

# Thematic Restrictions on Movement in NP

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## 0. Introduction

This paper attempts to show that the well-motivated hierarchical relation among theta-roles can be exploited in explaining some problematic examples of movement in NP. To do so, the Minimality Condition of Chomsky (1986b) will be more restricted to incorporate the thematic restrictions in derived nominals.

In section 1, the NPs with raising predicate are analyzed to introduce the motivation for the revision of the Minimality Condition. Section 2 will be devoted to the explanation of the problematic examples in terms of the revised Minimality Condition.

## 1. A Proposal

### 1.1. Raising within NP

There are certain types of sentences that do not have derived nominal counterparts. Kayne (1981) introduces several types of such instances, two of which deserve our attention in this paper:

- (1) \*Mary's appearance to have left
  - \*her proof to be a good companion
  - \*its likelihood not to be there
  - \*your book's certainty to be a success
- (2) \*Mary's belief to have left by John
  - \*her acknowledgement by her superiors to be quite clever
  - \*his report by a good source to have made a killing
  - \*his article's assumption to contain several errors by the editor
  - \*your book's judgement by the Board to be of little interest
  - \*Mary's knowledge by John to tell lies
  - \*her supposition by her superiors to be capable of good work

\*her thought by her colleagues to be in Paris

\*the baby's estimation to weigh about 8 pounds by the doctor

The first examples of (1) and (2) are assumed to be related to (3a) and (3b), respectively:

(3) a. Mary<sub>i</sub> appears t<sub>i</sub> to have left. (Raising to Subject)

b. Mary<sub>i</sub> is believed t<sub>i</sub> to have left by John. (Passive)

Why do certain types of sentences have derived nominal counterparts, and others not? There have been a lot of approaches to this question in the transformational literature with varying degrees of acceptability. This section will be devoted to the brief review of the previous approaches, followed by a proposal which is based on the Minimality Condition of Chomsky (1986b).

### 1.1.1. Non-ECP Analyses

In general, preceding approaches may well be grouped into two parts: one is based on Theta-theory, Case theory, and Predication theory (Non-ECP Analyses), and the other is based on the ECP (ECP Analyses). For the purpose of discussion, let's critically review the Non-ECP analyses first.

Williams' (1980) theory of predication implies that predication does not take place within NPs, because predicates must be maximal projections<sup>1</sup> and, therefore, N' cannot be a predicate of NP in (4):

(4) [NP N']

<sup>1</sup> Rothstein (1983) recognizes the predication in NP as the saturation process with varying degrees. She, however, does not say that there is no predication relation. For example, she tries to explain the interpretability of the examples in (i) as follows:

- (i) a. \*John's gift of the book late  
 b. \*John's arrival in a hurry  
 c. \*John's performance drunk

The reason for the marginal acceptability is that *gift*, *arrival*, and *performance* all have a theta-role to assign: it is just that there is no way of syntactically encoding this thematic relationship and thus 'properly' assigning the theta-role. However, it is possible to assign it 'improperly'—i.e., 'match up' the [NP, NP] with the 'floating' theta-role, even though there is no syntactic mechanism to encode this. Thus the *John* of (ic) can be understood as the agent of *performance* because *John* is 'improperly' assigned a theta-role in this way.

Williams (1980) supports this conclusion by noting that noun phrases, unlike sentences, do not require subjects. According to him, it is a defining feature of predicates that they obligatorily have subjects of which they are predicated, the fact that subjects are optional in NPs supports the conclusion that the relation between the NP and N' in (4) is not a predication relation.

Actually, according to Williams (1982), three things differentiate clauses from NPs; NPs do not exhibit NP-movement, predication, and obligatory control. For illustration, consider the clauses in (5), and the related NP in (6), of which (5a) and (6a) are of our concern:

- (5) a. John<sub>i</sub> appears t<sub>i</sub> to like Mary.  
 b. John arrived nude.  
 c. John attempted PRO to leave.
- (6) a. \*John<sub>i</sub>'s appearance t<sub>i</sub> to like Mary  
 b. \*John's arrival nude  
 c. any attempt PRO to leave (antecedent is not obligatory)

Assuming these differences, how is one to account for these facts concerning NP and S, given the standard X-bar theory analysis? For Williams, two things combine to give the desired results; the inheritance of indices through heads, and the predication relation. Assume that all projections of a lexical item bear the same index as shown in (7a). Thus, following Williams (1980), we can define predication as coindexation as in (7b):

- (7) a.  $N_i \rightarrow N'_i \rightarrow NP_i$   
 b.  $NP \ VP \rightarrow NP_i \ VP_i$

The desired distinction between (5) and (6) can thus be predicted in the following way. Some version of *i*-within-*i* filter of Chomsky (1981) is required in order to rule out the anomalous structures in (8):

- (8) a. \*[a picture of itself]<sub>i</sub>  
 b. \*[the friends of each other]<sub>i</sub>

This can also be stated as Williams' NP<sub>i</sub>/NP<sub>i</sub> C<sub>i</sub> constraint, which is given below:

(9) NP<sub>i</sub>/NP<sub>i</sub> Constraint

No NP may be coindexed with an NP it contains.

Secondly, let's state the condition on opacity as in (10)<sup>2</sup>:

## (10) Strict Opacity Condition (SOC)

X, for X an anaphor, cannot be free in Y, for any Y.

Now if one considers the case of raising in (6a), its S-structure is (11):

(11) John<sub>i</sub>'s [<sub>N'</sub> appearance [<sub>t<sub>i</sub></sub> to like Mary]]

One can thus observe that predicating the N' of the subject *John* will lead to a violation of (9), the NP<sub>i</sub>/NP<sub>i</sub> constraint, since N, N', and NP all bear the same index. If this indexing does not obtain, the anaphor left free. This violates the SOC, and the structure is ruled out as ill-formed.

Williams' theory of predication is intriguing and suggestive in itself. There are, however, some problems within his argument. As for the SOC, first, he does not distinguish the referential index from the anaphoric or the relational index (D.-W. Yang, class lecture, fall 1985). In fact, he makes use of indices in a confusing way in the NP<sub>i</sub>/NP<sub>i</sub> Constraint and in the SOC. Second, the scope of application of the SOC is confined to some limited area: raising (passive), predication, and obligatory control. Third, his theory does not work as far as the phenomena of pure referential index are concerned: for example, Binding. Consider the following example:

(12) John<sub>j</sub>'s [<sub>N'</sub> destruction<sub>i</sub> of himself<sub>j</sub>]

In (12) the head noun *destruction* shares the same index *i* with N' but the anaphor *himself* carries different index *j*. The SOC incorrectly predicts that the example (12) is ungrammatical. This means that Williams has to set up a doubtful representation of PS (Predicate Structure), at which the SOC, among others, applies, whereas Chomsky (1986a) claims that it applies at LF as a licensing condition.

Williams' theory of predication entails that there is no predication

<sup>2</sup> Williams (1982, 281) uses the term *free* in the following sense: "X is free in Y if X is neither coindexed with a c-commanding NP in Y nor coindexed with Y itself."

relation in NP and that this is due to the  $NP_i/NP_i$  Constraint. However, even if there is no such relation in NP, the lack of predication is due to the lack of maximal projection predicate inside the NP, not due to the  $NP_i/NP_i$  Constraint (Rothstein (1983)).<sup>3</sup>

Rather than criticizing preceding approaches, Higginbotham (1983) proceeds by reviewing some of the properties of simple and derived nominals. He takes the Theta-Criterion to block raising in nominals:<sup>4</sup>

(13) \*John<sub>i</sub>'s [certainty [<sub>t<sub>i</sub></sub> to leave]]

Under his theory *John* is already assigned a theta-role through the VP *to leave*; hence it cannot also be assigned a theta-role through interpretation of a relation-symbol R.<sup>5</sup> The same considerations block movement passives.

His analysis, however, misses the point that the theta-role assignment can be optional at least in nominals. Chomsky (1986a, 142) says that a theta-role may be, but need not be assigned to the position occupied by *there* as in (14):

(14) \*there's fear of John

Whereas in clauses a transitive verb that may theta-mark the subject must do so, the same is not true of nominal heads of noun phrases.

(15) a. Bill's fear of John  
b. the fear of John

In (15a), *Bill* receives the same theta-role (Experiencer) that it receives

<sup>3</sup> Rothstein (1983, 11) defines the following rule of Predicate-Linking for the predication relation:

(i) Rule of Predicate-Linking

Every non-theta-marked XP must be linked at S-structure to an argument which it immediately c-commands it.

One thing to notice here is that the relation is between maximal projections (XPs) not between XP and X'.

<sup>4</sup> Rappaport (1983) poses some problems for Kayne and has independently proposed an analysis similar to the one proposed by Higginbotham (1983).

<sup>5</sup> Higginbotham (1983, 416) explains the relation-symbol R as follows: "The NP subject bears some relation to the variable-place, however, this leads to assigning for instance to (i) the semantic structure (ii), R being, in effect, a relational demonstrative."

(i) John's cat

(ii) [the x: cat (x) & R (John, x)]

in the corresponding clause *Bill fears John*, but in (15b), the corresponding theta-role is not assigned. The reason for the difference is that the subject of a clause must be present or the predicative VP will not be licensed, whereas *fear of John* in (14) and (15) is an N', not a maximal projection, and, need not be licensed by predication.<sup>6</sup> Therefore, no subject is required in (15b), though if a subject is present it must be thetamarkeed, barring (14): the subject cannot be an expletive.

Chomsky (1986b) assumes that all lexical categories assign Case: P, N, and A assign inherent Case at D-structure, while V (along with INFL containing AGR: usually finite INFL in English) assigns structural Case at S-structure. Inherent Case is associated with theta-marking while structural Case is not, i.e., inherent Case is assigned by  $\alpha$  to NP if and only if  $\alpha$  theta-marks NP, while structural Case is independent of theta-marking. Chomsky assumes further that the association of inherent Case with theta-marking extends to Case realization as well as Case-assignment. Thus comes the following Uniformity Condition (Chomsky (1986b, 194)):

(16) Uniformity Condition

If  $\alpha$  is an inherent Case-marker, then  $\alpha$  Case-marks an NP, if and only if  $\alpha$  theta-marks the chain headed by the NP.

Here Case-marking includes Case-assignment and Case-realization. Since Case-assignment is at D-structure, the chain headed by NP will be the trivial single-membered chain, (NP), in this case. This extension amounts to the requirement that inherent Case should be realized on NP under government by the category that theta-marks the NP at D-structure.

Genitive Case is assigned to the complement in (17a) and is realized in the same position in (17c) but is realized in the subject position in (17b):

- (17) a. the destruction the city  
 b. [the city]<sub>i</sub>'s destruction t<sub>i</sub>  
 c. the destruction of [the city]

Case-assignment and both instances of Case-realization satisfy the Uniformity Condition. Genitive Case is realized morphologically by the affixation of

<sup>6</sup> According to Chomsky (1986b), the *fear of John* in (14) and (15) is licensed simply as an X' projection of its head *fear*.

some element to the NP: *of* in complement position, the possessive element POSS in subject position.<sup>7</sup> If the Uniformity Condition is generally valid, such forms as in (18) will be barred (Lee (1989)):

- (18) a. \*there's [destruction of the city]  
 b. \*there's [arriving a man in the room]  
 c. \*its [seeming that John is intelligent]  
 d. \*John<sub>i</sub>'s [seeming t<sub>i</sub> to be intelligent]

Examples (18a), (18b), and (18c) violates the Uniformity Condition, since the genitive Case is realized in the subject position even though the position cannot be theta-assigned. (18d) is also out, since *seeming* assigns a theta-role to the phrase *John to be intelligent* not to *John* or to the chain headed by *John*, (John<sub>i</sub>, t<sub>i</sub>). Exactly the same explanation holds for our example repeated in (19):

- (19) \*John<sub>i</sub>'s [<sub>N'</sub> certainty [<sub>VP</sub> t<sub>i</sub> to leave]]

Here *certainty* assigns a theta-role to the chain headed by *John* (John<sub>i</sub>, t<sub>i</sub>), not to *John*. *John*, however, is realized with a genitive Case('s), resulting in the violation of the Uniformity Condition.

The Uniformity Condition, however, bears some problems, which casts doubt against its need of existence. First, the Uniformity Condition incorrectly predicts that the following examples are ungrammatical:

- (20) a. John<sub>i</sub>'s [being likely [t<sub>i</sub> to win]]  
 b. John<sub>i</sub>'s [being appointed t<sub>i</sub>]]

In (20a) the chain headed by *John*, (John<sub>i</sub>, t<sub>i</sub>) is theta-assigned not by

<sup>7</sup> Two rules are set up in the literature: *of*-insertion rule and 's-insertion rule:

(i) *of*-insertion rule:

Insert *of* in the following context, [<sub>α'</sub> α NP], where α=[+N] (=N, A).

(ii) 's-insertion rule:

Insert 's in the following context, [<sub>NP</sub> NP α], where α=N', VP

The given contexts for the rules are to avoid the illegitimate permission of the following examples (Lee (1989)):

(iii) a. \*There was killed *of* John.  
 b. \*It seems *of* John to be happy.  
 c. \*It is certain *of* John to win.  
 d. \*the belief *of* John to be the winner

the VP *being likely to win* but by the verb *win*. That is, the theta-assigner and the inherent Case assigner are different. This is the clear instance of the violation of the Uniformity Condition and the Condition predicts that (20a) is ungrammatical. The same situation holds for the example (20b). The VP *being appointed*  $t_i$  assigns an inherent Case to *John*, whereas the chain headed by *John*, ( $John_i, t_i$ ), is theta-assigned by the verb *appointed*, resulting in the violation of the Uniformity Condition. Yet the example (20b) turns out to be grammatical. Let's consider another serious problem. According to Chomsky (1986a), the complementizer *for*, as an inherent Case assigner, must obey the Uniformity Condition. However *for* always violates the Condition:

- (21) a. [For [John to [be the winner]]] is unlikely.  
 b. I would prefer [for [John to [win the race]]].

In the sentences of (21), *John* is assigned an inherent Case by the complementizer *for*, whereas the theta-role is assigned by the VP of the embedded sentence. Hence they violate the Uniformity Condition. Yet they all prove to be wholly grammatical. This is due to the theoretical consequence of some assumptions of Chomsky (1986a). That is, the complementizer *for* is an inherent Case assigner, but it is not qualified to assign a theta-role. Therefore, the NP which is assigned a Case by *for* must be assigned a theta-role by another element other than *for*.<sup>8</sup>

### 1. 1. 2. ECP Analyses

If we briefly consider the analysis presented in Kayne (1981), we can see that it is based on the following assumptions as summarized by Rappaport (1983):

- (22) a. Derived nominals have deep syntactic structures which are isomorphic to those of their verbal constructions.  
 b. NP-movement is restricted within NP as it is restricted within sentences. Ill-formed nominals are ruled out by general principles such as the ECP and the Case Filter.

<sup>8</sup> Whether the complementizer *for* is a real preposition with theta-assigning property or a simple Case-assigner is an open question.

- c. Nouns crucially differ from verbs in two respects:
  - i. Nouns do not assign Case.
  - ii. S is an absolute barrier to government for N: nouns cannot govern across an S boundary.
- d. *Of*-insertion depends on government: *Of* may be inserted only between an N and an NP which it governs.

The systematic absence of nominals corresponding to raising to subject constructions is accounted for by assumption (22cii) and the ECP. By the ECP, the trace in the subject position of the complement in (23) must be properly governed:

(23) [[<sub>NP</sub> John<sub>i</sub>'s] certainty [<sub>S</sub> t<sub>i</sub> to leave]]

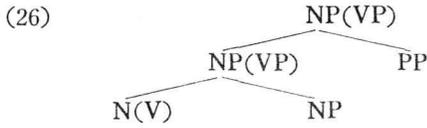
However in (22cii), the head noun may not govern across S boundary. The trace remains ungoverned and the construction is ruled out by the ECP. There are no nominals corresponding to raising to object constructions such as the one in (24), since the head noun does not govern the NP in the subject position of the complement by (22cii). Thus, by applying (22d), *of* may then not be inserted, the subject of the complement cannot receive Case, and the construction is ruled out by the Case Filter:

- (24) a. John believes Mary a genius.
- b. \*John's belief of Mary a genius

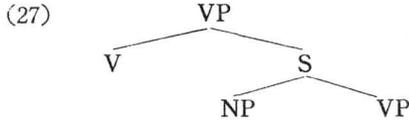
Kayne's analysis, however, bears some problems. The greatest problem for Kayne's analysis is the existence of derived nominals with two complements as is pointed out in Rappaport (1983):

- (25) a. John's presentation of a medal to mary
- b. The general's command to the troops to leave
- c. The sale of missiles to Iran
- d. His drainage of the water from the pond

By Kayne's reasoning, these complements cannot be jointly embedded under an S node, nor can they be assigned a ternary branching structure, in the verbal or nominal constructions. They must have a representation something similar to (26):



Thus there must be two representations for the double object construction (and any construction with two complements)—(26) and (27) (for (23), (24), etc.):



However, as Rappaport (1983) indicates, there is no syntactic evidence for either representation, aside from the fact that those which are assigned (27) do not have nominals with both complements, and those assigned (26) do. Kayne speculates that the second complement in (26) may be “less closely bound to the verb”; it is a complement, but not an argument. Rappaport (1983) estimates this distinction to be at best vague.

## 1.2. Minimality Condition

Kim (1987) suggests a solution which can avoid the problems of the Non-ECP Analyses and Kayne’s analysis with the use of the Minimality Condition proposed in Chomsky (1986b).

Before we extend the proposals of Kim (1987), let’s consider what the Minimality Condition is for. The original version of the Minimality Condition suggested in Chomsky (1986b) is as follows:

- (28) Minimality Condition  
 $\alpha$  does not govern  $\beta$   
 in  $[\dots\alpha\dots[\gamma\dots\gamma\dots\beta\dots]\dots]$ ,  
 where  $\gamma$  is a head nearest to  $\beta$ , only if  
 a.  $\gamma$  has features.  
 b.  $\gamma$  is not I (=INFL).

The Minimality Condition is proposed to account for various structures including the well-known *that*-t effect:

- (29) a. Who<sub>i</sub> do you think [<sub>CP</sub> t<sub>i</sub>' [<sub>C'</sub> e [<sub>IP</sub> t<sub>i</sub> left first]]] ?

b. \*Who<sub>i</sub> do you think [<sub>CP</sub> t<sub>i</sub>' [<sub>C'</sub> that [<sub>IP</sub> t<sub>i</sub> left first]]] ?

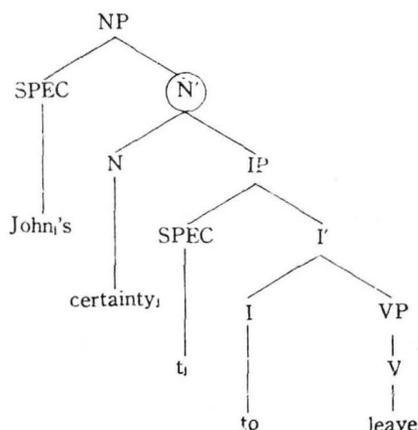
According to (28), in (29a) C' functions as a barrier for government of t<sub>i</sub> by t<sub>i</sub>'. Thus (29b) is filtered out as an ECP violation. Chomsky says that X' is present only when its head has features and X' need not be present when its head is missing. That is, C' does not constitute a barrier by (29a) so that t<sub>i</sub>' can antecedent-govern t<sub>i</sub>. (28b) is for the example like following:

(30) [<sub>CP</sub> How<sub>i</sub> [<sub>C'</sub> did<sub>j</sub> [<sub>IP</sub> you [<sub>I'</sub> t<sub>j</sub> [<sub>VP</sub> t<sub>i</sub>' [<sub>VP</sub> [<sub>V'</sub> fix the car t<sub>i</sub>]]]]]]] ?

In (30), T<sub>i</sub>' antecedent-governs t<sub>i</sub>. According to (28a), I' will constitute a barrier. Therefore, Chomsky assumes the defective character of the I-system includes both IP and I' projections. Then t<sub>i</sub>' is antecedent-governed by *how*, satisfying the ECP.

Under the X'-theory adopted in Chomsky (1986b), the structure of our example (23) would be something like (31):

(31)



Here t<sub>i</sub> cannot be properly governed by *John*<sub>i</sub>, because the lexical head *certainty* will make the circled N' a barrier for government by the Minimality Condition (28). *Certainty*<sub>j</sub> cannot properly govern t<sub>i</sub>, either because it cannot be chain-coindexed with it or because nouns are not

proper governors.<sup>9</sup> This analysis holds true of all the examples in (1) and (2).

## 2. Minimality Condition Revised

### 2.1. Experiencer/Psych Nominals

The Minimality Condition, however, proves to be too powerful to correctly predict varying degrees of grammaticality of nominals in general. Consider the following derived nominals compared with the corresponding verbal constructions:

- (32) a. The enemy destroyed the city.  
 b. The city was destroyed by the enemy.  
 c. the enemy's destruction of the city  
 d. the city's destruction by the enemy

Under the lexicalist hypothesis of Chomsky (1970) with its null hypothesis of subcategorizational and selectional correspondences between verbs and derivationally related nominals, (32d) is the result of the application of the rule of NP-preposing just in the same way as the passive sentence (32b) is derived. Compare, however, the examples in (33) with those in (32):

- (33) a. John enjoyed the film.  
 b. The film was enjoyed by John.  
 c. John's enjoyment of the film  
 d. \*the film's enjoyment (by/of John)

There is some asymmetry in the distribution of arguments between (32) and (33). The asymmetry is accounted for by Anderson (1979) by means of a constraint on movement inside NPs. Within the lexicalist hypothesis, the specifier position of a nominal is the subject and the *of*-prepositional phrase is the object. She distinguishes between bare NP complements and prepositional complements and suggests that NP-preposing will apply regularly whenever a noun has an empty NP in its determiner and an NP not mediated by a preposition in its complement. The only preposition

<sup>9</sup> Whether nouns are proper governors or not is yet to be settled down. Kim (1987) and this paper assume that nouns are not proper governors.

that appears to allow preposing of its object is *of*.

However, there exist nominals such as (33) which take *of* as a preposition but still do not allow preposing. Here Anderson makes reference to the semantic notion of Affectedness and suggests as a further stipulation that only affected NPs count with a lexical preposition *of*, which blocks their movement to the specifier position. The object of *destruction* is not preceded by *of* in D-structure: here the preposition is inserted transformationally. The object of *enjoyment* has a base-generated preposition *of*.

Now let's consider the theoretical prediction of the Minimality Condition.<sup>10</sup> The S-structure representations of (32d) and (33d) would be (34a) and (34b), respectively:

- (34) a. [<sub>NP</sub> the city<sub>i</sub>'s [<sub>N'</sub> destruction t<sub>i</sub>]]  
 b. \* [<sub>NP</sub> the film<sub>i</sub>'s [<sub>N'</sub> enjoyment t<sub>i</sub>]]

According to the Minimality Condition (28), in both cases of (34) N' constitutes a barrier. Therefore, the Minimality Condition makes a false judgement in that it rules out (34a) as an instance of ECP violation. Here, one of the assumptions of this paper must be clarified. The head noun *destruction* and *enjoyment* are assumed not to be able to properly govern their complement trace t<sub>i</sub>. As Kayne (1984) claims, we assume that the proper government by lexical head is not possible for nouns, or that lexical government is to be all together eliminated in favor of antecedent government, suggested as a possibility in Chomsky (1986b).

Since the effect of the Minimality Condition is too strong to correctly predict the grammatical status of the examples, I suggest that the original version of the Minimality condition (28) should be revised as in (35):

- (35) Minimality Condition (Revised)  
 $\alpha$  does not govern  $\beta$   
 in [... $\alpha$  ... [ <sub>$\gamma$</sub>  ... $\gamma$ ... $\beta$ ...]...],  
 where  $\beta$  is a head nearest to  $\beta$ , only if  
 a.  $\gamma$  has features.

<sup>10</sup> Torrego (1986) criticizes Anderson's Affectedness and tries to solve the pointed problems by modifying the Minimality Condition from quite a different point of view.

- b.  $\gamma$  is not I.
- c.  $\beta$  is not properly connected to  $\alpha$  by a theta-role.

Here we assume that the traditional thematic hierarchy of Gruber (1976) and Jackendoff (1972) is correct in principle.<sup>11</sup> What (35) says is that if a head,  $\alpha$ , assigns a proper theta-role to  $\beta$ , the Minimality Condition does not work: that is,  $\gamma'$  is not a barrier for government between  $\alpha$  and  $\beta$ .

Bearing in mind this revision and the assumption that nouns are not lexical governors, let's turn now to the examples in (34). If the head noun is *destruction*, which assigns a theta-role of Theme to its complement, N' does not constitute a barrier for government, for the complement is not properly connected with a head by a theta-role. If the head noun is *enjoyment*, which assigns a theta-role of Experienced, the circled N' of (34b) forms a barrier for government, for the complement is not connected with a head by a proper theta-role. In the case of (34a), *the city* antecedent-governs its trace, while in (34b) *the film* cannot antecedent-govern its trace because of the barrier N'.

Roswadowska (1988) highlights some interesting examples which our proposals so far discussed seem to be unable to tackle. Consider the following examples:

- (36) a. John enjoyed the film.
- b. The film was enjoyed by John.
- c. John's enjoyment of the film
- d. \*the film's enjoyment (by/of John)
  
- (37) a. The public was delighted at the book.
- b. The book delights the public.
- c. the public's delight in the book
- d. \*the book's delight of the book
  
- (38) a. Mary was disgusted at his rude behavior.
- b. His rude behavior disgusts Mary.
- c. Mary's disgust at his rude behavior
- d. \*His rude behavior's disgust of Mary

<sup>11</sup> The order of theta-roles in the thematic hierarchy varies according to the scholar. This will be discussed in the next section.

- (39) a. The people were disillusioned with the president.  
 b. The president disillusioned the people.  
 c. the people's disillusionment with the president  
 d. \*the president's disillusionment of the people
- (40) a. John was amused at the books.  
 b. The books amused John.  
 c. John's amusement at the books  
 d. \*The book's amusement of John
- (41) a. The children amused at John's stories.  
 b. John amused the children with his stories.  
 c. the children's amusement at John's stories  
 d. \*John's amusement of the children with his stories

Before we try to account for the data given above, let's make some critical review of the approaches to the interesting examples. The approaches are divided into two groups depending on whether the approach makes use of the movement rule or not. It will be shown in the following that the previous approaches are not wholly satisfactory because they take into consideration only one side of the fact, and that the approach that exploits both movement in NP and thematic restriction would result in the desired explanation.

## 2.2. Thematic Approaches

Roswadowska (1988) claims that the impossibility of some arguments in a SPEC position of a nominal can be explained in terms of thematic restrictions and is independent of morphological relations between nominals and verbs. She concludes that there is no movement in NP and that a principle like (42) is necessary:

(42) N-Rule

Neutral can never appear in a specifier position of a nominal.

The notion Neutral is an invention of a theta-role. Roswadowska (1988, 151) says that the notion of Theme is vague and too broad to reflect finer distinctions, and that its insufficiency has led some linguists to introduce various more specific thematic notions, such as Patient, Experi-

enced, or Percept. She defines it as follows:

- (43) NEUTRAL: An entity X holds a thematic relation NEUTRAL (N-role) with respect to Y if
- a. X is in no way affected by the action, process, or state described by Y.
  - b. X does not have any control over the action, process, or state described by Y.

So, the subjects in the (d) examples of (37)~(41) bear the Neutral thematic relation to their respective verbs. The objects of the following verbs bear the Neutral thematic relation: *like, enjoy, dislike, hate, admire, respect, know, see, recollect, perceive, observe, understand*, etc. Neutral is contrasted with Patient, both of which were understood as Theme in Jackendoff (1972). The reason for Roswadowska's (1988) give-up of Theme altogether is its inability to distinguish affected objects from nonaffected ones, which distinction is crucial in the account of nominals. This paper assumes that her distinction is right in itself. However, her claim is no explanation of the fact in a strict sense. That is, it is a mere observation or description of the phenomena. Her observation can be reinterpreted as a factor that may play a part in determining the barrierhood of a category in the revision of the Minimality Condition. Such a solution will be shown in section 2.3.

Rappaport (1983) independently formulates, within LFG, a similar restriction. She labels the arguments of emotive verbs as Experiencer, Experienced and says that Experienced is restricted from being assigned the POSS function. Her restriction can, however, be reformulated in the thematic terms of Roswadowska (1988), which is adopted here. In discussing the restrictions on nominals, Rappaport attributes the lack of the syntactic correspondence with the relevant verbs to what is called Thematic Constancy in the LFG framework. This means that a given semantically restricted grammatical function can be assigned only to an argument bearing a particular thematic relation. However, as Roswadowska (1988) says, the thematic constancy principle does not work consistently. Rappaport assumes that only Themes are assigned the  $OBL_{Theme}$  function in nominals and therefore only Themes can be realized as objects of the preposition

*of*. Hence the ungrammaticality of (44b):

- (44) a. Herbie gave Louise a bouquet.  
 b. \*Herbie's gift of Louise of a bouquet

If we follow the reasoning, there is no account of the contrast between (45a) and (45b):

- (45) a. John's love of Mary  
 b. \*John's amazement of the film

Rappaport assumes that the nominals both in (45a) and (45b) as well as the corresponding verbs share the argument structure Experiencer, Experienced. Thus, the NP taking the preposition *of* in (45a) bear the same thematic relation of Experienced as to the ungrammatical nominal in (45b). In Rappaport's terms, (45b) would be accounted for by saying that Experienced is incompatible with the  $OBL_{Theme}$  function and cannot take the preposition *of*. Then the grammaticality of (45a) is a counterexample to the thematic constancy principle: Experienced should not take the preposition *of* in nominals. Furthermore, Rappaport's proposal can be reduced to a more general distinction between nouns, which is proposed in Grishaw (1989). Consider the following examples:

- (46) a. They ordered the troops to leave.  
 b. their order to/\*of the troops to fire

Rappaport's proposal is that this is due to the absence of grammatical functions within NP. However, the difference actually reduces to the difference between a true theta-marking head, V, and a head which does not theta-mark directly, N, as is proposed in recent works of Grimshaw.

Amritavalli (1980) proposes a similar analysis to that discussed so far. The proposal is summarized as follows:

- (47) Map Experiencer into  
 a. in the S  
   i. Subject, given an argument structure (Experiencer, X),  
     X=Causer  
   ii. Object, given an argument structure (Causer, Experiencer)

- b. in the NP POSS-NP or of-NP, given an argument structure (Experiencer, X), X=Causer

However, Roswadowska (1988) observes that the Experiencer Hypothesis implies that the argument structure of a nominal is different from that of a verb: subject of a verb such as *amuse* is interpreted as Causer (47ai), while the argument of the *at*-prepositional phrase in *amusement* is not a Causer (47ai), which undermines any attempt to relate the two constructions in the first place.

### 2.3. Solution

Wasow (1977) argues that nominals in (37)~(41) are derived from adjectival passives, not from verbs. Thus, the base structure for a nominal such as *amusement* would be as in (48):

(48) *be amused* [at NP]

(48) contains a prepositional complement, and NP movement to the SPEC position is blocked.<sup>12</sup> Here we will assume, as did Wasow (1977), that the nominals here in (37)~(41) are derived from adjectival passives, not from verbs.<sup>13</sup> Moreover, we will assume that the subject position of adjectival passive is not theta-marked; that is, theta-bar position. Therefore the arguments of the adjectival passive construction are at post verbal positions (as complements). The theta-structure representation of (c) and (d) examples of (37)~(41) would be as follows:

(49) [NP e [<sub>N'</sub> N NP (NP)]]<sup>14</sup>

The movement of complement NPs is thematically restricted in terms of the Minimality Condition. Just as Gruber (1976) and Jackendoff (1972) suggested a partial order over the set of thematic roles, I will argue that

<sup>12</sup> There are good morphological arguments against Wasow (1977). See Roswadowska (1988).

<sup>13</sup> Grimshaw (1989) says that passive nominals are simple event nominals and they have no argument structure. She enumerates a lot of evidence in support of her claim. However, I assume that her contention holds only for verbal nominals and not for adjectival nominals.

<sup>14</sup> Grimshaw (1989) claims that prepositions participate in the theta-marking of nouns. This paper assumes, however, that even though prepositions participate in the theta-marking, such theta-marking is a surface phenomena.

the syntactic behavior of the revised Minimality Condition owes much to the theta-role hierarchy (50):

- (50) Agent > Experiencer > Patient (=Affected Theme) >  
 Goal/Source/Location > Neutral (=Unaffected Theme) >  $\phi$

Let's assume that a theta-role can only nullify the revised Minimality Condition if it occupies the higher position in the theta-role hierarchy in (50). For example, if the head gives a theta-role of Patient (=Affected Theme) to its complement, the revised Minimality Condition has no effect, and if the head gives a theta-role of Neutral (=Unaffected Theme), the revised Minimality Condition does work.

It is worth considering an imaginary NP which my proposal so far cannot handle:

- (51) \*[That John will leave]<sub>i</sub>'s [<sub>N'</sub> certainty t<sub>i</sub>]

Under our proposal the head noun *certainty* gives a theta-role to t<sub>i</sub> and N' is not a barrier so that the whole clause *that John will leave* can antecedent-govern t<sub>i</sub>, resulting in the satisfaction of the ECP. Our proposal with the revised Minimality Condition predicts that (51) will be grammatical. But the discussion is out of point, for the ungrammaticality of (51) is not a matter to be dealt with by the ECP. The fact that clauses cannot be assigned a genitive Case in nature would be relevant here.

Franks (1986) picks up examples that show an interesting contrast:

- (52) a. \*What<sub>i</sub> did you meet [a student of t<sub>i</sub>] ?  
 b. Who<sub>i</sub> did you see [a portrait of t<sub>i</sub>] ?

Contrary to his proposal, if we assume that *student* gives no theta-role to its complement and *portrait*, just like *picture*, *drawing*, etc.,<sup>15</sup> gives a theta-role to its complement, we can give a unified explanation to the contrast shown in (52). Under our proposal, the S-structure of (52a) would be something like (53):

- (53) \*What<sub>i</sub> did you [<sub>VP</sub> t<sub>i</sub> [<sub>VP</sub> meet [<sub>NP</sub> t<sub>i</sub> [<sub>N'</sub> student t<sub>i</sub>]]]] ?

<sup>15</sup> Franks (1986) claims that *student* does give a theta-role to its complement whereas *portrait* does not. Under his proposal, (52a) is ruled out by the i-within-i condition.

$N'$  is a barrier: complement  $t_i$  is not given a theta-role by *student* so that the  $N'$  is a barrier due to the revised Minimality Condition. Antecedent-government by  $t_i$  in adjoined VP position is impossible, for NP is a predicate and an inherent barrier.

One consequence of my proposal is that we can explain the ungrammaticality of (36d) and the other (d) examples of (37)~(41) in a consistent way. Just as *the film* of (36d) cannot be moved across the minimal barrier, because it carries Neutral (or Experiencer), *the book* of (37d) cannot be moved across the minimal barrier. On the other hand, the Neutral, *the public*, can be freely moved, since the theta-role occupies the relatively higher position in the hierarchy (50).<sup>16</sup> The same explanation holds for the other examples of (38)~(41).

Now, consider the behavior of nominals of perception:

- (54) a. Mary saw John.  
 b. John was seen by Mary.  
 c. Mary's sight of John  
 d. John's sight by Mary

The verb *see* has the argument structure (Experiencer, Neutral), and the movement of Experiencer is allowed, while Neutral can be moved across

<sup>16</sup> If the preposition is *of* in the (c) examples of (37)~(41), the phrases turn out to be ungrammatical:

- (i) a. \*the public's delight of the book  
 b. \*Mary's disgust of his rude behavior  
 c. \*the people's disillusionment of the president  
 d. \*John's amusement of the book  
 e. \*the children's amusement of John's stories

This is not wholly due to the role of prepositions in theta-marking as was mentioned in the footnote 14. This can be demonstrated by the fact that the above examples become acceptable if *of*-insertion phrase is deleted. Rather I suggest a surface filter as below:

- (ii) Neutral must not be realized by *of*.

The condition (ii) can be supported by the fact that Experiencer, for example, can be realized by *of*:

- (iii) a. *John's* disappointment of *his audience*  
 Agent Experiencer  
 b. *John's* embarrassment of *Mary*  
 Agent Experiencer

N'. Other examples include the following:

- (55) a. \*history's knowledge  
 b. \*the event's recollection  
 c. \*the problem's perception  
 d. \*the picture's observation  
 e. \*the novel's understanding

The verbs of emotion (*love, like, dislike, hate, fear, admire, respect, etc.*) behave quite the same way as is shown below:

- (56) a. Mary loves John.  
 b. John is loved by Mary.  
 c. Mary's love of John  
 d. \*John's love by Mary
- (57) a. \*the enemy's hatred by people  
 b. \*the devil's fear by children

Even though a noun has an Experiencer in its argument structure if it has an Agent, the Experiencer cannot be moved. That is, the hierarchical relation among theta-roles are that of prominence as is claimed in Grimshaw (1989, among others) and the NP movement of argument with a theta-role of thematically lower prominence makes N' a barrier by the revised Minimality Condition:

- (58) a. \*Amy's fight by the scarecrow  
 b. \*the class's boredom by the lecturer  
 c. \*Debbie's amusement by Randy  
 d. \*Sam's annoyance by Dave

If a nominal has (Agent, Location), the movement of Location is not allowed:

- (59) \*the city's entry by the soldiers

Finally let's consider some apparent counter-examples to our proposal:

- (60) a. \*the barbarian's destruction (where barbarians=Agent)  
 b. ?the rocket's destruction of the city (where rocket=Instrument)

These examples seem to be problematic since the nominal with the higher Agent is not allowed while that with the lower Instrument is marginal. These examples, however, are not the result of movement in NP. If the examples are the result of movement, they become grammatical:

- (61) a. the barbarian's destruction (where the barbarians=Affected Theme)  
 b. the rocket's destruction of the city (where the rocket=Affected Theme)

### 3. Conclusion

So far we have discussed the unproductivity of derived nominals in English. There have been a lot of approaches in the literature, and the approaches that rely on the thematic structure of the head turn out to be successful in explaining the unproductivity. Among thematic approaches, however, those which do not admit movement in NP are not wholly satisfactory, either. As a natural consequence, an approach which adopts both movement in NP and thematic restrictions are proposed and verified through problematic examples. Our proposal incorporated the well-motivated thematic hierarchy into the well-motivated Minimality Condition. It costs, therefore, nothing in the grammar, whereas other approaches require several conditions or undermotivated thematic labels.

The thematic hierarchy proposed here is somewhat different from the original version of Gruber (1976) and Jackendoff (1972). It is, however, suggestive in solving the problem of order between Theme and Goal/Source/Location (GSL) as a consequence of the proposal of this paper. Larson (1988) says that Theme precedes GSL whereas Grimshaw (1989) suggests that GSL precedes Theme. Their arguments may be settled by dividing Theme into two kinds: affected and non-affected as we did in (50).

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## ABSTRACT

### Thematic Restrictions on Movement in NP

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This paper deals with the unproductivity of derived nominals in English. It is shown that the unproductivity is crucially related to the thematic structure of the head noun and that the thematic restriction is based on the slightly revised form of the traditional thematic hierarchy. To incorporate the thematic restriction into the grammar, the Minimality Condition of Chomsky (1986b) is revised. Hence, a revision of the Minimality Condition is proposed so that the movement of some argument can nullify the effect of the minimal barrier. It is demonstrated through examples that the movement of the argument with a higher theta-role is permitted, since it nullifies the effect of the revised Minimality Condition. It is also shown that the movement of the argument with a lower theta-role is not permitted, since it does not affect the revised Minimality Condition.

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