

Abstract

In Dutch, adpositions can be stranded, typically if their complement is an R-pronoun. The complement usually appears in the left part of the *Mittelfeld* or in the *Vorfeld*. In HPSG this is canonically modeled in terms of extraction, making use of nonlocal devices such as SLASH and BIND. This paper argues that the extraction analysis is indeed appropriate for cases in which the complement is realised in the *Vorfeld*, but proposes an alternative for the cases in which the complement is realised in the *Mittelfeld*. The new treatment is based on argument inheritance, as complement raising in the *Mittelfeld* involves a middle distance dependency rather than a long distance dependency.

1 Introduction

In Dutch, adpositions canonically precede their complement.

- (1) Ze zegt dat ze soms nog [aan hem/Hans] denkt.
she says that she sometimes still [of him/Hans] thinks
'She says that she still thinks of him/Hans from time to time.'
- (2) *Ze zegt dat ze soms nog [hem/Hans aan] denkt.
* she says that she sometimes still [him/Hans of] thinks

However, if the complement is a demonstrative pronoun, such as *dit* 'this' or *dat* 'that', it takes another form, the so-called R-form, and precedes the adposition.¹

- (3) *Ze zegt dat ze soms nog [aan dat/dit] denkt.
* she says that she sometimes still [of that/this] thinks
- (4) Ze zegt dat ze soms nog [daar/hier aan] denkt.
she says that she sometimes still [that+R/this+R of] thinks
'She says that she still thinks of that/this from time to time.'

The same holds for the impersonal *het* 'it' and the interrogative/relative *wat* 'what', which alternate with *er* and *waar* respectively. The alternation also applies to the quantifying *iets* 'something', *niets* 'nothing' and *alles* 'everything', but for these pronouns it is optional: (5) and (6) are equally well-formed.²

- (5) Ze zegt dat ze soms gewoon [aan niets] denkt.
she says that she sometimes simply [of nothing] thinks
'She says that she simply thinks of nothing from time to time.'

[†]We thank the audience of the HPSG 2014 conference (Buffalo, August 28-29) for their comments. The research presented in this paper is part of a project on complement raising and cluster formation in Dutch, sponsored by FWO Vlaanderen (2011-2015, G.0.559.11.N.10).

¹The sequence of the R-pronoun and the adposition is often treated as an orthographic unit, as in *daaraan* and *hieraan*.

²The sequence of *(n)ergens/overal* and an adposition is not treated as a single unit in the orthography.

- (6) Ze zegt dat ze soms gewoon [nergens aan] denkt.
 she says that she sometimes simply [nothing+R of] thinks
 ‘She says that she simply thinks of nothing from time to time.’

Table 1 provides a survey of the pronouns which show the [–/+ R] alternation. What they have in common is that they all denote a thing rather than a person: They are [–HUMAN], see Van Riemsdijk (1978, 37–40).

Pronoun	[-R]	[+R]	
Impersonal	<i>het</i>	<i>er</i>	‘it’
Demonstrative	<i>dat</i>	<i>daar, d’r</i>	‘that’
	<i>dit</i>	<i>hier</i>	‘this’
Interrogative/Relative	<i>wat</i>	<i>waar</i>	‘what’
Quantifying	<i>iets</i>	<i>ergens</i>	‘something’
	<i>niets</i>	<i>nergens</i>	‘nothing’
	<i>alles</i>	<i>overal</i>	‘everything’

Table 1: The Dutch pronouns with an R-form

A peculiar property of the R-pronouns is that they tend to be realized out of the PP: They typically end up in the left part of the Mittelfeld, preceding the VP adjuncts, as in (7–8), or in the Vorfeld, as in (9–10).

- (7) Ze zegt dat ze *daar* soms nog [__ aan] denkt.
 she says that she that+R sometimes still [__ of] thinks
 ‘She says that she still thinks of it from time to time.’
- (8) We hebben *er* toen een lied [__ over] gezongen.
 we have it+R then a song [__ about] sung
 ‘We have sung a song about it.’
- (9) *Waar* denk je dat ze [__ op] wachten?
 what+R think you that they [__ for] wait
 ‘What do you think they are waiting for?’
- (10) *Hier* kunnen we echt niet [__ op] wachten.
 this+R can we really not [__ for] wait
 ‘This we really cannot wait for.’

The result of this non-local realization is that the adposition is left alone: It is stranded in the right part of the Mittelfeld. The phenomenon has been studied extensively. Descriptive surveys are provided in Haeseryn et al. (1997) and Broekhuis (2013), transformational treatments in Van Riemsdijk (1978) and Bennis (1986),

and HPSG treatments in Rentier (1993) and Bouma (2000).³ Both of the latter treat the phenomenon in terms of extraction, employing non-local devices such as SLASH and BIND.

This paper endorses the extraction treatment for sentences in which the R-pronoun ends up in the Vorfeld, as in (9–10), but proposes an alternative for the sentences in which the R-pronoun occurs in the left part of the Mittelfeld, as in (7–8). Since the latter is a middle distance (or bounded) dependency rather than a long distance (or unbounded) dependency, we argue that its proper treatment requires an analysis that is based on argument inheritance, rather than on non-local devices. Section 2 presents the analysis, section 3 compares it with the uniform extraction analysis, especially with Bouma’s version, and section 4 draws some conclusions.

2 The analysis

In HPSG middle-distance dependencies are typically dealt with in terms of argument inheritance, also known as generalized raising. It was first proposed in Hinrichs & Nakazawa (1989, 1994) for a treatment of the German verb clusters, and it was adopted and adapted by various authors to deal with similar phenomena in other languages, such as the Dutch verb clusters in Bouma & van Noord (1998) and clitic climbing in French and Italian, see Abeillé et al. (1998) and Monachesi (1998). We will adopt it here to deal with the adposition stranding in (7–8), albeit with a twist, in the sense that we adopt the treatment of argument inheritance that is proposed in Van Eynde & Augustinus (2013). A characteristic property of that treatment is that it differentiates complement raising from subject raising.

We first show how this treatment deals with scrambling in the Mittelfeld (section 2.1), and then apply it to the phenomenon of adposition stranding (section 2.2). Next, we discuss a constraint on adposition stranding (section 2.3) and show that it extends to scrambling in general (section 2.4). Finally, we discuss a second constraint on adposition stranding and argue why complement raising must be differentiated from complement extraction (section 2.5).

2.1 Scrambling as a result of complement raising

A typical instance of scrambling in the Mittelfeld is given in the bracketed subordinate clause of (11).

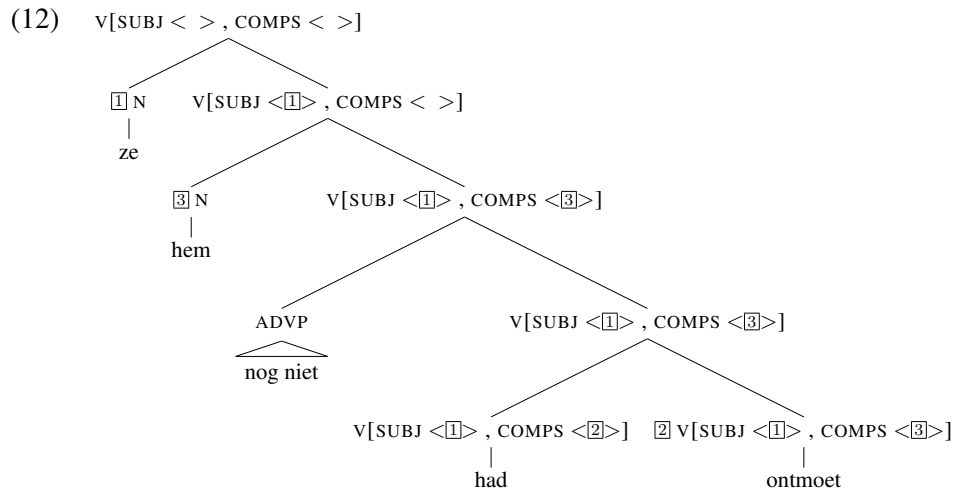
- (11) Het schijnt [dat ze hem nog niet had ontmoet].
it seems [that she him still not had met]
‘It seems that she had not met him yet.’

³The phenomenon also occurs in German, albeit on a smaller scale. See Fleischer (2002) and Kunkel-Razum & Münzberg (2006) for a descriptive overview, and Müller (1995) for an HPSG analysis.

The main verb *ontmoet* ‘met’ is separated from its arguments *ze* ‘she’ and *hem* ‘him’ by the auxiliary of the perfect *had* and the VP-adjunct *nog niet* ‘not yet’.

To link the verb to its arguments, the generalized raising treatment assumes that the auxiliary inherits the unfulfilled expectations of its participial complement. As applied to the example, *had* inherits the SUBJ list of *ontmoet* ‘met’ and adds the latter’s COMPS list to its own COMPS list.

In the treatment of Van Eynde & Augustinus (2013), the auxiliary inherits the SUBJ list of *ontmoet* ‘met’, but not its COMPS list. Instead, the non-realized COMPS requirement of the participle is propagated directly from the participle to the mother node, as in (12).⁴



The auxiliary selects a participial VP complement ([2]) and inherits its unrealized SUBJ requirement ([1]), but not its unrealized COMPS requirement ([3]). The latter is propagated directly to the mother.

To model this we employ a lexical constraint for subject raising and a phrasal constraint for complement raising.

$$(13) \text{ } s\text{-}rsg\text{-}lx \Rightarrow [\text{ARG-ST} \langle [1], [\text{SUBJ} \langle [1] \rangle] \rangle]$$

$$(14) \text{ } hd\text{-}ph \Rightarrow \left[\begin{array}{l} \text{SS} \mid \text{LOC} \mid \text{CAT} \mid \text{COMPS} \quad [B] \oplus [A] \\ \text{HEAD-DTR} \mid \text{SS} \mid \text{LOC} \mid \text{CAT} \mid \text{COMPS} \quad [A] \\ \text{NONHD-DTR} \mid \text{SS} \mid \text{LOC} \mid \text{CAT} \mid \text{COMPS} \quad [B] \end{array} \right]$$

The lexical constraint is identical to the one for English, see Ginzburg & Sag (2000, 22) and Sag et al. (2003, 367).⁵ The phrasal constraint subsumes all headed phrases.⁶

⁴The SUBJ and COMPS lists of *ze* ‘she’, *hem* ‘him’ and *nog niet* ‘not yet’ are all empty.

⁵There is a similar lexical constraint for the object raising lexemes, such as *expect* and *make*.

⁶In non-headed phrases, such as coordinate structures, the COMPS list of the mother is identified with the COMPS lists of each of the conjunct daughters separately. In *he buys and sells cars*, for instance, the coordinate phrase *buys and sells* has the same COMPS list as its conjunct daughters, *buys* and *sells*.

Cancellation of elements from the COMPS list is modeled in the definition of the phrases of type *head-complement*.⁷

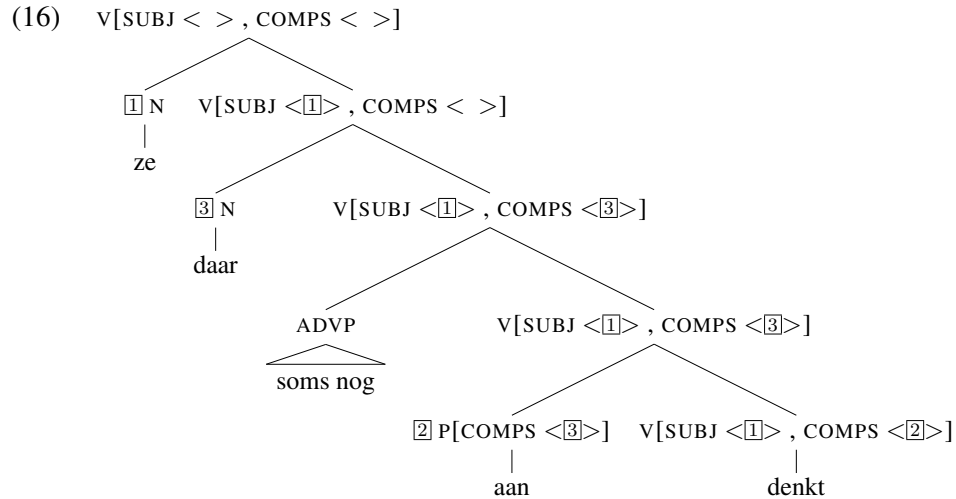
$$(15) \text{ } hd\text{-}comp\text{-}ph \Rightarrow \left[\begin{array}{l} SS \mid LOC \mid CAT \mid COMPS \quad \boxed{A} \\ HEAD\text{-}DTR \mid SS \mid LOC \mid CAT \mid COMPS \quad \boxed{A} \oplus \langle \boxed{1} \rangle \\ NONHD\text{-}DTR \mid SS \quad \boxed{1} \end{array} \right]$$

Since *head-complement-phrase* is a subtype of *headed-phrase*, it follows that the COMPS list can shrink and expand at the same time. The combination of *had* with *ontmoet* in (12), for instance, involves the cancelation of the requirement for a participial complement (2) and the addition of the unrealized requirement for an accusative nominal (3).

Empirical evidence for treating complement raising in another way than subject raising is provided in Van Eynde & Augustinus (2013). It hinges on the interaction of raising with the argument realization principle, the binding principles and the passive lexical rule. In a nutshell, while the integration of unrealized SUBJ requirements in the ARG-ST list of the raising lexemes meshes well with the independently motivated treatments of argument realization, binding and passivization, the integration of unrealized COMPS requirements in the ARG-ST lists of the selecting lexemes causes complications.

2.2 Adposition stranding as an instance of complement raising

Clauses in which an R-pronoun is realized in the left part of the Mittelfeld can be analyzed in the same way as the scrambling data in the previous section. The application of complement raising to (7), for instance, yields the structure in (16).



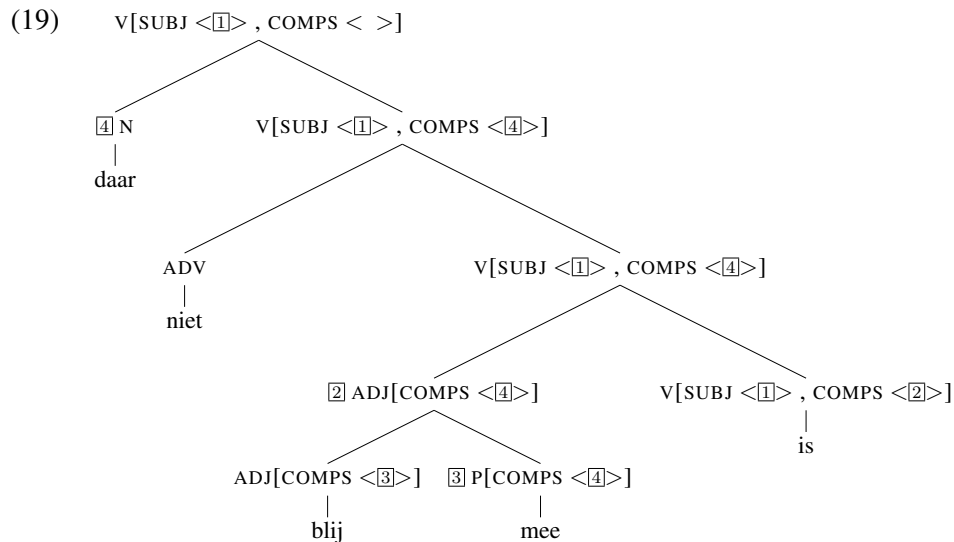
⁷(15) assumes that complements are added one at a time, from the most to the least oblique. To allow the combination with two or more complements at once, as in a flat structure, the COMPS list of the head daughter has to be reformulated as in Ginzburg & Sag (2000, 34).

The verb's requirement for an adpositional complement (②) is immediately saturated, but the adposition's requirement for a nominal complement (③) is not. It is appended to the one of the mother and canceled after the addition of *daar* 'there'.⁸

This treatment not only deals with raising out of PP complements of verbs, but also out of PP complements of non-verbal categories, such as the predicative adjective in (17) and the noun in (18).

- (17) ...dat ze *daar* niet blij [... mee] is.
 ...that she that+R not glad [... with] is
 '... that she is not glad about that.'
- (18) ...dat ze *er* een boek [... over] wil lezen.
 ...that she it+R a book [... about] wants read
 '... that she wants to read a book about it.'

The structure of (17) is spelled out in (19).



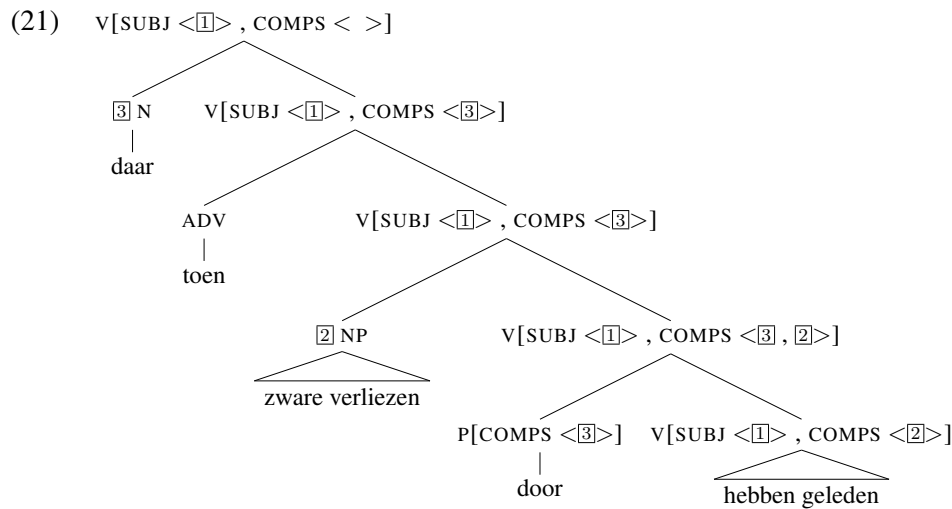
The adjective's requirement for an adpositional complement (③) is immediately saturated, and so is the verb's requirement for a predicative complement (②), but the adposition's requirement for a nominal complement (④) is not. It is appended to the one of the mother and propagated up the tree, till the point where the addition of *daar* triggers its cancellation. Notice that the requirement for a nominal complement (④) figures in the COMPS lists of the adposition and the nodes which dominate it, but not in the COMPS lists of the adjective or the verb.

An advantage of this treatment of complement raising is that it also copes with the raising out of PP adjuncts, as in (20).

⁸The SUBJ value of the adposition is the empty list, in accordance with the canonical HPSG treatment of argument marking adpositions.

- (20) ...dat we *daar* toen zware verliezen [... door] hebben geleden.
 ...that we that+R then heavy losses [... by] have suffered
 ‘...that we suffered heavy losses because of that.’

The *door*-phrase in this sentence is not a complement of the verb, but a VP adjunct. It specifies the cause of the losses. Its COMPS requirement is not immediately saturated, but propagated in the by now familiar way.



In the generalized raising treatment, Hinrichs-Nakazawa style, this would require special measures: Since adjuncts are not selected by their head sister, the latter cannot inherit the former's COMPS requirement in the usual way. No such complications are needed in our treatment of complement raising.

In sum, the device which we use to model scrambling in the Mittelfeld can be used to model the raising out of PPs as well, no matter whether those PPs are complements of verbs, complements of other categories, or adjuncts.

2.3 A constraint on adposition stranding

A general constraint on Dutch adposition stranding is that it only affects complements which precede the adposition. Complements which follow the adposition must be realized within the PP.

- (22) * Ze zegt dat ze hem/Hans soms nog [aan --] denkt.
 * she says that she him/Hans sometimes still [of --] thinks

This is confirmed by the locative adverbs. They are homophonous to the R-pronouns, but in contrast to the latter they follow the adposition in PPs and must be realized within the PP.

- (23) ... dat ze volgens ons niet [van hier] zijn.
 ... that they according-to us not [from here] are
 ‘... that they are not from here according to us.’
- (24) * ... dat ze volgens ons niet [hier van] zijn.
 * ... that they according-to us not [here from] are
- (25) * ... dat ze hier volgens ons niet [van __] zijn.
 * ... that they here according-to us not [from __] are

The relevance of the linear order is also clear from the contrast between (26) and (27).

- (26) ... dat de auto dagenlang [in de garage] stond.
 ... that the car days-long [in the garage] stood
 ‘... that the car stood in the garage for days.’
- (27) ... dat ze achteruit [de garage in] reed.
 ... that she backward [the garage in] drove
 ‘... that she drove backward into the garage.’

The prepositional PP in (26) requires in situ realization of its complement, but its postpositional counterpart in (27) allows raising.⁹

- (28) * ... dat de auto de garage dagenlang [in __] stond.
 * ... that the car the garage days-long [in __] stood
- (29) ... dat ze de garage achteruit [__ in] reed.
 ... that she the garage backward [__ in] drove
 ‘... that she drove backward into the garage.’

This suggests that P-initial PPs are islands for complement raising. This is confirmed by the contrast between (30) and (31).

- (30) Heb jij *daar* al [een boek [__ over]] gelezen?
 have you that+R already [a book [__ about]] read?
 ‘Have you already read a book about that?’
- (31) * Heb jij *daar* al [aan een boek [__ over]] meegewerkt?
 * have you that+R already [on a book [__ about]] collaborated?

(30) is well-formed, but (31) is not: The addition of the preposition *aan* ‘on’ blocks the raising of the complement.

In sum, complements can be raised out of a P-final PP, but not out of a P-initial PP. Besides, we have seen that the raised complement cannot only be an R-pronoun, but also a full NP, as in (29).

⁹The distinction corresponds to a difference in interpretation: While the prepositional PP has a locational interpretation, the postpositional one has a directional interpretation.

2.4 A generalization

The conclusion of the previous section naturally extends to verbs: While it is possible to raise complements out of a V-final VP, as shown in (12), it is not possible to raise a complement out of a V-initial VP. Indeed, complements which precede a V-initial VP, as in (32), are standardly treated as extracted, rather than as raised.

- (32) Zo iemand [had ik nog nooit __ ontmoet].
so someone [had I still never __ met]
'Such a person I had never met before.'

In terms of the canonical HPSG treatment of extraction, the requirement of *ontmoet* 'met' for a direct object NP is subtracted from its COMPS list and added to its SLASH value (Ginzburg & Sag, 2000, 170-171).

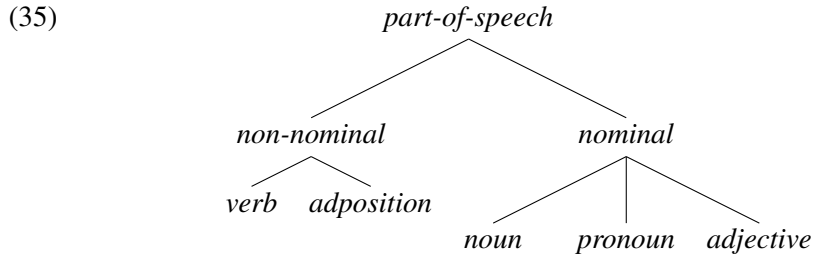
Empirical evidence for differentiating complement raising from complement extraction is provided by the contrast between (33) and (34).

- (33) Ze zouden jou/je volgens haar meteen moeten ontslaan.
they should you according-to her immediately must fire
'They should fire you immediately according to her.'
- (34) Jou/*je zouden ze volgens haar meteen moeten ontslaan.
you should they according-to her immediately must fire
'It is you that they should fire immediately according to her.'

While both the full form and the phonologically reduced form of the object pronoun can be raised to the left part of the Mittelfeld, it is only the full form (*jou*) that can be extracted. The non-extractability of the reduced form (*je*) is due to the fact that non-subject constituents in the Vorfeld must be able to bear stress. Pronouns with a clear vowel can bear stress and, hence, occur in the Vorfeld, but pronouns with a mute vowel or without vowel cannot. The other non-extractable forms include the non-nominative personal pronouns *me*, *ze*, *d'r*, *'r*, *'m*, the impersonal *het*, *'t* and the reflexive *zich*, see (Van Eynde, 1999).

Assuming then that complement extraction is different from complement raising, in the same way as subject extraction is different from subject raising, we can formulate the ban on complement raising out of V-initial VPs and P-initial PPs in terms of a single constraint. To pave the way for its formulation we first add a feature, called POSITION, to the HEAD values of the verbs and the adpositions. As in X-bar theory, we assume that they are both non-nominal, i.e. [-N] (Chomsky, 1970; Jackendoff, 1977).¹⁰

¹⁰In X-bar theory, the lexical categories are analyzed in terms of the boolean features N and V: Verbs are [-N, +V], nouns are [+N, -V], adjectives are [+N, +V] and adpositions are [-N, -V].



(36) *non-nominal* : [POSITION *position*]

The inventory of POSITION values is given in (37).



In terms of this dichotomy, the Dutch adpositions come in three types. Some are inherently initial, such as *met* ‘with’, *tot* ‘to, till’, *te* ‘at, to’ and *sinds* ‘since, for’, some are inherently final, such as *mee* ‘with’, *toe* ‘to, till’, *af* ‘from’ and *heen* ‘towards’, and some are used either way, such as *in* ‘in’, *op* ‘up, on’, *aan* ‘on’ and *van* ‘of’. The verbs can be partitioned in the same way: Assuming that *initial* subsumes both the V1 and the V2 order, the inherently initial ones include the imperatives, the inherently final ones include the participles and the infinitives, and the underspecified ones include the non-imperative finite forms. Table 2 provides a survey.

POSITION	Adpositions	Verbs
Initial	<i>met, tot, te, sinds</i>	imperative
Final	<i>mee, toe, af, heen</i>	non-finite
Underspecified	<i>in, op, aan, van</i>	non-imperative finite

Table 2: The POSITION values of Dutch adpositions and verbs

Assuming that the underspecified values are resolved contextually, the constraint which blocks complement raising can now be formulated as follows:

$$(38) \left[\begin{array}{l} hd-ph \\ SS | LOC | CAT | HEAD | POSITION \quad initial \end{array} \right] \Rightarrow \left[\begin{array}{l} SS | LOC | CAT | COMPS \quad \langle \rangle \end{array} \right]$$

What (38) says, is that phrases whose POSITION value is resolved to *initial* must have an empty COMPS list. From this it follows that complements cannot be raised out of V-initial VPs nor out of P-initial PPs. Technically, the restriction to verbs and adpositions is due the fact that only these have the POSITION feature. Empirically, it is motivated by the fact that the other lexical categories do not abide by the

constraint. APs and NPs, for instance, allow complement raising, also if the head precedes its dependents. This was shown for the R-pronouns in (17–18), but it also holds for other kinds of dependents of adjectives and nouns, such as the bracketed PPs in (39–40).

- (39) Ze zullen [met die resultaten] volgens mij niet [blij --] zijn.
 they will [with those results] according-to me not [happy --] be
 ‘They will not be happy with those results according to me.’
- (40) Ze hebben [van elk dier] om het uur [foto’s --] gemaakt.
 they have [of each animal] about the hour [pictures --] made
 ‘Every hour they made pictures of each animal.’

The restriction to verbs and adpositions is, hence, justified.

Broadening the scope to the functional categories, there is one that could be claimed to show the same behavior as the verbs and the adpositions, i.e. the complementizers. They take the same position in V-final clauses as the finite verbs in V-initial clauses, i.e. the first pole, also known as the *linke Satzklammer*. Since that position separates the Vorfeld from the Mittelfeld, complementizers are a barrier for complement raising. As a consequence, if we add the complementizers to the non-nominal parts of speech, they also have the POSITION feature, and since complementizers invariably precede their clausal complement (in Dutch), the value of that feature is always *initial*, so that the CPs are subsumed by the constraint in (38). Appealing as it is, we present this extension as hypothetical, since it presupposes that complementizers are heads of CPs. If one adopts the marker treatment of the complementizers instead, as in Pollard & Sag (1994, 44–46), the constraint has to be formulated in another way, for instance, by adding the requirement that the clausal sister of the complementizer must have an empty COMPS list. Since we do not know of any conclusive evidence in favour of the CP treatment, as opposed to the marker treatment, we leave the issue open.

2.5 A second constraint on adposition stranding

As for extraction out of PPs, it is clear that P-final PPs allow it, see (9–10). Some other examples are those in (41–42).

- (41) Welke garage denk je dat hij toen achteruit [-- in] reed?
 which garage think you that he then backward [-- in] drove?
 ‘Which garage do you think he drove into backward?’
- (42) Daar hebben we toen met de baas [-- over] gesproken.
 that+R have we then with the boss [-- about] spoken
 ‘That we talked about with the boss then.’

P-initial PPs, by contrast, are islands for extraction.

- (43) * Welke garage denk je dat ze [in ...] liggen?
 * which garage think you that they [in ...] lie?
- (44) * Daar hebben we toen [met de baas [... van]] gesproken.
 * that+R have we then [with the boss [... of]] talked

As indicated by the bracketing, the stranded *van* ‘of’ in (44) is a PP-adjunct of *baas* and, hence, included in the PP that is introduced by *met* ‘with’. It thus contrasts with the stranded *over* ‘about’ in (42), which is a PP-complement of the verb *gesproken* ‘spoken’.

In contrast to the P-initial PPs, the V-initial VPs do allow complement extraction, as shown in (32) and (45).

- (45) Wie [heb je gisteren in Gent __ ontmoet]?
 who [have you yesterday in Gent __ met]?
 ‘Who did you meet in Gent yesterday?’

The same holds for clauses which are introduced by a complementizer.

- (46) Wie denk je [dat ik gisteren in Gent __ ontmoet heb]?
 who think you [that I yesterday in Gent __ met have]?
 ‘Who do you think I met in Gent yesterday?’

The constraint on complement extraction is, hence, less restrictive than the one on complement raising:

$$(47) \left[\begin{array}{c} hd-ph \\ SS | LOC | CAT | HEAD \left[\begin{array}{c} adposition \\ POSITION \quad initial \end{array} \right] \end{array} \right] \Rightarrow \left[SS | NONLOC | SLASH \{ \} \right]$$

In plain words, P-initial PPs must have an empty SLASH set, but this constraint does not extend to V-initial VPs nor to clauses which are introduced by a complementizer.

3 A comparison with the uniform extraction analysis

A distinctive property of our analysis of adposition stranding is that we see it as the result of either complement raising or complement extraction. In this respect it differs from the existing HPSG treatments which see it as the result of complement extraction only. Rentier (1993) and Müller (1995) take the uniform extraction analysis for granted and focus mainly on the issue of how it can be spelled out in formal detail. Bouma (2000), by contrast, considers argument inheritance as an alternative for the uniform extraction analysis, but then argues against it. His four arguments will be discussed in this section.

3.1 Raising versus extraction

“Prepositions which do not allow extraction (such as *met*) cannot be associated with an R-pronoun in the Mittelfeld either. If two different mechanisms are used to account for these two phenomena, such generalizations are easily lost.” (Bouma, 2000, p.69)

Our answer to this objection is threefold. First, it is true that we have separate constraints on complement raising and complement extraction, see (38) and (47) respectively. This, however, is motivated by the fact that the former also subsumes the verbs, while the latter does not. If we use a single constraint, we lose the generalization that the constraint on complement raising also subsumes V-initial VPs.

Second, the empirical argument for differentiating raising from extraction is also valid for the R-pronouns. The reduced forms *er* and *d’r* can be raised, as in (48), but they cannot be extracted, as shown in (49).

- (48) We hebben *daar/er/d’r* een liedje [... over] gezongen.
we have that+R/it+R a song [... about] sung
‘We sang a song about that.’
- (49) *Daar/*er/*d’r* hebben we een liedje [... over] gezongen.
that+R/*it+R have we a song [... about] sung
‘That we sang a song about.’

Third, there are languages, such as English, which allow adposition stranding as a result of extraction, but not as a result of raising.

- (50) a. *What* did you say she sang a song [about ...]?
b. *That man* I never want to talk [to ...] again.
- (51) a. * I once heard *it* a song [about ...].
b. * You should never *that* talk [about ...] again.

The ban on complement raising follows from the Empty COMPS Constraint (ECC), see Ginzburg & Sag (2000, p.33).

$$(52) \text{ phrase} \Rightarrow \left[\text{SS} \mid \text{LOC} \mid \text{CAT} \mid \text{COMPS} \left\langle \right\rangle \right]$$

This constraint requires all phrases to have an empty COMPS list and is, hence, much more restrictive than (38), which requires this only for V-initial VPs and P-initial PPs.¹¹

In sum, the use of separate constraints on complement raising and complement extraction is motivated by the fact that they have a different range of application, as well as by the fact that there are languages which have one but not the other.

¹¹It might make sense to restrict the ECC to *headed* phrases, since coordinate phrases may consist of unsaturated words, as in *he buys and sells cars* and *are you for or against the war on terror*.

3.2 PP-internal order

“As argument inheritance normally involves the composition of two COMPS lists, R-pronouns would have to be allowed on COMPS, even though they can, apart from a few exceptional cases, never appear in a position following the preposition.” (ibid.)

This objection is based on the assumption that a nominal can only be a complement of an adposition if it follows that adposition, as in (1) and (5). This assumption, though, is hardly tenable in view of the fact that R-pronouns canonically precede the adposition when they are realized within the PP, as in (4) and (6), repeated in (53–54).

- (53) Ze zegt dat ze soms nog [daar aan] denkt.
she says that she sometimes still [that+R on] thinks
‘She says that she still thinks about it from time to time.’
- (54) Ze zegt dat ze soms gewoon [nergens aan] denkt.
she says that she sometimes simply [nothing+R of] thinks
‘She says that she simply thinks of nothing from time to time.’

It is also contradicted by the PP-internal order in (27), repeated in (55).

- (55) ... dat ze achteruit [de garage in] reed.
... that she backward [the garage in] drove
‘... that she drove backward into the garage.’

Rentier (1993, 116), who just like Bouma assumes that Dutch PPs must be *prepositional*, mentions (55) as a possible counterexample for his claim that Dutch has no postpositions, but then casts doubt on the adpositional status of *in*, claiming that it might be a particle. We do not share this doubt, since the adposition in (55) is clearly distinct from the separable verb particle in *inrijden*, a transitive verb denoting the activity of preparing a vehicle (car, bike, bus, ...) for use on the road. For detailed argumentation that postpositions like the one in (55) are distinct from particles, see Van Riemsdijk (1978, 90-108).

In addition, given that Dutch has V-final VPs and A-final APs, as shown in (56), the existence of P-final PPs is just what one expects.

- (56) ... dat hij [[haar fratsen beu] is].
... that he [[her antics fed-up] is]
‘... that he is fed up with her antics’.

In fact, Dutch is widely assumed to be predominantly head-final.

3.3 Argument inheritance

“The set of argument inheritance verbs must now not only contain auxiliaries and modals, but all verbs which select a (prepositional) complement. Examples such as *Kim is er tevreden mee* introduce further complications for an argument inheritance approach, as it suggests that predicative adjectives and nouns must be argument inheritors as well.” (ibid.)

This is a concern which we share. In fact, it is one of the reasons why we have chosen to model complement raising in terms of a constraint on headed phrases rather than in terms of a lexical constraint. The latter is only used to model subject raising and is, hence, limited to auxiliaries, modals and a few other verbs. It is not necessary to extend this to all the verbs, adjectives and nouns which select a PP complement, since the unsaturated COMPS requirements are propagated directly from the nonhead-daughter to the mother, see (16), (19) and (21).

3.4 Amalgamation of syntactic functions

“In an argument inheritance approach, the relationship between valence and syntactically realized arguments has to be one-on-one, and thus there is no room for amalgamation of syntactic functions.” (ibid.)

This objection requires a more lengthy rebuttal. To see what is meant with amalgamation, notice that *er* and *d'r* are not only used as R-pronouns and locative adverbs, but also as the semantically vacuous subject of existential clauses and impersonal passives, as in (57–58).

- (57) *Er/d'r staat een artikel over die mislukte aanslag in de krant.*
there stands an article about that failed coup in the newspaper
'There is an article about that failed coup in the newspaper.'
- (58) *Er/d'r wordt nog elke dag over die mislukte aanslag geschreven.*
there is still every day about that failed coup written
'That failed coup is still written about every day.'

These uses of *er* and *d'r* can be seen as the nominative counterparts of the non-nominative R-pronouns in PPs. If a clause contains both a nominative and a non-nominative R-pronoun, there is a tendency to drop the latter.

- (59) *Er/d'r staat (er) een artikel [... over] in de krant.*
there stands (it+R) an article [... about] in the newspaper
'There is an article about it in the newspaper.'
- (60) *Er/d'r wordt (er) nog elke dag een artikel [... over] geschreven.*
there is (it+R) still every day an article [... about] written
'Every day an article is written about it.'

If the two occurrences are adjacent, the elision is even obligatory.

- (61) ... dat *er/d'r* (**er*) een artikel [... over] in de krant staat.
... that there (**it+R*) an article [... about] in the newspaper stands
'... that there is an article about it in the newspaper.'
- (62) ... dat *er/d'r* (**er*) een artikel [... over] geschreven wordt.
... that there (**it+R*) an article [... about] written is
'... that there is an article written about it.'

Bouma (2000, 73) treats the clauses with a single occurrence of *er/d'r* as instances of function amalgamation: He assumes that the pronoun simultaneously fulfills two functions in such clauses.¹² This amalgamation, he claims, is impossible to model in terms of argument inheritance, since that device does not allow for discrepancies between valence and syntactically realized arguments.

We see this differently. In our analysis, there is no function amalgamation. Instead, we assume that the first *er* tokens in (59–62) have only one function, i.e. subject of the verb. The homophonous raised pronouns are not identified with that subject, but simply omitted.¹³ Independent evidence for this analysis is provided by the fact that the omission also occurs in clauses which do not contain another instance of *er*, as in (63).

- (63) Wie is (*er*) voor? En wie is (*er*) tegen?
who is (*it+R*) for? And who is (*it+R*) against?
'Who is in favor? And who is against?'

In fact, the optional omission in (59–60) and (63) is comparable to the kind of elision that is also attested by the post-auxiliary ellipsis in *yes we can*, by the intransitive use of verbs like *eat* and *read*, and by the intransitive use of the adposition in (64).

- (64) We kunnen niet meer zonder.
we can not more without
'We can't do without it anymore.'

The obligatory omission in (61–62), for its part, is due to a constraint which blocks adjacent instances of *er/d'r*.

Similar remarks apply to clauses which contain the locative *er* 'there', such as (65).

- (65) We gaan er de ontsnapte papegaai met een groot net vangen.
we go there the escaped parrot with a large net catch
'We are going to catch the escaped parrot there with a large net.'

¹²Technically, the amalgamation is modeled in terms of structure sharing: The LOCAL value of the subject is identified with the SLASH value of the adposition as well as with the BIND value of the verb.

¹³A similar assumption is made in the transformational treatment of Bennis (1986).

If the locative *er* is followed by the homophonous non-nominative R-pronoun, as in (66), the latter is omitted.

- (66) We gaan er (*er) de ontsnapte papegaai [... mee] vangen.
we go there (*it+R) the escaped parrot [... with] catch
'We are going to catch the escaped parrot there with it.'

In sum, we do not need any room for amalgamation of syntactic functions, since the relevant data can be modeled in terms of the independently motivated omissibility of the (nominal) complements of adpositions.

4 Conclusions

The existing HPSG treatments of adposition stranding in Dutch provide a uniform extraction analysis, employing such nonlocal devices as SLASH and BIND, see Rentier (1993) and Bouma (2000). We endorse this analysis for the cases in which the extracted pronouns end up in the Vorfeld, but not for the cases in which they end up in the left part of the Mittelfeld. Since the latter concerns a middle-distance (bounded) dependency, we propose a treatment that is based on argument inheritance. More specifically, we employ the version of argument inheritance in Van Eynde & Augustinus (2013), which differentiates subject raising from complement raising, and show how the treatment of complement raising, originally motivated to model scrambling, can be used to model adposition stranding as well. In order to avoid overgeneration, we added two constraints: (38) blocks complement raising out of P-initial PPs and V-initial VPs, while (47) blocks complement extraction out of P-initial PPs. Having spelled out the treatment, we discussed Bouma's objections against the use of argument inheritance for the analysis of adposition stranding, and demonstrated that none of them sticks.

The resulting treatment is not only economical, it also accounts for the fact that languages which abide by the Empty COMPS Constraint, such as English, not only lack the kind of scrambling that we find in Dutch and German, but also the kind of adposition stranding that results from complement raising (as opposed to the kind of adposition stranding that results from complement extraction).

References

- Abeillé, Anne, Danièle Godard, Philip Miller & Ivan Sag. 1998. French bounded dependencies. In S. Balari & L. Dini (eds.), *Romance in HPSG*, 1–54. Stanford: CSLI Publications.
- Bennis, Hans. 1986. *Gaps and Dummies*: Katholieke Hogeschool Tilburg dissertation.
- Bouma, Gosse. 2000. Argument realization and Dutch R-pronouns. In R. Cann, C. Grover & P. Miller (eds.), *Grammatical Interfaces in HPSG*, 51–76. Stanford: CSLI Publications.
- Bouma, Gosse & Gertjan van Noord. 1998. Word Order Constraints on Verb Clusters in German and Dutch. In E. Hinrichs (ed.), *Complex Predicates in Non-derivational Syntax*, New York: Academic Press.
- Broekhuis, Hans. 2013. *Syntax of Dutch. Adpositions and Adpositional Phrases*. Amsterdam: Amsterdam University Press.
- Chomsky, Noam. 1970. Remarks on Nominalization. In R.A. Jacobs & P.S. Rosenbaum (eds.), *Readings in English transformational grammar*, 184–221. Waltham, Mass.: Ginn and Company.
- Fleischer, Jürg. 2002. Preposition Stranding in German Dialects. In S. Barbiere, L. Cornips & S. van der Kleij (eds.), *Proceedings of the Workshop on Syntactic Microvariation, August 2000*, 116–151. Amsterdam: Meertens Instituut.
- Ginzburg, Jonathan & Ivan Sag. 2000. *Interrogative Investigations*. Stanford: CSLI Publications.
- Haeseryn, Walter, Kirsten Romijn, Guido Geerts, Jos de Rooij & Maarten van den Toorn. 1997. *Algemene Nederlandse Spraakkunst*. Nijhoff and Wolters Plantyn.
- Hinrichs, Erhard & Tsuneko Nakazawa. 1989. Flipped out: AUX in German. In *Papers from the 25th Regional Meeting of the Chicago Linguistic Society*, 193–202. Chicago.
- Hinrichs, Erhard & Tsuneko Nakazawa. 1994. Linearizing AUXs in German Verbal Complexes. In J. Nerbonne, K. Netter & C. Pollard (eds.), *German in Head-driven Phrase Structure Grammar*, 11–37. Stanford: CSLI Publications.
- Jackendoff, Ray. 1977. *X-bar syntax: a study of phrase structure*. Cambridge: MIT Press.
- Kunkel-Razum, Kathrin & Franziska Münzberg (eds.). 2006. *DUDEN. Die Grammatik. Unentbehrlich für richtiges Deutsch*. Mannheim/Leipzig/Vienna/Zürich: Dudenverlag.

- Monachesi, Paola. 1998. Decomposing Italian clitics. In S. Balari & L. Dini (eds.), *Romance in HPSG*, 305–357. Stanford: CSLI Publications.
- Müller, Stefan. 1995. Scrambling in German – Extraction into the *Mittelfeld*. In Benjamin K. T'sou & Tom B. Y. Lai (eds.), *Proceedings of the tenth Pacific Asia Conference on Language, Information and Computation*, 79–83. City University of Hong Kong.
- Pollard, Carl & Ivan Sag. 1994. *Head-driven Phrase Structure Grammar*. Stanford/Chicago: CSLI Publications and University of Chicago Press.
- Rentier, Gerrit. 1993. Dutch Clitic Pronouns and Preposition Stranding. In *Computational Linguistics in the Netherlands. Papers from the Third CLIN Meeting*, 109–120. Tilburg.
- Sag, Ivan, Thomas Wasow & Emily Bender. 2003. *Syntactic Theory. a Formal Introduction. Second Edition*. Stanford: CSLI Publications.
- Van Eynde, Frank. 1999. Major and minor pronouns in Dutch. In G. Bouma, E. Hinrichs, G.-J. Kruijff & R. Oehrle (eds.), *Constraints and Resources in Natural Language Syntax and Semantics*, 137–151. Stanford: CSLI Publications.
- Van Eynde, Frank & Liesbeth Augustinus. 2013. Why and How to Differentiate Complement Raising from Subject Raising in Dutch. In Stefan Müller (ed.), *Proceedings of the 20th International Conference on Head-Driven Phrase Structure Grammar*, 222–242. Stanford: CSLI Publications.
- Van Riemsdijk, Henk. 1978. *A Case Study in Syntactic Markedness*. Lisse: The Peter de Ridder Press.