Backward Anaphora

Hyeran Lee

Institute of continuing Education Kyung Hee University, Suwon #1 Seocheon-ri, Giheung-up, Yongin-si, Kyunggido, South Korea 449-701 ghyeran@hotmail.com

Abstract

This paper aims to account for the backward anaphora that seem to be against the c-command requirements in the anaphor-antecedent relations. It was claimed that the binding conditions should apply at LF for the backward binding cases involving phych-verbs and causatives. Under the recent development of minimalism where the concept of levels disappears to adopt a cyclic derivation, the data that show the backward binding phenomena have not been discussed in the area of the binding theory. In this paper, I argue that the backward binding cases can be incorporated into the core binding phenomena with the general assumptions on the thematic prominency. It is discussed how the dependency between NPs involving backward anaphora is determined by the thematic prominency. The Agree operation takes place between the probe T and the goal with the uninterpretable u[a] and [prominent] feature, by which an anaphor is valued, producing a proper interpretation.

1 Introduction

The binding theory has been discussed as a dependency relation between NPs. It attempted to clarify how an anaphor is related with its antecedent. The different binding conditions were proposed by Chomsky (1981) to explain the different phenomena of the binding facts. This has been developed into the LF-movement theory that accounts for both the long-distance anaphors and locally bound anaphors in a unified way (Chomsky 1986, Battistella 1989, Cole, Hermon, and Sung 1990, Pica 1991 and Cole and Wang 1996). Along the same line, a covert anaphor movement is changed into feature checking with minimalism (Chomsky 1992, Yang 1994, 1996, Lee 1997, Kim 1999). Another proposal was made by Reinhart and Reuland (1993) based on the semantic properties of predicates. Their work is meaningful in that not only NPs but also predicates come into play in the binding phenomena.

These approaches could not provide an explanation for the residue of the anaphoric phenomena, i.e. backward anaphora, but only partially account for core constructions. In this paper, I will focus on the backward anaphors that have been a problem in the area of the binding theory. To deal with such cases, I claim that the dependency relation between NPs is determined by the thematic prominency.

2 **Previous Studies**

The c-command requirements in the binding relations are essential to form the binding theory. In Chomsky (1981), all the binding conditions were defined by the word "bound" and the word "bound" was defined by the notion of c-command. It has thus been claimed that the NPs that are not bound within the local domain or do not satisfy the c-command requirements are not anaphors but something else. McCawley (1972) and Katada (1991) argue that they are reflexive pronouns. Clement (1975), Maling (1984), Sells (1987) and Reinhart and Reuland (1989; 1993) argue that they are emphatic pronouns or logophors which make reference to the individual whose speech, thought, or feelings are reported to other individuals. According to this line of research, the relaxation of the strict c-command and locality might be due to the fact that no syntactic binding is involved.

If they are not anaphors, it should be accounted for why there is a referential dependency at all. If they are actually pronouns, the question is why they have a reflexive form different from a pronoun. Is the structural and formal explanation not possible at all for such anaphors? It is undeniable that there are anaphors that should be accounted for by the rules of discourse. However, It is also required to find a unified syntactic rule, because there is an obvious syntactic dependency between the anaphor and the antecedent from large amounts of core data. Furthermore, if we could find a syntactic account for non-core anaphors, which do not seem to belong to the syntactic binding, better generalization on the binging facts could be obtained.

Anaphors contained in psych-verb and causative constructions are in an arguable boundary between logophors and anaphors. Belletti and Rizzi (1988), instead of putting them aside as involving logophors, claimed that the principle A applies at D-structure for those constructions.

(1) Questi pettegolessi su dei sei preoccupano Gianni, piudi ogni altra cosa.

'These gossips about himself, worry Gianni, more than anything else (Belletti and Rizzi (1988))'

(2) [[preoccupano [Gianni_i]]Questi pettegolessi su dei se_i]]piudi ogni altra cosa.

Belletti and Rizzi said that both the subject and object are in the VP complement position at D-structure as in (2). It was claimed that the experiencer is in the higher position than the theme at D-structure, and thus it could properly bind the theme subject, satisfying the c-command requirements. With the elimination of D-structure in minimalism, their analysis should be reanalyzed, adopting the concept of a thematic hierarchy only.

Other linguists such as Giorgi (1991), Reinhart and Reuland (1993), Reuland and Koster(1991), Hellan(1991), Everaert(1991, 1996), Katalin (1991), and Pollard and Sag (1992) argued that the binding theory should make crucial reference to the thematic structure in an effort to explain the different binging phenomena across languages.

Grimshaw (1990) proposed that the relative prominence of an argument is determined in both the thematic and the aspectual dimension. The psych-verb constructions were claimed to involve mismatch in those dimensions, which made the most prominent experiencer object antecede the theme subject, yielding backward anaphora.

The previous analyses that argue for the need of a thematic hierarchy are not against Chomsky (2001) in that he proposes to adopt a pure configurational theta-theory, eliminating s-selectional features or theta-grids distinct from the semantic properties of head. (H.B.Lee (2001: Presentation at the Korean Generative Grammar Circle. Chomsky (2001) said that the C-I system requires that SEM express a variety of semantic properties, which include at least argument structure (Chomsky 2001:7). He also said that theta-theoretic properties depend in part on configuration and the semantic properties SEM (H) of the head (label) (Chomsky 2001:8). By H.B.Lee's interpretation, a theta-role is determined by the structure, so that s-selectional features or theta-grids are dispensable. I will adopt the configurational theta theory from Chomsky (2001) to analyze the backward anaphora. What follows are the detailed proposals for this paper.

3 Assumptions and Proposals

Within the framework of Chomsky (1998, 2001), I assume that anaphors have an uninterpretable u[a] feature. This assumption is natural, since anaphors cannot be interpreted unless they are bound to antecedents due to their lack of references. The issue here is how the binding process takes place. The phi-features of Probe activate the u[a] feature so that the u[a] feature should undergo Agree with the phi-features of Probe. By Agree the u[a] feature is eliminated, which provides interpretation of the anaphor. See the following examples.

(3) She_i hates herself_i.

(4) *She_i hates himself_i

(5) *She_i hates themselves_i

In (3), the u[a] feature in *herself* undergoes Agree with phi-features of T^1 , providing a proper interpretation. The sentence (4), however, crashes, since the u[a] in *himself* does not match with phi-features of T in gender. In the same way, the sentence (5) also crashes due to feature mismatch between the goal and the probe in number. With this assumption in mind let us see the backward anaphor in Italian in the minimalist's viewpoint.

4 Psych-verb Constructions by Agree

The following example is repeated from (1).

(6) Questi pettegolessi su dei sei preoccupano Giannii piudi ogni altra cosa.

'These gossips about himself_i worry Gianni_i more than anything else (Belletti and Rizzi (1988)'

The sentence (6) had been an example that the binding condition applied at D-structure. With the elimination of D-structure and S-structure within minimalism, the above construction can be explained by the Agree operation. I propose that the a derivation is formed after TRANSFER by the relative prominence of an argument (Grimshaw 1990) as follows:

(7) [Gianni [Questi pettegolessi su dei se preoccupano piudi ogni altra cosa]].

Gianni could be located at the outer spec of T, since the multiple specs are possible in minimalism. Though an NP can move to a place technically, there should be a motivation why this is so. I propose that prominency checking should take place at LF interface for Full Interpretation. The feature [prominent] on T is usually checked by an external argument. In case of psych-verb and causative constructions, however, Experiencer and Causee are fronted at LF to check the feature [prominent] on T. It is natural, since Experiencer and Causee are thematically higher than theme and Causer respectively. In (7), *Gianni* undergoes Agree to check off the [prominent] feature on T, and at the same time, the u[a] feature undergoes Agree on T by phi-feature match.²

A question arises of why the feature [prominent] on T is necessary. This feature could be justified by the focused constructions. Free scrambling does not bring the focusing effects, but in many languages fronting of a phrase carries special semantic properties with the focusing effects. Such an overt movement is induced by the [prominent] feature checking in our term or the [+Focus] feature checking. Chomsky (2001) claims that the semantic effects at SEM are formed by external merge at the base structure and internal merge (displacement) before TRANSFER and after TRANSFER. A focused construction is involved with an overt displacement before TRANSFER, showing the semantic effects at SEM. The scopal properties are obtained by a covert displacement after TRANSFER. In addition, I would like to point out that the [prominent] feature checking proposed in this paper is also involved with a covert displacement after TRANSFER. I provide this explanation to show that the prominency checking is necessary not only in the binding area but in the other areas too and it should be done during derivation, since it has semantic effects. Now let us look at the psych-verb constructions in English.

(8) Each other_i's pictures frighten the girls_i

- (9) [the girls [each other's pictures frighten t]
- (10) A picture of himself annoyed the politician.
- (11) [the politician [a picture of himself annoyed t]

¹ As a probe, T locates the u[a], while the T locates the subject NP to undergo Agree to check EPP, Case, and phi-features. By the phi-feature checking, all other uninterpretable features such as EPP on T, Case on the subject NP, and u[a] raised onto T are eliminated.

 $^{^{2}}$ It is argued that multiple checking or multiple Agree is possible in minimalism (Chomsky 1998, 1999). Yang (2001) also argues for multiple Agree such as the primary Agree and secondary Agree.

After TRANSFER, the feature [prominent] on T, T being the probe, activates the goal. The activated feature [prominent] on the Experiencer undergoes Agree on T, making (9) as a proper derivation. The probe T locates not only the [prominent] but the u[a]. The u[a] feature on the anaphor also undergoes Agree on T by phi-feature match. The [prominent] is eliminated against [prominent] and the u[a] is eliminated by phi-feature match. The same explanation applies to (10) and (11). The Korean examples are presented below.

5 **Causative Constructions by Agree**

In Korean, there are no psych-verb constructions in parallel to the English cases, since they are expressed with the causative formative. Below is shown the Korean causative constructions.³

- (12) caki_i-uy kwake-ka John_i-ul kwolop-hi-ess-ta
 - self-GEN past-NOM John-ACC annoy-CAUS-PAST-ta

'self_i's past annoyed John_i'

(13) After TRANSFER: [John-ul [caki-uy kwake-ka t kwolop-hi-ess-ta]]

If we look at (13), the prominency checking takes place on T against the Causee John by a covert displacement after TRANSFER. The u[a] feature undergoes Agree on T by phi-feature match, eliminating the uninterpretable feature.

(14) *Johni-uy kwake-ka cakii-ul kwolop-hi-ess-ta

John-GEN past-NOM self-ACC annoy-CAUS-PAST-ta 'John_i's past annoved self_i'

(15) After TRANSFER: [caki-ul [John-uy kwake-ka t kwolop-hi-ess-ta]]

In contrast to (13), (15) cannot produce a reading where caki takes John as an antecedent. The LF structure in (13) shows why such a reading is not possible. While caki undergoes Agree on T due to the [prominent] feature checking, caki's u[a] feature cannot be checked off, since there is no thematically prominent referential NP than caki itself. If we embedded the above sentence into the main clause, caki now can delete its u[a] by Agree with the thematically higher NP Tom as below.

(16) Tom_i-i [John_i-uy kwake-ka caki_{i/*i}-ul kwolop-hi-ess-ta-ko]

Tom-NOM John-GEN past-NOM self-ACC annoy-CAUS-PAST-ta-COMP malha-yss-ta say-PAST-DEC 'Tom_i said that John_i's past annoyed self_{i/*i}'

(17) After TRANSFER: Tom_i-i [caki_{i/*j}-ul [John_j-uy kwake-ka t kwolop-hi-ess-ta-ko]] malha-yss-ta

Causative Constructions More Embedded 5.1

If we embed (12) into the main clause, the antecedent becomes suddenly changes from the Experiencer to the main clause subject, since the main clause subject NP is the most prominent referential NP in the sentence. See below.

(18) Tom_i-i [caki_{i/i}-uy kwake-ka John_i-ul kwolop-hi-ess-ta-ko] Tom-NOM self-GEN past-NOM John-ACC annoy-CAUS-PAST-DEC-COMP malha-yss-ta say-PAST-DEC

³ The discourse caki can refer to the discourse topic that is not present within a sentence. The discourse caki is beyond our range of research, and thus not our concern here.

'Tom_i said that self_{i/j}'s past annoyed John_j'

(19) After TRANSFER: Tom,-i [Johnj-ul [caki_{i/j}-uy kwake-ka t kwolop-hi-ess-ta]] malhayss-ta

The sentence (18) may provide both readings; taking both John and Tom as caki's antecedents, which is a characteristics of long-distance binding. However, the most prominent NP *Tom* is preferred over *John* as an antecedent. This is another piece of evidence that anaphor binding is related with the prominency checking.

The English psych-verb constructions can be embedded to the matrix clause as below.

(20) A picture of himself_i annoyed the politician_i

(21) John_i said that a picture of himself_{i/i} annoyed the politician_i

The anaphor *himself* in (21) is bound forward and backward which seem to be very unusual. But if we posit two possible derivations after TRANSFER as follows, such a binding is explainable.

(22) [John_i said that [a picture of himself_{i/i} annoyed the politician_i]]

(23) [John said that [the politician [a picture of himself annoyed t]]

(22) is a possible derivation after TRANSFER, since the [prominent] is checked by the matrix T. (23) seems to be another possible derivation, since the [prominent] is additionally checked within the embedded clause. I propose that these two derivational options are needed for "the diverse semantic properties at SEM" (Chomsky 2001). Binding with *John* takes place in (22), while binding with *the politician* is made in (23). The matrix T, as a probe, activates the u[a] on the picture-NP, undergoing the Agree operation in (22). The [prominent] feature does not have to be mentioned for (22), since it was already checked by the matrix subject *John*. The embedded T in (23) activates the u[a] and the [prominent] on the picture-NP to undergo the Agree operation.

Our assumptions are now summarized as follows.

(24)

- i) Anaphors have an u[a] feature
- ii) The u[a] feature should be eliminated by the Agree operation.
- iii) The antecedent should have a thematic prominency for the u[a] feature to be eliminated.
- iv) The anaphoric feature [a] cannot co-occur with the [prominent] feature, prohibited at the base generation.
- v) The thematic prominency is structurally noticed after TRANSFER.

These assumptions are not newly introduced into the grammar except (i). (24i) is the assumption that I posited to account for the binding phenomena. (i) is not unnatural, since the anaphor cannot be interpretable due to the lack of references, unless it find a way to get interpretation. (ii) is more than convincing, since the Agree operation is a general and unique operation within the framework of minimalism. (iii) and (iv) are natural requirements at the base generation, since an NP without references cannot have prominency at SEM. (v) is also natural, since if something is prominent or focused at SEM, it should be noticed at a certain point through derivations.

5.2 Causative Constructions Involving a Relative Clause

Causative constructions involving a relative clause follow as below.

(25) caki_i-ka iki-ess-ta-nun sasil-i John_i-ul

self-NOM win-PAST-DEC-COMP fact-NOM John-ACC

kippu-key ha-yss-ta
please-CAUS do-PAST-DEC
'The fact that self won pleased John'
(26) After TRANSFER: [John_i-ul [caki_i-ka iki-ess-ta-nun sasil-i t'kippu-key ha-yss-ta]]

In (25), *caki* is bound backward to John. This is against c-command requirements between two NPs, inducing a lot of problems in the binding theory. The previous discussions couldn't handle this case. But if we assume the [prominent] feature on T, *John* is activated to undergo Agree on Probe T. And then the u[a] feature of *caki* also undergoes Agree on T by phi-feature match as in (26).

(27) * John_i-i iki-ess-ta-nun sasil-i caki_i-ul John-NOM win-PAST-DEC-COMP fact-NOM self-ACC kippu-key ha-yss-ta please-CAUS do-PAST-DEC 'The fact that John_i won pleased self_i'
(28) A fear TP ANSEEP: Isolai [John i ibi case to run casil i t himme have been to the

(28) After TRANSFER: [caki [John-i iki-ess-ta-nun sasil-i t kippu-key ha-yss-ta]]

The binding between *John* and *caki* cannot be obtained in (27). If we apply the prominency checking to (27), *caki* should be activated to undergo Agree on T where its [prominent] feature is checked off, but its u[a] feature cannot be eliminated, since *caki* has no thematically prominent referential NP for its feature to undergo Agree as seen in (28).

6 Expletives and Psych-verbs

Expletive constructions containing an anaphor have been discussed in H.-R Lee (2001) under the minimalist framework, using the assumption on the u[a] and the Agree operation. The following sentence is grammatical, since the u[a] is valued and eliminated by the Agree operation.

(29) They_i said that it is unlikely that pictures of each other_i are on sale.

(30) They, think that it is a pity that pictures of each other, are hanging on the wall

A question arises of the following sentence. The sentence (31) below is wrongly predicted as a correct sentence, since *each other* can be bound to the matrix *they* by the Agree operation.

(31) *They think that it surprised each other that they won

(32) *John thinks that it surprised himself that he won

Based on the native speakers' judgment⁴, the above sentences are not acceptable against our prediction. The anaphor in (31) should be bound to the matrix subject, since the u[a] feature should undergo Agree on the matrix T. (32) should be correct with the same reason, but it is not. Now how can we block to generate such wrong sentences within our analysis?

I argue that problems are not on our analysis, but are involved with the structure having a psych-verb "surprise". The expletive constructions at issue contain psych-verb constructions. The derivation after TRANSFER should be the one for psych-verb constructions. See the following.

(33) *They think that [each other] it surprised t that they won

(34) *John thinks that [himself] it surprised t that he won

In the above constructions, *surprise* belongs to psych-verbs. The anaphor itself is in the higher position thematically as an Experiencer object, *it* being the lower theme, which makes the whole

⁴ Thanks go to Tony Anderson, Dianne Ellis, Gerald de la Salle, and native English speakers of our English program.

sentence ungrammatical. It seems that anaphors cannot be an Experiencer object in psych-verb constructions with the expletive theme subject, since they can never be bound to the theme subject that is the only possible antecedent in those constructions. Other examples involving psych-verbs contained in *it*-constructions (Chomsky 1981) are given below.

(35) *They think that it bothered each other that...

(36) *They think that it bothered themselves that...

The ungrammaticality in (35) and (36) is due to the base generation where *bother* cannot take the anaphor Experiencer object with the expletive theme subject. However, the following sentences vary in the degree of grammaticality.

(37) They bothered each other
(38) They surprised each other
(39)? They concerned each other
(40)? Politicians depressed each other
(41)? Politicians worried each other
(42)? *John bothers himself
(43) John surprised himself
(44)? *John depressed himself
(45)? *John worried himself
(46)? * John fears himself

By native speakers' judgment,⁵ (37), (38), and (43) are uncontroversially ok, but the rest of data varies in the degree of acceptability. In other words, all the sentences above are not totally ungrammatical to native speakers, though many of them sound strange. These examples are in contrast to the examples with expletives that are not acceptable at all. It means that when the theme subject is a human NP, the Experiencer anaphor seems to be bound to the NP, and when the theme subject is expletives, picture-NPs, or anaphors, the Experiencer object seems to save the sentence by the prominency checking. My research is not complete in this sense, requiring further study on this contrast.

7 Conclusion

Introduction of the notion of prominency is not new in the area of binding theory. In Chomsky (1981), the notion of SUBJECT is also related with prominency. He said that the notion SUBJECT accords with the idea that the subject is the most prominent nominal element in some sense, taking INFL to be the head of S (Chomsky 1981:209). He handled the long-distance binding phenomena with the notion of accessible SUBJECT. I argued in this paper that the long lasting idea of prominency should be structurally noticed and checked by Agree after TRANSFER and the anaphoric feature u[a] involving psych-verb and causative constructions take advantage of the prominency checking, being bound to the prominent and referential NP in the higher position.

In conclusion, psych-verb and causative constructions that were not included in the core data of the binding theory can be accounted for with the anaphoric feature checking and the prominency checking within the recent development of minimalism. Positing the u[a] feature of the anaphor is not unnatural, since the anaphor with no referential features should do something to satisfy the Full Interpretation at SEM. Positing the [prominent] feature is not unnatural either, since the prominency should be noticed at SEM not only for the anaphor binding but for other constructions such as focused constructions that induce a change in meaning.

⁵ Thanks go to Tony Anderson, Dianne Ellis, Gerald de la Salle, and native English speakers of our English program.

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