

BEYOND PRINCIPLES AND PARAMETERS

Essays in Memory of Osvaldo Jaeggli

edited by

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KLUWER ACADEMIC PUBLISHERS

DORDRECHT / BOSTON / LONDON

Library of Congress Cataloging-in-Publication Data

Beyond principles and parameters : essays in memory of Osvaldo Jaeggli
/ edited by Kyle Johnson and Ian Roberts.

p. cm. -- (Studies in natural language and linguistic theory
: v.45)

Includes bibliographical references and index.

ISBN 0-7923-5498-2 (alk. paper)

1. Grammar, Comparative and general--Syntax. 2. Generative
grammar. I. Jaeggli, Osvaldo. II. Johnson, Kyle, 1958-
III. Roberts, Ian G. IV. Series.

P291.B49 1999

415--dc21

98-47895

ISBN 0-7923-5498-2

Published by Kluwer Academic Publishers,
P.O. Box 17, 3300 AA Dordrecht, The Netherlands.

Sold and distributed in North, Central and South America
by Kluwer Academic Publishers,
101 Philip Drive, Norwell, MA 02061, U.S.A.

In all other countries, sold and distributed
by Kluwer Academic Publishers,
P.O. Box 322, 3300 AH Dordrecht, The Netherlands.

Printed on acid-free paper

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Printed in the Netherlands.

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1. INTRODUCTION

According to the VP-internal subject hypothesis, proposed by Fukui and Speas (1986), Kuroda (1988), Koopman and Sportiche (1985), and Kitagawa (1986), among others, the subject of a finite sentence is generated within VP and is raised to the IP Spec position at S-structure to have its Case checked. Fukui and Speas (1986), Abney (1986), and Kuroda (1988) propose a parallel analysis for the subject of NP: it is generated within NP and is moved to DP Spec. The S-structures of (1a-b), then, are as in (2a-b), respectively.¹

- (1) a. the barbarians destroyed the city
b. the barbarians' destruction of the city
- (2) a. [_{IP} the barbarians_i [_T I [_{VP} t_i [_V destroyed the city]]]]
b. [_{DP} the barbarians'_i [_D D [_{NP} t_i [_N destruction of the city]]]]

This paper consists of two notes on the VP/NP-internal subject hypothesis illustrated above. In the following section, we will discuss two phenomena that suggest the possibility of the structures in (3).

- (3) a. [_{IP} the barbarians_i [_T I [_{VP} PRO_i [_V destroyed the city]]]]
b. [_{DP} the barbarians'_i [_D D [_{NP} PRO_i [_N destruction of the city]]]]

The idea that PRO can occur in NP Spec within a DP is entertained in Fukui and Speas (1986), and Giorgi and Longobardi (1991). In 2.1-2.2, we will examine the phenomenon of NP-deletion in some detail, and argue further that there can be a control relation between a phrase in DP Spec and PRO in NP Spec, as in (3b). Then, in 2.3, we will discuss VP-preposing, and suggest that the same kind of control relation is possible within a finite IP. As far as we know, the hypothesis that the subject of a sentence is predicated of the VP (or \bar{I}) via control was first seriously considered by David Lebeaux.² Thus, the discussion in this paper provides empirical support for his general idea. It further provides evidence for the proposal in Fukui and Speas (1986) that PRO, unlike lexical DPs, can stay within VP at S-structure.

Section 3 is concerned with the absence of NP-preposing and IP-preposing, as opposed to VP-preposing. Given the parallelism between IPs and DPs, the absence of NP-preposing seems particularly surprising. Or put differently, if IPs and DPs indeed have parallel structures as in (3) (or as in (2)), we would expect the absence of NP-preposing to follow from independently motivated principles. We will argue that the expectation is fulfilled. We will first show that all cases of IP-preposing and most cases of NP-preposing are ruled out by the Head Licensing Condition on empty categories, originally proposed by Jaeggli (1982), along the lines suggested by Zagana (1982) and Lobeck (1990). Then, we will argue that the remaining cases of NP-preposing are excluded by the "antecedent government requirement," or the ECP as formulated in Chomsky (1991) and Chomsky and Lasnik (1993). The discussion in this section provides support for those principles, as well as for the parallel analysis of IPs and DPs.

2. NP/VP-INTERNAL PRO

In this section, we will argue for the structures in (3), based on the phenomena of \bar{N} -deletion and VP-preposing. But first, we will briefly go over the arguments for the reanalysis of \bar{N} -deletion as NP-deletion in Section 2.1.

2.1. \bar{N} -Deletion and the DP Hypothesis

The \bar{N} -deletion phenomenon is studied extensively in Jackendoff (1971). A typical example is shown in (4).

- (4) I like Bill's wine, but Max's is even better.

Lobeck (1990), and Saito and Murasugi (1990) independently argue that this phenomenon provides support for the DP hypothesis mentioned above. Lobeck (1990), in particular, discusses the parallelism among \bar{N} -deletion, VP-deletion and Sluicing in detail, and shows that the DP hypothesis enables us to maintain the following generalizations:

- (5) a. The three phenomena involve "deletion" of the complement of a functional head.
b. The "deletion" is licensed only by a functional head that agrees with its Spec.

The examples in (6)-(8) illustrate these generalizations. (The contrast in (7) is due to Takahashi (1994) and Martin (1992).)

- (6) a. I read John's book, and now, I want to read Mary's.
b. *I read about that person, and now, I want to see the.

- (7) a. I believe that Mary is smart, and I believe that John is, too.
b. *I believe Mary to be smart, and I believe John to, too.
(8) a. I know that Mary bought something, but I don't know what.
b. *Mary said that she was going to Boston, but I don't know whether.

(7a) and (8a) involve "deletion" of the complements of I and C, respectively. And given the DP hypothesis, the structure of (6a) can be as in (9).

- (9) ... [_{DP} Mary's [_D D [_{NP} \bar{e}]]]

Thus, what is "deleted" in (6a) is the complement of a functional head D. Under this hypothesis, \bar{N} -deletion is reanalyzed as NP-deletion. (7b)-(8b) illustrate the generalization in (5b). (7b) shows that VP-deletion is allowed only when the I agrees with its Spec.³ (8b) indicates that Sluicing has the same general property: an IP can be "deleted" only when the C agrees with its Spec. If we assume the standard \bar{N} -deletion analysis, the contrast in (6) simply suggests that \bar{N} -deletion is allowed only when there is a genitive phrase. But if we assume the DP hypothesis/NP-deletion analysis, the contrast readily falls under the generalization in (5b). Since *the* is not an agreeing functional head, it fails to license NP-deletion.

In Saito and Murasugi (1990), we presented two pieces of empirical evidence for the DP hypothesis/NP-deletion analysis, in addition to the conceptual argument illustrated above. The first piece of evidence has to do with Anderson's (1983) paradigm, to which we will return in the following subsection. The other piece of evidence has to do with \bar{N} (NP)-deletion in Japanese.

In this language, the genitive Case marker *no* is not assigned to any specific position, but appears on any NP(DP) or PP that is immediately dominated by a projection of N (or D). Thus, the so called multiple genitive construction is possible as shown in (10), and adjunct NP(DP)s are also accompanied by the genitive Case marker as shown in (11).

- (10) a. yuubokumin-no tosi-no hakai
nomad -gen city-gen destruction
'the nomad's destruction of the city'
b. John-no Mary-e -no izon
-gen -on -gen reliance
'John's reliance on Mary'

- (11) a. ame -no hi
rain -gen day
'rainy day'
- b. hutakire -no hamu
two slice -gen ham
'two slices of ham'

Hence, on the surface, there is no clear difference between arguments and adjuncts within NPs.

However, interestingly enough, only argument genitive phrases license \bar{N} (NP)-deletion. For example, (12a-b) are well-formed, but (13a-b) are not.

- (12) a. [rooma-no hakai] -wa [kyooto-no e] yorimo hisandatta.
Rome -gen destruction-top Kyoto -gen than horrifying-was
'Rome's destruction was more horrifying than Kyoto's.'
- b. [gakubusei -no sensei -e -no izon]-wa yuruseru
undergraduate-gen teacher-on-gen dependence-top tolerable-is
ga, [insei -no e]-wa yurusenai.
though graduate-gen -top tolerable-not-is
'The undergraduates' dependence on the faculty is tolerable, but the graduate students' is not.'
- (13) a. *saikin -wa [hare -no hi]-ga [ame -no e] yorimo ooi.
recently-top clear-gen day-nom rain-gen than plentiful-is
'Recently, there have been more clear days than rainy days.'
- b. *[hutakire -no hamu]-wa yuusyoku-ni naru ga,
two slice-gen ham -top supper -to make though
[hitokire -no e]-wa naranai.
one slice-gen -top make-not
'Two slices of ham make up a supper, but one slice does not.'

If we assume the standard \bar{N} -deletion analysis and the simple generalization that a genitive phrase licenses \bar{N} -deletion, this contrast seems quite mysterious. However, given the DP hypothesis/NP-deletion analysis, this contrast can be related to the general inability of adjuncts to appear in the DP Spec position. As illustrated in (14-15), adjuncts in general cannot move from an NP-internal position to DP Spec.⁴

- (14) a. the books there
b. *there's books

- (15) a. the brown book
b. *brown's book

Hence, *ame-no* in (13a), for example, cannot move to DP Spec, and consequently, cannot agree with D to license NP-deletion. On the other hand, *kyooto-no* in (12a), being an argument, can move to DP Spec, and participate in Spec/head agreement with D. Thus, given the DP hypothesis/NP-deletion analysis, the contrast between (12) and (13) is exactly what we expect. This contrast then provides strong evidence for the existence of DP in Japanese, and for the DP hypothesis in general. In the following subsection, we will present evidence for the structure in (3b), based on the NP-deletion phenomenon.

2.2. Anderson's (1983) Paradigm

Anderson (1983) discusses the following paradigm in relation to the possible distribution of empty nominals:

- (16) a. This book is John's e.
b. *That reliance on friends is Mary's e.
c. *That destruction of the city is the barbarians' e.

We argued in Saito and Murasugi (1990) that this contrast constitutes further supporting evidence for the DP hypothesis/NP-deletion analysis. The "predeletion" structures of (16a-b), for example, are as in (17a-b) respectively.

- (17) a. [_{DP} This [_{NP} book]] is [_{DP} John's [_{NP} book]].
b. [_{DP} This [_{NP} reliance on friends]] is [_{DP} Mary's_i [_{NP} *t_i* reliance on friends]].

The second NP is identical to the first in (17a), but not in (17b). Hence if NP-deletion requires a syntactic antecedent, the contrast between (17a) and (17b) directly follows.

However, as also noted in Saito and Murasugi (1990), there are examples that are potentially problematic for this analysis. For example, (18) and its English counterpart (19) are both fine.

- (18) [[John-ga Mary-ni yoseru] sinrai]-wa [Bill-no e] yorimo atui.
-nom -to have trust -top -gen than deep

- (19) The trust that John has in Mary is deeper than Bill's e.

In this subsection, we will argue that examples like (18)-(19) constitute evidence for the structure in (3b).

Suppose first that the "pre-deletion" structure of (19) is as in (20).⁵

- (20) $[_{DP} \text{The } [_{NP} [_{NP} \text{PRO}_i \text{ trust}] \text{ [that John}_i \text{ has in Mary}}]]]$ is deeper than $[_{DP} \text{Bill's}_i \text{ } [_{NP} t_i \text{ trust}]]]$.

Then, it may seem possible that the deletion in (19) is allowed because $[_{NP} \text{PRO trust}]$ and $[_{NP} t \text{ trust}]$ count as "identical" despite the difference between PRO and trace. But this analysis is untenable: "deletion" seems sensitive to the distinction between PRO and trace, as we will see directly.

The following example from Lasnik and Saito (1992) shows that *promise* allows not only control, but also raising:

- (21) ?Headway_i promises [*t_i* to be made by John].

Thus, (22a-b) are also ambiguous between the control and the raising readings.

- (22) a. John_i promises [*e_i* to be successful].
 b. John_i [_{VP} promises [*e_i* to be successful]], and Mary does [_{VP} *e*], too.

But in (22b), the second conjunct must have the same reading as the first. That is, the first and the second conjuncts must receive identical interpretation with respect to control vs. raising. This fact indicates that PRO and trace do not count as "identical" with respect to deletion phenomenon. The following examples illustrate this point more clearly.

- (23) a. John_i promises [*t_i* to be successful], and Mary_i actually promised [PRO_i to be successful].
 b. *John promises [*t_i* to be successful], and Mary actually did.
 (24) a. John_i often promises [PRO_i to be successful], but Mary is the one who_i really promises [*t_i* to be successful].
 b. *John_i often promises [PRO_i to be successful], but Mary is the one who really does.

(23b)-(24b) are out as the VP-deletion versions of (23a)-(24a) since the "deleted" VPs do not have syntactic antecedents. (20), thus, cannot be the "pre-deletion" structure of (19).

Then, what can be the "pre-deletion" structure of (19)? Since the subject of the relative head *trust* cannot be a trace and must be PRO, the only possibility seems to be the following:

- (25) $[_{DP} \text{The } [_{NP} [_{NP} \text{PRO}_i \text{ trust}] \text{ [that John}_i \text{ has in Mary}}]]]$ is deeper than $[_{DP} \text{Bill's}_i \text{ } [_{NP} \text{PRO}_i \text{ trust}]]]$.

This structure implies that the subject of a DP can be base-generated in DP Spec, and be coindexed with PRO in the NP-internal subject position, as illustrated in (26).

- (26) $[_{NP} \text{DP}_i \text{ } [_{NP} \text{PRO}_i \text{ } [_{N...}]]]]$

This analysis was in fact suggested in Saito and Murasugi (1990), but was not ultimately adopted as it was inconsistent with our analysis of Anderson's (1983) paradigm in (16). Once we admit the structure in (26), nothing seems to prevent (16b), for example, from having the "pre-deletion" structure in (27).

- (27) $[_{DP} \text{This } [_{NP} \text{PRO} \text{ reliance on friends}]]]$ is $[_{DP} \text{Mary's}_i \text{ } [_{NP} \text{PRO}_i \text{ reliance on friends}]]]$.

Thus, we lose the NP-deletion account for the examples in (16b-c). These examples, then, become problematic if we accept the structure in (26).

In the remainder of this subsection, we will argue that (19) in fact can have the "pre-deletion" structure in (25), and that the structure in (26) is indeed possible. We will suggest that examples like (16b-c), contrary to Saito and Murasugi (1990), are to be ruled out independently of NP-deletion.

First, as Ray Jackendoff (p.c., 1989) has pointed out to us, the range of examples that seem to require the structure in (26) is quite extensive.⁶ A few more examples are shown in (28)-(29).

- (28) a. [This attack on Rome] took longer than [the enemy's *e*].
 b. [That attack on Rome] was successful, but [the enemy's *e*] wasn't.
 (29) [song kenkyuu -ni taisuru taido] -wa [Taroo-no *e*] yorimo warui.
 that research -toward attitude-top -gen than bad
 'That attitude toward research is worse than Taroo's.'

Given that "deletion" is sensitive to the distinction between trace and PRO, the "pre-deletion" structure of (28a), for example, must be as in (30).

- (30) $[_{DP} \text{This } [_{NP} \text{PRO} \text{ attack on Rome}_i]]]$ took longer than $[_{DP} \text{the enemy's}_i \text{ } [_{NP} \text{PRO}_i \text{ attack on Rome}]]]$.

Hence, these examples, like (18)-(19), provide evidence for the structure in (26).

Secondly, (16b-c) are bad even without NP-deletion, as illustrated in (31).⁷

- (31) a. This book is John's book.
 b. *That reliance on friends is Mary's reliance on friends.
 c. *That destruction of the city is the barbarians' destruction of the city.

This fact clearly indicates that (16b-c) should be ruled out independently of whether or not the structure in (26) is possible. This is so, since the ungrammaticality of (31b-c) shows that (16b-c) are ruled out regardless of whether the deletion is legitimate with a linguistic antecedent for the "deleted" NP. Hence, those examples, after all, do not pose a problem for the structure in (26).

We speculate here that the ill-formedness of (31b-c) is related to a specific property of equative sentences. If a Θ -role assigning noun, like *reliance* and *destruction*, must have a subject, then the structure of (31b), for example, will be as in (27), repeated below as (32).

(32) [_{DP} This [_{NP} PRO reliance on friends]] is [_{DP} Mary's₁ [_{NP} PRO₁ reliance on friends]].

Since (31b) is an identity statement, the PRO in the first DP in (32) must be coindexed with, and referentially dependent on, *Mary* in the second DP. But it seems that the reference of the first DP in an equative sentence must be established independently of the rest of the sentence. Thus, it seems to be generally the case that any element in the first DP cannot be referentially dependent on any element in the second DP. The following examples illustrate this fact:

- (33) a. *His₁ book is John's₁ book.
b. *Her₁ reliance on friends is Mary's₁ reliance on friends.

(34) *[The book that he₁ was reading] is John's₁ book.

Hence, given the structure in (32), (31b) will be ruled out for the same reason as (33)-(34).

As should be clear from the discussion above, Anderson's (1983) paradigm in (16) seems neutral with respect to the structure in (26). We conclude, therefore, that (25) can be the "pre-deletion" structure of (19), and more generally, that there can be a control relation between a phrase in DP Spec and PRO in NP Spec.

2.3. Controlled PRO in the Spec of VP

In the preceding subsection, we argued that DPs can have the following structure based on some examples of NP-deletion:

(35) [_{DP} DP₁ [_{NP} PRO₁ [_N ...]]]

Given the parallelism between DP and IP, we expect then that IPs can have the structure in (36).

(36) [_{IP} DP₁ [_{VP} PRO₁ [_V ...]]]

In this section, we will discuss VP-preposing, and suggest that this is indeed the case.⁸

Let us first consider the following examples:

- (37) a. [How likely [_{t_i} to win]]_j is John₁ _{t_j}?
b. *[Which picture of _{t_i}]₂ does John wonder who₁ Mary bought _{t₂}?

In Saito (1986), the contrast in (37) was taken as evidence that "reconstructions" (or chain binding in the sense of Barss (1984)) obtains with A-binding, but not with A'-binding. According to this hypothesis, the trace _{t_i} of raising in (37a) is "A-bound" by its antecedent due to "reconstruction," exactly as the reflexive in (38).

(38) [Which picture of himself₁]₂ does John₁ like _{t₂} best?

The trace _{t_i} of wh-movement in (37b), on the other hand, needs to be A'-bound. As A'-binding is insensitive to "reconstruction," this trace must have a c-commanding antecedent in the strict sense. The example is, thus, ruled out by the Proper Binding Condition.

However, Anthony Kroch (p.c., 1986) has pointed out the following examples, originally due to Mark Baltin, which indicate that traces of raising do not show reconstruction effects:

- (39) a. *[How likely [_{t_i'} to be taken _{t_i} of John]]₂ is advantage₁ _{t_i}?
b. *[How likely [_{t_i} to be a riot]]₂ is there₁ _{t₂}?

As the idiom chunk *advantage* and the expletive *there* occupy the matrix subject position in (39a-b), these examples, unlike (37a), clearly involve raising. The ungrammatical status of these examples, then, suggests that traces of raising, like those of wh-movement, are insensitive to "reconstruction." Given this observation, it is argued in Lasnik and Saito (1992) that the Proper Binding Condition, as opposed to Condition (A), requires strictly that traces have c-commanding antecedents, and that (37a) has the structure in (40). (See also Saito (1989).)

(40) [How likely [PRO₁ to win]]₂ is John₁ _{t₂}?

Let us now consider the following examples of VP-preposing in the light of this conclusion:⁹

- (41) a. John said he would win the race, and win the race, he did.
b. Mary said she would be praised by the critics, and praised by the critics, she was.

According to the standard VP-internal subject hypothesis, the structure of the second conjunct in (41a) is as in (42).

(42) [_{VP} t_i win the race]₂, he₁ did t_2 .

But then, the example should be ruled out by the Proper Binding Condition, since the trace t_i is not c-commanded by its antecedent. The well-formedness of the example, thus, indicates that the empty category in the VP Spec position need not be a trace. The only option for the example, in fact, seems to be that it is PRO, exactly as the embedded subject in (40). We conclude, then, that the structure of the second conjunct in (41a) can be as in (43).

(43) [_{VP} PRO₁ win the race]₂, he₁ did t_2 .

This analysis of (41a) carries over directly to (41b). The standard VP-internal subject hypothesis assigns the following structure to the second conjunct of this example:

(44) [_{VP} (t_i) praised t_i by the critics]₂, she₁ was t_2 .

Thus, we would falsely predict the example to be ungrammatical. But once we assume that PRO can appear in VP Spec as in (43), the structure in (45) becomes possible.

(45) [_{VP} PRO₁ praised t_i by the critics]₂, she₁ was t_2 .

(41b) is then correctly predicted to be grammatical.

The analysis proposed above predicts that VP-preposing is impossible when the IP Spec is occupied by an idiom chunk. The analysis of (39a), repeated below as (46), implies that an idiom chunk cannot be base-generated in IP Spec and control a PRO, but must be raised to that position leaving behind a trace.

(46) *[How likely [e₁' to be taken e₁ of John]]₂ is advantage₁ t_2 ?

Hence, when an idiom chunk is in the IP Spec, VP-preposing should result in a Proper Binding Condition violation. Here, there are some potentially problematic cases. But the prediction is borne out to a large extent, as shown by the following examples:

- (47) a. *They said headway would be made by her, and made by her,
it (headway) was.
b. *They said tabs would be kept on her, and kept on her, they (tabs) were.

The second conjuncts of (47a-b) have the structures in (48a-b) respectively.

- (48) a. [_{VP} (t_i) made t_i by her]₂, it₁ (headway) was t_2 .
b. [_{VP} (t_i) kept t_i on her]₂, they₁ (tabs) were t_2 .

Thus, they are ruled out by the Proper Binding Condition, exactly as (49a-b).

- (49) a. *[How likely to be made by Mary]₂ is headway t_2 ?
b. *[How likely to be kept on Mary]₂ are tabs t_2 ?

The examples in (47), then, provide further evidence for our analysis.¹⁰

If the argument above is on the right track, there must be a control relation between the phrase in IP Spec and PRO in VP Spec in all VP-preposing examples. Put differently, it is this control relation that makes VP-preposing possible. Then, more generally, IPs must be able to have the structure in (3a), repeated in (50), which parallels the structure of DP in (3b), repeated in (51).

(50) [_{IP} the barbarians₁ [_T I [_{VP} PRO₁ [_V destroyed the city]]]]

(51) [_{DP} the barbarians'₁ [_{DP} D [_{NP} PRO₁ [_N destruction of the city]]]]

In the following section, we will consider a difference between an IP-internal VP and a DP-internal NP. Despite the parallelism between VP and NP in (50)/(51), NP-preposing, in distinction to VP-preposing, is uniformly barred. We will argue that all cases of NP-preposing are ruled out by independently motivated principles, and hence, this difference does not constitute a problem for the parallel analysis of IPs and DPs.

3. ON THE ABSENCE OF IP/NP-PREPOSING

In the preceding section, we suggested that the subject in IP Spec can control a PRO in VP Spec as in (50), and that this is the reason VP-preposing is possible without violating the Proper Binding Condition. Since we also suggested that DPs can have the structure in (51), NP-preposing out of a DP, like VP-preposing, need not violate the Proper Binding Condition. But NP-preposing is impossible as shown in (52).

- (52) a. *Book₁, I read [John's t_i].
b. *Destruction of the city₁, I witnessed [the barbarians' t_i].

The main concern of this section is the absence of NP-preposing, as opposed to VP-preposing.¹¹

More generally, as will be shown below, though VP, NP, and IP can all be "deleted," only VP can be preposed. We will show in this section that IP-preposing and NP-preposing are both ruled out by independently motivated principles. In the following subsection, we will argue that all cases of IP-preposing and most cases of NP-preposing are excluded by the Head Licensing Condition on empty categories. Then, in Section 3.2, we will argue that the "antecedent government requirement," or the ECP as formulated in Chomsky (1991) and Chomsky and Lasnik (1993), rules out the remaining cases. The analysis proposed in this section provides support for those

principles, and also shows that the difference between VP and NP/IP with respect to the possibility of proposing is quite consistent with the parallel analysis of the functional projections, IP, DP, and CP.

3.1. The Head Licensing Requirement on Empty Categories

It is argued in Zagana (1982) that VP-deletion and VP-preposing are allowed in the same contexts. The examples in (53)-(54) illustrate this generalization.

- (53) a. I believed that Mary would win the race, and she did.
b. I believed that Mary would win the race, and win the race, she did.

- (54) a. *Mary believes Bill to be smart, but I don't believe him to.
b. *Mary believes Bill to be smart, but be smart, I don't believe him to.

Recall here that the VP-deletion examples fall under Lobeck's (1990) generalization in (5b), restated in (55).

- (55) A functional head licenses the deletion of its complement only when it agrees with its Spec.

Given the parallelism between "deletion" and preposing, the relevant generalization should be stated more generally as in (56), as in fact suggested by Zagana (1982) for VP-deletion and VP-preposing.

- (56) A functional head licenses an empty category in its complement position only when it agrees with its Spec.

Following Zagana and Lobeck, we assume here that (56) is to be explained by the so-called "head government requirement on empty categories," originally proposed by Jaeggli (1982).¹² For the purpose of discussion, we adopt the following formulation of this condition:

- (57) The Head Licensing Condition on Empty Categories¹³
a. An empty category must be within a projection of a licensing head.
b. X is a licensing head iff it is lexical or agrees with its Spec.

This condition excludes (54) since the embedded Infl in the second conjunct is not a licensing head. On the other hand, the empty VPs in (53) satisfy this condition: the relevant Infl agrees with the subject, and hence, is a licensing head.

As far as we can see, the condition in (57) has the effect of excluding all cases of IP preposing. Let us first consider the following example:

- (58) *_[IP]Bill will visit tomorrow]_i, I think that *t_i* .

Chomsky and Lasnik (1993) discuss this example as evidence that Comp, when it contains *that*, is not a proper (head) governor. In our terms, the trace in (58) fails to be licensed because the Comp does not agree with its Spec and hence is not a licensing head. Thus, (58) is ruled out in the same way as the example of Sluicing in (59).

- (59) *Mary thinks that Bill will visit tomorrow, but I don't think [_{CP} [_C that [_{IP}]]].

Note here that (58) is out even without the complementizer *that*. This indicates that the representation in (60) is also in violation of (57).

- (60) *_[IP]Bill will visit tomorrow]_i, I think [_{CP} *t_i*' [_C [_C] *t_i*]].

And this, in turn, implies that an intermediate trace in CP Spec does not agree (in the relevant sense) even with an empty Comp.¹⁴ This conclusion is confirmed by the following ill-formed example of Sluicing:

- (61) *Bill thinks someone stole the car, but I don't know who_i he thinks [_{CP} *t_i*' [_C [_C] [_{IP}]]].

Given the condition in (57), then, IP-preposing, like Sluicing, is impossible without an operator in CP Spec. This is so, since otherwise, the head C will fail to license the trace. On the other hand, if the operator moves to CP Spec from a position within the IP, the IP-preposing necessarily results in a Proper Binding Condition violation. The example in (62) illustrates this point.

- (62) *_[IP]John bought *t₂*]_i, I don't know [_{CP} what₂ [_C [_C] *t_i*]].

The wh-phrase *what* in CP Spec turns the embedded COMP into a licensing head, and hence, the trace of IP is licensed. But once *what* moves into the CP Spec and the IP is proposed, the trace of the wh-phrase fails to be bound. Thus, the resulting configuration is ruled out by the Proper Binding Condition.

The discussion above implies that if IP-preposing is possible at all, we must have a base-generated operator in CP Spec. Here, *whether* and *if* may be considered possible candidates. But they do not license IP-preposing as shown in (63).

- (63) *_[IP]Bill will visit tomorrow]_i, I don't know whether/if *t_i*.

Independently of examples such as (63), it is dubious that they are in CP Spec agreeing with the head C, since they do not license Sluicing either, as shown in (8b). Another relevant example is given in (64).¹⁵

- (64) *Mary thinks Bill will visit tomorrow, but I don't know whether/if.

We tentatively assume here that *whether/if* are in Comp, and do not agree with an operator in CP Spec. Then, (63)-(64) are straightforwardly ruled out by the condition in (57).

We have seen that (57) has the effect of excluding all cases of IP-preposing. As is clear from its formulation, it excludes some cases of NP-preposing as well. Let us consider (65).

(65) *Book₁, I read [the/a t₁].

This example is ruled out by (57), exactly as the example of NP-deletion in (6b), repeated below as (66), since the D dominating *the/a* does not agree with its Spec, and hence, is not a licensing head.

(66) *I read about that person, and now, I want to see the.

Then, what remains to be accounted for are examples like (52a-b), repeated below as (67a-b).

(67) a. *Book₁, I read [John's t₁].
b. *Destruction of the city₁, I witnessed [the barbarians' t₁].

Neither of these examples are ruled out by (57), since as indicated by the presence of the genitive phrase, the D agrees with its Spec and thus licenses the trace. Further, given our conclusion in Section 2, (67b) need not violate the Proper Binding Condition. More specifically, it can have the structure in (68).

(68) [_{NP} PRO₁ destruction of the city]₂, I witnessed [_{DP} the barbarians' t₂].

The same problem arises with (67a), but independently of our PRO analysis if possessors can be base-generated in DP Spec. In the following subsection, we will suggest an account for these examples.

3.2. NP-Preposing and the ECP

Let us first consider the following examples:

(69) a. *How₁ does John wonder [_{CP} who₂ [_{IP} t₂ fixed the car t₁]]?
b. ??What₁ does John wonder [_{CP} who₂ [_{IP} t₂ fixed t₁]]?

Rizzi (1990), proposing Relativized Minimality, attributes the ill-formedness of (69a) to the fact that the operator *who* in CP Spec intervenes between *how* and its trace. To make the discussion more precise, let us assume the representation in (70) for this example.

(70) [_{CP} How₁ [_C does [_{IP} t₁⁵ [_{IP} John [_{VP} t₁⁴ [_{VP} wonder [_{CP} who₂ [_{IP} t₁³ [_{IP} t₂
[_{VP} t₁² [_{VP} fixed the car t₁¹]]]]]]]]]]]]]]]?]

Here, *who* in CP Spec intervenes between t₁⁴ and t₁³, and hence, the former fails to antecedent govern the latter. As a result, the chain of *how* fails to satisfy the antecedent government requirement on each link of a chain, and the example is ruled out.

Chomsky and Lasnik (1993) extends this analysis to the weaker violation in (69b), and at the same time, propose to derive Rizzi's Relativized Minimality from the following principle of Economy of Derivation:¹⁶

(71) Minimize chain links.

This principle states, roughly, that movement must proceed via every possible landing site. As the movement of *how* in (70) from the position of t₁³ to that of t₁⁴ skips the embedded CP Spec, a possible landing site, this movement is illegitimate. They propose that a trace produced by such illegitimate movement, e.g., t₁³ in (70), is marked with a *. Given this analysis, the derivation of (69b) also produces a starred trace, as illustrated in (72).

(72) [_{CP} What₁ [_C does [_{IP} t₁⁵ [_{IP} John [_{VP} t₁⁴ [_{VP} wonder [_{CP} who₂ [_{IP} *t₁³ [_{IP} t₂
[_{VP} t₁² [_{VP} fixed t₁¹]]]]]]]]]]]]]]]?]

In this example too, t₂³ is produced by a movement that skips a possible landing site and fails to satisfy (71).

In order to account for the contrast between (69a) and (69b), Chomsky and Lasnik appeal to the analysis of the argument/adjunct asymmetry outlined in Chomsky (1991). Suppose that deletion, like movement, applies only as the "last resort," and further, that the chains in (73a-c) but not the one in (73d) constitute legitimate objects at LF.

(73) a. A ... A ... A (uniform A-chain)
b. A' ... A' ... A' (uniform A'-chain)
c. A A (operator-variable chain)
d. *A' ... A' ... A

Then, the trace t₁³ in (70) cannot delete in LF, since it is a part of a legitimate chain of the form (73b). On the other hand, the corresponding trace in (72) must, and therefore can, delete in LF along with the other intermediate traces. Such deletion is necessary to create an operator-variable chain from an illegitimate chain of the form (73d). Given this distinction, Chomsky and Lasnik propose that the creation of a starred trace constitutes a minor violation, while the presence of such an "offending" trace at LF results in much stronger deviance (their version of the ECP).

The analysis outlined above directly extends to the examples of subject extraction in (74).

- (74) a. Who₁ does John think [_{CP} *t*₁' [_{IP} *t*₁ fixed the car]]?
 b. *Who₁ does John wonder [_{CP} how₂ [_{IP} *t*₁ fixed the car *t*₂]]?

Let us suppose, following Frampton (1990), that the IP-adjoined position is not a possible landing site for the subject immediately dominated by the IP. We state the relevant constraint as follows:

- (75) a. A chain link must be at least of length 1.
 b. A chain link from A to B is of length *n* iff there are *n* "nodes" (*X*, \bar{X} or *XP*, but not segments of these) that dominate A and exclude B.

(75a) states basically that each chain link must have some length. It excludes the chain link from the IP Spec to the IP-adjoined position, since according to (75b) the chain link is of length 0. A constraint of this kind seems to be needed independently: without it, (71) may force a phrase in an adjoined position to keep adjoining to the same node.¹⁷

Given (75), *who* in (74b) must skip the CP Spec when it creates the first link of the chain. The movement of *who* is illustrated in (76).

- (76) [_{CP} Who₁ [_C does [_{IP} *t*₁³ [_{IP} John [_{VP} *t*₁² [_{VP} wonder [_{CP} how₂ [_{IP} **t*₁¹ fixed the car *t*₂]]]]]]]]]?

Here, unlike the case of object extraction, the initial trace is assigned a *. Since this trace cannot delete, we correctly predict a severe violation. Note that *who* in (74a) can move through the embedded CP Spec, and hence, no starred trace needs to be created.

This analysis works well also for extraction out of DPs. Let us consider the following examples from Stowell (1989):

- (77) a. Who₁ did you sell [_{DP} [_D a [_{NP} picture of *t*₁]]]?
 b. Who₁ does Jane regret [_{DP} [_D the [_{NP} dismissal of *t*₁]]]?
 (78) a. ??Who₁ did you sell [_{DP} Mary's [_D [_{NP} picture of *t*₁]]]?
 b. ??Who₁ does Jane regret [_{DP} Bob's [_D [_{NP} dismissal of *t*₁]]]?

As discussed in detail in the literature, a genitive phrase blocks extraction out of a DP. (See, among others, Torrego (1986), Stowell (1989), Ormazabal (1991), and the references cited there.) According to the standard analysis originally proposed by Torrego, the examples in (77) are well-formed since *who* can move through the DP Spec

position, while those in (78) are out because such movement is blocked by the genitive phrase. And as should be clear, this analysis can be stated quite naturally in terms of "Minimize chain links." Let us consider the following derivation for (78a):

- (79) [_{CP} Who₁ [_C did [_{IP} *t*₁⁴ [_{IP} you [_{VP} *t*₁³ [_{VP} sell [_{DP} Mary's [_D [_{NP} **t*₁² [_{NP} picture of *t*₁¹]]]]]]]]]]?
 [NP picture of *t*₁¹]]]]]]]]])?

As *who* skips the DP Spec, a possible landing site, the trace *t*₁² is marked with a *. But being an intermediate trace of an argument wh-phrase, this trace must, and therefore can, delete in LF. Thus, we have a weak violation. Since the movement in (77) can go through the DP Spec, no possible landing site needs to be skipped, and hence, no trace needs to be starred.¹⁸

Let us now return to the problematic examples of NP-preposing in (67), repeated below in (80).

- (80) a. *Book₁, I read [John's *t*₁].
 b. *Destruction of the city₁, I witnessed [the barbarians' *t*₁].

Note first that the analysis of (78) basically carries over to these examples. As it was assumed above that DP Spec is a possible landing site for wh-movement, it is reasonable to suppose that it is a possible landing site for NP-preposing as well. And the movement in (80a-b) clearly skips this possible landing site.¹⁹ The derivation of (80a) is illustrated in (81).

- (81) [_{IP} [_{NP} book]₁ [_{IP} I [_{VP} *t*₁¹ [_{VP} read [_{DP} John's [_D [_D \bar{e}]]] **t*₁]]]]]].

Here, the trace *t*₁, like *t*₁² in (79), is marked with a * since it was created by an illegitimate movement skipping the DP Spec position. At the same time, however, there is one important difference between (78) and (80). In the latter, but not in the former, the initial trace is starred, as is clear from the structures in (79) and (81). Hence, in the latter case, the offending trace remains at LF, and a stronger violation is expected. Thus, the theory of Chomsky and Lasnik (1993) correctly accounts for the three-way contrast among (77), (78), and (80).

We have seen in this subsection that Chomsky and Lasnik's (1993) ECP, which was originally proposed, in part, to account for the argument/adjunct asymmetry in (69), has the desirable effect of ruling out potentially problematic examples of NP-preposing. Note that it also excludes (redundantly) the examples of IP-preposing such as (62), repeated below in (82).

- (82) * [_{IP} John bought *t*₂]₁ I don't know [_{CP} what₂ [_C [_C \bar{e}] *t*₁]].

The IP-preposing here skips the CP Spec and hence, must leave a starred initial trace, exactly as in (81). More generally, Chomsky and Lasnik's ECP prohibits

NP/IP-preposing whenever the DP/CP Spec is filled. Then, all cases of NP/IP-preposing are excluded since unless the DP/IP Spec is filled, the trace of NP/IP fails to be licensed, according to the Head Licensing Condition discussed in the preceding subsection.

The situation is different in the case of VP-preposing. In this case also, the Head Licensing Condition requires that the IP Spec be filled. But this does not result in a starred initial trace of the proposed VP, because the IP Spec, being strictly an A-position, is not a possible landing site for the VP. What makes VP-preposing possible, ultimately, is then the fact that IP Spec is strictly an A-position.

4. CONCLUSION

In Section 2 of this paper, we argued for the possibility of the structures in (83).

- (83) a. [_{IP} The barbarians₁ [_T I [_{VP} PRO₁ [_V destroyed the city]]]].
 b. [_{DP} The barbarians'₁ [_D D [_{NP} PRO₁ [_N destruction of the city]]]].

This of course does not preclude raising within IP and DP. Our conclusion is that IPs and DPs are ambiguous with respect to raising and control. It is well known that modals such as *can*, *may*, and *must* have two interpretations, "root" and "epistemic," as illustrated in (84).

- (84) John can win the race
 a. John has the ability to win the race (root)
 b. It is possible that John will win the race (epistemic)

And it seems reasonable to assume that the "root" *can* takes a base-generated subject, while the subject of the "epistemic" *can* is raised from a VP-internal position. As Jim Huang points out (p.c., 1986), our proposal, then, amounts to saying that IP and DP are in general structurally ambiguous in this way.

In Section 3, we examined why IP-preposing and NP-preposing, as opposed to VP-preposing, are in general impossible. We first showed that all cases of IP-preposing are excluded by the Head Licensing Condition. Then, noting that this account does not extend to some cases of NP-preposing, we proposed an analysis for those cases in terms of Chomsky and Lasnik's (1993) ECP. According to this analysis, the cases of NP-preposing that satisfy the Head Licensing Condition are excluded in the same way as the adjunct/subject extraction over a *wh*-island in (69a) and (74b): "Minimize chain links" forces a starred trace and the offending trace remains at LF. This analysis, if correct, provides support for the ECP, as formulated in Chomsky and Lasnik (1993). The discussion in this section shows that the asymmetry between VP and NP/IP with respect to preposing is straightforwardly explained with the assumption that IP, DP, and CP have completely parallel structures. In this sense, it supports the parallel analysis of these functional projections.

NOTES

* This is a slightly revised version of the original written in 1993. The material in this paper was presented at the 1989 LSA Annual Meeting (Section 2) and also in syntax seminar at the University of Connecticut. We would like to thank Sung-Ho Ahn, Mona Anderson, Joseph Aoun, Zeliko Bošković, Noam Chomsky, Naoki Fukui, Jim Huang, Ray Jackendoff, Kyle Johnson, Howard Lasnik, Rhang Lee, Roger Martin, Javier Ormazabal, and Daiko Takahashi for helpful comments and suggestions. The first author started working on the material in Section 2.3 when he was at the University of Southern California in 1984-86. There, he benefitted greatly from discussions with Osvaldo Jaeggli on this material.

¹ The works mentioned above offer different hypotheses with respect to the exact nature of the VP-internal subject position, and also with respect to the positioning of the genitive 's. But we will not be concerned with those differences, since as far as we can see, the discussion in this paper is consistent with any of the alternative hypotheses.

² In an early version of Lebeaux (1983), he entertains the hypothesis that the subject of a finite clause controls PRO in Infl, and thus, is licensed via predication. See also Hyams (1985) for much relevant discussion.

³ See Martin (1992) for a detailed discussion. As he notes, examples such as the following constitute evidence for the null Case hypothesis for PRO:

- (i) John wants me to take the exam, but I don't want [PRO to].

If PRO agrees with Infl and receives null Case, as hypothesized in Chomsky and Lasnik (1993), then the well-formedness of (i) is exactly what we expect, given the generalization in (5b). (See also Saito and Murasugi (1990).)

We tentatively assume here that PRO can be assigned null Case, but does not have to have Case to receive a Θ -role, for reasons that will become clear shortly.

⁴ Similarly, it seems that adjuncts are unable to move to IP Spec, as illustrated below.

- (i) a. It seemed then that John was going to win the prize.
 b. *Then₁ seemed *t_i* that John was going to win the prize.

⁵ Here, the PRO in (20) must be in NP Spec, and cannot be in DP Spec. If it raises from NP Spec to DP Spec, then it c-commands John. Thus this raising creates a configuration in violation of Condition (C).

⁶ Jackendoff was not advocating the structure in (26) itself, but he showed us many examples like (28)-(29) which cast doubts on the NP-deletion analysis of Anderson's paradigm, proposed in Saito and Murasugi (1990).

⁷ We unfortunately noticed this fact after the final draft for Saito and Murasugi (1990) was completed. Ray Jackendoff (p.c., 1989) has also pointed out this fact in his comments on Saito and Murasugi (1990).

⁸ The argument below for (36) is presented also in Ahn (1990) only with minor differences.

⁹ The relevance of examples such as (41a-b) to the Proper Binding analysis of (39) was first pointed out to us by Joseph Aoun and Kyle Johnson (p.c., 1986).

¹⁰ The potentially problematic examples alluded to above are the following:

- (i) a. They said the cat would be let out of the bag, and let out of the bag, it (the cat) was.
 b. ?They said advantage would be taken of him, and taken of him, it (?*advantage) was.

These examples are particularly mysterious, since the parallel raising examples are out, as shown in (ii) and (46).

- (ii) *[How likely to be let out of the bag]₁ is the cat t₂?

It is not clear to us at this point why (ia) and (ii), for example, have a completely different grammatical status.

¹¹ Note that this difference between NP and VP requires an analysis independently of the structures in (50) we argued for. Even under the standard VP/NP-internal subject hypothesis with a trace in the VP/NP-internal subject position, it is not obvious why (52b) should be out when VP-preposing is possible. And if possessor genitives can be base-generated in DP Spec, as we have been assuming, then the ungrammaticality of (52a) should be explained independently of the Proper Binding Condition.

¹² See also Jaeggli (1985), Stowell (1986), Aoun, Hornstein, Lightfoot and Weinberg (1987), Rizzi (1990), and Chomsky and Lasnik (1993) for discussions on this condition.

¹³ We revised the name of the condition, since it is not clear to us that the notion "government" plays any role in the formulation of this condition. See Bošković (1993) and Saito (1992) for relevant discussion. As it is not clear that this condition should apply to "intermediate traces," it may be necessary to construe it as a condition on empty categories in the tail position of a chain.

¹⁴ This seems incompatible with Rizzi's (1990) analysis of the *that*-trace effect, adopted in Chomsky and Lasnik (1993), and also with the analysis suggested in Lasnik and Saito (1992). For an alternative analysis of the *that*-trace effect, see, among others, Takahashi (1993).

¹⁵ It seems clear that the Japanese counterpart of *whether/if* occupies the Comp position. The language is head-final/Spec-initial, and *kadooka*, which corresponds to *whether/if*, follows the complement IP. As shown in Takahashi (1994), *kadooka* does not license sluicing, as expected.

¹⁶ See Takahashi (1993) for a detailed discussion, as well as an extension, of this principle.

¹⁷ See Bošković (1994) for much relevant discussion. It is reasonable to suppose that (75a) should be derived from a general principle of economy. Chomsky's "no superfluous steps" seems to be a natural candidate.

¹⁸ As discussed in Huang (1982) and the references cited in the text, extraction of an adjunct out of a DP uniformly results in a strong violation. The following example from Stowell (1989) illustrates this fact:

- (i) *By whom₁ did Frans sell [a picture t₁]?

Once a starred trace is created in the derivation, we expect a strong violation, since the chain is a uniform A'-chain and hence no trace can be deleted. The desired result is obtained if we assume, as discussed in Section 2, that adjuncts, as opposed to arguments, cannot move to DP Spec. This will force the movement to skip a possible landing site, i.e. DP Spec, and create a starred trace.

¹⁹ The DP Spec position is a possible landing site for the NP, according to (75), since the resulting chain link will be of length 1: the \bar{D} node dominates the NP and excludes the DP Spec position.

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