP a claim [s that he saw *what*]]]

Many proposals have been made so far to handle such phenomena, from syntactic and semantic viewpoints. But here, I am assuming that the structure (46) is generated in the base and is to be restructured as (47) when *wh*-movement works.7)

(47) John [VP made [NP a claim] [s that he saw *what*]]

It is clear that this is also a case of structure-disintegration, detaching the complement clause from the object NP and attaching it directly to the VP node. If this is correct, the configuration of (47) is eventually the same as that of (48).

(48) You [VP told [NP John] [s that you saw *what*]]

7) A similar disintegrating process is suggested in Akmajian, Steele and Wasow (1979), as an independent restructuring rule. But as was pointed out earlier, it is not a good idea to assume that the restructuring applies independent of *wh*-movement, since the point of its application cannot be determined uniquely. If the disintegrating rule were to work in the base, as is often argued, we cannot explicate in a principled way the possibility of deriving (i b) from (i a) below.

(i) a. John made a claim that Mary saw a unicorn.

b. A claim that Mary saw a unicorn was made by John.

If the restructuring rule is assumed to work among syntactic transformations, we will be destined to encounter the recalcitrant problem of rule-ordering. After all, the best idea seems to be that the restructuring is a sub-function of *wh*-movement.
Thus, there will be no structural reason to block the derivation of well-formed sentences like (49).

(49) a. What did John make a claim that he saw?
    b. What did you tell John that you saw?

Furthermore, the well-known examples (50) can be dealt with exactly in the same way.

(50) a. John, I don't have the impression Bill will like.
    b. What does he have an opportunity to see?
    c. This is the kind of data which I feel the necessity to confirm.

5.2. **Movement of Non-constituent Sequence.** Structure-disintegration is not only necessary for the \( wh \)-movement from the embedded clause of complex NPs, but also makes it possible to remove specifier-head sequences. Let us begin with the following sentence.

(51) What image did they carry of President Reagan?

It will be agreed that the base-generated VP structure of this sentence is something like (52).

(52)

\[
\text{VP} \\
\text{V} \quad \text{NP} \\
\text{carry} \quad \text{DET} \quad \text{N} \\
\quad \text{what} \\
\quad \text{image} \\
\quad \text{P} \\
\quad \text{of} \\
\quad \text{NP} \\
\quad \text{President Reagan}
\]

From the generality of \( \overline{X} \)-convention, the PP of President Reagan is to be dominated by \( \overline{N} \), working as a complement to the head image. Note that given such an NP configuration, the DET-N
sequence *what image* does not constitute any constituent. This means that (51) cannot be derived from a structure containing (52) straightforwardly by extracting *what image* through a single operation of *wh*-movement.

It seems to me that the extraction of DET-N will be possible if we assume that the object NP of (52) is disintegrated by restructuring when *wh*-movement is to apply. Suppose that if the complement PP is freed from the domination of the upper NP, the VP of (52) will be turned into something like (53), where the DET *what* and the remaining head *image* can behave as a constituent.

\[(53) \ [\text{VP carry} \ [\text{NP} [\text{DET what}] [\text{N image}] ] [\text{PP of President Reagan}] ]\]

Given such a VP structure, there will be no obstacle to removing the sequence of *what image* in the same away as in ordinary cases of constituent movement.

It might be argued that (51) be yielded by extracting the entire NP *what image of President Reagan* first, and then by extraposing the NP-internal PP stylistically to the sentence-final position. Such derivation is conceivable to some extent, but examining closely, it turns out to suffer serious difficulties. For instance, the free relative of (54) cannot be considered to be derived through PP extraposition, because the pre-extraposition form (55) is impossible.

\[(54) \text{The hearer can add to the context } \text{*what* he remembers of utterances further back in the conversation.}\]

\[(55) \text{*what of utterances further back in the conversation he remembers}\]

The sentence below raises a further problem against the *wh*-movement-extraposition analysis.

\[(56) \text{The sketch the driver drew of the object several days later reveals precious little, showing merely an egg-shaped object.}\]

If (56) be derived through *wh*-movement and PP extraposition, its
base-generated structure would contain a subject NP which has an internal structure like (57).

The fact that there is no relative pronoun in (56) suggests that the encircled NP of (57) must be deleted in the COMP position after it has been extracted by wh-movement. Under extraposition analysis, this deletion is to be done after the extraposition of the squared PP. But in this case, the extraposed PP has to be attached to the _S_-node, not to _S_.

That is, it is inconceivable that an extraposed phrase goes into a lower clause. This means that the extraposition analysis cannot explain why the PP of the object appears before the adverbial _several days later_ in (56). One might argue that the adverbial could be shifted rightward after the PP extraposition. But in such movement, the adverbial will have to be attached to the _S_-node because it
crosses an S-external phrase. I suppose that there is no ground for such unnatural derived structure.

I will claim, instead, that the base-generated structure (57) be disintegrated as (59) when wh-movement applies.

(59)

In this configuration, the PP of the subject is disjoined from the object NP and the remaining sequence the sketch can act as a single constituent. Thus, there will be no reason to prohibit the movement of the target the sketch by a single movement operation.

The restructuring by disintegration can obtain also for a similar movement from APs. Note that in the following sentences wh-movement appears to have extracted sequences of a specifier and a head adjective, leaving PP complements behind.

(60)  a. *How envious he is of me for my success!*
    b. He did not state *how close* he thought he was to *the object.*
    c. You don’t know *how greedy* he is for *money* despite his remarks to the contrary.

The logic is the same here. From the X-theory, the base structure of (60a), for instance, will have a sub-configuration like (61).
Restructuring and a Concept of Syntactic Transformation

(61) \[ \text{VP is } [\text{AP [SPEC how]} [\text{A envious}] [\text{PP of me}]] \]

Since the specifier and the head adjective do not form a constituent, the movement of them cannot be performed directly by a single operation. But if the restructuring for wh-movement works to convert (61) to (62) by detaching the complement PP from the dominating AP, the specifier-head sequence will become a constituent automatically.

(62) \[ \text{VP is } [\text{AP [SPEC how]} [\text{A envious}] [\text{PP of me}]] \]

Thus, the target sequence is ready to undergo the operation of wh-movement.

Again, there might be an argument that sentence like (60) be derived by extracting the base-generated APs as a whole and later by extraposing the complement PPs from the COMP position. But such an argument fails essentially for the same reason as I raised in the discussion of DET-N sequence.

(63) *How afraid do you think [I was when I was a child] of the dark?

cf. How afraid do you think [I was of the dark when I was a child]?

I believe that the derivation of (60) is impossible without appealing

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8) Concerning this issue, Yagi (1977) suggests that the base configuration of the complex APs in question is (i), where the specifier-head sequence constitutes a constituent (i.e. an AP).

(i) \[ [\text{AP [AP how envious] PP of me}] \]

But such an idea will necessarily lead us to suppose that complex NPs have also similar internal structures, as in (ii).

(ii) \[ [\text{NP [NP what image] PP of President Reagan}] \]

Although the inner NP of (ii) is constituent indeed, I think that the movement of it should be prohibited in the spirit of the left branch condition (Ross 1967). Thus, it is not desirable to postulate base structures like (i) and (ii) simply for the ease of movement operations, at the expense of the generality of X-convention.

9) These examples are cited from Yagi (1977).
to the idea of restructuring by disintegration.

6. A TENTATIVE CONCLUSION.

For the limitation of space, I will not discuss the issue of restructuring and non-structure-preserving movements (inversions, extraposition, etc.), leaving it for further study.10) But for the present, I have found no convincing evidence indicating that such movement rules need any restructuring for their successful application. Thus, my tentative speculation is that the paradigm of (12) is correct in principle.

As I said at the beginning, the purpose of this paper was to specify the point of derivation where restructuring works and to solve the related problems. These tasks can be accomplished by assuming that syntactic transformation is a compound of a restructuring process and a movement operation proper. But at the same time, our hypothesis has further implications. First, it seems a correct observation that transformational rules do not need to obey structural conditions precisely, but can work in violation of them to a certain extent. This means that syntactic structure is not a rigid entity but somewhat flexible, and that transformation has a more dynamic function than the traditional one which consists of structural description and structural change. That is, transformational rules work by making the structure of a given phrase-maker accessible to transformational operation. Figuratively speaking, the restructuring subcomponent of a transformation serves as an advance guard, smoothing the ground and paving the path for the movement operation to be performed successfully.

Secondly, it might appear that our hypothesis will provide transformation with a rich mechanism, making it an extremely powerful descriptive device. However, this is not a mere enlargement of the

10) Baltin (1978) points out a possibility that extraposition from NP needs some restructuring.
concept of transformation. Note that in (12) each transformational rule is designed to have a particular way of restructuring, precluding arbitrary combinations of restructuring and movement operation. For instance, it is predicted that there can be no case where NP movement needs other restructuring than structure-integration, or wh-movement requires other structural readjustment than structure-disintegration.11) Thus, our hypothesis may be said to contribute to restricting the class of possible transformations by making explicit specification of the manner of restructuring and movement operation.

REFERENCES


11) In his discussion of Italian clitic placement, Rizzi (1978) proposes a restructuring process which combines matrix and complement verbs into a single verbal complex, turning bisentential structure into a single sentence.

   (i) a. Gianni deve [presentare la a Francesco]
   b. Gianni la [v deve presentare] a Francesco

   It is clear that this restructuring falls under structure-integration because clitic placement is a kind of NP movement.


