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On the Interpretation of Movement and Agreement: PPs and Binding*

1. Introduction

In Barbiers (1995), I argued that PP-adjuncts must have a syntactic subject to be interpretable as a modifier of the event denoted by (an extended projection of) VP. PP-adjuncts are generated as left-adjuncts to (an extended projection of) VP. A segment of (extended) VP moves into Spec,PP, giving rise to the configuration required for modification. In this view, the need to establish a semantic modification relation is a trigger for syntactic movement. The additional assumption that the moved (extended) VP-segment may be spelled out in its base position or in its landing site accounts for the syntactic and semantic properties of non-extraposed and extraposed PP-adjuncts in languages such as German and Dutch. I also argued that the assumption that PP must have a syntactic subject can be fruitfully extended to other types of PPs (i.e., PP-complements and PP-Small-Clause complements) to explain their syntactic and semantic properties.

In this paper, I explore the consequences of this analysis for Binding Theory. If every PP has a syntactic subject and if syntactic subjects are relevant for the definition of binding domains, then the analysis predicts that every PP is a binding domain. The primary goal of this paper is to show that this prediction is correct, at least for Dutch. Contra Hestvik (1991), Giorgi (1991), Reinhart & Reuland (1993), Baker (1996), I show that there is no need to assume that PP can be a monadic predicate in syntax and a dyadic predicate in semantics. Semantic interpretation of syntactic structure is fully compositional in the domain of PPs, a desirable result.

The present proposal has more consequences for the syntax-semantics interface. When the extended VP equals AgrOP, PP behaves for binding as if the direct object is the syntactic subject of PP, and the PP is interpreted as an object depictive. Similarly, when AgrSP is the subject of PP, this PP has the binding properties of a PP with the matrix subject as its subject; PP is interpreted as a subject depictive. The fact that AgrOP and AgrSP can be an antecedent for binding suggests that Agr projects and is interpretable at LF (contra Chomsky 1995). The well-known observation that depictives must have a

* I would like to thank Eric Reuland and an anonimous reviewer for valuable comments on an earlier version of this paper. The usual disclaimers apply.

stage-level interpretation follows straightforwardly from the analysis provided.

The analysis of PP as a binding domain requires reconsideration of logophoricity. Reuland and Reinhart (1993) analyze cases of "long-distance bound" *himself* in English PPs as logophoric. I show that the Dutch anaphor *zichzelf* is systematically impossible here: Dutch uses pronoun + intensifier SELF in this environment (cf. Veraart 1996, Safir 1997). Apparent cases of long distance bound *zichzelf* are argued to involve *zich* (= SE) + intensifier SELF. This analysis of "logophors" in Dutch PPs may have important consequences for the analysis of English. From the perspective of Dutch, English *himself* is ambiguous between [pronoun + SELF], [SE], [SE + SELF] and [SIGSELF].

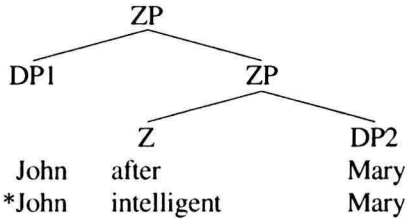
Most importantly, the present proposal is a step forward in making principle A and B of the binding theory superfluous. While standard binding theory and Reuland and Reinhart's (1993) binding theory need to stipulate these principles as primitives of the theory, most consequences of these principles now follow directly from the proposed definitions of monadic and dyadic predication, which are needed independently.

2. Background

I briefly outline the configurational theory of semantic relations and properties proposed in Barbiers (1995). Barbiers (1995) assumes that syntactic structure determines a set of binary semantic *relations* of the form Z(X,Y), where X, Y and Z are syntactic nodes in a local configuration. Structure does this independently from the lexical semantics of the terminals under X,Y and Z. When the semantic relations determined by syntactic structure are not fully compatible with the lexical semantics of the terminals, the structure is not fully interpretable, hence deviant.

To illustrate, the configuration in (1) defines Z *after* as a relation between DP *John* and DP *Mary*. Since *after* is lexically specified as a relation, this is compatible with the relation determined by syntax. However, when *intelligent* is under Z, the result is uninterpretable, since syntax defines *intelligent* as a relation, but *intelligent* is lexically specified as a property. Structures such as (1) with *intelligent* as the terminal of Z are therefore filtered out at LF.

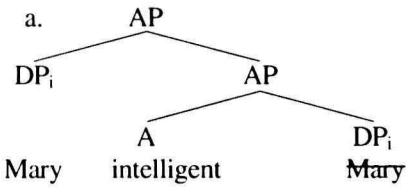
(1)



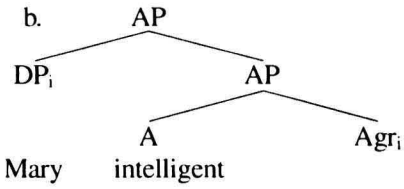
If syntax determines a set of binary semantic relations, how about those semantic relations that seem to involve a predicate with just one argument, i.e., just two nodes rather than three, e.g. the predication relation between a SC-predicate and its subject, or the modification relation between a PP-adjunct and its VP-host? My hypothesis is that such relations, henceforth *properties* to avoid confusion with existing notions of

predication, can only be expressed by identity of the two objects: Z(X,X). A relation with two identical objects is interpreted as a property. The reduction of a relation to a property is achieved syntactically by (i) movement, or (ii) agreement:

(2) a.



b.



The local relation in (2a) is A(DP, ~~DP~~). The DP in complement position is a copy of the DP in Spec,AP, so the two DPs are identical. Thus, syntax defines A as a property, which is fully compatible with the lexical specification of *intelligent*. In (2b), the ϕ-features of DP subsume those of Agr. I take this to imply that DP and Agr are interpreted as denoting the same object; in fact, then, Agr functions as a pronoun (cf. Jelinek 1984), coreferential with the constituent it is agreeing with. As a result, A in (2b) has two identical objects, so A is defined as a property. Things would go wrong if we were to substitute the preposition *after* for *intelligent* in the structures in (2): being lexically specified as a relation, it cannot occur in a configuration that defines it as a property.[1]

The syntactic definitions of relations and properties are given in (3).

(3) Principle of Semantic Interpretation (PSI; Barbiers 1995)[2]

I. A node Z is interpreted as a *relation* between a node X and a node Y iff X immediately c-commands Z and Z immediately c-commands Y.

II. A node Z is interpreted as a *property* of X iff X immediately c-commands Z and Z immediately c-commands Y, and Y is a copy of X, or Y is Agreement or a pronoun coindexed with X.

The PSI is meant as an alternative for θ-theory and as such constitutes a program, namely to reanalyze the respective θ-roles in terms of the primitive notion of relation.

3. SIGSELF as a solution to contradictory requirements

I now show that binding conditions A and B follow in a natural way from the PSI in (3), incorporating Reuland's (1997) idea that SIGSELF-anaphors are there to preserve the arity of binary predicates. Many languages have SIGSELF-anaphors (e.g., Dutch *zichzelf*)

[1] For ease of exposition, I have simplified matters considerably. In fact, P is a relation between two distinct constituents, its subject and its object, but at the same time, PP is a property of its subject. See Section 4.3 and Barbiers (1995) for a discussion of the syntactic configuration that expresses the latter semantic relation.

[2] Immediate c-command of Z by X means that there is no node W such that X c-commands W and W c-commands Z.

in addition to SE-anaphors (e.g., Dutch *zich*). According to Reuland, SE and its antecedent form a chain and are interpreted as one argument. As a result, SE reduces a dyadic predicate to a monadic predicate, e.g., in cases such as *Jan schaamt zich* (John shames SE; 'John is embarrassed'). SIGSELF, however, prevents reduction to a monadic predicate, as it is a complex DP consisting of a head SELF and a possessor SIG (Helke 1971). If there is any chain at all, then it consists of the antecedent and the possessor SIG in Spec,DP. The complex DP as a whole does not form a chain with the antecedent; thus the arity of the predicate is preserved.

Reuland's idea that SIGSELF preserves the arity of a predicate follows in the present proposal from the definition of relations and properties. A relation is reduced to a property by identity of its two arguments. Therefore, a reflexive relation is subject to contradictory requirements. On the one hand, the two objects of the relation must be distinct to prevent reduction to a property. On the other hand, the two objects of the relation must be identical to express reflexivity. SIGSELF anaphors are the solution to these contradictory requirements. If they consist of possessor SIG and head SELF, the latter denoting a body part in many languages, then SIGSELF and its antecedent are distinct. At the same time, SIGSELF can be taken to be an approximation of SE by conventional metonomy (Safir 1996), thus expressing reflexivity.

I would like to make the tentative proposal that this does not only explain the different distribution of SE and SIGSELF, but also the fact that the constructions in (4a–d) cannot express reflexive binary relations. In all four constructions, the identity of the two objects of the relation reduces this relation to a property. Since the verb *like* is lexically specified as a relation, not as a property, this leads to a clash between the semantic interpretation forced upon *like* by syntactic structure and the lexical specification of *like*. Thus, the present proposal explains condition B violations (4a), local instances of condition C violations (4b), violations of the θ-criterion (4c; the moved constituent *John* has two θ-roles), and cases like (4d).[3]

(4) a. *John$_i$ likes him$_i$
b. *John$_i$ likes John$_i$
c. *John$_i$ likes ~~John~~$_i$
d. *John$_i$ like-s$_i$
e. John$_i$ likes himself$_i$

The distribution of the short distance anaphor SIGSELF (to be distinguished from the medium distance anaphor SE + SELF; see below) can now be summarized as in (5):

(5) Short distance anaphor SIGSELF is used to express a reflexive relation and to avoid reduction to a property.

This analysis of SIGSELF as a last resort guarantees that it is locally bound. It is only

[3] For reasons of space, I cannot go into the distribution of SIGSELF, SE and pronouns in more complex cases, such as ECM-constructions. It is clear, however, that this distribution does not follow immediately from the present proposal. I hope to address this issue in future work.

inserted to avoid reduction of a relation to a property. Given the definitions in (3), such a reduction is only possible in local environments, in particular with two coarguments. There are, however, cases in which SIGSELF is a complement of P but seemingly bound by a non-coargument outside PP. In the next section, I show that these cases are not problematic for the last resort analysis of SIGSELF.

4. PP as a binding domain

4.1 *Small Clause Complements*

In this section I argue that every PP has a syntactic subject. Before turning to more controversial cases such as PP-adjuncts, I discuss a type of PP that has often been claimed to have a syntactic subject, namely small clause complement PPs (Stowell 1981, Hoekstra 1984). I show that these PP-SCs behave fully regularly with respect to binding, once it is recognized that Dutch *zichzelf* is ambiguous between a true short distance anaphor (henceforth SIGSELF) and a medium distance anaphor *zich* (henceforth SE) plus intensifier SELF.

The generalizations are clear. In a PP-SC, SIGSELF can only occur as the complement of P if it is bound by the subject of PP-SC (condition A), SE can only occur if it is free from the subject of PP-SC but bound by the first subject up, and HIM (i.e., a pronoun) may occur if it is free from the subject of PP-SC (condition B). This is shown for PP-SCs of unaccusatives (6c). To establish whether a PP is a SC-complement we use Hoekstra's (1984) diagnostic: as opposed to other types of PPs, PP-SCs cannot be extraposed; cf. the contrast between (6a) and (6b).

(6) a. Ik weet dat Jan $[_{PP}$ voor dit plan] is
I know that John in favor of this plan is
'I know that John is in favor of plan'

b. *Ik weet dat Jan is $[_{PP}$ voor dit plan]
I know that John is in favor of this plan

c. Jan_i is voor zichzelf_i /*zich_i/$\text{hem}_{j/*i}$
John is in favor of SIGSELF/SE /HIM

d. $[_{IP}[_{DP}$ Jan$][_{IP}[$I $[_{VP}[_{PP}$ ~~t_{DP} Jan~~$]$ $[_{PP}$voor $[_{DP}$zichzelf/*zich/*hem$]]][_{VP}$ is$]]]$
John John for SIGSELF/SE/HIM is

SE cannot find a binder at all in (6c). We are dealing with an unaccusative verb here, so the matrix subject is also the subject of PP-SC and has raised from Spec,PP-SC. This is different in transitive constructions with a PP-SC, where the subject of PP-SC and the subject of the clause can be distinct (7b). For binding theory, then, the difference between unaccusative and transitive PP-SC constructions is that in the latter SE can be bound from outside PP if the subject of the matrix clause is a suitable binder. This is what we find in (7b). Unaccusative and transitive SC-constructions do not differ with respect to the distribution of HIM and SIGSELF, as expected.

(7) a. Ik zette Jan$_i$ naast zichzelf$_i$/hem$_{j/*i}$/*zich$_i$
I put John next to SIGSELF/HIM/SE (context: in the waxworks)
b. Jan$_i$ zette de baby naast zich$_i$/'m $_i$/*zichzelf$_i$
John put the baby next to SE/HIM/SIGSELF
c. Eerst zette Jan$_i$ de baby naast mij en toen naast zichzelf$_i$/'mzelf $_i$/*zich$_i$
first put J. the baby next to me and then next to SE+self/HIM+self/SE
'John first put the baby next to me and then next to himself'

There is one complication. In (7c) it looks as if *zichzelf* can be bound from outside PP. However, there is an alternative, more plausible analysis. Given (7b), it is likely that *zichzelf* in (7c) is not the true short distance anaphor SIGSELF, but *zich* SE + intensifier *zelf* SELF. In Dutch, intensifier *zelf* can be added to most DPs, pronouns and apparently also to *zich*. It is obligatory in case SE (or HIM) has contrastive focus, as in (7c). This is not surprising, since *zich* is a clitic and cannot be stressed (Everaert 1991, Veraart 1996). Under this analysis, the binding properties of the PP-SC in (7) are entirely regular and binding theory need not be adapted.

Not all instances of *zichzelf* in Dutch can be analyzed as SE + intensifier SELF. The example in (6c) shows this: here *zichzelf* is possible but SE is not. Another example demonstrating the same point is given in (8). In (8), *zichzelf* is obligatory, even though the context clearly shows that there can be no contrastive focus on SE.

(8) (Jan kent zijn goede en zijn slechte eigenschappen, kortom)
(John knows his good and his bad qualitities, in short)
Jan kent zichzelf$_i$/*zich$_i$
John knows SIGSELF/SE

I conclude that Dutch *zichzelf* is ambiguous between the true short distance anaphor SIGSELF and intensified medium-distance anaphor SE + SELF.

4.2 *Dutch has no logophors in PP*

It can also be shown that *zich* and *zichzelf* are not logophors in (7b,c). According to Reinhart & Reuland (R&R; 1993: 682), a diagnostic property of logophoric anaphors is that they do not have to be c-commanded by their antecedent. In (7b,c), *zich* and *zichzelf* must be c-commanded by their antecedent:

(9) a. [De vrouw$_i$ die Jan$_j$ kent] zette de baby naast zich$_{i/*j}$
the woman that John knows put the baby next to SE
b. Toen zette [de vrouw$_i$ die Jan$_j$ kent] de baby eindelijk naast zichzelf$_{i/*j}$
then put the woman that John knows the baby finally next to SE+SELF

Veraart (1996) provides evidence that Dutch does not have logophors either in other contexts for which English *himself* has been claimed to be a logophor. Next to (7b), the English construction in (10a) is one of the constructions that have led R&R to capture logophoricity in their definition of the binding conditions. However, the parallel construction in Dutch does not allow for SE or SIGSELF, but requires *hem* HIM + (optionally) *zelf* SELF (10b).

(10) a. Max boasted that you invited Lucie and himself for a drink
b. Max_i pochte dat jij Lucie en hem(zelf)$_i$/*zich/*zichzelf had uitgenodigd
Max boasted that you Lucie and HIM(SELF)/SE/SIGSELF had invited

Dutch is similar to Mainland Scandinavian, where SIGSELF cannot be a logophor in several contexts in which English may have *himself*. In Mainland Scandivian too, SIGSELF must be locally bound, unlike pronoun + SELF (Safir 1996).

Perhaps, then, English *himself* must be analyzed as pronoun + SELF when it behaves as a logophor, whereas it must be analyzed as SIGSELF when it behaves as a short distance anaphor. If that is correct, there is no need to redefine the traditional binding conditions A and B. It would be sufficient to state that English *himself* is lexically or syntactically ambiguous (cf. Veraart 1996 for a similar conclusion).

If my analysis of *zichzelf* as being ambiguous between short distance *zichzelf* and SE + SELF is correct, then English *himself* is probably even more complex. In addition, in those cases where Dutch uses SE but not HIM, English uses *himself* (except for inherent reflexives), as in *John$_i$ drank himself$_i$/*him$_i$ under the table*. In sum, English *himself* appears to be four ways ambiguous:

(11) The ambiguity of English *himself*
(i) Short distance anaphor SIGSELF
(ii) HIM + intensifier SELF
(iii) Medium distance anaphor SE
(iv) SE + intensifier SELF

Further research is necessary to establish whether this ambiguity can fully explain the distribution of anaphors and pronouns in English, but the comparison with Dutch (and Mainland Scandinavian) suggests that an approach in terms of lexical or syntactic ambiguity may be more promising than an approach in terms of logophoricity.[4]

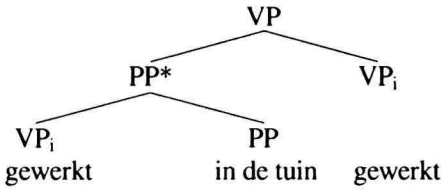
4.3 *VP as a subject of PP*

We now turn to binding into PP-adjuncts. In Barbiers (1995), I argued that at LF PP-adjuncts have an (extended) projection of V as their syntactic subject, as a result of VP-Intraposition into Spec,PP. The analysis is illustrated in (12). I assume that in Dutch the moved VP-segment can be spelled out in its base position or in the landing site, giving rise to the semantically equivalent linear orders in (13). For English it can be shown that VP must be spelled out in its landing site. I further argued in Barbiers (1995) that VP-intraposition is necessary to make VP the subject of PP, i.e. to make PP

[4] Potential cases of long-distance bound anaphors that cannot be explained away in terms of the distinctions [SIGSELF] — [SE + SELF] — [pronoun + SELF] involve SIGSELF within picture-NPs (cf. Pollard and Sag 1992). It is clear that Dutch allows SIGSELF in picture-NPs, even when there is no visible antecedent within the picture-NP. The way out would be to assume that such picture-NPs contain a PRO subject that acts as a binder. As is well-known, such a solution has a number of complications. I leave this for future research.

interpretable as a property of VP.[5] In this approach, movement is triggered by the need to establish certain semantic relations. Technical details aside, the configuration in (12) has the status of (2a), satisfying the second clause of the PSI (3): there is a local relation PP(VP_i, VP_i), such that PP is interpreted as a property of VP.[6]

(12)



(13) a. Jan heeft [$_{VP}$ [$_{PP}$ [$_{\cancel{VP}}$ ~~gewerkt~~] [$_{PP}$ in de tuin]] [$_{VP}$ gewerkt]]
John has worked in the garden worked

b. Jan heeft [$_{VP}$ [$_{PP}$ [$_{VP}$ gewerkt] [$_{PP}$ in de tuin]] [$_{\cancel{VP}}$ ~~gewerkt~~]]
John has worked in the garden worked

This analysis explains why a PP-SC cannot be extraposed. A PP-SC has its own syntactic subject, i.e. the internal argument. Under the plausible assumption that a predicate can only have one subject, movement of a V-projection into Spec,PP to make the V-projection interpretable as a subject of PP is blocked.

If it is correct that VP is the syntactic subject of a PP adjoined to it, this predicts that SIGSELF cannot occur as the complement of P when VP is the subject of PP. The reason is that SIGSELF needs to be bound in its binding domain, PP, but the subject of that domain, VP, is not a suitable binder for SIGSELF. On the other hand, HIM should be freely allowed, whereas SE should be possible if the next subject up is a suitable binder. These predictions are borne out (14a,c). The examples in (14b,d) show once more that contrastive stress makes it necessary to add the intensifier *zelf* to *zich*.

(14) a. Jan_i voelde onder $zich_i$/'m $_i$/*$zichzelf_i$ of ie verder kon dalen
John felt under SE/HIM/SIGSELF if he further could descend

b. Eerst voelde Jan_i onder Piet en toen onder $zichzelf_i$/'mzelf $_i$/*$zich_i$
first felt John under Pete and then under SIGSELF/HIM+SELF/SE

c. Jan_i keek achter $zich_i$/'m $_i$/*$zichzelf_i$
John looked behind SE/HIM/SIGSELF

[5] The VP Intraposition analysis of PP Extraposition explains all known properties of this construction, including Koster's mirror image effect. Evidence favoring the VP-Intraposition analysis over rightward movement and right-adjunction analyses of PP Extraposition comes from the distribution and interpretation of focus particles in extraposition contexts. For extensive discussion, also of the technical aspects of the analysis, see Barbiers (1995).

[6] The analysis only works if Kayne's definition of c-command is adopted. In addition, it must be assumed that PP in (12) c-commands the copy of VP. This requires an adaptation of Kayne's definition. See Barbiers (1995) for such an adaptation, and for independent empirical evidence that PP in (12) c-commands the copy of VP.

d. Eerst keek Jan$_i$ achter mij en toen achter zichzelf$_i$/'mzelf $_i$/*zich$_i$
first looked John behind me and then behind SIGSELF/HIM+SELF/SE

4.4 *AgrOP as the subject of PP: object depictives*

The PPs in (14) are clearly low VP-adjuncts: the PP denotes a property of just the feel/look event, but e.g. not of the subject. We now turn to PPs that are slightly higher, namely adjuncts to AgrOP. Suppose that PP is generated as a left-adjunct to AgrOP, and that a segment of AgrOP moves into Spec,PP. This yields a configuration similar to (12), with AgrOP in stead of VP. If the above assumption that Agreement is interpretable and functions as a pronoun (see Section 2; cf. Jelinek 1984) is correct, then AgrOP must be interpreted as a projection of an object pronoun. This predicts that a PP-adjunct with AgrOP as its subject behaves the same for binding as a PP with the internal argument as its subject, i.e. as the PP-SCs of transitive verbs discussed in Section 4.1. This prediction is borne out (15). Notice that cases like (15a) cannot be analyzed as involving a PP-SC with the DP as its subject. If that were the correct analysis, the PP should not be extraposable, contrary to fact.

(15) a. Ik fotografeerde Jan$_i$ [$_{PP}$ naast zichzelf$_i$/*zich$_i$/*'m $_i$]
I photographed J.next to SIGSELF/SE/HIM (context: in the waxworks)
b. Jan$_i$ zag mij [$_{PP}$ naast zich$_i$/'m $_i$/*zichzelf$_i$]
John saw me next to SE/HIM/SIGSELF
c. Eerst zag Jan$_i$ mij naast Piet en toen naast zichzelf$_i$/'mzelf $_i$/*zich$_i$
first saw J. me next to Pete and then next to SE+SELF/HIM+SELF/SE

4.5 *Why object depictives must be stage-level predicates*

Based on the binding facts in (15), I have proposed that AgrOP is the syntactic subject of PP. However, the binding facts alone also allow for alternative, more traditional analyses in which the DP-object, or PRO controlled by the DP object, is the subject of PP in (15). In this section I provide some evidence that favors my analysis over the more traditional analyses.

If we look at the interpretation of PP carefully, we see that it does not exactly denote a property of the object, but rather a property of a certain state of the object. For (15), this can be described as: John in his state of being photographed was next to himself. Put differently, PP in (15) is interpreted as an object depictive. As is well-known, depictives differ from attributive predicates in that they must have a stage-level interpretation (16a), predicating of a stage of the object. *Intelligent* in (16a) is felicitous only if interpreted as a temporary property, implying that the boy's intelligence decreased later on. There is no such implication in (16b), where *intelligente* can have an individual-level interpretation.

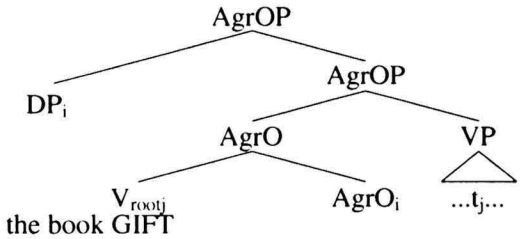
(16) a. Ik heb die jongen boos/#intelligent op de video gezien
I have that boy angry/intelligent at the video seen
'I saw that boy on the video, being angry'
b. de boze/intelligente jongen op de video
the angry/intelligent boy on the video

The fact that object-depictives must have a stage-level interpretation can be easily explained if we assume that AgrOP, the subject of a stage-level predicate, denotes a certain state of the object, not simply the object.

To show that this assumption is plausible, I have to be more precise about the interpretive role of AgrOP. Let me demonstrate this with the verb *give*. In Hale & Keyser (1993), internal arguments are analyzed as the subject of the root of the verb. Rather than being the complement of the verb, the internal argument is the subject of a small clause, with the root of the verb as the small clause predicate. Extending Hale & Keyser's analysis, I take GIFT to be the root of *give* (where the categorial status of GIFT is irrelevant and perhaps entirely dependent on its syntactic environment). In *John gave the book to Mary*, GIFT is a small clause predicate of *the book*, such that GIFT is interpreted as a property of the book.

It has often been argued that SC-predicates are dominated by an AgrP (e.g., Den Dikken 1987). I assume that Agr not only plays a role in the licensing of agreement and case, but also establishes a predication relation (i.e. a property interpretation) in a SC.

(17)



In (17), DP immediately c-commands V_{root}, and V_{root} immediately c-commands AgrO, which is coreferential with DP. Thus, the configuration in (17) satisfies the second clause of the PSI (cf. 3), and V_{root} is interpreted as a property of DP (compare the parallel configuration in 2b). To summarize: object depictives have a projection of AgrO as their subject. AgrO-projections are interpreted as a state V_{root} of the object, i.e. the object in its state of being V_{root}. Therefore, object depictives must get a stage-level interpretation.

Analyses that assume the object, or PRO controlled by the object, to be the subject of a PP such as the one in (15) need additional assumptions to account for the restriction of object depictives to a stage-level interpretation, since DP and PRO do not denote a state of the object. This restriction follows quite naturally from the present analysis in which AgrOP is the subject of the depictive PP.

To conclude this section, we have found two pieces of evidence for the semantic interpretability of (abstract) object agreement: the binding facts in (15) and the fact that object depictives are restricted to a stage-level interpretation.

4.6 *AgrSP as the subject of PP: subject depictives*

A similar reasoning can be set up for adjuncts to AgrSP. If AgrSP is the syntactic subject of a PP-adjunct and if AgrSP, being a projection of the subject pronoun AgrS, denotes the subject in a certain state, we expect the PP to behave for binding as if the DP-subject were its subject. This is borne out.

(18) Jan heeft namens zichzelf/*'m/*zich met Marie gesproken
John has on behalf of SIGSELF/HIM/SE with Mary spoken

4.7 *PP-complements*

The situation with PP-complements is more complicated. I will compare them with PP-SCs to answer the question what kind of subject they take. The interpretation of PP-complements can be very close to that of PP-SC, e.g. in (19a,b) the endpoint of an action. Superficially, the only syntactic difference between the two types of PP is that a PP-complement can be "extraposed", but a PP-SC cannot (19a,b).

(19) a. Jan heeft de bak <aan Marie> gegeven <aan Marie>
John has the bin to Mary given to Mary
'John has given the bin to Mary'
b. Jan heeft de bak <aan de straat> gezet <*aan de straat>
John has the bin on the street put on the street
'John has put the bin on the street'

If my analysis of PP Extraposition as (extended) VP-intraposition can be generalized to PP-complements, then the difference between a PP-complement and a PP-SC must be that a PP-complement is interpreted as a property of the event denoted by V, i.e. it takes some (extended) projection of V as its subject, whereas a PP-SC has the internal argument DP as its subject and is not interpreted as a property of V. I would like to argue that there are three crucial differences between a PP-complement (19a) and a resultative PP (19b):

(20)

	PP-complement gave [$_{DP}$the bin] [$_{PP}$to M.]	Resultative PP put [$_{DP}$the bin] [$_{PP}$on the s.]
PP is property of	AgrOP, i.e. the gift is to Mary, so the DP in its state of being a gift is to Mary	DP: the bin is on the street as a result of the putting event; the putting event itself is not on the street
Internal DP is argument of	V_{root}: the bin is a gift	PP: the bin is on the street
PP can be extraposed	Yes	No

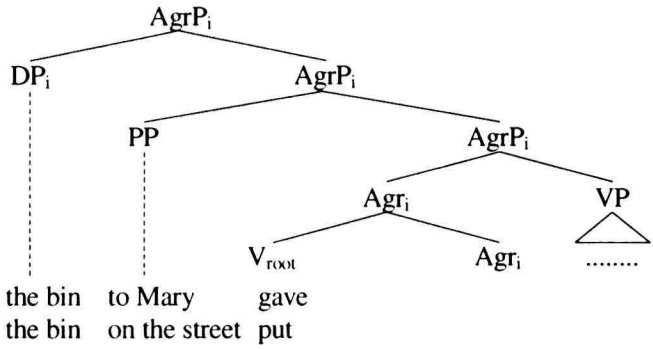
These differences are even clearer in (21).

(21) a. Jan heeft [$_{PP}$ op Marie] gewacht
John has for Mary waited
Means: 'het wachten was op Marie'
the waiting was for Mary
b. Jan heeft [$_{PP}$ over taalkunde] gesproken
John has about linguistics talked
Means: 'the talk was about linguistics'

c. Jan heeft het vuil [$_{PP}$ onder het kleed] geveegd
John has the dirt under the rug swept
Means: 'the dirt is under the rug' (as a result of sweeping)
Does not mean: 'the sweeping event takes place under the rug'

The configuration in (22) captures the differences mentioned in the table in (20). Both types of PPs are base-generated in the position indicated in (22).

(22)



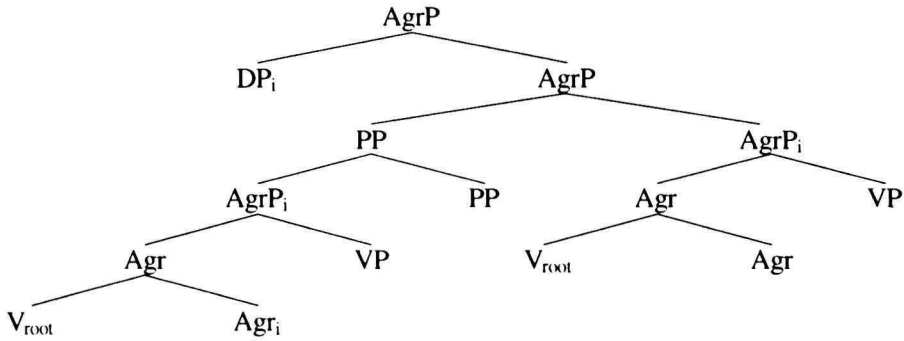
For the PP-SC construction, (22) is also the LF-representation. Thus, PP is interpreted as a property of DP, since there is a local configuration PP(DP$_i$,Agr$_i$) that satisfies clause II of the PSI (cf. 3). This captures the meaning part 'the bin is on the street'.

There is no local configuration V$_{root}$(DP$_i$,Agr$_i$). DP does not immediately c-command V$_{root}$ since PP is a closer c-commander for V$_{root}$. This yields the desired result: V$_{root}$ is not interpreted as a property of DP, i.e. DP is not interpreted as an argument of V$_{root}$. Since neither VP nor the lowest AgrP moves into Spec,PP, PP is not interpreted as a property of a state of the object (as denoted by AgrP). The syntactic counterpart of this semantic impossibility is that PP-SC cannot "extrapose".

In the PP-complement construction, the lowest AgrP moves into Spec,PP (23c), and can be spelled out in its base-position or in its landing site, giving rise to the non-extraposed order in (23a) and the extraposed order in (23b).

(23) a. Jan heeft de bak [$_{PP}$ [$_{AgrP}$ ~~gegeven~~] [$_{PP}$ aan Marie]] [$_{AgrP}$ gegeven]
John has the bin given to Mary given
b. Jan heeft de bak [$_{PP}$ [$_{AgrP}$ gegeven] [$_{PP}$ aan Marie]] [$_{AgrP}$ ~~gegeven~~]

c.



As a result of this movement, there is a local configuration PP(AgrP$_i$,AgrP$_i$) satisfying clause II of the PSI (cf 3), so PP is interpreted as a property of a state of the object: the book in its state of being a gift is to Mary. Also, a local configuration V$_{root}$(DP$_i$,Agr$_i$) arises: by moving AgrP into Spec,PP, the PP no longer is a closer c-commander for V$_{root}$. Thus, V$_{root}$ is interpreted as a property of DP: the book is a gift.

Turning to the binding properties of PP-complements now, we expect the following. Suppose AgrP in (23c) can either be AgrOP or AgrSP. If AgrOP moves into Spec,PP, the PP should behave as if the internal argument is the subject of PP. If AgrSP moves into Spec,PP, the PP should behave as if the subject of the clause is the subject of PP. The latter is the case with verbs that do not take an internal argument and therefore lack an AgrOP.

(24) a. Jan$_i$ heeft over zichzelf$_i$/*zich$_i$/*hem$_i$ gesproken
John has about SIGSELF/SE/HIM talked
'John has talked about himself'

b. Jan heeft niet aan zichzelf$_i$/*zich$_i$/*hem$_i$ gedacht
John has not about SIGSELF/SE/HIM thought
'John has not thought of himself'

With verbs that do take an internal argument, AgrOP can be the subject of PP (25a), or AgrSP can be the subject of PP (25b).

(25) a. Ik heb Jan$_i$ aan zichzelf$_i$/*'m $_i$/*zich$_i$ toegewezen
I have John to SIGSELF/HIM/SE assigned
'I have assigned John to himself'

b. Jan$_i$ heeft mij aan zichzelf$_i$/*'m $_i$/*zich$_i$ toegewezen
John has me to SIGSELF/HIM/SE assigned
'John has assigned me to himself'

If it is correct that PP can be either adjoined to a segment of AgrOP or AgrSP, we expect to find a low and a high occurrence of PP. A property of the higher occurrence should be that it cannot be bound by the object (i.e., AgrOP). This is correct:

(26) a. Ik heb die jongens aan elkaars ouders voorgesteld
I have those boys to each other's parents introduced
'I have introduced those boys to each other's parents'

b. Ik heb aan die jongens elkaars ouders voorgesteld
I have to those boys each other's parents introduced
c. *Ik heb aan elkaars ouders die jongens voorgesteld
I have to each other's parents those boys introduced
d. Aan elkaars ouders heb ik de jongens niet voorgesteld
To each other's parents have I the boys not introduced
e. Elkaars boeken leken die jongens de beste
each other's books seemed to the boys de beste

The examples in (26a,b) show that both the order DP PP and the order PP DP is possible. In the former, DP can bind into PP, in the latter PP can bind into DP. (26c) shows that reconstruction is impossible, whereas reconstruction is possible with A-bar and A-movement (26d,e). These facts support the idea that there are two levels to attach a PP-complement, each with its own binding properties.

Finally, let us look at verbs that take two PP-complements. The distribution of anaphors and pronouns in constructions with two PP-complements has been crucial for various versions of binding theory (e.g. Kiss 1991, Pollard & Sag 1992, R&R).

(27) We talked with John$_i$ about him$_i$/himself$_i$

Reinhart & Reuland analyze the *about* PP as an adjunct, hence *himself* in the *about* PP does not reflexive-mark the matrix predicate *talked. Himself* in the complement of P should then be a logophor, an idea that seems to be supported by the fact that the pronoun may occur there too (27). Veraart (1996: 39) points out, however, that this incorrectly predicts that the sentence in (28a) is grammatical with *him*. She also points out that in the Dutch equivalent of (27) SIGSELF is impossible (28b).

(28) a. John$_i$ often talks about himself$_i$/*him$_i$
b. We spraken met Jan$_i$ over 'mzelf $_i$/*zich$_i$/*zichzelf$_i$
we talked with John about HIM+SELF/SE/HIMSELF
c. *We talked about John with himself

The Dutch example in (28b) clearly shows that Dutch does not use a logophoric anaphor but an intensified pronoun in this environment. It is plausible, then, that *himself* in (27) is not a logophor either, but a pronoun *him* + intensifier SELF.

Both PPs in (27) and (28b) can now be analyzed as PP-complements. Since there is no object in these clauses, there is no AgrOP. Therefore, only AgrSP can be the subject of each PP. This implies that true short distance SIGSELF can only occur when bound by the subject of the clause (i.e., by AgrSP). SE cannot occur at all: there is no subject higher than AgrSP, and the *with*-PP does not qualify as such. HIM can only occur if it is free from the subject of PP. The latter explains the ungrammaticality of HIM in (28a).

It is also clear now why (28c) is ungrammatical. In Dutch both SIGSELF and HIM (+ intensifier SELF) are ungrammatical in that position (29). That SIGSELF is ungrammatical follows from our analysis: AgrSP is the subject of PP, so only AgrSP (i.e. the subject) can bind SIGSELF.

(29) *We hebben [PP over Jan_i] [PP met $hemzelf_i$/$zichzelf_i$] gesproken
we have about John with HIM+SELF/SIGSELF spoken

The ungrammaticality of the pronoun can be shown to be a principle C violation. There are reasons to assume that the order of PPs in (29) is derived by leftward A-bar movement of the about-PP across the with-PP (30). One reason is that extraction is possible from the about-PP when it is to the right of the with-PP, but impossible when it is to the left of the with-PP. Since c-command out of PP is possible (*John talked with nobody about anyone*) and A'-movement does not obviate principle C violations, (28c) and (29) are principle C violations. In addition, *zichzelf* in the with-PP in (29) violates binding condition A.

(30) *Ik heb [$_{PP}$ over Jan] [$_{PP}$ met 'mzelf/zichzelf] ~~[$_{PP}$ over Jan]~~ gesproken
I have about John with HIM+ SELF/SIGSELF about John spoken

5. Conclusion

I have used the properties of binding into PP in this paper to make the following claims: (i) PP always has a syntactic subject. (ii) The syntactic subject of PP can be a DP, or an extended projection of V, such as VP, AgrSP and AgrOP. (iii) The binding properties of a PP with AgrSP or AgrOP as its subject show that AgrSP and AgrOP are interpretable at LF, namely as a state of the subject and the object respectively. (iv) The distribution of SIGSELF and HIM follows from the Principle of Semantic Interpretation (Barbiers 1995). (v) Logophors do not exist in Dutch. (vi) Dutch *zichzelf* is ambiguous between SIGSELF and SE + intensifier SELF. (vii) The properties of Dutch and Mainland Scandinavian anaphors suggest that English *himself* is four ways ambiguous, namely between [SIGSELF], [HIM + intensifier SELF], [SE], and [SE + intensifier SELF]. Further research is necessary to establish whether this can fully explain the distribution of *himself*.

The semantic function of a PP was shown to depend on the kind of subject that it takes. PP is a small clause complement when it takes an internal DP as its subject. PP is a "PP-complement" when it takes as its subject a segment of AgrOP or AgrSP. PP is interpreted as a VP-modifier when it has a VP-subject. PP is interpreted as an object depictive when it has AgrOP, denoting a state of the object, as its subject. PP is interpreted as a subject depictive if it takes AgrSP as its subject. The difference between "PP-complements" on the one hand and object/subject depictives is the level of attachment: depictives attach to a higher AgrP segment than "PP-complements".

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