

## Predicative Complements, Scrambling, and Accent Placement in Dutch\*

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2/2009

### 1. Introduction

This paper explores a word order constraint in Dutch which, according to a diagnosis put forward by Zwart (1997), is not syntactic but prosodic in nature. Consider the examples in (1):

- (1) a. dat Jan de schutting [pp met die kwasten] zwart heeft geverfd  
that J. the fence with those brushes black has painted  
b. \* dat Jan de schutting zwart [pp met die kwasten] heeft geverfd  
that J. the fence black with those brushes has painted  
c. de kwasten waar<sub>i</sub> Jan de schutting zwart [pp t<sub>i</sub> mee] heeft geverfd  
the brushes, which<sub>i</sub> J. the fence black with t<sub>i</sub> has painted

In general, a resultative predicative complement such as *zwart* in (1a) must be adjacent to the verbal end cluster. In particular, an adverbial PP such as instrumental *met die kwasten* in (1b) may not intervene between the resultative and the verb. Surprisingly, this word order is allowed when the PP consists only of the stranded adposition *mee*, as illustrated in (1c).

Hoekstra (1979), who first observed the paradigm in (1), argued for an analysis involving movement of the adposition. The PP is generated to the left of the resultative, as in (1a), but stranded P obeys a V-adjacency requirement which causes *mee* in (1c) to move rightward across the resultative. A P-movement analysis was also maintained by e.g. Zwart (1993) and Neeleman (1994).

Zwart (1997) suggested a different approach, which I adopted in Ruys (2008) and will continue to assume here. The PP starts out (after some obligatory movements, detailed below) in between the resultative and the verb, as in (1b). But prosodic considerations then force the PP to move leftward, yielding (1a). A single stranded P, on the other hand, is prosodically light enough to be allowed to remain in situ, which gives (1c).

Evidence that a prosodic constraint is at work was presented in Ruys (2008). I argued that the distribution of stranded P mirrors that of P with a weak pronoun as its complement, across a wide range of cases. This generalization extends to the pattern in (1), as shown in (2):

- (2) dat Jan de schutting zwart met ze heeft geverfd, met die kwasten  
that J. the fence black with them has painted, with those brushes

The fact that *met ze*, a full PP, can appear in the same position as stranded P, between resultative and verb, argues against a head-movement derivation of this word order as proposed by Hoekstra (1979) and others. Furthermore, the fact that *met ze* can appear where *met die kwasten* cannot, supports the prosodic approach suggested by Zwart (1997), since the two PPs differ in their prosodic properties, but do not appear to differ in their syntactic properties.

The syntactic side of the analysis is straightforward enough. As in Hoekstra (1979), the PP is initially generated to the left of the object and the resultative, which together form a Small Clause; see (3a):<sup>1</sup>

- (3) a. [AgroP [PredP [VP PP [VP [SC DP AP ] V ]]]]  
b. [AgroP DP [PredP AP [VP PP [VP [SC t<sub>DP</sub> t<sub>AP</sub> ] V ]]]]

The object DP moves leftward for Case (say, to Spec,AGRoP; see Vanden Wyngaerd 1989), and the resultative also moves leftward, to Spec,PredP, for similar reasons. These movements result in the (proscribed) word order of (1b), shown in (3b). At this point, the prosodic constraint forces movement of the PP, if it is prosodically “heavy.”

But what is the nature of the prosodic constraint? Zwart phrases his proposal as follows:

In [Small Clause] constructions, the predicate carries the nuclear pitch accent and is in a prosodic domain with the verb. Adjunct PPs, like VP-adverbs, constitute a prosodic domain of their own. [A] prosodic phrase cannot be nested in another prosodic domain. This excludes the word order in [(1b)].

The stranded preposition, on the other hand, is atonic. Therefore, it does not intrude in the prosodic phrase containing the predicate and the verb. (Zwart 1997:104).

Unfortunately, this discussion is as brief as it is insightful, and it leaves unanswered some important questions, which it is the purpose of the present paper to address.

The first question is this. Granted that the predicate in predicative complement constructions generally ends up in the same prosodic domain as the verb, why should it cause problems when on occasion this does not happen, due to an intervening adjunct PP? Apparently, the intention is that there exists some constraint that the predicate *must* end up in the same domain as the verb. Let’s state this as in (4):

- (4) *Predicate Adjacency Constraint (PAC)*  
The Small Clause predicate may not be prosodically separated from the verbal end cluster.

\* Thanks are due to Arnold Evers, Ora Matushansky, and Mieke Trommelen. I also benefitted from comments by anonymous reviewers of Ruys (2008). All remaining errors are mine.

<sup>1</sup> My structure in (3) deviates from Zwart’s proposal in that he base-generates the small clause to the right of the verb; this is not relevant for the discussion in this paper.

Although I will motivate a revision in the next section, this statement is descriptively close to correct. The more important question, of course, remains: why should a constraint like this hold?

The second question concerns the relevance of Zwart's generalization that the predicate carries the nuclear pitch accent. I will argue below that, while this generalization is not correct, the place of the nuclear pitch accent is indeed relevant, and may provide the key to explaining the Predicate Adjacency Constraint.

The purpose of the present paper is to examine the properties of the Predicate Adjacency Constraint, to describe how it fits in with basic generalizations governing phrasal stress assignment around the verbal end cluster, and to explore how it might be derived from underlying principles. Before turning to these issues, I will discuss a modification of the PAC which is necessitated by some observations in Ruys (2008).

## 2. The Predicate Adjacency Constraint Revised

The Predicate Adjacency Constraint as stated in (4) correctly describes the data in (1) and (2): the predicative complement may be separated from the verb cluster at most by elements (adpositions, weak pronouns) that cannot bear stress and do not form a separate intonational domain. The generalization holds across a wide range of predicative complement types (but not for non-complement predicates, such as depictives, as discussed below). The data in (5) through (10) illustrate that it holds for PP Small Clause predicates as well (the PAC-violation in (5b) is due to Bennis & Hoekstra 1984).

- (5) a. dat we gisteren naar Groningen gingen  
that we yesterday to Groningen went  
b. \* dat we naar Groningen gisteren gingen  
that we to Groningen yesterday went  
c. ? de trein waar<sub>i</sub> Marie naar Amsterdam mee t<sub>i</sub> is gegaan  
d. ? dat Marie naar Amsterdam met je is gegaan  
{ which<sub>i</sub> / that } M. to Amsterdam with { t<sub>i</sub> / you } is gone
- (6) a. dat Jan de spijker met de hamer in de muur heeft geslagen  
that J. the nail into the wall with the hammer has hit  
b. \* dat Jan de spijker in de muur met de hamer heeft geslagen  
that J. the nail into the wall with the hammer has hit  
c. ? de hamer waar<sub>i</sub> Jan de spijker in de muur mee t<sub>i</sub> heeft geslagen  
d. ? dat Jan de spijker in de muur met ze heeft geslagen, met die hamers  
{ which<sub>i</sub> / that } J. the nail into the wall with { t<sub>i</sub> / them } has hit (, with those hammers)
- (7) a. dat Jan door die praatjes in de war raakte  
b. \* dat Jan in de war door die praatjes raakte  
c. de praatjes waar<sub>i</sub> Jan in de war door t<sub>i</sub> raakte  
d. dat Jan in de war door ze raakte, door die verhaaltjes

In each case, the PP predicative complement may be separated from the verb cluster by a prosodically light adverbial PP (stranded P or P with a weak pronoun) but not by a prosodically full PP.

However, Broekhuis (2002) observes that, conditional on pragmatic and semantic factors, PP predicative complements may sometimes scramble away from the verb cluster ((8a) from Broekhuis):

- (8) a. dat Jan [op iedere plank]<sub>i</sub> een vaasje t<sub>i</sub> heeft gezet  
that J. on every shelf a vase has put  
b. dat Jan op elke plank wel eens een boek heeft gelegd  
that J. on every shelf PRT once a book has put  
c. dat Jan in elke muur een spijker heeft geslagen  
that J. into every wall a nail has hit

The examples in (8) violate the PAC as stated in (4). Ruys (2008) concluded that the PAC must be reformulated along the lines of (9):<sup>2</sup>

- (9) *Predicate Adjacency Constraint (PAC) – revised*  
The Small Clause predicate and the Small Clause subject may not both be prosodically separated from the verbal end cluster.

The reformulation in (9) allows the PP SC-predicate in (8) to move away from the verb cluster, since the object does not. However, the PAC as stated in (9) is clearly little more than a description of the facts. In the following sections, I want to explore how it might be derived from some underlying prosodic constraint. Section 3 provides some general background on the rules of accent placement in the Dutch VP. Section 4 describes how predicative complements fit into this general picture. Section 5 then attempts to explain why predicative complements obey the (revised) PAC. Section 6 provides independent evidence for the correctness of the PAC.

## 3. Accent placement in VP

What part does placement of the nuclear pitch accent have to play in explaining the PAC? The examples in (10) show, that the pitch accent itself is not directly relevant: even when the only pitch accent is on the complementizer (a so-called “verum focus”) or on the element in Spec,CP, the word order constraints around the predicative complement remain the same (I use bold face to indicate the presence of a pitch accent):

<sup>2</sup> The alternative of saying that the SC-subject may come between the predicate and the verb cluster, as in (8a), but that an adverbial may not, will not work: see e.g. (8b), and (i): the predicate may be separated from the verb cluster by an adverbial, provided that the SC-subject is not.

- (i) dat Jan op iedere plank meermalen een vaasje heeft gezet  
that J. on every shelf repeatedly a vase has put

- (10) a. ik weet wel **dat** Jan de schutting zwart (\*met die kwasten) heeft geverfd, maar  
 b. ik weet niet **waarom** Jan de schutting zwart (\*met die kwasten) heeft geverfd

Nonetheless, placement of pitch accents will turn out to be indirectly relevant, as suggested in Zwart's (1997) statement of the PAC, because it reflects the working of the phrasal stress rules.

I adopt the standard approach to the distribution of pitch accents in Dutch that goes back to the work of Chomsky 1970, Jackendoff 1972. If a constituent C is to be interpreted as Focus, or new information, this is marked by a pitch accent on C. The location of the pitch accent within C is determined by the phrasal stress rules: the location of the accent is the location of the main phrasal stress within C, which I will refer to as the Designated Terminal Element (DTE) of C. I will argue below that the phrasal stress rules in turn are responsible for the PAC. I will use the position of the pitch accent to locate the DTE, hence to explore the working of the phrasal stress rules. This method of locating the DTE is convenient, because in the absence of a pitch accent, for instance in the VPs of (10), the position of phrasal stress is often difficult to judge.<sup>3</sup>

The usual caveat is in order. In almost every example we will discuss, pitch accents can be placed virtually anywhere, depending on the intended interpretation. In each case, the logic of the reasoning must be as follows: given a discourse context where we intend constituent C to be interpreted as Focus, or new information, is it possible to achieve this by realizing a single ('integrative') accent in C? If so, the position of this pitch accent is the DTE of C.

Consider then the basic generalizations governing phrasal stress assignment around the verbal end cluster in Dutch; we will focus on predicative complement structures in the next section. As demonstrated by Gussenhoven (1992 and previous work), the VP can be marked as focused by means of one integrative pitch accent on the direct object, as in (11a). Accenting the verb instead, as in (11b), only focuses the verb, not the VP as a whole ((11b) give "narrow focus"; as opposed to "wide focus" in (11a)).

- (11) a. dat Jan een **boek** kocht  
 b. dat Jan een boek **kocht**  
 that J. a book bought

It follows, that the element that receives main phrasal stress in VP is the object. As pointed out in Cinque (1993) with reference to similar facts in German, this generalization contradicts

<sup>3</sup> A prominent alternative approach to the placement of pitch accents is the one proposed by Selkirk (1984 and later work). According to Selkirk, pitch accents can be freely placed anywhere in the sentence. So-called "F-marking" percolation rules then determine which constituents around the accented element can be interpreted as new information or focus. These percolation rules are orthogonal to the phrasal stress rules, so that the stress rules cannot be investigated by studying pitch accent placement. This makes the stress rules hard to identify: in the absence of a pitch accent (see (10)), the phrasal stress can be difficult to judge, but if a pitch accent is present, the accent overrides the output of the stress rules (Selkirk 1995:563).

the NSR of Chomsky and Halle (1968), which would place nuclear stress on the rightmost stressable element -- in (11): the verb.

In order to capture such data, Cinque (1993) proposed a system which places the main stress on the most deeply embedded element; in SOV (11) this will be the head noun of the object.

Gussenhoven (1992), on the other hand, proposed an account of (11) couched directly in terms of the argument/predicate distinction: when both the predicate (*kocht*) and an adjacent argument are to be interpreted as focus, the argument and the predicate can be integrated into one intonational domain ("Focus Domain"), which can be marked with one pitch accent on the argument; the predicate can remain unaccented.

In case the object cannot be stressed, as for instance in (12):

- (12) dat Jan ze heeft **gekocht**  
 that J. them has bought

the predicate becomes the most deeply embedded stressable element, and catches main stress. In Gussenhoven's terms: focus on the predicate now cannot be marked by realizing an accent on the argument and integrating the predicate with the argument; therefore the predicate itself needs to be accented.

This pattern persists when there are multiple, embedded predicates, as in (13) (Gussenhoven (1992: 95: (36)):

- (13) dat Jan [ een **vogel** t<sub>i</sub> ] hoorde zingen<sub>i</sub>  
 that J. a bird heard sing

Wide focus can be achieved by placing one pitch accent on the argument *een vogel*. When this argument (the ECM subject) is not stressable, stress again shifts to the predicate. As the predicate is not one verb, all elements of the predicate cluster are integrated into one intonational domain, with a pitch accent realized once.

- (14) dat Jan [ 'm t<sub>i</sub> ] hoorde **zingen**<sub>i</sub>  
 that J. it heard sing

Depth of embedding continues to play the same role, in the sense that the accent shifts to the verb that is the most deeply embedded in the underlying structure. (15) shows that this is independent of the surface order of the verbs in the cluster.

- (15) dat Jan 'm **zingen** hoorde  
 that J. it sing heard

While the word order in (15) is marked, there is no choice as to the placement of the pitch accent: it is on the most deeply embedded verb in underlying structure; see Evers (2003) for extensive discussion of stress patterns in the verbal cluster.

In (12) and (14)/(15), accent must be realized on the verbal cluster because the object is inherently un-stressable. The same effect is achieved, as reported in Gussenhoven (1983, 1992) in case the object is stressable, but cannot be integrated with the verbal cluster into one intonational domain because an adverbial expression (a sentence adverbial in (16a), a VP-adverbial PP in (16b)) intervenes.<sup>4</sup>

- (16) a. dat we [de **ringen**] **vandaag** bestellen  
that we the rings today order  
b. dat Jan de **schutting** met die **kwasten** **verft**  
that J. the fence with those brushes paints

Even though the direct object in (16) is stressable, accenting only the object will not serve to mark the VP as focused: this can only be achieved by separately accenting the predicate (the verb *bestellen* / *verft*) as well.

Why is one accent not enough in (16)? Gussenhoven's generalization is that adverbials cannot be joined into a "focus domain" either with an argument, or with a predicate.<sup>5</sup> This generalization can be demonstrated directly with familiar facts such as (17) and (18) ((18b) from Gussenhoven 1992:(15a)).

- (17) dat Jan op de **trein** wacht  
that J. for the train waits  
(18) a. dat Jan op het **perron** wacht  
that J. on the platform waits  
b. dat Jan in de **tent** **rookt**  
that J. in the tent smokes

Accenting the argument PP in (17) realizes focus for VP. Focus for the VP in (18) can be achieved neither by accenting only the adverbial PP, nor by accenting only the verb, but only by accenting both.

The fact that adverbials cannot be integrated with arguments or predicates into one intonational domain has also been demonstrated extensively for the case of depictive secondary predicates. Winkler (1994), in an in-depth investigation of stress patterns with different types of secondary predicates, finds that in German and English, depictives must receive an accent in order to be allowed as (part of) the focus (they cannot be integrated in a

<sup>4</sup> Zwart (1997) reports a different intuition for sentence adverbials, but not in the crucial cases involving the PAC.

<sup>5</sup> In fact, Gussenhoven's SAAR allows one exception: argument and predicate may be integrated in a focus domain with X intervening, if X is unfocused ("old information"). However, I am not aware of, and have not been able to construct, any evidence for this possibility when X is an adverbial (note, that in the constructions under consideration here it would need to involve a previously mentioned or inferable adverbial placed in between an object and a verb that are both "new").

"focus domain" with either the object or the verb). This is also the case for Dutch, as illustrated in (19a).

- (19) a. Jan heeft het **stekelvarken** **rauw** **opgegeten** Gussenhoven (1992:(31))  
J. has the porcupine raw eaten 'J. ate the porcupine raw'  
b. Hans hat es **roh** **gegessen** Winkler (1994:325:(35B))  
H. has it raw eaten 'H. ate it raw'

As in the examples in (16) and (18) above, both the verb and the (depictive) adverbial must be accented if both are to be in focus, as must the object in (19a).

Let us now consider how the general approach to pitch accent placement we have adopted might be made to explain the patterns we have observed so far. As discussed in Evers (2003), Cinque's (1993) account in terms of depth of embedding fails. No matter how deep an adverbial expression branches, it never catches main stress, as illustrated in Cinque's (20a).

- (20) a. man hat den Mann [<sub>CP</sub> ohne zu **zögern**] **umgebracht**  
b. ze hebben die man [<sub>CP</sub> zonder te aarzelen ] **omgebracht**  
they have the man without to-hesitate killed

There is no doubt that the embedded verb (*zögern*) is more deeply embedded than the matrix verb, but main stress is on the matrix verb. While Cinque deals with similar exceptions in English (*the man from Philadelphia's hat*) by discounting branching on the non-recursive side, this will not differentiate between objects and adjuncts in left-recursive Dutch and German. Noting problems of this type for a Cinque-style analysis of Dutch, Evers (2003) proposes a stress-assignment algorithm that, unlike Cinque's, and like Baart's (1987), does not work by cyclically assigning grid marks (hence, the internal size of a constituent does not affect whether its head is stressed) but that labels nodes in a syntactic tree as s (strong) or w (weak), turning it into a metrical tree (Lieberman & Prince 1977). The algorithm says, in effect, that a specifier or adjunct is always labelled w and its sister s, but a head-governed constituent (in effect, a complement) is labelled s and the head w. This approach will achieve a complement/adjunct distinction, although implementation is not straightforward. I will discuss two complications.

The first complication is that modern work commonly assumes that the direct object in Dutch is not the most deeply embedded element in surface syntax, because it undergoes obligatory movement to a Case-checking position, say: in Spec, AgrOP (see Vanden Wyngaerd 1989, Zwart 1993, also Koopman & Sportiche 1991). Thus, the most deeply embedded element, in the complement position of V, will be the trace of the object, and the deepest overt element is the verb. Nonetheless, main stress falls on the object. Indeed, stress is on the object even when word order shows that it has vacated the most deeply embedded position, as illustrated in (21):

- (21) a. dat we er de **ringen**<sub>i</sub> mee t<sub>i</sub> bestellen

- that we it<sub>[+R]</sub> the rings with order 'that we order the rings with it'
- b. dat Jan **tentamens**<sub>i</sub> met ze t<sub>i</sub> corrigeert  
that J. exams with them grades

The intervening adverbials in (21), consisting only of un-stressable material, do not prevent formation of a Focus Domain that integrates the verb and the object: a single accent on the object marks focus for VP as a whole. The position of the adverbial does indicate, however, that the object is not in the complement position of V.

To resolve this problem, I follow Selkirk (1995), and ultimately Bresnan (1971), in assuming that trace (first merge) positions play a role in determining stress patterns. For present purposes, it is sufficient to postulate that the trace of the object, as the deepest complement position, would be labeled s and the verb w, so that the trace is dominated only by s-labeled nodes, but that this results in the antecedent of the trace being identified as the DTE. We have already encountered independent evidence for such a "DTE transfer" mechanism in (14), (15); the verb of the embedded clause catches main stress, irrespective of its surface position. See esp. Selkirk (1995) for further cases. I return to this mechanism below.

A more fundamental problem for Cinque (1993) and Evers (2003) is this. Even supposing that these accounts can be modified so as to achieve main stress on a stressable object when it is (nearly) adjacent to the verb (i.e., in both (11a) and (21)), but on the verb when no stressable object is close at hand (i.e. in (16), (18) and (19)), neither approach can explain the fact that accenting the verb in the latter cases is not enough to signal that the adjunct is in focus as well: focus cannot "project" from V to include the adverbial.

This brings us back to the initial question raised by (16), (18) and (19): why is one accent on the object OB enough to mark focus for [<sub>VP</sub> OB V], but a single accent is not enough to place [<sub>VP</sub> OB ADV V] or [<sub>VP</sub> ADV V] in focus, no matter where the accent is placed? Winkler (1994) concludes, in accordance with Gussenhoven's (1983)/(1992) findings, that argument structure is directly relevant: her descriptive statement of the facts is that Adverbial expressions must form a separate Intonational Phrase (IP) (recall that Zwart 1997 makes the same assumption, for VP-adverbials). As a result, ADV and V in (18) and (19) cannot be integrated and focused with one pitch accent; and since the object and verbal cluster in (16) are separated by an adverbial IP, they also cannot be integrated into one IP. Hence, the verbal end cluster must form its own IP; if it is to be focused, its most deeply embedded element will be the locus of a separate pitch accent. I will adopt this analysis.

One question remains: why does the verb, and not the trace of the object, count as the most deeply embedded position (the DTE) of the rightmost IP in these [OB ADV t<sub>OB</sub> V] examples?<sup>6</sup> I want to suggest that we can think of the rules involved in determining the Designated Terminal Element as involving a "repair strategy." The idea is this: due to the role of traces in the selection of the DTE, the DTE of an IP will, on occasion, not be included in

<sup>6</sup> Similar questions arise for any approach that takes trace positions into account. E.g., Selkirk (1995) allows [F]-marking to be copied from a pitch-accented antecedent to its trace; she does not explain why in [OB ADV t<sub>OB</sub> V], V must bear its own pitch accent if it is not "old information," and cannot inherit [F] from t<sub>OB</sub>

that IP; I assume that this is disallowed, and that such exceptional cases are repaired by reversing the last s-w labeling. Now consider again the full range of cases. In the default case (11a) (repeated):

- (11)a. dat Jan een **boek**<sub>i</sub> t<sub>i</sub> kocht  
that J. a book bought
- (21) a. dat we er de **ringen**<sub>i</sub> mee t<sub>i</sub> bestellen  
that we it<sub>[+R]</sub> the rings with order 'that we order the rings with it'
- (16) b. dat Jan de **schutting**<sub>i</sub> met die **kwasten** t<sub>i</sub> **verft**  
that J. the fence with those brushes paints

the most deeply embedded element is the (trace of the) object. As a result, the object is the VP's DTE, the place to realize the pitch accent if a pitch accent is to be realized in VP, i.e. if VP is to be marked as focused. Note, that movement of the object to Spec,Agro may have caused it not to be the deepest element itself; but as long as the object is in the same Intonational Phrase as its trace, identifying the trace as DTE will apparently cause stress to be realized on the object. This is clearly what happens in (21a): while the object has moved to the left of the adverbial expression, it is still in the same IP (the adverbial in this case consisting of just a preposition which is ignored by the stress rules – see Halle & Vergnaud 1987:264), and its trace identifies it as the locus for stress on the VP. In (16b), the repair strategy comes into play. Due to the presence of the adverbial expression *met die kwasten* 'with those brushes', the cluster following this adverbial must form a separate IP, and its DTE must be identified. The deepest element is the trace of the object, but choosing this will not provide a suitable locus for stress: the trace itself is not stressable, and its antecedent is not part of the relevant IP. Hence, the repair strategy shifts the choice of DTE to the next-deepest element: the verb selecting the object, and stress will be realized there.

#### 4. Accent placement around predicative complements

Against this background, consider now the predicative complements constructions, such as resultatives, that are subject to the PAC. We first need to deal with the disagreement that exists in the literature as to whether main stress in a predicative complement construction is on the object (SC subject) or on the SC predicate. On the one hand, experimental research leads Baart (1987), Gussenhoven (1992) and Winkler (1994) to conclude that (mostly resultative) predicative complements behave as elements of the predicate for the stress assignment rules observed so far. That is, when the object is stressable, the SC predicate and the verb(s) can all be integrated with the object, and wide focus is achieved by accenting only the object, and not the secondary predicate or a verb:

- (22) a. dat Jan de **schutting** zwart heeft geverfd      that J. the fence black has painted  
b. dat Jan de schutting **zwart** heeft geverfd  
c. dat Jan de **schutting** **zwart** heeft geverfd

(22a) answers a "what happened?" question. The pitch accent on *zwart* 'black' in (22b) makes the structure usable only in the context where *de schutting* 'the fence' is "old information;" as an answer to "what do you think John did?", (22b) is marked. (22c) receives a contrastive reading for *zwart* 'black'.

The same is observed for other Small Clause predicate types by Baart (1987): the *put-*, *call-* and *consider-*type constructions in (23) (from Baart) all have the pitch accent on the object (or SC subject).

- (23) a. dat hij de **boeken** in de kast zette      that he the books in the bookcase put  
 b. dat hij zijn **baas** een idioot noemde      that he his boss an idiot called  
 c. dat hij zijn **broer** vervelend vindt      that he his brother annoying finds

The examples in (24) (from Gussenhoven 1992) and (25) (from Winkler 1994) show the same pattern, for English and German as well as for Dutch.

- (24) a. ze hebben het **huis** in brand gestoken      Gussenhoven (1992:(19))  
           they have the house in fire put      'they put the house on fire'  
 b. He's painted the **front door** green      Gussenhoven (1992:(30a))  
 c. Hij heeft de **voordeur** groen geschilderd      Gussenhoven (1992:(32a))  
           he has the front-door green painted  
 (25) a. he launched the **door** open      Winkler (1994:421:(119a))  
 b. she swung her **legs** to the floor      Winkler (1994:421:(119d))  
 c. Er pumpte seine **Lungen** voll      Winkler (1994:422:(120a))  
           he pumped his lungs full  
 d. Jetzt habe ich diesen **Stuhl** kaputt gesessen      Winkler (1994:321:(25))  
           now have I this chair broken sat

It is concluded that resultatives and other SC predicates do not form a separate IP: together with other predicative elements (verbs) they can be integrated into one IP with the object, which receives main stress.

On the other hand, Zwart (1997) claims, (apparently on the basis of native intuitions), that main stress is on the predicate, not on the object, in predicative complement constructions (see the passage cited in section 1).<sup>7</sup> This is cause for examining these intuitions a bit more closely.

The cause of the variation in judgments is no doubt that accenting the object is possible, but accenting the predicate, or both, is possible as well. The different intonation patterns fit different information structures; determining which pattern is the "unmarked" one in an out-

<sup>7</sup> In a footnote which I didn't include in the passage cited from Zwart (1997) in section 1, he points out that main stress on the predicate is compatible with the Cinque-approach to stress assignment, since the predicate is more deeply embedded than its subject. I agree on this point, and I have no explanation for why stress is on the object (beyond returning to the argument / predicate distinction of Gussenhoven (1992)), but the fact of the matter is, that main stress falls on the object, not on the predicate.

of-context example is quite difficult. Thus, the question is not whether the predicate or the object can be accented or remain unaccented. Even if the object is the locus for main stress for the VP, it will be possible to place a pitch accent only on the predicate: namely when the object must not be in focus. The relevant question is: is it possible to integrate the object and the predicate in one intonational domain with one pitch accent marking that the whole domain is in focus; and if so, where does this accent land? The answer to this question will tell us whether the prosodic constituency rules allow integration of the whole VP, and which node in the VP carries main stress (is the DTE of the VP). To decide the question, we need to look at examples in a context which does not trigger a contrastive reading for object or predicate (causing it to be stressed for that reason), and which also does not make the object or the predicate "old information" (which would cause it to resist integration in a domain which is marked as being in focus, or trigger "deaccenting"). Given such a context, judgments become quite solid:

- (26) Q    Waarom hijgt Jan zo? Heeft hij gedanst?  
 A1    Nee, hij heeft **boeken** in de kast gezet  
 A2 # Nee, hij heeft boeken in de **kast** gezet  
 A3 # Nee, hij heeft **boeken** in de **kast** gezet

The context invites focus for the complete VP; it makes no mention of books or bookcases, nor of other objects or places that books and bookcases can be contrasted with. The unambiguous result is stress on the object: A1 is realized with one pitch accent on *boeken*, with a low tone stretching to the end of the clause. Stressing only the predicate as in A2 implicates that books have been mentioned, and is quite unacceptable, and so is stressing both elements. The important contrast is between A1 and A2, which demonstrates that it is possible to integrate the whole VP into one domain and mark it in focus with a single accent on the object, but not with a single accent on the predicate.

We find the same judgment with definite DP objects as well, and with AP predicative complements:

- (27) Q    Waarom wordt Jan gearresteerd? Heeft hij gefraudeerd?  
 A1    Nee, hij heeft zijn **vrouw** bont en blauw geslagen  
 A2 # Nee, hij heeft zijn vrouw bont en **blauw** geslagen  
 A3 # Nee, hij heeft zijn **vrouw** bont en **blauw** geslagen

I conclude, that Baart (1987), Gussenhoven (1992) and Winkler (1994) are correct: stress on the object marks focus which can project to the VP, including the predicative complement.

Stress can shift away from the object by the same rules that we observed in the previous section. When the object is not stressable, stress shifts to the most deeply embedded element of the predicate cluster, which in these cases is the SC predicate:<sup>8</sup>

- (28) a. Ze hebben het in **brand** gestoken                      Winkler (1994:424:(126b))  
           they have it in fire put    'they put fire to it'  
       b. dat Jan ze **zwart** heeft geschilderd  
           that J. them black has painted  
       c. Jan is in de **tent** gebleven                      Gussenhoven (1992:(14a))  
           J. is in the tent remained    'J. remained in the tent'

The repair strategy identified above applies also in the case of these SC structures.

- (29)        dat Jan er de **schutting** zwart mee verft  
               that J. it<sub>[+R]</sub> the fence black with paints    'that J. paints the fence black with it'  
       (30)        dat Jan de **schutting** met die **kwasten zwart** verft  
               that J. the fence with those brushes black paints

In (29), the deepest element is the trace of the object. The object can be integrated in one IP with the predicate because no separating IP is present; hence, the object is the DTE. In (30) the object trace is again the deepest element, but the object cannot be the DTE for the sentence-final IP, as it is separated from the predicative cluster by an adverbial expression instantiating a separate IP. So the repair strategy shifts stress in the final IP to the deepest predicative element, which is the predicative complement *zwart* 'zwart'.

As in the case of the object, it is enough for the trace of the deepest predicative element to be identified as DTE, for it to function as the locus of stress, even when it has moved, so long as the landing site can be integrated in the same intonational domain. This is demonstrated for leftward movement of the predicate (to Spec,PredP) in (31a), and for rightward movement (V-raising) in (31b). See Evers (2003) for discussion of the stress properties of 'cluster creepers' like *zwart* in (31b).

- (31) a.        dat Jan ze er<sub>i</sub> **zwart** [ mee t<sub>i</sub> ] t<sub>AP</sub> verft  
               that J. them it<sub>[+R]</sub> black with paints    'that J. paints them black with it'  
       b.        dat Jan ze t<sub>V</sub> heeft [v **zwart** geverfd ]  
               that J. them has black painted

<sup>8</sup> In fact, the different accenting behavior of adverbial PPs (as in (18c)), and predicative PPs (as in (28c)), is used by Hoekstra & Mulder (1990), who refer to Baart (1987), as a test for distinguishing the two PP types. Observe further that (28c) does not contain an object; the fact that *Jan*, the underlying SC subject, does not bear an integrative accent for VP is probably due to a combination of factors, including its probable discourse-familiar status and position as VP-external subject. The stress behavior of subjects is outside the scope of this paper; but it has often been observed (see e.g. Selkirk 1995 and references cited there) that an integrative accent on a subject that is underlyingly an object (or SC subject) is possible, as illustrated in (i); a proper context will allow this for (28c) as well:

- (i) a.        dat **Kennedy** dood is geschoten  
       b.        dat **Kennedy** er dood mee is geslagen

## 5. Deriving the PAC

We can now attempt an explanation of the revised *Predicate Adjacency Constraint* (9). Consider what happens in ill-formed examples like (1b), where a full adverbial PP intervenes between SC predicate and verbal end-cluster:

- (1) b. \* dat Jan de schutting zwart [pp met die kwasten] heeft geverfd  
           that J. the fence black with those brushes has painted

The repair strategy fails. The first deepest element found is the trace of the object, but this has moved to the left of a separating adverbial IP. Hence, repair finds the next deepest element: the predicate selecting the object, in this case, the trace of the resultative. However, this predicate has also moved out of the sentence-final IP, across the adverbial. As a result, no DTE can be identified for the sentence-final intonational domain; the structure fails at PF.<sup>9</sup>

This line of reasoning explains the prosodic effects on well-formedness seen in the contrast in (1): the *Predicate Adjacency Constraint* is derived as a failure to apply the same stress repair strategy *twice*. This explains not only the data that originally gave rise to the PAC, but also the examples that occasioned the revision of the PAC in section 2. Consider the following paradigm:

- (32) a.        dat Jan in elke muur meermalen een spijker t<sub>pp</sub> heeft geslagen  
               that J. into every wall several times a nail has hit  
       b.        dat Jan de spijker met de hamer t<sub>pp</sub> in de muur heeft geslagen  
               that J. the nail into the wall with the hammer has hit  
       c. \* dat Jan de spijker in de muur met de hamer t<sub>pp</sub> t<sub>pp</sub> heeft geslagen  
               that J. the nail into the wall with the hammer has hit

In (32a), the predicative complement PP has scrambled away from the verb cluster (and, in fact, out of the final intonational domain). Since the object is selected as DTE, this is allowed. In (32b), the object has moved away, but the predicative PP has not, so repair can select the PP as DTE. In (32c), both the object and the predicate have moved out, so DTE selections fails.

This explanation relies on the following assumption. The repair strategy operating in (32b), (30) and earlier examples of "stress-shift" to the predicate is not recursive; otherwise we would expect stress simply to shift to the next higher predicate *geverfd* 'painted' in (1b), and *geslagen* 'beaten' in (32c), and the structures should be okay. One way to view this is to

<sup>9</sup> Recall that I am assuming an approach to focus of the type proposed in Jackendoff (1972) (see also e.g. Cinque 1993), which separates the designation of a phrase as belonging to the Focus or the Presupposition, from the selection of the locus for the highest stress in that phrase (the DTE). The actual realization of the DTE depends on whether the phrase it is the DTE of is in focus; but the DTE is identified by the stress rules regardless of whether the phrase is focussed. It is the selection of the DTE for the sentence-final IP that fails in (1b).

consider the stress-shift from the argument to the predicate a real marked "repair" strategy that cannot apply more than once for the same IP. Another option is to derive the effect from cyclicity, along the following lines. Given a structure with a Small Clause, as in (33),

- (33) [V' [SC NP Pred ] V ]

the search for the correct locus of the pitch accent is through a top-down procedure labelling nodes strong or weak. In the head-complement structure V – SC, SC is marked s and V is marked w. Inside SC, NP will be s unless it has moved out of the IP (as in (30)) -- in the latter case, Pred is marked s. If, however, Pred is also trace of an element that is outside IP, the procedure cancels: the only possible repair would be to return and relabel SC as w and V as s, but this would involve returning to a previous cycle. Assuming this is ruled out, there is no possible repair.

Further assumptions are needed to deal with the following observations. Whereas local (A-) movement of Pred into a different intonational domain, as in (1b), is blocked (unless the object remains adjacent to the verb cluster), non-local movement to a phase-edge position, as in WH-movement or topicalization, is not blocked:

- (34) hoe groen heb je de schutting met die kwasten geverfd?  
how green have you the fence with those brushes painted

In this case, stress does shift onto the next higher predicate (*geverfd* 'painted') if necessary: it is not obvious how this can be accommodated in the approach outlined above, except by assuming that in this case the trace, whose feature-content should reveal that its antecedent has been subject to long movement, hence cannot be a proper choice of DTE, is ignored altogether: then repair will immediately shift to the next higher verb upon the first attempt.<sup>10</sup> In the cyclicity-based approach, this should entail that SC is ignored as a cyclic node (i.e., is pruned before the stress-rules apply). The question remains, why wh-movement of the SC subject does not cause it to be ignored; I must leave this issue for further research.<sup>11</sup> Other, related questions arise with the effects of V2 and movement to Spec,IP, which I must leave for further research as well.

## 6. Independent evidence for the PAC

Looking at the original puzzle, the paradigm in (1) and (2), it seems fairly clear from the examples themselves that the relevant contrast is prosodic, and not purely syntactic, in nature.

<sup>10</sup> Bresnan (1971) argues that stress does "move along" with wh-movement; the examples appear to involve only one IP; see Gussenhoven (1992) for some discussion; see also Baart (1987).

<sup>11</sup> One possibility is that an argument trace with wh-features cannot be ignored, because wh-arguments, unlike wh-predicates, can remain in situ in multiple questions (thanks to O. Matushansky for suggesting this option to me). Another option is that wh-traces are not ignored by the regular stress assignment rules (which systematically allow "DTE transfer" via any kind of trace) but are ignored by the repair strategy, which will shift stress only onto a trace with local movement features.

In the previous sections, I have attempted to identify the nature of the prosodic constraint, taking as a starting point Zwart's (1997) suggestion that the problem lies in the fact that the secondary predicate *zwart* 'black' in (1b) cannot be integrated with the remaining predicative elements (the verbal end cluster) into one intonational domain, due to the intervening adverbial domain. To end this paper, I want to present some independent evidence that, whatever the details of the ultimate explanation, the (revised) PAC of (9) indeed correctly characterizes the relevant constraint.

If a resultative secondary predicate, or other SC predicate, may not be separated from the IP constituted by the verbal end cluster, this constraint should also be violated when the SC predicate has not moved across an adverbial, but constitutes a separate IP merely due to its own size. The contrast in (35) – (36) shows that this prediction holds.

- (35) a. \* dat Jan de schutting groen, wat een mooie kleur is, heeft geverfd  
that J. the fence green, which a nice color is, has painted  
b. \* dat Jan Marie intelligent, wat ze inderdaad wel een beetje is, is gaan vinden  
that J. M. intelligent, which she indeed PRT a little is, is gone to-find  
'that J. began to consider M. intelligent, which in fact she is a bit'  
c. \* dat Jan de schutting zo groen, dat zelfs Marie het niet mooi meer vond, heeft geverfd  
that J. the fence so green, that even M. it not nice anymore found, has painted  
'that J. painted the fence so green that even M. didn't like it'  
d. ?? dat ik hem groter dan de bedoeling was heb gemaakt  
that I him bigger than the intention was have made
- (36) a. dat Jan Marie opgewekt, wat hij nu eenmaal altijd is, is gaan zoeken  
that J. M. cheerful, which he now after-all always is, is gone to-search  
that J. went to look for M. cheerful, which after all he always is  
b. dat Jan die toespraak zo dronken dat zelfs Marie het niet leuk meer vond voor is gaan lezen  
that J. that speech so drunk that even Marie it no fun anymore found fore is gone read

The appositive relative clauses attached to the SC predicates in (35a), (35b), the result clause in (35c),<sup>12</sup> and the *than*-clause in (35d) form separate intonational domains, separating the head of the predicate from the verbal cluster. The structures are ruled out (they can be corrected by extraposing the intervening CP's).

(36) shows that the constraint violated in (35) is not against a non-extraposed CP per se; the appositive CP may remain in situ when it modifies not a predicative complement, but a depictive secondary predicate. This is as expected, since the "repair strategy" will not attempt to shift stress to the depictive. Recall (see (19) above) that depictives behave like ordinary adverbial expressions for the stress assignment rules, not like predicative complements: they cannot be integrated with object and verb cluster into one IP, and in Dutch they may freely occur to the left of (other) adverbials. Hence, in (36), the depictive may intervene between

<sup>12</sup> Rijkhoek (1998) observes that result clauses with *so* "usually" extrapose; but (36b) shows that this is not always the case.



object and verbal cluster: stress is realized separately on object and (deepest element of) predicate cluster, and the structure is fine. In fact, (35a) and (35c) are allowed as well, if the secondary predicate is not taken as a resultative but as a depictive (John was green while painting the fence).

Similar examples can be constructed with PP secondary predicates:

- (37) a. \* hij wist uit de bank, die door de politie omsingeld werd, te komen  
 b. hij wist uit de bank, die door de politie omsingeld werd, weg te komen

The predicative complement PP in (37a) does not allow a complement with an appositive relative clause; the adverbial PP in (37b) does. The following data show that a predicative complement PP does allow a complement with a relative clause when a the verb-adjacent SC subject functions as DTE, satisfying the PAC:<sup>13</sup>

- (38) a. ?? dat ik de roos in deze vaas, die ik van Marie heb gekregen, heb willen stoppen  
 b. dat ik in deze vaas, die ik van Marie heb gekregen, een roos heb gestopt

Consider finally the following examples, with a nominal secondary predicate:

- (39) a. \* dat Marie hem vader, wat hij altijd al had willen zijn, heeft willen maken  
 b. dat Marie hem vader maakte

My native-speaker impression of all the unacceptable examples in this section is that they would be fine, if I could just find a fitting intonation pattern for them.

A final, striking piece of independent evidence comes from the puzzling paradigm in (40), also discussed in Ruys (2008).

- (40) a. dat Jan een vaasje met een hijskraan op de plank heeft gezet  
 that J. a vase with a crane on the shelf has put  
 b. dat Jan [op iedere plank]<sub>i</sub> een vaasje t<sub>i</sub> heeft gezet  
 that J. on every shelf a vase has put  
 c. \* dat Jan [op iedere plank]<sub>i</sub> een vaasje met een hijskraan t<sub>i</sub> heeft gezet  
 that J. on every shelf a vase with a crane has put

(40a) shows the familiar fact that an object (SC subject) may occur to the left of an instrumental PP; we have assumed this is due to movement of the object to Spec,AGRO. (40b) shows that a predicative complement PP in turn may scramble to the left of the object (the SC subject); this scrambling is facilitated in (40b) by its effect on scope relations (cf.

<sup>13</sup> In constructing these examples, it is necessary to select verbs that cannot occur without predicative complements; otherwise, the PPs can be parsed as adverbials. At the same time, the sentence-final verb cluster must not be too small, otherwise the structure might be rejected by the prosodic phrasing rules, which prefer IPs of roughly the same size: hence the complex cluster in (38a). The complex cluster also rules out an explanation in terms of De Hoop's (1992) Principle of Contrastiveness.

Broekhuis 2002:227). By simple transitivity, we would now expect that the object may move to the left of an instrumental PP and the PP predicate to the left of the object, as in (40c). But this order is ruled out. On a purely syntactic approach, the ill-formedness of (40c) entails a near ordering paradox.<sup>14</sup> The prosodic constraint we have proposed however exactly predicts the pattern in (40). In (40a), the object may move to a different Intonational Phrase because the predicate is available as locus for a pitch accent. In (40b), the PP predicate may scramble because the object remains available for accentuation. In (40c), both have moved to a different IP, hence the structure fails. A similar argument can be constructed from the paradigm in (160).

## 7. Conclusion

Zwart (1997) first suggested that the ill-formedness of (1b) is due to a prosodic constraint; Ruys (2008) provided evidence on the basis of (2) that this approach is correct. In the present paper, I have attempted to further characterize the prosodic constraint involved, I have provided further evidence for it, and I have explored how it might be related to the rules of phrasal stress assignment in Dutch. To the extent that the analysis proposed seems viable, it supports the surprising conclusion that the autonomy of syntax may be violated on the PF side of grammar, in that the well-formedness of certain word orders can depend on their intonational fitness.

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<sup>14</sup> A Minimality approach that would block movement of PP across another PP would fail, as PPs otherwise freely scramble across each other (see Ruys 2008). Other alternatives fail for reasons laid out in Ruys (2008).

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