

English Reflexives as LF-Affixes

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The purpose of this study is to account for the binding properties of English anaphors within the Minimalist Theory (Chomsky 1992). We assume that anaphors have defective referential features to be checked off. These defective referential features of anaphors are checked off by AGRs which share all the features with NPs in SPEC of AGRsP. We also assume that anaphors are LF-affixes, being affixed to predicates which take them as their arguments. When an anaphor is affixed to its predicate, for example, V, anaphor+V moves to AGRs to get phi-features and tense features of V checked off. In this position, the anaphor gets its defective referential feature checked by AGR. In this way, the process of binding is captured by the defective referential feature checking. By assuming that anaphors with defective referential features are LF-affixes, we can subsume English anaphora under the Principle of Full Interpretation and Economy without any other independent condition for anaphors.

1. Introduction

Pollard & Sag (1992), Reinhart & Reuland (1993) argue that English anaphors are divided into local and non-local anaphors. They plausibly show that only local anaphors are subject to syntactic binding constraints while non-local anaphors are exempt from syntactic binding constraints, being subject to discourse principles.¹

Following the line of Reinhart & Reuland, and Pollard & Sag, we will assume that local anaphors are only subject to these constraints. Thus, we will focus on binding properties of local anaphors. In the following section,

¹ Lebeaux (1984) and Bouchard (1984) already noted that local and non-local anaphors show different binding properties. Non-local anaphors usually allow split antecedents, non-local antecedents, free variation with pronouns, Non-sloppy reading, and do not require c-commanding antecedents while local anaphors require c-commanding local antecedents, complementary distribution with pronouns and do not allow split antecedents nor non-sloppy reading.

we will suggest a new definition of an anaphor to capture the binding properties of English local anaphors within the Minimalist Theory (Chomsky 1992). Given this definition, the binding properties of English local anaphors will be accounted for by general principles of the Minimalist Theory, i.e., Principle of Economy without assuming any binding conditions.

2. A Feature Checking Approach

2.1. LF-Affix Anaphors and Defective Referential Feature Checking

English anaphors have phi-features such as person, number, gender, but they have no independent references. Thus, if anaphors do not get their references, they will not be interpretable due to lack of references. NPs without references have no meaning. To get an appropriate interpretation, anaphors should get references. Let us suppose that all NPs must have not only phi-features but also referential features.² R-expressions like John or the boys have both inherent phi-features and referential features. Anaphor like himself has inherent phi-features but defective referential feature. Unlike the referential feature of R-expression, the referential feature of an anaphor is defective in that it is not specified. Thus, the defective referential feature of an anaphor must be specified by checking.³ Anaphors do not have meanings until the defective referential features are checked.

Which functional category checks off the defective referential features of anaphors? It may be AGR since AGR is generally assumed to share all the features with an NP in SPEC of AGRP. Hence, an anaphor moves and adjoins to AGR, getting its defective referential feature checked off by AGR.⁴

² Huang & Tang (1991) also assume that all NPs have phi-features and referential features.

³ The anaphor's defective referential feature checking is different from other morphological feature checking in that the defective referential feature is specified by checking, while the other morphological feature is to compare the checker's specified feature with the checkee's.

⁴ Chomsky (1992) argues that the reference of an anaphor is identified not by checking but by interpretation rule like (i):

- (i) If α is an anaphor, interpret it as coreferential with a c-commanding phrase in D.

In this point, Chomsky's binding theory is different from ours.

Now, the remaining problem is how anaphors move to AGR. We assume that an anaphor is an LF-affix, being affixed to a predicate which takes it as an argument.⁵ Reinhart & Reuland (1993) define the syntactic arguments of the predicate P as the projection assigned theta-role or Case by P and its external argument. Following this idea, we assume that an anaphor is affixed to a predicate which assigns theta-role or Case to it, or which takes an anaphor as its external argument. If an anaphor with [+LF-Affix] is not affixed to its predicate, it will violate the following Affix Filter (1):

(1) Affix Filter

An element with [+Affix] must be supported by an element with [-Affix]. (Yang 1994)

When an anaphor is affixed to its predicate, for example, V, the anaphor +V moves to AGRs getting tense and phi-features of V checked off. In this position, the anaphor gets its defective referential feature checked by AGRs, which shares a referential feature with an NP in SPEC of AGRsP. Under this assumption that anaphors have defective referential features to be checked off, we can account for English anaphor binding in terms of the referential feature checking process within the Minimalist Theory. We do not need any independent binding condition for an anaphor. All that is needed is the following definition of an anaphor.

(2) Definition of an Anaphor

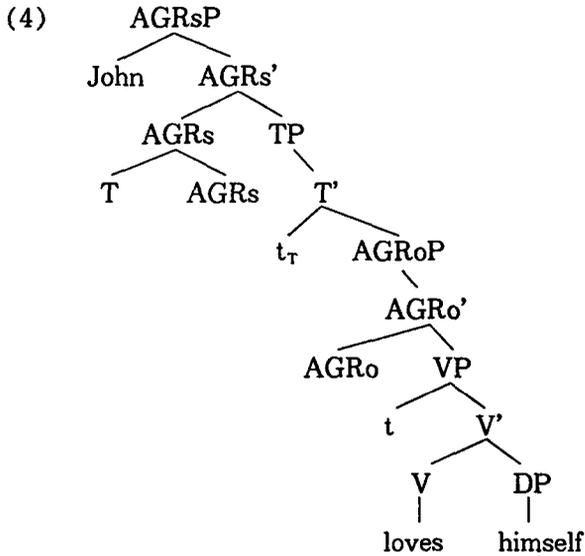
An anaphor has a defective referential feature.

⁵ Reinhart and Reuland (1989, 1991) take SELF to be a two place identity relation. One of the two arguments is saturated by the pronoun-determiner. The other argument is saturated through anaphor-raising to the predicate. The SELF-anaphor moves to the predicate and absorbs the argument position which is assigned to a SELF-anaphor. Thus the unsaturated argument is saturated. As Safir (1993a, b) notes, when the anaphor absorbs the argument position of the predicate, the arguments of SELF map onto a pair of arguments of some other relation. This means that the identity relation of SELF is superimposed on the relation R of the predicate. Given Reinhart and Reuland's, and Safir's ideas, it is not implausible that an anaphor with [LF-Affix] is affixed to a predicate which takes it as an argument. Safir also assumes that an anaphor is an LF-affix. In English, there are, indeed, verbs which SELF is affixed to, for example, *self-feed*, *self-actualize*, *self-destructs*, *self-ignites*, *self-pollinates*, *self-sow*. These verbs imply that SELF can be affixed to its predicate before LF.

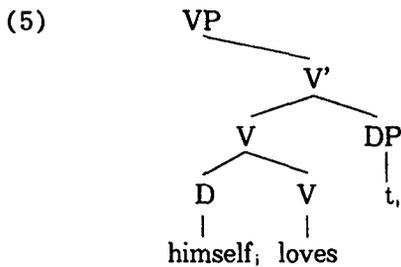
Given the assumption that an anaphor is an LF-affix, affixed to a predicate which takes it as an argument, there are some advantages. One advantage is that we can reduce the cost of derivation. Let us see the following example (15):

(3) John_i loves himself_i.

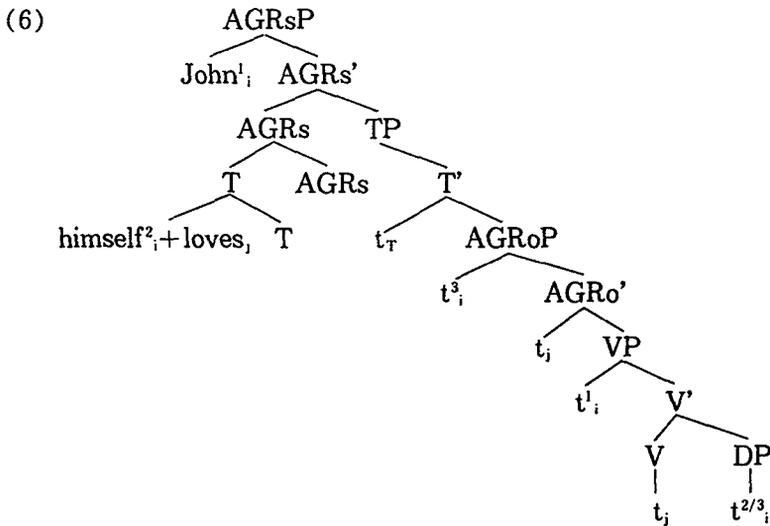
(3) has the following pre-SPELL-OUT structure (4):



At LF, *himself* is affixed to *loves* which takes it as an argument, as in (5).

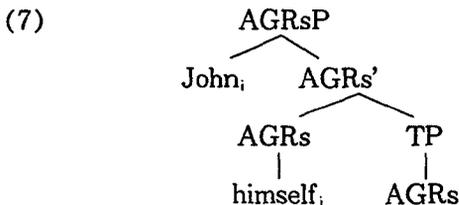


himself+loves raises to AGRs for the verb's tense and phi-feature checking, as shown below:



In (6), *himself* gets its defective referential feature checked by AGRs. After *himself* is affixed to *loves*, the trace of *himself* raises to SPEC of AGRoP for case checking.⁶ Finally, *himself* is interpreted as *John* via the referential feature checking.

Then, now suppose that an anaphor is not an LF-affix, not affixed to its predicate. Lasnik (1993) indeed argues that in (4), *himself* undergoes head-movement to AGRs to get its dependent phi-features checked off as in (7), without being affixed to the predicate.



Under Lasnik's analysis, anaphors separately move to AGRs irrespective of V-to-AGRs movement. Compared with Lasnik's analysis, our analysis is more economical in that under our analysis, anaphors do not have to move separately to AGRs. The verb which an anaphor is affixed to carries the anaphor to AGRs. Therefore, by assuming that an anaphor is an LF-affix,

⁶ *himself* undergoes both head-movement to V and XP-movement to SPEC of AGRoP. Chomsky (1994) shows that an item like clitic can be both an X⁰ and an XP.

we can spare the separate anaphor-to-AGR movement.

Another advantage is that we can capture the local binding property of English anaphors in terms of the Principle of Economy without assuming binding domains. Under our analysis, an anaphor is affixed to its predicate and the predicate to which an anaphor is affixed moves to AGR for its tense and phi-feature checking by incorporation. After feature checking is done, the predicate does not move any longer. If the predicate moves further, it will violate the Principle of Economy since it undergoes unnecessary movement. An anaphor should get its referential feature checked off within AGRP immediately dominating a predicate to which it is affixed. Therefore, under our analysis, anaphors with [+LF-Affix] always take coarguments of predicates as their antecedents. In the next section, we will see in detail how our referential feature checking approach accounts for the local binding property of English anaphors.

2.2. The Specified Subject Condition

How can we account for the Specified Subject Condition (SSC)?⁷ The idea of the SSC is that an anaphor should be bound by the nearest subject. Look at the following example (8):

(8) *John_i thinks that Mary_j loves himself_i.

In (8), *himself* is affixed to *loves* and *himself*+*loves* raises to the embedded AGRs to get its features checked off. However, the anaphor's defective referential feature is not checked off since the phi-features of the antecedent are not compatible with those of the anaphor. Let us suppose *himself*+*loves* moves to the matrix AGRs to get the anaphor's defective referential feature checked, as in (9).

⁷ The Specified Subject Condition is as follows:

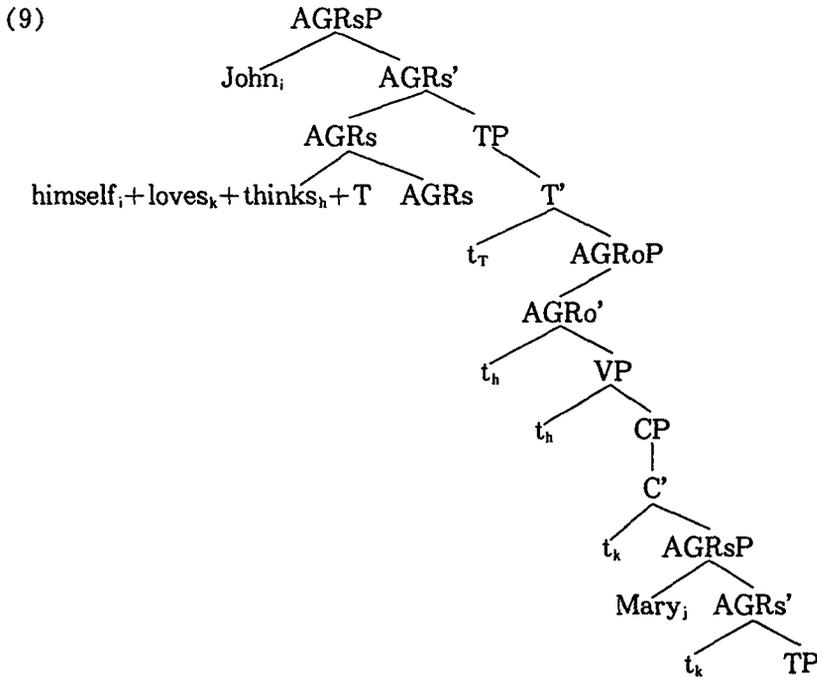
(i) Specified Subject Condition

No rule may relate X and Y in the structure

...X...[α ...Z...W₁YW₂...] α ...

(or ...[α ...Z...W₁YW₂...] α ...X...)

where Z is the subject of W₁YW₂. (Chomsky 1973)



In (9), the anaphor gets its defective referential feature checked by the matrix AGRs. However, this derivation violates the Principle of Greed⁸ since all the features of the verb are already checked off in the embedded AGRs and hence the verb, *loves*, does not need to move any longer.

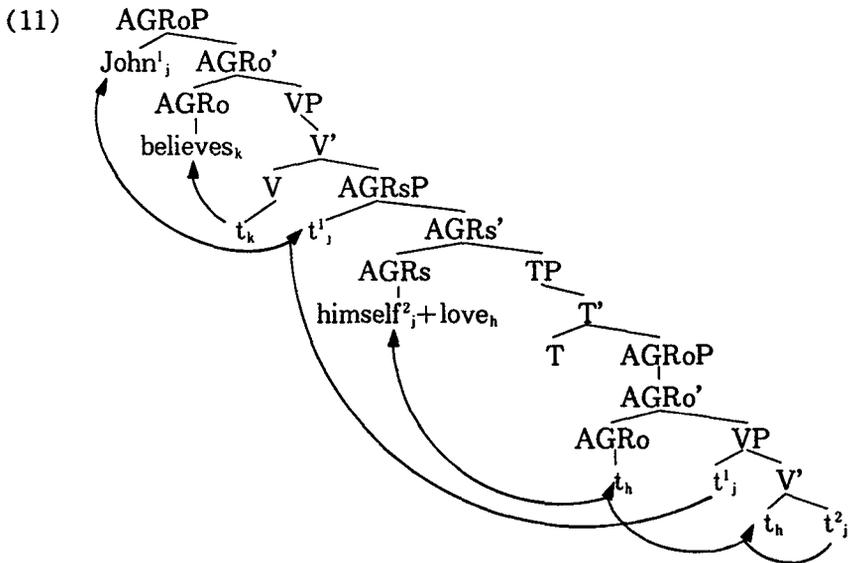
Let us consider the SSC effect in ECM constructions (10):

- (10) a. Mary_i believes John_j to love himself_j,
- b. *John_i believes Mary_j to love himself_i.

In the Minimalist Theory, every structural Case is checked off via SPEC-head agreement. Exceptional Case Marking by V is now interpreted as raising of NP to the SPEC position of the AGR-phrase dominating V. Thus, the embedded subject *John* in (10a) moves to SPEC of the matrix AGRoP for CASE checking as in (11).

⁸ The Principle of Greed is as follows:

(i) Greed: Operate only for your own benefits. (Chomsky 1992)



Then, *himself* is affixed to *love* and *himself+love* raises to the embedded AGRs, getting the anaphor's defective referential feature checked by the embedded AGRs which shares a reference with the trace of *John*, as shown above. Chomsky (1992) assumes that the trace left behind is a copy of the moved element.

In (10b), *Mary* moves to SPEC of the matrix AGRoP for CASE⁹ checking. *Himself* is affixed to *love* and *himself+love* moves to the embedded AGRs. However, the anaphor fails to get its referential feature checked since the phi-features of *Mary* is incompatible with those of the anaphor. If *himself+love* moves to the matrix AGRs, it will violate the Principle of Greed. Assuming that an anaphor is an LF-affix, we can account for the SSC effect as a case of the violation of the Principle of Greed.

2.3. The Tensed S Condition

Let us now consider the Tensed S Condition (TSC).¹⁰ The idea of this

⁹ CASE consists of phi-features and case feature.

¹⁰ The Tensed S condition is as follows:

(i) Tensed S Condition (TSC)

No rule may relate X and Y in the structure

...X...[α ...Y...] α ...(or...[α ...Y...] α ...X...)

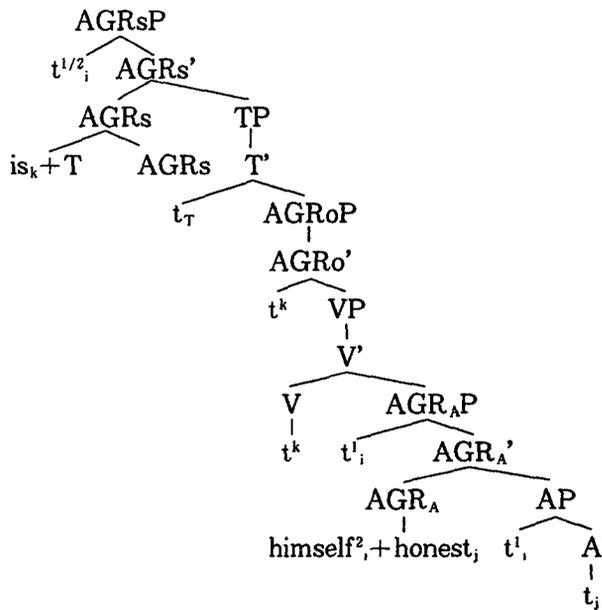
where α is a tensed clause. (Chomsky 1973)

condition is that an anaphor may not be the subject of a tensed clause. The following sentences (12a, b) are ungrammatical since they violate the TSC:

- (12) a. *Himself is honest.
- b. *John_i thinks (that) himself_i will be praised t_i.

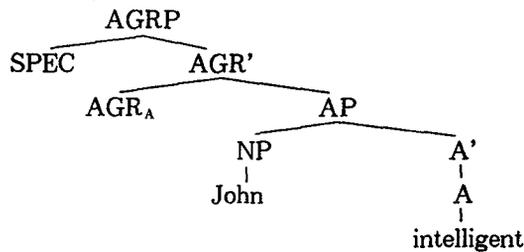
In (12a), *himself* is an external argument of the predicate, *honest*. Thus, at LF, *himself* is affixed to *honest*¹¹ and *himself*+*honest* moves to AGR, as in (13a).

(13) a.



¹¹Chomsky (1992) extends the AGR hypothesis to predicate adjectives, assuming AGR_A as in (i).

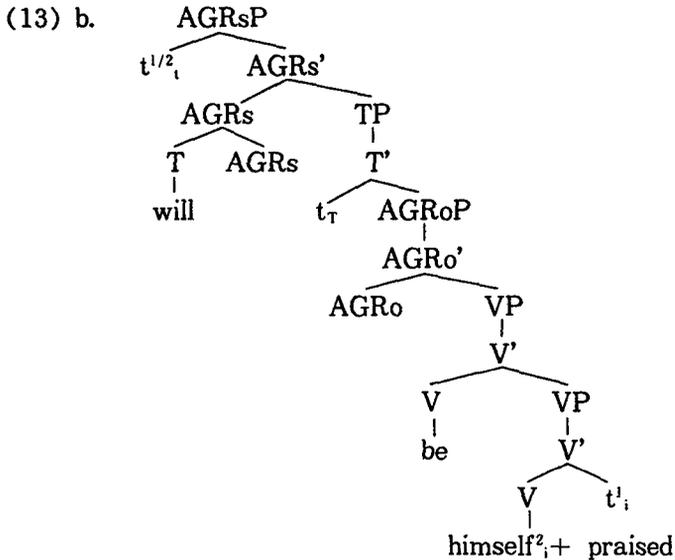
- (i) a. John is intelligent.
- b.



According to Chomsky (1992), in (i) raising of NP to SPEC and A to AGR_A creates the structure for NP-adjective agreement internal to the predicate phrase.

However, in this position, the anaphor does not get its referential feature checked by AGR_A since AGR_A shares a defective referential feature with the trace of *himself* in SPEC of AGR_{AP} . Thus, it violates the Principle of Full Interpretation.¹²

In (12b), *himself* is affixed to *praised*, as in (13b):



In this position, the anaphor does not get its defective referential feature checked since there is no possible referential feature checker. If *himself+praised* moves to the matrix AGRs to get its referential feature checked, it will violate the Principle of Greed. By assuming that an anaphor is an LF-affix, we can subsume the TSC effect under the Principle of Greed.¹³

¹²The Principle of Full Interpretation is as follows:

(i) Principle of Full Interpretation (FI)

Every element at the interface (=LF, PF) must be interpreted by language-independent interpretation rules of interface. (Chomsky 1992)

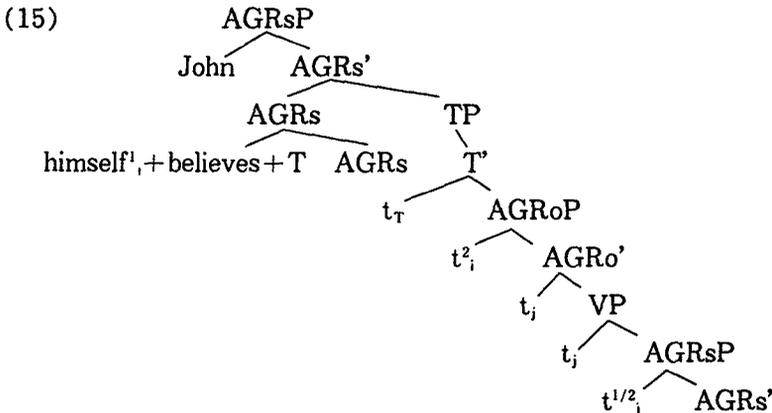
Under Chomsky's (1992) analysis, the reference of an anaphor is identified by the interpretation rule. (see fn.4) Thus, an anaphor without reference does not violate FI. It will be only regarded as gibberish by the interpretation rule. Under our analysis, however, the referential feature of an anaphor is an NP-feature to be checked off. Thus, the referential feature of an anaphor must be subject to FI.

¹³The TSC effect can be accounted for in an alternative way as an anonymous reviewer notes. If *himself* in (12a, b) undergoes lowering to the predicate, *himself* cannot bind its trace. Thus, the TSC effect results from the illegitimate movement, i.e., lowering.

While an anaphor may not be the subject of a tensed clause, it may be the subject of a non-finite clause as in (14).

- (14) a. John_i believes himself_i to be honest.
 b. John_i heard himself_i criticize Lucie_r.

Although in (14a, b) *himself* is a semantic subject of *honest/criticize*, *himself* is also an object of the verb since *believes/heard*+AGRo checks the anaphor's Case. Thus, in (14a), if *himself* is affixed to *honest* which assigns a theta-role to it, it will not get its defective referential feature checked as in (14a). Then, *himself* is affixed to *believes* which checks off anaphor's Case and *himself*+*believes* moves to the matrix AGRs, getting the defective referential feature of the anaphor checked by the matrix AGRs, as in (15).



After *himself* is affixed to *believes*, the trace of the anaphor moves to SPEC of AGRoP for CASE checking. In (14b) *himself* is affixed to *heard* and *himself*+*heard* moves to the matrix AGRs, getting the defective referential feature of the anaphor checked.

2.4. Reflexives in DPs

To account for the anaphor binding in NPs, we assume that there is an AGR in an NP. Abney (1987) shows that the noun phrase in numerous languages such as Yup'ik, Mayan, Hungarian and Turkish has one or both of the following properties. First, a possessed noun phrase agrees with its subject in the same way that the verb agrees with its subject. Second, the possessor receives the same Case as the subject of the sentence, rather than

a special genitive Case. This is schematically shown in (16) and the examples of Hungarian are represented in (17):

- (16) [_{NP} NP_{1-nom./erg.} N-agr_{1...}]
 (17) a. az en vendeg-e-m
 the I-NOM guest-Poss-1sg
 ‘my guest’
 b. a te vendeg-e-de
 the you-NOM guest-POSS-2sg
 ‘your guest’
 c. (a) Mari vendeg-e- ϕ
 (the) Mary-NOM guest-POSS-3sg
 ‘Mary’s guest’ (Abney 1987)

From this observation, Abney proposes that there is an INFL-like position in a noun phrase which the AGR occupies. Abney considers this as Determiner. Thus, we assume that this functional category D contains AGR.

- (18)
-
- ```

 DP
 / \
 SPEC D'
 / \
 D NP
 |
 [AGR]

```

Following Abney (1987), Stowell (1989), and Kim (1991), we also assume that the predicative N, which assigns theta-roles to its arguments, has a subject. It can be an overt subject as in (19a, b) or a covert subject PRO as in (19c, d).

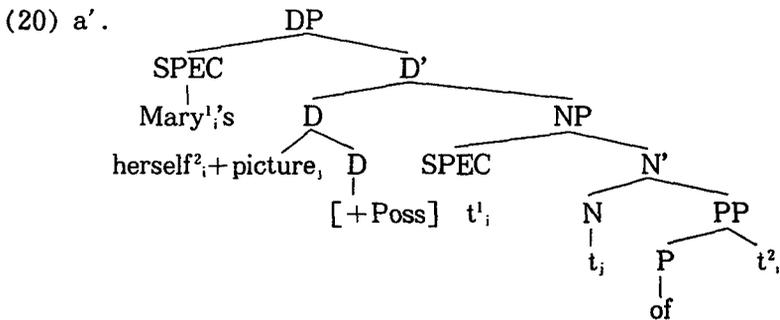
- (19) a. John likes [Mary’s picture of herself].  
       b. \*John likes [Mary’s picture of himself].

In (19a), the noun phrase ‘*Mary’s picture of herself*’ has the following pre-SPELL-OUT structure (20a):

- (20) a.
- 
- ```

      DP
     /  \
  SPEC  D'
       /  \
      D   NP
     |   /  \
    [+Poss] SPEC N'
           |   /  \
          Mary's N  PP
                |  |
               picture of herself
  
```

Before SPELL-OUT, the pronominal possessive NP occupies [SPEC NP], not [SPEC DP]. This is due to the theta-role assignment. *Mary* is assigned its theta-role from the noun, *picture*. At LF, *Mary's* moves to SPEC of DP to get its Possessive Case checked by D. According to K.H. Lee (1993), English Possessive Case is checked at LF via SPEC-head agreement. Then, *herself* is affixed to the predicate N, *picture*, and then, *herself+picture* raises to D to get its abstract phi-feature checked off, as shown below.

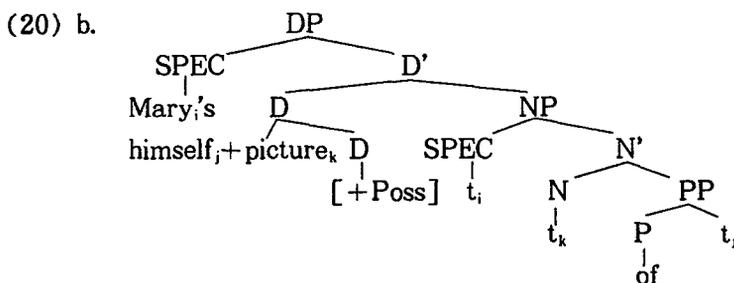


In this position, *herself* gets its defective referential feature checked by D which has the referential feature of *Mary* in SPEC of DP. Thus (19a) is grammatical.

The possibility of N-to-D raising is suggested by Longobardi (1990) and Chomsky & Lasnik (1991).¹⁴ Longobardi argues that there exist instances of N-Movement to D in the syntax of Western Romance and that the same type of movement is likely to take place only at LF in English and German.

On the other hand, in (19b), *Mary's* moves to SPEC of DP to get its possessive Case checked off. *Himself* is affixed to the predicate N, *picture*, and *himself+picture* moves to AGR, getting its phi-features checked off as shown below.

¹⁴K. H. Lee (1993) also assumes N-to-D raising. She assumes that the noun has the definiteness feature [+Def]. What appears in [SPEC NP] or [SPEC DP] depends on the definiteness of nouns. If N has [+Def], there are two possibilities: (i) when D has [+Def] and [+Poss], the possessive phrase occurs, (ii) when D does not have [+Poss], the lexical determiner the occurs. And if N has [-Def] feature, the article a or an empty D would result. When D is empty and has [-Def] feature, the noun phrase would be plural or non-countable.

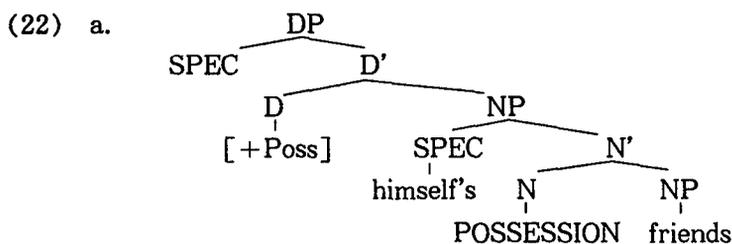


However, the anaphor fails to get its defective referential feature checked off by D since the phi-features of D are incompatible with those of the anaphor. Thus, (19b) is correctly predicted ungrammatical.

Let us consider the following contrast (21):

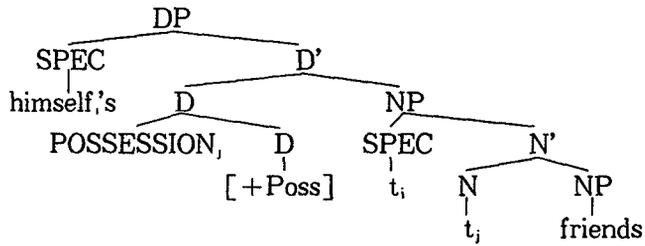
- (21) a. *John_i likes [himself_j's friends].
 b. John_i likes [his_i friends].

Chomsky (1986) argues that the noun phrase 'his friends' forms a CFC, a projection in which all thematic roles of head are realized. This entails that there is an empty predicate N, *POSSESSION*, which takes two arguments, *himself* and *friends*. Thus, the object noun phrase '*himself's friends*' has the following meaning: 'he possesses friends.' In (21a) *himself* is assigned Possessor theta role from the abstract predicate, *POSSESSION*, and *friends* is assigned Theme theta role. Thus, (21a) has the following pre-SPELL-OUT structure (22a):



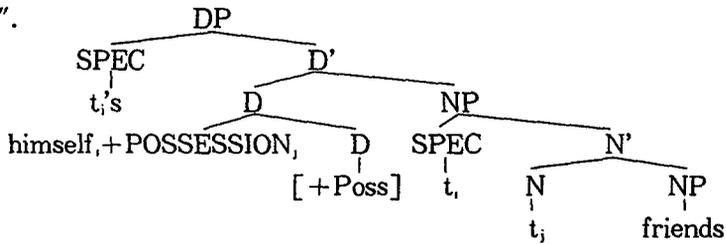
At LF, *himself's* moves to SPEC of DP to get its Possessive Case checked off. The abstract noun, *POSSESSION*, also moves to AGR, getting its phi-features checked off as shown below.

(22) a'.



In (22a'), *himself* lowers to *POSESSION*, as in (22a''), but it cannot get its defective referential feature checked off since D has no referential feature to check off that of the anaphor.

(22) a''.



Therefore, the anaphor violates the Principle of Full Interpretation. Suppose *himself+POSESSION* moves to the matrix AGRs to get the anaphor's referential feature checked off. In this case, it will violate the Principle of Greed since *POSESSION* does not have to move to the matrix AGRs. By assuming that an anaphor is an LF-Affix, we can subsume the ban on the prenominal possessive anaphor under the Principle of FI and Greed.

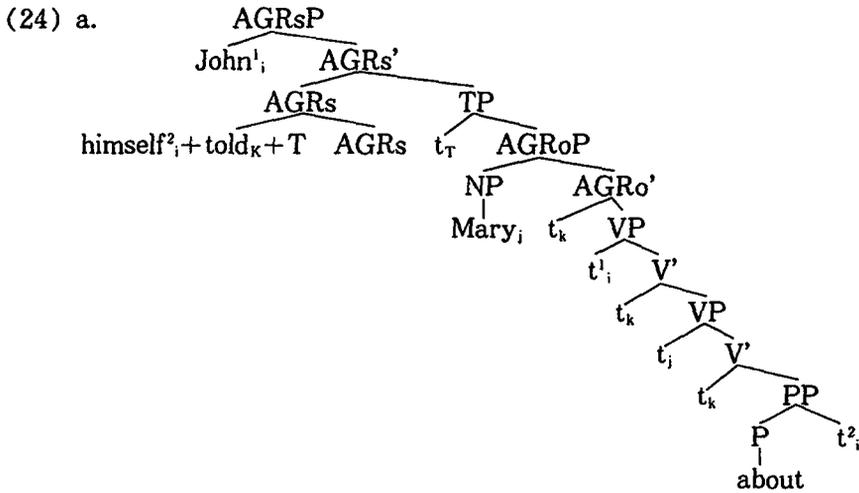
Alternatively, suppose there is no abstract noun, *POSESSION*. In this case, there is no predicate which takes the anaphor as its object since the object of the verb, *likes*, is not *himself* but [*himself's friends*]. Thus, *himself* with [+LF-Affix] cannot be affixed, violating the Affix Filter. Therefore, (21a) becomes ungrammatical.

2.5. Subject/Object Orientation

Let us now look at how our analysis explains the subject and object orientations of English anaphors. Consider the following examples (23):

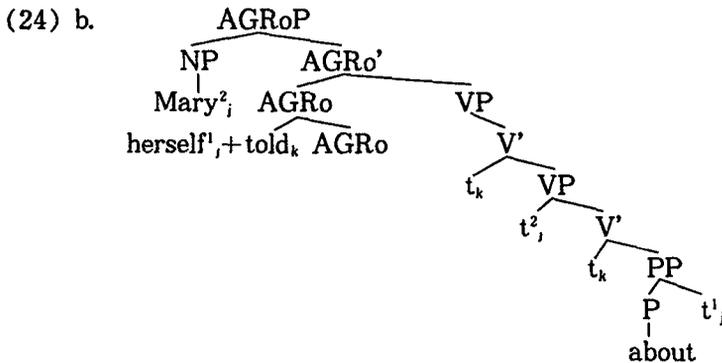
- (23) a. John_i told Mary_j about himself_i.
- b. John_i told Mary_j about herself_j.
- c. *John_i told herself_j about Mary_j.
- d. John_i told Tom_j about himself_{i,j}.

In (23a) *Mary* moves to SPEC of AGRoP. *herself* is affixed to *told* and *herself+told* moves to AGRo. However, the anaphor cannot get its defective referential feature checked off since the phi-features of AGRo and the anaphor are conflicting. Thus, *herself+told* moves to AGRs for the verb's tense and phi-feature checking, as in (24a):



In (24a), the anaphor gets its defective referential feature checked by AGRs.

In (23b) *Mary* moves to SPEC of AGRoP for checking its CASE features. *Herself* raises to *told* and *herself+told* moves to AGRo, as shown below.



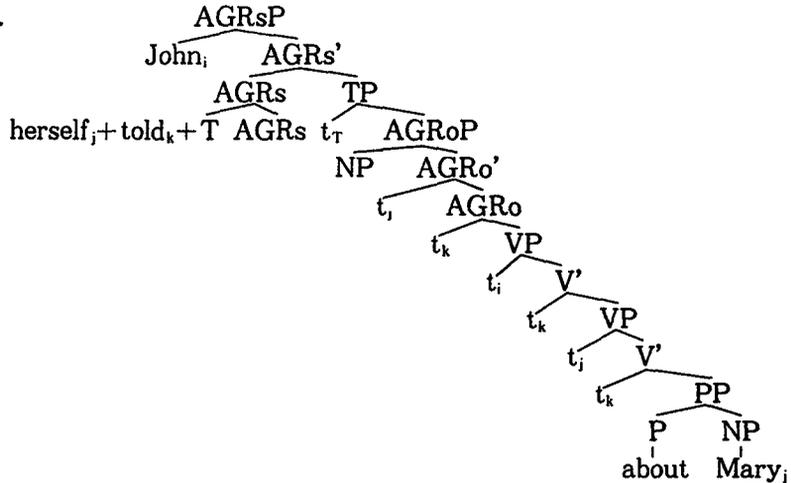
herself gets its reference checked off by AGRo before *herself+told* moves to AGRs.¹⁵ After the anaphor's referential feature is checked off, *herself+told* moves to AGRs, getting tense and phi-features of *told* checked off.

¹⁵ Alternatively, *herself* raises to *told* and *herself+told* moves to AGRs. The anaphor fails to get its defective referential feature checked since the phi-features

This may violate the Principle of Greed since in *herself's* place, it does not need to move any further. However, the head of *herself+ told* is not *herself* but *told*. Therefore, *herself+ told* should move further until all the features of *told* are checked off, without violating the Principle of Greed.

In (23c) *herself* is affixed to *told* and *herself+ told* raises to AGRs, as shown below.

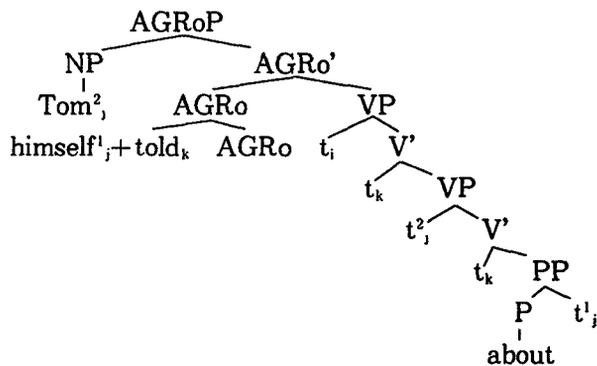
(24) c.



In AGRs, the anaphor fails to get its defective referential feature checked by AGRs since the phi-features of AGR are different from those of the anaphor. Thus, (23c) is not interpretable.

In (23d) either *John* or *Tom* can be an antecedent of the anaphor. *Tom* moves to SPEC of AGRoP for CASE checking. *Himself* is affixed to *told* and *himself+ told* raises to AGRo as shown below.

(24) d.



of AGR are incompatible with those of the anaphor. Then, the trace left behind in AGRo copies its antecedent, *herself+ told*. Hence, the copied trace gets the anaphor's referential feature checked by AGRo.

The anaphor gets its defective referential feature checked by AGR_o. Then, *himself+_{told}* moves to AGRs, getting the verb's tense and phi-feature checking. AGRs cannot check off the referential feature of the anaphor since it is already checked off. One NP cannot have two different references. Therefore, our analysis incorrectly predicts that the anaphor cannot be interpreted as *John*, the subject. To solve this problem, we suggest that AGR has an optional referential feature for the anaphor's referential feature checking. Thus, it is possible for AGR to optionally check off the anaphor's defective referential feature. Considering that every sentence does not contain an anaphor, this suggestion is not implausible.¹⁶

Now, let us turn back to (23d). If AGR_o has no referential feature for an anaphor in (23d), *himself+_{told}* moves to AGRs, getting the anaphor's defective referential feature checked off by AGRs since the anaphor does not get its defective referential feature checked by AGR_o. Thus, the anaphor is interpreted as *John*.

2.6. Reflexives in Heavy PP Shift Constructions

2.6.1. Issues in Heavy PP Shift Constructions

Let us look at the well-known problem in (25), which is often cited as indicating that the binding theory must incorporate a thematic hierarchy (e.g., Jackendoff 1972, Wilkins 1988, Kiss 1991).

- (25) a. We talked to John about himself.
 b. *We talked to himself about John.
 c. *We talked about John to himself.

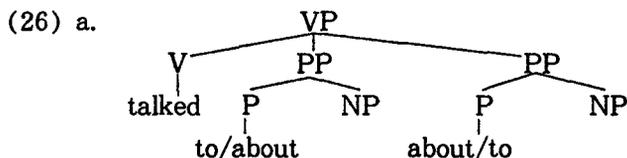
¹⁶Bearing it in mind that AGR has an optional referential feature for an anaphor, let us consider the following sentence:

- (i) John thinks that Tom loves himself.

Let us suppose that the embedded AGRs has no referential feature for an anaphor. Then, *himself* cannot get its defective referential feature checked off by the embedded AGRs. Furthermore, *himself+_{told}* cannot move to the matrix AGRs due to the Principle of Greed. Thus, this derivation crashes. However, in case that the embedded AGRs has a referential feature for an anaphor, *himself* can get its defective referential feature checked off. If there is one convergent derivation, (i) will be fully interpreted. The assumption that AGR has an optional referential feature for an anaphor does no harm to our previous accounts for the anaphor binding.

d. *We talked about himself to John.

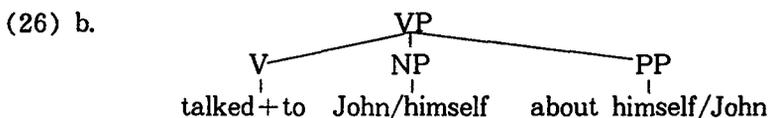
In (25a-d), the predicate-internal arguments are assigned their roles. But only (25a) is grammatical. The analysis solely in terms of the configurational hierarchy cannot account for (25a-d) since there is no binding relation between an anaphor and its antecedent, as shown in (26):



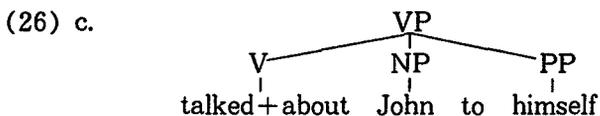
The c-domain of NP embedded in PP is only the PP immediately dominating NP. However, suppose [_v *talk*] [_{PP} *to/about* NP] is reanalyzed as [_v *talked to/about*][NP]. This reanalysis is warranted in (27):

- (27) a. Mary was [talked to] about Fred.
 b. *Mary was talked about to. (Wilkins 1988)
 c. Bill was [talked to] about himself by John.
 (Riemsdijk & Williams 1986)
 d. Mary was [talked about]. (Watanabe 1993)
 e. Mary was [talked about] to Fred.
 f. *Mary was talked to Fred about. (Wilkins 1988)

If [*talk*] [*to* NP] is reanalyzed as [*talk to*] [NP] as in (26b), we can account for (25a, b) in terms of Chomsky's (1981) Condition (A).



However, even if [_v *talk*] [_{PP} *about* NP] is reanalyzed as [*talk about*] [NP] as in (26c), we cannot account for the ungrammaticality of (25c).

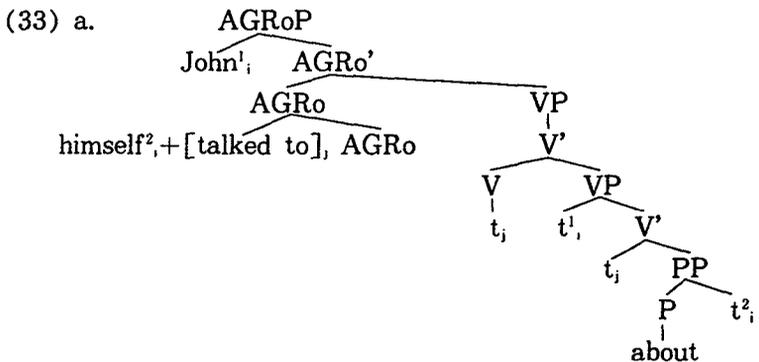


In (26c) *John* binds *himself*, satisfying Condition (A), but (25c) is ungrammatical.

shift. Larson assumes that in (30), a verb and its internal argument PP, [about NP], are reanalyzed as a verb [_v V+ [about NP]], and this reanalyzed verb is leftwardly shifted cross [to NP]. We will take the rightward PP shift. The rightward PP shift will be first discussed in this section. This will be compared with the leftward PP shift in the next section. Let us turn to the problematic examples like (25a-d), repeated in (32a-d).

- (32) a. We talked to John about himself.
- b. *We talked to himself about John.
- c. *We talked about John to himself.
- d. *We talked about himself to John.

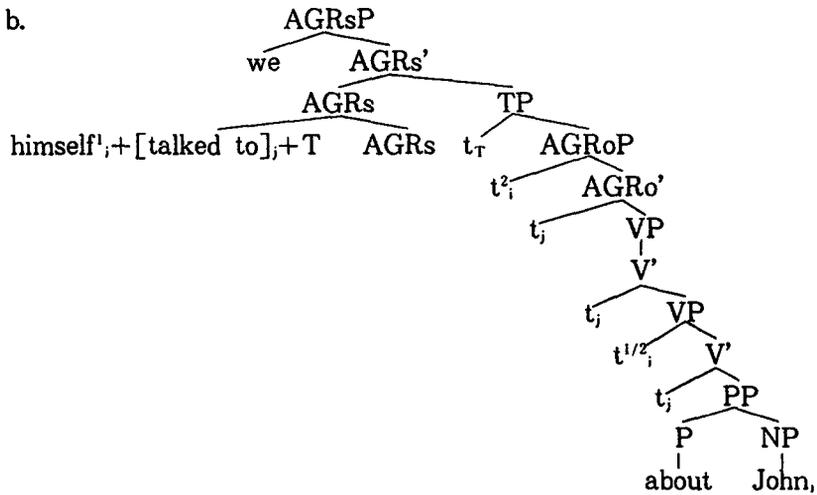
In (32a), the P 'to' incorporates into the verb, talked, forming [_v talked to]. *John* moves to SPEC of AGRoP for CASE checking. *himself* is affixed to the reanalyzed predicate, *talked to* and *himself+talked to* raises to AGRo, as shown below.



At this position, the anaphor gets its defective referential feature checked. Then, *himself+talked to* moves to AGRs getting the verb's tense and phi-features checked off.

In the case of (32b), when 'talked to' is reanalyzed as a verb [_v talked to], *himself* raises to the predicate, *talked to*, and it raises to AGRs to check off its features, as in (33b).

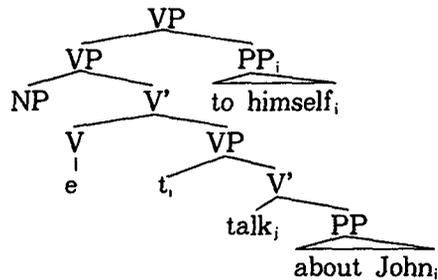
(33) b.



But *himself* fails to have its defective referential feature checked since the phi-features of the anaphor and AGRs are conflicting.

In (32c), [_{PP} *to himself*] cross [_{PP} *about John*] to VP, as in (34).

(34)



In (34), [*talk*] [*about John*] is reanalyzed as [*talk about*] [*John*]. Then, *himself* lowers to *talked about*, but *himself* cannot c-command its trace. Thus, it violates the Chain Condition (35).

(35) Chain Condition

In chain $(\alpha_1 \dots \alpha_n)$, α_i must antecedent-govern α_{i+1} .

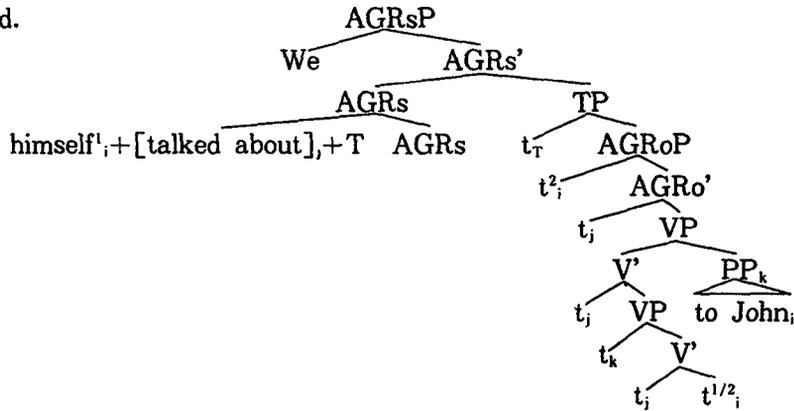
(36) α antecedent-governs β iff(i) α c-commands β (ii) no barrier intervenes between α and β ¹⁷

¹⁷Under the framework of Chomsky (1992), reported by Yang (1992), IP is always a barrier since it is not L-marked. The notions of barrier and L-marking are defined as follows:

Therefore (32c) is ungrammatical.

In the case of (32d), [*to John*] adjoins to VP. When [*talk*] [*about himself*] is reanalyzed as [*talk about*] [*himself*], *himself* is affixed to [*talked about*] and *himself*+*[talked about]* moves to AGRs, as in (33d):

(33) d.



However, the anaphor fails to get its defective referential feature checked since the references of the anaphor and AGRs are conflicting. In this way, we can account for the problematic examples (32a-d) employing rightward PP shift.

2.6.3. Comparison with Leftward PP Shift

Larson (1989) assumes that a verb and its internal argument PP are reanalyzed as a verb, [_v V + [about NP]] and this reanalyzed verb moves cross [to PP], according to the optional Rule of V'-Reanalysis (37).

(37) V'-Reanalysis

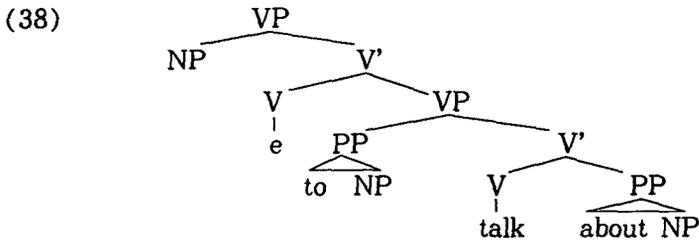
If x is a V' with thematic grid containing one undischarged internal theta-role, then x may be reanalyzed as V.

Assuming that the [*to NP*] and [*about NP*] represent internal arguments of *talk* and that the underlying VP is like (38), the lower V' phrase *talk about NP* will have a theta-grid with one undischarged internal argument,

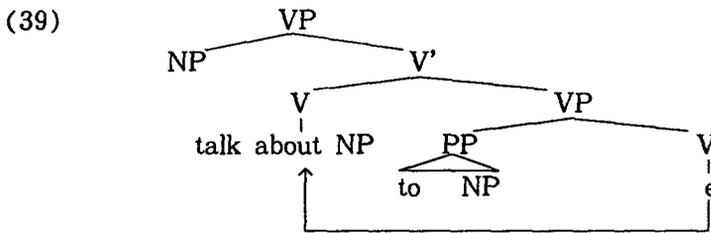
- (i) a. Category *a* is a barrier if it is not L-marked.
- b. A lexical category (N, V, A, P) L-marks its complement and a daughter (Spec) of the complement.

TP, AGRoP and VP are not barriers since verb moves to AGRs through AGRo and T, and verb L-marks VP, AGRoP and TP.

and hence can be subject to reanalysis:



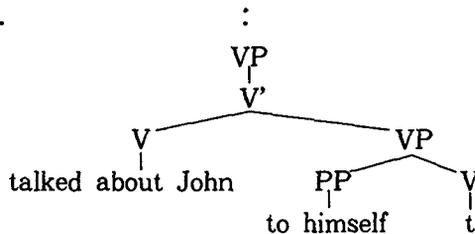
If we do not apply V'-Reanalysis, and raise only V, this will yield *talked to NP about NP*. Alternatively, we can apply V'-Reanalysis and raise the entire complex predicate to the empty V position as in (39).



This yields *talk about NP to NP* with its appearance of “Heavy PP Shift.”

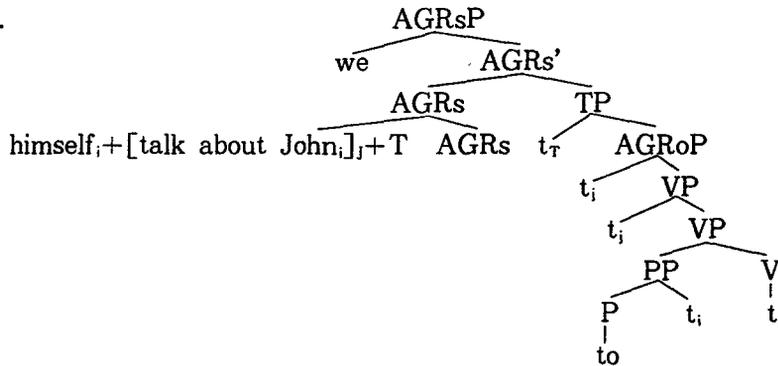
Let's now turn to the problematic examples (32a, b, c, d). If we do not apply V'-Reanalysis in the lower VP and raise only V, this yields (32a) and (32b). These examples are accounted for in the same way as in (33a) and (33b). In the case of (33c), V'-Reanalysis is applied in the lower VP and the entire complex predicate raises to the empty V position, as in (40a).

(40) a.



Then *himself* is affixed to the predicate, *talked about John*. In this case, there is no NP in SPEC of AGRsP and hence AGR_o cannot check the anaphor's referential feature. *himself*+*talked about John* raises to AGRs, as in (40b).

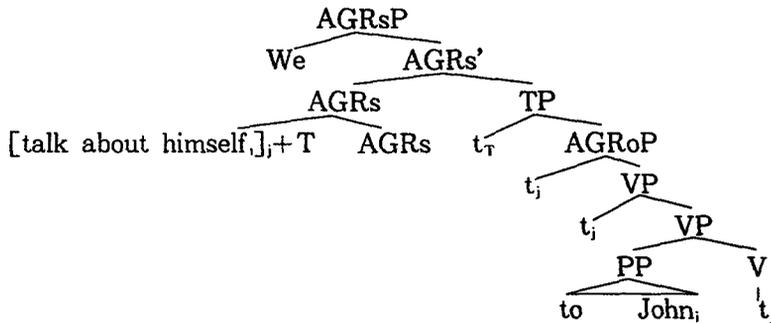
(40) b.



However, *himself*+*talked about John* fails to check off the defective referential feature of the anaphor since the phi-features of the anaphor and AGRs are conflicting.

In the case of (32d), V'-Reanalysis is applied in the lower VP and the entire complex predicate, *talk about himself* raises to the empty V position. Then, *talk about himself* raises to AGRs, as in (41).

(41)



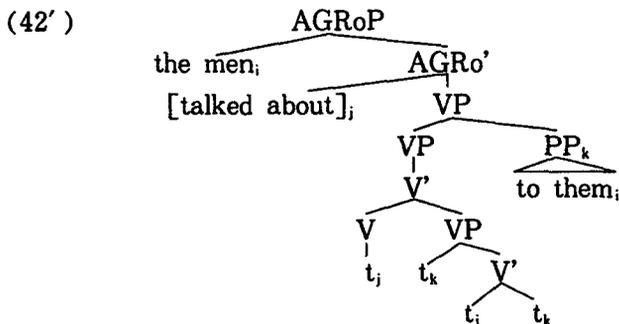
However, the anaphor fails to get its defective referential feature checked. Hence the problematic examples like (32a-d) are accounted for too, employing the leftward PP shift.

However, there are counterexamples to Larson's leftward PP shift. Let us look at the following examples:

- (42) a. *John [talked about the men_i] to them_i.
- b. *I [spoke about Rosa_i] with her_i.

To account for the ungrammaticalities of (42a) and (42b), we should say that (37a) and (37b) violate Condition (B) since *the men* and *Rosa* c-command *them* and *her*, respectively. However, under Larson's analysis, *the men*

and *Rosa* cannot c-command *them* and *her*, respectively, because *the men* and *Rosa* incorporate into verbs, ‘*talked about the men*’ and ‘*spoke about Rosa*,’ respectively. On the other hand, employing the rightward PP shift, we can account for (42a, b). In (42a), [*to them*] is adjoined to VP and [*talked*] [*about the men*] is reanalyzed as [*talked about*] [*the men*]. Then, *the men* moves to SPEC of AGRoP, as in (42’):



In this position, *the men* binds *them*, violating Condition (B). (59b) is explained in the same way. This is the reason that we take the rightward PP shift rather than the leftward PP shift.

3. Conclusion

We have accounted for the binding properties of English anaphors in terms of the referential feature checking process within the framework of the Minimalist Theory. We assumed that anaphors have defective referential features to be checked off since anaphors have no independent references. If anaphors do not get their defective referential features checked off, they will violate the Principle of Full Interpretation. NPs without references have no senses. These defective referential features of anaphors are checked off by AGRs which share all the features with NPs in SPEC of AGRP. We also made assumptions that anaphors are LF-affixes, being affixed to predicates which take them as their arguments. When an anaphor is affixed to its predicate, for example, V, anaphor+V moves to AGRs to get phi-features and tense features of V checked off. At this position, the anaphor gets its defective referential features checked by AGRS. In this way, by assuming that anaphors have defective referential features to be checked off, we can expound English anaphor binding in terms of the defec-

tive referential feature checking process. We do not need any independent binding condition for an anaphor. All that is needed to account for the binding properties of English anaphors is the following new definition of an anaphor.

(43) Definition of an Anaphor

An anaphor has a defective referential feature.

Given the assumptions that anaphors are LF-affixes, being affixed to predicates which take them as arguments, there are some advantages. First, we reduced the cost of derivation. In anaphor-movement approach, anaphors should move to INFL or AGRS. When anaphors undergo movement, they separately move to INFL or AGRS irrespective of V-to-AGRs movement. However, under our analysis, anaphors do not have to separately move to AGRs since the verbs to which anaphors are affixed carry anaphors to AGRs. Therefore, by assuming that an anaphor is an LF-affix, we could spare the anaphor-to-AGR movement.

Second, we could capture the local binding property of English anaphors in terms of the Principle of Full Interpretation and Economy without assuming binding domains. Under our analysis, an anaphor is affixed to its predicate and the predicate to which an anaphor is affixed moves to AGR for getting its phi-features and tense features checked off. After feature checking is done, the predicate does not move any longer. If the predicate moves further, it will violate the Principle of Greed since it undergoes unnecessary movement. Thus, an anaphor should get its defective referential feature checked off within AGRP immediately dominating a predicate to which an anaphor is affixed. Thus, by assuming that anaphors are LF-affixes, we could account for the SSC and TSC effects as cases of the violation of the Principle of Greed. We could also subsume the ban on the prenominal possessive anaphors, and the anaphor binding within DPs, double object and heavy PP shift constructions, under the Principle of FI and Greed.

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