

Dutch Scrambling and the Nature of Discourse Templates*

Ad Neeleman and Hans van de Koot (UCL)

Abstract

The so-called cartographic approach to discourse-related word-order variation is based on the idea that particular interpretations – say contrastive focus – are licensed in the specifier of particular functional projections – say a focus phrase. In this paper we present arguments against this view based on scrambling in Dutch. We discuss a range of implementations of the cartographic approach and show that they are either too weak, in that they cannot generate all the word orders found in Dutch, or too strong, in that they fail to capture restrictions on scrambling. The alternative we present dispenses with discourse-related functional projections and instead relies on mapping rules that associate syntactic representations with representations in information structure. On this view, scrambling operations derive a syntactic configuration that matches the structural description of a mapping rule that could otherwise not apply. We suggest that it is this interface effect that licenses the marked structures created by scrambling.

Keywords: Scrambling, topic, focus, discourse-anaphoricity, information structure

1. Interpretive effects of scrambling

This article is concerned with the interpretive effects of scrambling and, more specifically, with the question of whether such effects should be attributed to the existence of functional projections that encode the discourse status of scrambled DPs. We will argue that a proposal along these lines cannot achieve empirical adequacy and will suggest an alternative based on mapping principles that associate representations in syntax with representations in information structure.

There is general agreement that, in Germanic and beyond, there are two types of scrambling. A-scrambling feeds and bleeds binding and secondary predication, does not give rise to weak crossover effects, is clause-bounded, and does not give rise to scope-reconstruction. We cannot illustrate all these properties here, but for relevant discussion, see Vanden Wyngaerd 1989, Mahajan 1990, Zwart 1993, Neeleman 1994, and Neeleman and Van de Koot 2007. In contrast, A'-scrambling does not affect binding or secondary predication, gives rise to weak crossover effects, is not clause-bounded, and reconstructs (obligatorily) for scope. Again, we will not demonstrate these properties here, but refer the reader to Neeleman 1994, Jacobs 1997, Haider and Rosengren 1998, and Neeleman and Van de Koot 2007 for discussion.

In Dutch, the language we will concentrate on in this paper, the two types of scrambling can be easily told apart, because only A'-scrambling can alter the basic order of arguments

*Earlier versions of this paper were presented at the 29th GLOW colloquium at the Universitat Autònoma de Barcelona, at the EGG Summerschool 2006 in Olomouc, at colloquia at MIT and the University of Ljubljana, and as part of an BA/MA course in syntax at UCL. We would like to thank participants for useful comments and questions. We have benefited from discussion with Klaus Abels, Hans Broekhuis, Kriszta Szendrői, Robert Truswell, Reiko Vermeulen, and Michael Wagner. We have also benefited greatly from the detailed questions and suggestions received from four anonymous reviewers. These have led to significant improvements in both content and presentation.

This paper is part of the output of the AHRC-funded project 'A Flexible Theory of Topic and Focus Movement' (Grant nr. 119403).

(subject – indirect object – direct object).¹ A-scrambling is restricted to the reordering of arguments and adjuncts (see Zwart 1993, and references cited there).² We demonstrate this contrast using binding as a test. Reordering of arguments and adjuncts can feed binding, as in (1b), indicating that the scrambled DP occupies an A-position. As shown in (2), reordering of arguments does not have the same effect, indicating that it must result from A'-movement (the contrast between (2a) and (2b,c) presumably has its origin in a preference for preceding antecedents). We will not attempt an explanation of the syntactic restrictions on A-scrambling in Dutch, as opposed to languages that show greater word order freedom (but see Neeleman & Van de Koot 2007).

- (1) a. *Jan heeft namens elkaar de acteurs gefeliciteerd.
John has on-behalf-of each other the actors congratulated
 b. Jan heeft de acteurs namens elkaar gefeliciteerd.
John has the actors on-behalf-of each other congratulated
 'John has congratulated the actors on behalf of each other.'
- (2) a. *dat ik elkaars fans zulke acteurs liever niet voorstel
that I each other's fans such actors rather not introduce
 b. ??dat zulke acteurs ik elkaars fans _{t_{DP}} liever niet voorstel
that such actors I each other's fans rather not introduce
 c. ??dat ik zulke acteurs elkaars fans _{t_{DP}} liever niet voorstel
that I such actors each other's fans rather not introduce
 'that I'd rather not introduce such actors to each other's fans'

The two types of scrambling are also associated with different interpretive effects. A-scrambling operations typically mark the scrambled DP as discourse-anaphoric (marked throughout by wavy underlining); see Reinhart 1995, Neeleman and Reinhart 1998, and Choi 1999, among others, for discussion. In (3), for example, Haegeman's book is mentioned in the initial question, and consequently scrambling of the coreferential DP in the answer is favored.

- (3) Hoe zit het met je review van dat boek van Haegeman?
 'How are you progressing with your review of that book by Haegeman?'
 a. #Nou, ik denk dat ik morgen het boek van Haegeman ga lezen.
Well, I think that I tomorrow the book by Haegeman go read
 b. Nou, ik denk dat ik het boek van Haegeman morgen ga lezen.
Well, I think that I the book by Haegeman tomorrow go read
 'Well, I think that I will read Haegeman's book tomorrow.'

By contrast, Haegeman's book is not mentioned in the question in (4), so that scrambling of this DP is disfavored in the answer. It is important to point out that (4b) would be an acceptable answer if speaker and hearer share knowledge of the reading list for the exam. In that case, Haegeman's book counts as given, which licenses scrambling across the adverb. Here and below, we abstract away from such non-linguistically expressed given information and from the possibility of accommodation of elements as discourse-anaphoric on the basis of assumed shared knowledge (see Wagner 2005 for recent discussion).

¹ Note that A'-scrambling can also affect categories other than DPs, including adverbials.

² Some speakers of Dutch marginally allow A-scrambling of a direct object across an indirect object, a possibility more generally available in German. The judgments reported here are from speakers who reject such scrambling.

- (4) Hoe zit het met de voorbereidingen van je examen?
 ‘How are you progressing with your exam preparations?’
- a. Nou, ik denk dat ik morgen het boek van Haegeman ga lezen.
Well, I think that I tomorrow the book by Haegeman go read
 ‘Well, I think that I will read Haegeman’s book tomorrow.’
- b. #Nou, ik denk dat ik het boek van Haegeman morgen ga lezen.
Well, I think that I the book by Haegeman tomorrow go read

Neeleman (1994), Frey (2001), and others observe that A'-scrambling operations typically require the moved DP to have a specific discourse function. It must either be a *FOCUS* (marked throughout by small caps) or a *topic* (marked throughout by double underlining); as shown in (5c), DPs that are neither a topic nor a focus cannot be scrambled across arguments.³

- (5) a. dat [_{DP} alleen _{DIT} boek] Jan Marie _{t_{DP}} geeft.
that only this book John Mary gives
 ‘that John gives Mary only this book’
- b. dat [_{DP} zo’n boek] alleen _{JAN} Marie _{t_{DP}} geeft.
that such-a book only John Mary gives
 ‘that only John gives Mary such a book’
- c. *dat [_{DP} het boek] Jan Marie _{t_{DP}} geeft.
that the book John Mary gives

In order to avoid terminological confusion, we should clarify our usage of the terms topic and focus. Unless indicated otherwise, we reserve the term focus for syntactic constituents expressing contrastive focus. What characterizes this type of focus is that it involves selection from a contextually defined set of alternatives. Out of this set, a subset is selected, often to the exclusion of other members of the original set. Our notion of focus thus excludes constituents expressing mere new information focus, which does not involve selection from a set: in the terminology of Kiss 1998, new information focus is non-quantificational.

We reserve the term topic for syntactic constituents that introduce a new discourse topic, narrow down the current discourse topic, or change it. We thus exclude constituents that are

³ We should warn the reader that there is some variation among speakers regarding the acceptability of A'-scrambling. There is general agreement in the literature that A'-movement across indirect objects and subjects exists. However, whereas all speakers accept A'-scrambling of a topic out of a constituent containing a focus, a subset of speakers reject A'-scrambling of foci – at least across the subject. That there is such variation became clear to us during the review procedure. One reviewer accepted all judgments given in the paper, while a second – who was not a native speaker – was able to replicate all but a few of them with their own informant. In contrast, a third reviewer rejected all examples of A'-scrambling of foci across a subject, stating explicitly that such movement is only allowed when the subject is a focus; presumably, the moved category would then be a topic. At this stage, we are uncertain about the percentage of speakers that fall in either category. We should perhaps point out that we are not aware of any speakers who accept movement structures that we claim to be infelicitous. All disagreements are about examples that we (and our informants) accept.

We do not think that speakers who reject A'-scrambling of foci across the subject have some kind of restriction on the landing site of focus scrambling. Rather, it seems to us that they simply do not accept focus as a trigger for movement. Crucially, such speakers also appear to reject scrambling of foci across indirect objects. Admittedly, this very local scrambling operation is more acceptable than scrambling across the subject, but we believe that this may be due to a confounding factor. The relevant examples could also involve A-scrambling, given that Dutch speakers judge A-scrambling across an object ungrammatical, but bordering on marginal acceptability (A-scrambling across subjects is judged much worse).

As will become apparent as we proceed, those speakers who only allow A'-scrambling of topics cannot be used to test a key empirical prediction we make, namely that focus scrambling out of a constituent containing a topic or a higher order focus is ungrammatical.

merely discourse-anaphoric. Of course, such constituents often refer to the current discourse topic (see Ariel 1990, 1991, 1994). However, they cannot introduce a new discourse topic. We are aware that this conception of topic is narrower than assumed in much of the literature, and will return to our reasons for adopting it in section 2.1. Note, however, that it is not without precedent (compare Lambrecht's 1994 notion of 'reference-oriented topic' and Büring's 1997 notion of 'S-Topic').

As we have shown, the two types of scrambling are licensed by their interpretive effect. A'-scrambling is ruled out in the absence of a topic or focus interpretation of the moved constituent, while A-scrambling is typically blocked if the scrambled category is not discourse-anaphoric (we return to other interpretive effects below). On any theory, these observations must be captured using interpretive templates of some sort. That is, one must adopt rules that associate a particular syntactic configuration with a particular information-structural effect. There appear to be two ways in this could be achieved.

One possibility is to conceptualize interpretive templates as part of the syntactic representation; that is, as functional projections. On this view, the topic and focus reading of A'-scrambled DPs would be attributed to their occupying the specifier of particular functional projections. Similarly, A-scrambling may target the specifier of a functional projection that licenses a discourse-anaphoric interpretation. Proposals along these lines belong to the cartographic research program (see Rizzi 1997, 2004, Cinque 1999, 2002, and Belletti 2004). This research program strives for a one-to-one relation between structure and interpretation. Interpretive effects are linked to specific regions of the tree, while each such region is associated with a single interpretive effect.

In the alternative we will argue for, interpretive templates are conceptualized as mapping rules that relate certain structural configurations with certain aspects of information structure. Such a proposal is inherently more flexible, in that mapping rules may have a structural description that can be met in various locations in the tree, while a single location in the tree might fit the structural description of more than one mapping rule. In other words, we may expect a double dissociation between structure and interpretation. We are not the first to explore this style of theorizing. Various authors have analyzed topic, focus, and discourse anaphoricity as interface phenomena, among them Vallduví (1992), Wagner (2005), and Reinhart (2006).

In comparing the cartographic and flexible alternatives, it is important to note that each theory can imitate the other, provided its core claims are sufficiently diluted. The flexible theory can imitate the cartographic theory by restricting the structural description of each mapping rule to a single functional projection. Similarly, the cartographic theory can imitate the flexible theory by allowing optional realization of the functional projections in question and variation in their locus of realization. We take such imitation to be tantamount to an admission of defeat, and will therefore mainly restrict discussion to undiluted implementations of the two theories.

The flexible theory may seem less restrictive than its cartographic competitor and therefore likely to overgenerate. Perhaps surprisingly, it can be demonstrated that the opposite is true. If we consider versions of the two theories that are capable of capturing all attested patterns, it turns out that the restrictions necessary to rule out unattested patterns can be expressed in the flexible theory, but remain beyond the grasp of the cartographic approach.

The paper is divided into two main sections, concerned with A'-scrambling and A-scrambling, respectively.

2. A'-Scrambling

2.1. Templates as Mapping Rules

In order to create a clear opposition between the proposal we advocate and cartographic alternatives, we will not assume any restrictions on the landing site of A'-scrambling. This movement is treated as an adjunction operation that can in principle target any node in the extended verbal projection (although it will of course have to meet general well-formedness conditions that apply in Dutch, such as the verb-second constraint).

The notion of economy underpinning the minimalist program implies that movement cannot apply freely; it must take place for a reason. On standard assumptions, adjunction operations cannot have a structural or morphological trigger. The only remaining possibility is that they are licensed by having an effect at one of the interfaces. Indeed, we will argue that A'-scrambling feeds an otherwise inapplicable mapping rule at the interface between syntax and information structure.

Allowing movement without a syntax-internal trigger implies a partial return to the move- α program of Government and Binding Theory. However, the generative capacity of the resulting grammar is constrained by the requirement that such movement yields an interface effect.⁴

One might conjecture that A'-scrambling is licensed by a mapping rule that assigns a constituent an interpretation as topic or focus. The drawback of this suggestion is that constituents can also be interpreted as topic or focus in situ, so that it is difficult to see what interpretive effect the movement could have on the displaced category. This being so, we explore the possibility that A'-scrambling does not affect the interpretation of the moved category itself, but rather that of the constituent to which it adjoins.

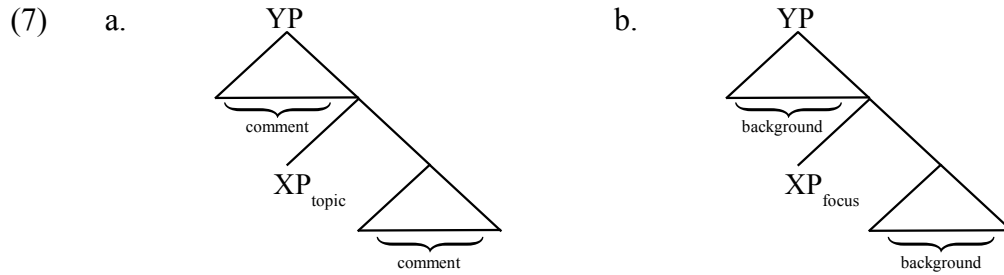
It is widely assumed that contrastive foci are associated with a background identifying the set against which the focus is evaluated (see Büring 2003b and references cited there). In an example like *Mary bought a HAT in Paris* the speaker contrasts *a hat* with other DPs that provide alternatives for the value of *x* in *Mary bought x in Paris*. As this example makes clear, the background is not necessarily a syntactic constituent on the surface, but may be composed of different constituents (for the LF-representation of focus-background structures, see below).

In the same vein, a topic is often taken to be associated with a comment. Like a background, a comment is not necessarily a surface constituent, but may be composed of different constituents. For example, *the record* in speaker B's reply in (6) is a topic surrounded by material that belongs to the comment (*he gave x to Susan*).

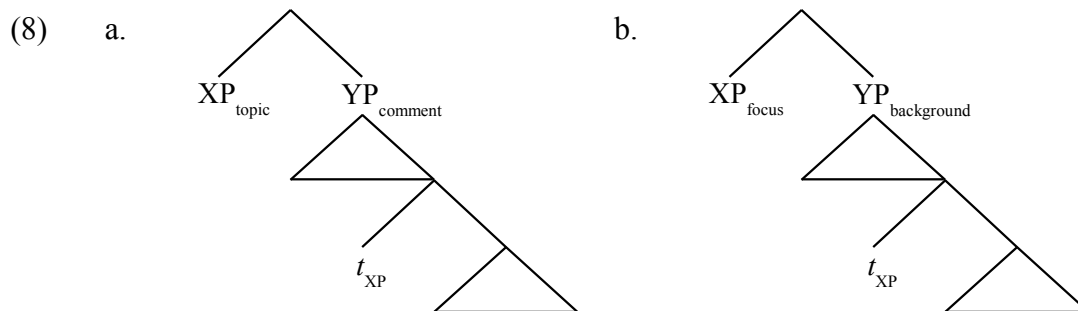
- (6) Do you know who John gave the book to?
I'm not sure, but he gave the record to Susan.

The reason that the background in *Mary bought a HAT in Paris* and the comment in (6) cannot be surface constituents is that the smallest structural units that contain the material making up the background and the comment also contain the focus and the topic. The situation is depicted in (7).

⁴It is interesting to note that a comparable move is made in recent work by Chomsky (2005). However, Chomsky holds on to the idea that every movement has a syntactic trigger by relying on so-called 'edge features' that trigger either external or internal merge. This proposal is entirely compatible with the outlook defended here and avoids, at least syntax-internally, the conclusion that there is optional movement (see Slioussar 2007 for an analysis of Russian scrambling along these lines). However, it does so at the cost of introducing optional features that have no detectable syntactic or semantic content. It seems to us that the evaluation whether or not to include an additional edge feature in the derivation seems equivalent to the evaluation whether or not to move a constituent. In each case the ultimate licence is an interpretive effect.



There is no trivial mapping procedure that can link overt syntax and information structure in cases where topic and focus interrupt a comment and a background, respectively. This is different if the constituents labeled XP in (7) are moved out of YP, so that an otherwise discontinuous comment or background is turned into a constituent:⁵



We therefore propose that movements of topics and foci do not mark the discourse functions of these elements themselves, but rather their comments and backgrounds. Thus, such movements will have a licence if the structures they create match the structural description of one of the mapping rules in (9).^{6,7}

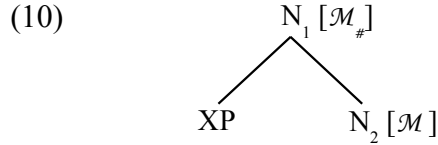
⁵ An anonymous reviewer asks whether our proposals implies a rejection of the copy theory of movement, on the assumption that such a theory does not actually remove the topic from the comment or the focus from the background. In our view, the proposal put forward here is neutral as regards the status of traces. We will explain below (see page 14) that displaced topics must be ‘indexed’ by a category in the comment. Similarly, a displaced focus must be indexed in its background. All that is required, then, is that the trace of a moved constituent can be interpreted as a category indexing an associated topic or focus. This seems entirely compatible with the copy theory of movement.

⁶ The mapping rule that drives topic movement relies on the existence of comments. If Vallduví (1992) and others are correct in rejecting this notion, an alternative formulation of the mapping rule is required, presumably one that links topic marking to movement across a focus or out of the background of a focus. The choice is an empirical one and our initial survey of the data suggests that the mapping rule as it stands is preferable. For example, some languages allow topic fronting in the absence of a (contrastive) focus (see Büring 2003a for discussion). Some further evidence, from Dutch, is presented in (23).

By contrast, an anonymous reviewer points out that in sentences with an in situ focus there is a strong preference for topic movement to land in the vicinity of the focus, rather than in a position relatively far removed from it. This seems to favour the proposal sketched at beginning of this footnote. The issues involved are complex and will, for reasons of space, not be explored here. However, as far as we can tell, an adjustment of (9a) that mentions a focus rather than a comment would not affect the argumentation elsewhere in the paper.

⁷ Rizzi (1997) claims that the heads of the projections hosting moved topics and foci mark their complements as comment and background, respectively. In this sense, Rizzi’s theory can be seen as a precursor of the current proposal, although – as we will argue in section 2.2 – there are several important differences.

- (9) a. *Comment Mapping Rule*
 If XP in (10) is interpreted as topic, then interpret N_2 as comment.
- b. *Background Mapping Rule*
 If XP in (10) is interpreted as focus, then interpret N_2 as background.



These mapping rules refer to the structure in (10), in which XP has undergone A'-movement. We assume that this property of XP is recoverable from the presence of \mathcal{M} , a selectional requirement introduced by A'-trace and satisfied under direct domination by the head of a movement chain. (This selectional requirement is comparable to the slash feature in HPSG; for a full discussion of this way of encoding movement, see Neeleman and Van de Koot 2002, 2007.) From our current perspective, there are two advantages to formalizing movement in this way. First, the presence of \mathcal{M} eliminates the need to scrutinize arbitrarily large structures. Second, this encoding does not rely on stipulations about possible landing sites for movement, and consequently permits a highly underspecified statement of the mapping rules in (9), allowing them to apply in a wide variety of structures.⁸

The mapping rules in (9) state that overt A'-movement restricts the otherwise relatively free association between syntax and information structure. As they mention configurations of overt movement, they do not choose between competing theories of the LF representation of in-situ focus. One could assume, as we will do throughout, that the background associated with an in-situ focus is construed freely. This assumption implies that a background of an in-situ focus need not be a constituent, so that there is no licence for covert focus movement (compare Rooth 1985, 1992). Alternatively, one could argue that covert focus movement is required to link surface syntax to a transparent LF-representation (compare Drubig 1994, Meinunger 1996, and Krifka 2006). The latter proposal is compatible with the theory developed here if certain additional assumptions are made. The most important one is that LF-operations cannot alter the marking effects of overt movement, a generalization familiar from the literature on WH-movement (see van Riemsdijk 1978). We will return to this issue in footnotes 16 and 22, but present our argument without reference to covert movement.⁹

⁸Wagner (2005) introduces a givenness operator G_R , which bipartitions a syntactic representation in a way similar to the mapping rule in (9b). In fact, that rule could be reformulated as an instruction about the insertion site of G_R at LF. Like our proposal, Wagner's theory allows a great deal of flexibility, the idea being that information-structural movement is motivated by the change in sisterhood relations it brings about and the stronger presuppositions this entails. The proposals are not equivalent, however. For one thing, Wagner's theory does not distinguish between displaced and in situ foci, whereas this distinction is crucial in the present proposal (see footnotes 9, 16, and 22).

⁹One reason why we are skeptical of an analysis of in-situ focus involving LF-movement is that there does not seem to be a correlation between the background of a focused quantifier and its scope. Of course, such a correlation would be expected on the reasonable assumption that an element contains only one position at LF. That the scope and background of a focused quantifier may diverge is particularly clear in the case of overt long-distance focus movement. In an example like (i), the indefinite matrix subject cannot depend on the fronted universal, even though the former is contained in the background of the latter:

- (i) Every BOOK, at least one girl claimed that Mary had read. ($*\forall > \exists$; $\exists > \forall$)

Our impression is that overt focus movement obligatorily reconstructs for scope, but that – after reconstruction – focused quantifiers may undergo (clause-bounded) quantifier raising. This explains the

The mapping rules in (9) make several predictions. The first is that only foci associated with a background can be moved, simply because the movement does not identify the focused constituent itself, but rather its background.¹⁰ This prediction is correct. It stands to reason that new-information focus lacks a background, as it does not involve selection of a subset out of a set of alternatives (recall that a set of alternatives for a focus is constructed from the background). As discussed by Kiss (1998) for a range of languages, new-information focus indeed does not undergo focus movement. (Kiss's explanation, based on the idea that new-information focus is non-quantificational, is very similar to ours.)

A second set of predictions follows from the interaction of the mapping rules in (9) with restrictions on information structure. As widely acknowledged, topic-comment structures cannot be embedded in a background, but focus-background structures can be part of a comment (for a rationale, see the discussion of 'aboutness' below). Thus, the information structure in (11b) is ruled out, while that in (11a) is well-formed (topic is followed by a Kleene star in order to indicate that there may be multiple topics). (For relevant discussion, see Prince 1981, Reinhart 1981, 1995, Vallduví 1992, Lambrecht 1994, and Hajičová et al. 1998.)

- (11) a. topic* [_{COMMENT} FOCUS [_{BACKGROUND} ...]]
 b. *FOCUS [_{BACKGROUND} topic [_{COMMENT} ...]]

We should emphasize that (11a,b) are information structures, and not syntactic configurations. Given that the mapping between syntax and information structure need not be isomorphic, the ban on the embedding of a topic-comment structure in a background will not directly restrict syntactic structure. For instance, it does not follow from (11b) that topics cannot be preceded by foci. Any impact of information-structural constraints on word order can only result from the application of mapping rules.

As explained above, application of the rules in (9) has the consequence that the mapping between syntax and information structure becomes partially transparent: there is a one-to-one association of syntactic constituents and (certain) information-structural functions. This effect of the mapping rules in (9) implies that information-structural conditions come to bear on

ambiguity of (ii):

- (ii) Every BOOK, Mary claimed that at least one girl had read. ($\forall > \exists$; $\exists > \forall$)

There is also no connection between (hypothetical) covert focus movement and scope. To begin with, the focused indefinite in (iii) can depend on the universal, indicating that it can be interpreted in situ for scope, even though the universal it depends on is contained in its background.

- (iii) Q: What did every student read after reading the morning paper?
 A: Every student read a BOOK. ($\forall > \exists$; $\exists > \forall$)

Conversely, there are situations in which a focused universal in object position fails to take scope over elements contained in its background. This interpretation is forced in (iv) by the question answered:

- (iv) Q: What has at least one student read?
 A: At least one student has read every BOOK. (* $\forall > \exists$; $\exists > \forall$)

It seems to us that data of this type make it impossible to deal with scope and background marking as a unitary phenomenon, thus undermining the case for LF focus movement.

¹⁰Occasionally, the moved constituent may contain material that belongs to the background or the comment. This is because constraints on movement may require pied-piping. Here and in what follows we abstract away from this phenomenon, acknowledging that it will require adjustments in the formulation of the proposed mapping rules.

Thus, our proposal makes the following core predictions. The order of in-situ topics and foci is free. However, the effects of (11) are felt when movement comes into play: while a topic can move out of a constituent containing a focus (whether in situ or not), a focus cannot move out of a constituent containing a topic (whether in situ or not).

A context that favours an interpretation of a constituent as topic is one in which the hearer answers a question that differs somewhat from the one being asked. The constituent in which the expected answer and the one actually given vary introduces a new (or contrastive) topic (see Büring 1997, 2003a, and references mentioned there). It typically carries what Jackendoff 1972 calls a B-accent, maximally realized as L+H* followed by a default low tone and a high boundary tone (L H%). These criteria allow us to classify *Wim* in (12a,b) as a topic (the original question mentioning *Fred*; abstracting away from phonological details, we indicate B-accent with ‘V’).¹¹

(12) Hoe zit het met FRED? Wat heeft HIJ gegeten?
'What about Fred? What did he eat?'
Nou, dat weet ik niet, maar...
'Well, I don't know, but...'

- ¹¹ The judgments given here and below are based on a pronunciation of the examples in which the A-accent is realized as a plain high tone, while the B-accent is realized as a tune consisting of a high tone, a low tone and a high boundary tone (this intonation of Dutch topics is in line with the observations reported in Van Hoof 2003). As far as we can judge these matters, this pronunciation is very similar to what is found in English, but establishing this more firmly would require phonetic experiments beyond the scope of the current paper.

9

- b. #ik geloof dat [_{PP} van de BONEN] Wim _{t_{PP}} meer gegeten heeft dan
I believe that from the beans Bill more eaten has than
 vorig jaar.
last year

There is a further test that can be used to corroborate the classification of topics and foci (on the definitions of these notions adopted above). Negative quantifiers or expressions like *only X* cannot function as topics. This is corroborated by the fact that they cannot appear in the English *as for* construction, which marks topics:

- (13) a. #As for no boy, I like him.
 b. #As for only John, I like him.

Therefore, if in the relevant context a constituent can be replaced by a negative quantifier or *only X*, it cannot be a topic. As pointed out by an anonymous reviewer, the scope of the *only X* replacement test is somewhat limited, because *X* in *only X* can be a topic. In the bulk of the what follows we will therefore rely on the negative quantifier test.

When *Wim* in (12a) is replaced by *niemand* ‘nobody’, the result is decidedly odd, as shown in (14a).¹³ (The hearer is left to wonder which person is referred to as ‘nobody’.) However, the variant of (12b) in (14b), in which *de bonen* ‘the beans’ has been replaced by *nergens* ‘nothing’, is perfectly natural.

- (14) a. #ik geloof dat niemand van de BONEN meer gegeten heeft dan vorig jaar.
I believe that nobody from the beans more eaten has than last year
 ‘I believe that nobody has eaten more from the beans than last year.’
 b. ik geloof dat Wim NERGENS van meer gegeten heeft dan vorig jaar
I believe that Bill nothing of more eaten has than last year
 ‘I believe that Bill has not eaten more from anything than last year.’

The data in (15) show that, by contrast, an in-situ topic may follow an in-situ focus or move across it. This observation is corroborated by the fact that in neither (15a) nor (15b) ‘the beans’ can be replaced by a negative quantifier (see (16)), whereas replacing ‘Bill’ by ‘nobody’ is unproblematic in both of these examples (see (17)). The results of this test are consistent with a classification of ‘the beans’ as topic and of ‘Bill’ as focus.

- (15) Hoe zit het met de SOEP? Wie heeft DIE gegeten?
 ‘What about the soup? Who ate that?’
 Nou, dat weet ik niet, maar...
 ‘Well, I don’t know, but...’

- a. ik geloof dat WIM van de bonen meer gegeten heeft dan vorig jaar.
I believe that Bill from the beans more eaten has than last year

¹³ The answer in (14a) is felicitous if the B-accent on the subject is omitted. Doing so allows the example to be construed as providing indirect information about Fred, namely that he did not eat more from the beans than he did last year.

- b. ik geloof dat [PP van de bonen] WIM t_{PP} meer gegeten heeft dan vorig jaar.
I believe that from the beans Bill more eaten has than last year
 ‘I believe that Bill has eaten more from the beans than last year.’
- (16) a. #ik geloof dat WIM nergens van meer gegeten heeft dan vorig jaar.
I believe that Bill nothing of more eaten has than last year
- b. #ik geloof dat [PP nergens van] WIM t_{PP} meer gegeten heeft dan vorig jaar.
I believe that nothing of Bill more eaten has than last year
 ‘I believe that Bill has not eaten more from anything than last year.’
- (17) a. ik geloof dat NIEMAND van de bonen meer gegeten heeft dan vorig jaar.
I believe that nobody from the beans more eaten has than last year
- b. ik geloof dat [PP van de bonen] NIEMAND t_{PP} meer gegeten heeft dan
I believe that from the beans nobody more eaten has than
vorig jaar.
last year
 ‘I believe that nobody has eaten more from the beans than last year.’

In sum, it seems that foci cannot move across topics, while topics *can* move across foci.¹⁴

This generalization could be captured by a linear constraint. However, as pointed out by an anonymous reviewer, the proposal based on the mapping rules in (9) makes a stronger prediction, namely that focus movement out of a constituent containing a topic will give rise to ungrammaticality whether the launching site of the relevant movement precedes or follows the topic. As we will now show, this stronger prediction is correct.

The answers in (18) involve a ditransitive verb. The context is set up in such a way as to favour a reading of the indirect object as focus (it answers the WH-question), and the direct

¹⁴ An anonymous reviewer points to a potential problem for our claim that foci cannot move across topics on the basis of a question-answer pair of the following type.

- (i) Q: How are you going to organize the inspection of the property?
 A: My father will inspect the GROUND FLOOR, my mother will inspect the FIRST FLOOR, and the basement my neighbour will check out.

The reviewer suggests that in the final conjunct of the answer, a focused constituent has moved across a topic. While we agree that fronting of *the basement* is possible here, it seems to us that it is impossible for *the basement* and *my neighbour* to carry an A- and a B-accent, respectively. Instead, the final conjunct must carry a B- and an A-accent, in that order. What seems to be going on here is that a topic-focus swap takes place in the middle of a pair-list answer (see note 12 for related discussion). That this is a reasonable interpretation of the facts is confirmed by the possibility of replacing *my neighbour*, and the impossibility of replacing *the basement*, by a negative quantifier (see (ii,iii)). Note that replacement of *the basement* is possible if no fronting takes place (see (iv)).

- (ii) A: My father will inspect the GROUND FLOOR, my mother will inspect the FIRST FLOOR, but the basement nobody will check out.
 (iii) A: #My father will inspect the GROUND FLOOR, my mother will inspect the FIRST FLOOR, but no part of the house <will> my neighbour <will> check out.
 (iv) A: My father will inspect the GROUND FLOOR, my mother will inspect the FIRST FLOOR, but my neighbour will check out no part of the house.

object as topic (it switches the topic of the discourse from the antique sideboard to the clock). While the answer in (18a) is felicitous, the answer in (18b), where the focus has moved, cannot be produced with the intonation indicated.

- (18) Hoe zit het met het antieke DRESSOIR? Wie heeft grootvader DAT nagelaten?
 ‘How about the antique sideboard? To whom has granddad bequeathed that?’
 Nou, dat weet ik niet, maar ik geloof
 ‘Well, I don’t know, but I believe ...’
- a. dat grootvader zijn BUREN de klok heeft willen nalaten.
that granddad his neighbours the clock has want bequeath
- b. #dat zijn BUREN grootvader t de klok heeft willen nalaten.
that his neighbours granddad the klok has want bequeath
 ‘that granddad wanted to bequeath the clock to his neighbours.’

We can corroborate our classification of the indirect object and direct object as focus and topic by trying to replace them with a negative quantifier. In the context of (18), such a replacement is only possible for the indirect object.¹⁵

- (19) a. #dat grootvader zijn BUREN niets heeft willen nalaten.
that granddad his neighbours nothing has want bequeath
 ‘that granddad did not want to bequeath anything to his neighbours.’
- b. dat grootvader NIEMAND de klok heeft willen nalaten.
that granddad nobody the clock has want bequeath
 ‘that granddad did not want to bequeath the clock to anyone.’

As expected, it is possible to move a topic from a position preceding a focus, as shown in (20). Our classification of ‘neighbours’ as topic and ‘clock’ as focus in the examples in (20) receives support from the by now familiar negative-quantifier test (see (21) and (22)).

- (20) Hoe zit het met tante Jo? Wat heeft grootvader HAAR nagelaten?
 ‘How about auntie Jo? What has granddad bequeathed to her?’
 Nou, dat weet ik niet, maar ik geloof
 ‘Well, I don’t know, but I believe ...’
- a. dat grootvader zijn buren de klok heeft willen nalaten.
that granddad his neighbours the clock has want bequeath

¹⁵ The anonymous reviewer who drew our attention to the data presently under discussion suggests that examples like (18b) are in fact grammatical and concludes from this that we are dealing with a linear constraint. We think that the reviewer’s judgments may be influenced by the confounding factor of topic-focus swap, which was discussed in footnotes 12 and 14. The answer in (18b) is acceptable only if produced with a B-accent on ‘neighbours’ and an A-accent on ‘clock’, indicating that the former is construed as topic and the latter as focus. That (18b) is only felicitous under topic-focus swap is confirmed by the fact that replacing the fronted constituent by a negative quantifier is impossible: there is a sharp contrast between (i) below and (19b) in the main text. The reason for this contrast is that replacement of ‘neighbours’ by ‘nobody’ blocks topic-focus swap, as topics cannot be negative quantifiers.

(i) #dat niemand grootvader de klok heeft willen nalaten.
that nobody granddad the clock has want bequeath

- b. $\begin{array}{c} \vee \\ \text{dat zijn } \underline{\text{buren}} \end{array} \quad \begin{array}{c} \backslash \\ \text{grootvader } t \text{ de KLOK} \end{array} \text{ heeft willen nalaten.}$
that his neighbours granddad the clock has want bequeath
 ‘that granddad wanted to bequeath the clock to his neighbours.’
- (21)
- a. $\begin{array}{c} \vee \\ \# \text{dat grootvader } \underline{\text{niemand}} \end{array} \quad \begin{array}{c} \backslash \\ \text{de KLOK} \end{array} \text{ heeft willen nalaten.}$
that granddad nobody the clock has want bequeath
- b. $\begin{array}{c} \vee \\ \# \text{dat } \underline{\text{niemand}} \end{array} \quad \begin{array}{c} \backslash \\ \text{grootvader } t \text{ de KLOK} \end{array} \text{ heeft willen nalaten.}$
that neighbours granddad the clock has want bequeath
 ‘that granddad did not want to bequeath the clock to anyone.’
- (22)
- a. $\begin{array}{c} \vee \\ \text{dat grootvader zijn } \underline{\text{buren}} \end{array} \quad \begin{array}{c} \backslash \\ \text{NIETS} \end{array} \text{ heeft willen nalaten.}$
that granddad his neighbours nothing has want bequeath
- b. $\begin{array}{c} \vee \\ \text{dat zijn } \underline{\text{buren}} \end{array} \quad \begin{array}{c} \backslash \\ \text{grootvader } t \text{ NIETS} \end{array} \text{ heeft willen nalaten.}$
that his neighbours granddad nothing has want bequeath
 ‘that granddad did not want to bequeath anything to his neighbours.’

Our argumentation so far firmly establishes that focus movement marks a background. It is much harder to show that topic movement marks a comment, simply because there are no elements that cannot be part of a comment. Hence, we cannot construct for comment marking the kind of paradigms given above in support of the existence of background marking.

However, the constraints on well-formed information structures imply that a focus must be contained in a comment. This condition has detectable consequences in sentences involving topic movement. Such movement is predicted to be infelicitous if it targets a position lower in the tree than a focus, because exactly this configuration leads to a situation in which the constituent marked as comment excludes the focus. In contrast, a topic should be able to move to a position c-commanding a focus (as the constituent marked as comment then contains the focus) or remain in situ (as construction of the comment is free in that case, so that the focus can be included).

This pattern is indeed what we find:

- (23) Hoe zit het met de NIETMACHINE? Wie heeft Jan DAAROM gevraagd?
 ‘What about the stapler? Who has asked John for that?’
 Nou, dat weet ik niet, maar...
 ‘Well, I don’t know, but...’
- a. $\begin{array}{c} \vee \\ \text{ik geloof dat PIET Jan om de } \underline{\text{liniaal}} \end{array} \text{ heeft willen vragen.}$
I believe that Peter John for the ruler has want ask
- b. $\begin{array}{c} \vee \\ \# \text{ik geloof dat PIET } [_{pp} \text{ om de } \underline{\text{liniaal}}] \end{array} \text{ Jan } t_{pp} \text{ heeft willen vragen.}$
I believe that Peter for the ruler John has want ask
- c. $\begin{array}{c} \vee \\ \text{ik geloof dat } [_{pp} \text{ om de } \underline{\text{liniaal}}] \end{array} \text{ PIET Jan } t_{pp} \text{ heeft willen vragen.}$
I believe that for the ruler Peter John has want ask
 ‘I believe that Peter has wanted to ask John for the ruler.’

This concludes our discussion of topic and focus movement. The data fully support an interpretation of discourse templates as mapping rules. In short, these mapping rules explain why the order of topic and focus is free when they are in situ, and why, when one is fronted, movement of a topic out of a constituent containing a focus is acceptable, but not the other way around.^{16,17}

Needless to say, the predictions that follow from our proposal depend on one's criteria for topichood. In this respect, it is important to consider the widely acknowledged definition of topics in terms of aboutness (see Reinhart 1981).¹⁸ The linguistic relevance of aboutness is obvious from several phenomena, including anaphora resolution. Our notion of topic covers only a subset of aboutness topics; it is restricted to expressions that introduce a new topic, change the topic, or narrow it down. It thus excludes discourse-anaphoric expressions that other researchers would classify as topics. Clearly, then, some justification is required for this choice.

We believe that topics must be distinguished from expressions in the comment that index them. This distinction has been motivated extensively by Lambrecht (1994). Our notion of topic corresponds to what he calls 'reference-oriented topic expressions', while our notion of indexing elements corresponds to his 'role-oriented topic expressions'. To give an example, *Maxine* in (24) is a topic. There is nothing to be gained, however, from conferring topichood on *her* as well. Rather, the function of this pronoun is to indicate how the topic is related to the comment.

¹⁶ We assume throughout that in situ focus does not move at LF. The data can also be captured, however, if in situ foci do move, so as to create a representation in which focus and background are constituents (abstracting away from many details; see Krifka 2006). Such an analysis requires two additional assumptions. To begin with, when overt focus movement takes place, LF-movement of material marked as belonging to a background must not be allowed. Such movement would repair the ill-formed examples in (12b) and (18b). By contrast, when no overt focus movement takes place, LF-movement must be generally available. For instance, the topics in (12a) and (18a) must move, as they would otherwise be part of a background created by LF focus movement. (Note, however, that parallel structures created by overt movement give rise to ungrammaticality; see footnote 17 for discussion.)

The restriction that marking relations established in overt syntax cannot be undone at LF has a precedent in the literature on multiple *WH*-questions: if overt movement is used to mark the scope of a *WH*-operator, its scope cannot be extended through subsequent LF-procedures. Consequently, *Who wonders what John bought?* cannot be interpreted as a multiple *WH*-question, whereas *Who said that John bought what?* does allow such a reading (see van Riemsdijk 1978).

¹⁷ An anonymous reviewer correctly points out that overt topic movement cannot be used to rescue structures in which a topic is contained in the background of a moved focus. We speculate that this is because "repair by movement" would violate Relativized Minimality: focus movement creates an A'-position that blocks association of the topic with its trace. If so, comparable structures in which a topic is linked to a pronoun should be acceptable. Indeed, there is a sharp contrast between (i) and (ii). Moreover, topic fronting across a moved focus is widely attested in languages that have clitic doubling (such as Italian) or allow radical pro drop (such as Japanese).

- (i) **Marie* heeft _{DIT} boek Jan *t* zeker *t* niet gegeven.
Mary has this book John certainly not given.
- (ii) Wat *Marie* betreft, _{DIT} boek heeft Jan haar zeker *t* niet gegeven.
What Mary regards, this book has John her certainly not given.
 'As for Mary, John has certainly not given her this book.'

For related discussion, see Rochemont 1989, Culicover 1991, Browning 1996, among others.

¹⁸ For Reinhart, an aboutness topic is comparable to a card in a filing system. Discourse participants organize the propositions they hold to be true in sets that are stored with a particular index (i.e. an aboutness topic). An important consequence of this proposal, which we adopt, is that topics must be the outermost constituents in information structures. This provides a rationale for our earlier suggestion that topic-comments structures cannot be embedded in a background. (See the main text below for further relevant discussion on what qualifies as a topic.)

- ∇
- (24) As for Maxine, I really like her.

It has been argued that this analysis should be generalized to other discourse-anaphoric constituents that index an aboutness topic. For example, the continuations below of the discourse in (24) are all-comment sentences linked to the topic *Maxine* through the pronoun *she* and the definite DP *the girl* (see Lambrecht's 1994 discussion of sentences containing only a 'role-oriented topic expression', and Vallduví 1992 and Vallduví and Engdahl 1996 for discussion of sentences without a 'link').

- (25) a. She always wears such nice scarfs.
 b. The girl always wears such nice scarfs.

This proposal makes two predictions. If discourse-anaphoric material coreferential with the current aboutness topic is interpreted as part of the comment, it should not undergo topic movement. Moreover, it should be allowed to surface in a constituent that is the sister of a moved focus. Both predictions seem to be correct:

- (26) a. As for Felix, he hit JOHN. Nobody has talked to him ever since.
 b. As for Felix, he hit JOHN. #Him nobody has talked to *t* ever since.
- (27) a. As for Felix, he hit JOHN. He stayed clear of BILL.
 b. As for Felix, he hit JOHN. BILL he stayed clear of *t*.

We conclude that it is productive to view aboutness topics as a purely pragmatic category. They are introduced into the discourse by topics in the narrow sense and indexed by discourse-anaphoric material.

Let us now turn to a second prediction associated with the mapping rule in (9b), also based on the idea that certain material is excluded from appearing in a background. In the case at hand, the offending material is not a topic, but a superordinate focus. We take the view that not all foci in information structure have the same status. In particular, a focus and its background may be embedded in the background of another focus. We will refer to the embedded focus as 'subordinate' and to the unembedded focus as 'superordinate'. Thus, in (28), FOCUS₂ is subordinate to FOCUS₁.

- (28) FOCUS₁ [BACKGROUND-1 FOCUS₂ [BACKGROUND-2 ...]]

As explained earlier, properties of information-structure do not bear directly on the syntax. In particular, the order in (28) need not correspond to the order of subordinate and superordinate foci in syntax. However, the effects of information structure on syntax are felt if focus movement takes place. Since the constituent marked as background can contain a subordinate focus but not a superordinate one, the syntactic structure in (29a) – but not that in (29b) – can be mapped onto the information structure in (28) (note that the position of the traces in (29) is irrelevant, because what matters is whether a subordinate focus is moved out of a constituent containing a superordinate focus, not whether it crosses that focus; see below for further discussion).

- (29) a. FOCUS₁ [... FOCUS₂ ... *t*₁ ...]
 b. FOCUS₂ [... FOCUS₁ ... *t*₂ ...]

The data below provide a first confirmation of this prediction. In each example, the right conjunct contains two foci. The one that corresponds to the single focus in the left conjunct is superordinate to the other (it is linked to the WH-operator in the context question). Put differently, the latter is interpreted as part of the background of the former. As expected, a superordinate focus is not allowed to move across a subordinate one (see (30b)); otherwise ordering of the two foci is free (superordinate FOCI appear in small caps, while subordinate foci are underlined; both should be pronounced with A-accents).¹⁹

- (30) Wie lezen er heden ten dage eigenlijk nog dichters?
 ‘Who still reads poets these days?’
 a. PIET leest veel dichters, maar ik geloof dat FRED alleen Bloem leest.
Peter reads many poets, but I believe that Fred only Bloem reads
 ‘Peter reads many poets, but I believe that Fred reads only Bloem.’
 b. #PIET leest veel dichters, maar ik geloof dat [_{DP} alleen Bloem] FRED *t*_{DP}
Peter reads many poets, but I believe that only Bloem Fred
leest.
reads
- (31) Welke dichters worden er heden ten dage eigenlijk nog gelezen?
 ‘Which poets do people still read these days?’
 a. Veel mensen lezen BLOEM, maar ik geloof dat alleen Jan MARSMAN leest.
Many people read Bloem, but I believe that only John Marsman reads
 b. Veel mensen lezen BLOEM, maar ik geloof dat [_{DP} MARSMAN] alleen Jan *t*_{DP}
Many people read Bloem, but I believe that Marsman only John
leest.
reads
 ‘Many people read Bloem, but I believe that only John reads Marsman.’

The data just discussed only provide a new argument if topic and superordinate focus are really different notions.²⁰ Otherwise we have merely replicated our earlier argument in a different context. This potential pitfall in our argumentation is highlighted by an anonymous reviewer, who suggests that a constituent moved across a focus must be interpreted as a topic. The ungrammaticality of (30b) would then follow from the fact that *alleen Bloem* ‘only Bloem’ cannot function as a topic for semantic reasons, something confirmed by the ungrammaticality of **wat alleen Bloem betreft* ‘as for only Bloem’ (in all but some rather contrived contexts).

The reviewer’s suggestion is plausible. However, we believe that the case for superordinate foci as distinct from topics can still be made. To begin with, if it is true that constituents of the form *alleen X* ‘only X’ cannot be topics, then the grammaticality of the example in (32) shows that a focus *can* be moved out of a constituent containing a focus, provided the in-situ focus is subordinate.²¹

¹⁹ We use *alleen DP* ‘only DP’ as the subordinate focus in order to create an adequate contrast with *veel DP* ‘many DP’ in the left conjunct. However, alternatives such as *minder mensen* ‘fewer people’ are felicitous as well.

²⁰ It is sometimes suggested that topics are subordinate foci. This is incompatible with the data above, because topics can move across foci, but movement of a subordinate focus across a superordinate one gives rise to very degraded results.

- (32) Veel mensen lezen alleen NEGENTIENDE eeuwse dichters. Maar ik geloof dat
Many people read only 19th century poets. But I believe that
 [_{DP} alleen ACHTIENDE eeuwse dichters] helemaal niemand _{t_{DP}} leest.
only 18th century poets entirely nobody reads
 ‘Many people read only 19th century poets. But I believe that absolutely nobody reads only 18th century poets.’

Moreover, we can replicate the data in (30) and (31) using negative expressions, which are incompatible with an interpretation as topic. If the moved constituent does not correspond to a preceding focus, A'-scrambling is infelicitous, as demonstrated by the pair in (33). By contrast, a moving focus that does correspond to a focus in the preceding context *can* undergo A'-scrambling, as demonstrated by the pair in (34). Since the notion of topic is irrelevant here, the contrast between the movements in (33) and (34) confirms our claims about subordinate and superordinate foci.

- (33) a. VEEL studenten zijn echte lezers. Sterker, ik geloof dat geen ENKELE
Many students are real readers Stronger, I believe that not-a single
 student helemaal niets leest.
student entirely nothing reads
 ‘Many students are true readers. Indeed, I believe that not a single student reads nothing at all.’
 b. #VEEL studenten zijn echte lezers. Sterker, ik geloof dat [_{DP} helemaal
Many students are real readers Stronger, I believe that entirely
niets geen ENKELE student _{t_{DP}} leest.
nothing not-a single student reads
- (34) a. Er wordt op de universiteit tegenwoordig VEEL gelezen. Sterker, ik
There is on the university these-days much read. Stronger, I
 geloof dat geen enkele student helemaal NIETS leest.
believe that not-a single student entirely nothing reads
 b. Er wordt op de universiteit tegenwoordig VEEL gelezen. Sterker, ik
There is on the university these-days much read. Stronger, I
 geloof dat [_{DP} helemaal NIETS] geen enkele student _{t_{DP}} leest.
believe that entirely nothing not-a single student reads
 ‘People read a lot in university these days. Indeed, I believe that not a single student reads nothing at all.’

As in the case of topic-focus interaction, the data in (30) and (31) do not yield to an explanation in terms of a linear constraint: examples in which a superordinate focus is generated to the right of the launching site of focus movement are equally degraded. This is demonstrated in (35b).

- (35) a. Grootvader heeft veel mensen een antieke VAAS nagelaten, maar ik geloof
granddad has many people a antique vase bequeathed but I believe
 dat grootvader alleen Jan een antiek BOEK nagelaten heeft.
that granddad only John a antique book bequeathed has
 ‘Granddad has bequeathed an antique vase to many people, but I believe that granddad has bequeathed an antique book only to John.’

²¹Note that *Wat alleen ACHTIENDE eeuwse dichters betreft, ...* ‘As for only 18th century poets, ...’ is ungrammatical, confirming that we are not dealing with a constituent that can be interpreted as a topic.

- b. #Grootvader heeft veel mensen een antieke VAAS nagelaten, maar ik geloof
granddad has many people a antique vase bequeathed but I believe
 dat alleen Jan grootvader *t* een antiek BOEK nagelaten heeft.
that only John granddad a antique book bequeathed has
- (36) a. Grootvader heeft JAN van alles nagelaten, maar ik geloof dat grootvader
granddad has John of all bequeathed but I believe that granddad
MARIE alleen een boekje nagelaten heeft.
Mary only a book-DIM bequeathed has
- b. Grootvader heeft JAN van alles nagelaten, maar ik geloof dat MARIE
granddad has John of all bequeathed but I believe that Mary
 grootvader *t* alleen een boekje nagelaten heeft.
granddad only a book-DIM bequeathed has
 ‘Granddad has bequeathed all sorts of things to John, but I believe that
 granddad has bequeathed only some book or other to Mary.’

In sum, the interaction between subordinate and superordinate foci provides a second testing ground for our proposal. As predicted, a subordinate focus cannot move out of a constituent containing a superordinate focus, but the reverse is unproblematic.²²

The predictions tested so far all concern the effects of topic and focus movement on the constituent marked as comment or background. There is an important additional consequence of the overall proposal. Given that the structural description of the mapping rules in (9) is highly underspecified, one would expect them to be applicable in a wide variety of syntactic environments. In other words, topic and focus movement should be free in their choice of landing site (modulo the interpretive effects of these movements, which do of course differ depending on what constituent is marked as comment or background).

Indeed, A'-scrambling can target a variety of positions. Irrespective of whether the moving phrase is a topic or a focus, it can land in a position between the subject and the indirect object, as in (37), a position between the complementizer and the subject, as in (38), or the first position in main clauses, as in (39). Further landing sites are available in structures containing adverbs, as these are freely ordered with respect to moved topics and foci. In fact, we know of no meaningful syntactic restriction on the landing site of A'-scrambling (other than that it must c-command its launching site).²³

- (37) a. dat Jan [DP alleen DIT boek] Marie t_{DP} zou geven
that John only this book Mary would give
 ‘that John would give Mary only this book’
- b. dat Jan [DP zo’n boek] alleen MARIE t_{DP} zou geven
that John such-a book only Mary would give
 ‘that John would give only Mary such a book’
- (38) a. dat [DP alleen DIT boek] Jan Marie t_{DP} zou geven
that only this book John Mary would give
 ‘that John would give Mary only this book’

²² Provided two additional assumptions are made, the analysis presented here can be made compatible with LF-movement of in situ foci (see also footnote 16). First, LF-movement must not be allowed to remove a superordinate focus from the overtly marked background of a subordinate focus. Otherwise (30b) and (35b) would be incorrectly ruled in. Second, in the absence of overt background marking, LF-movement must be generally available. Otherwise (30a) and (35a) would be incorrectly ruled out. The underlying idea is the same as before: marking relations established in overt syntax cannot be undone at LF.

²³ See note 3 for an important qualification.

- b. dat [_{DP} zo'n boek] alleen J_{AN} Marie t_{DP} zou geven
that such-a book only John Marie would give
 'that only John would give Marie such a book'
- (39) a. [_{DP} Alleen _{DIT} boek] zou Jan Marie t_{DP} t_V geven.
only this book would John Marie give
 'John would give Marie only this book.'
- b. [_{DP} Zo'n boek] zou alleen J_{AN} Marie t_{DP} t_V geven.
such-a book would only John Marie give
 'Only John would give Marie such a book.'

Of course, all A'-scrambling operations should be subject to the empirical generalizations illustrated in examples (12), (15), (30) and (31). Space limitations prevent us from demonstrating this here, but we believe that this expectation is fulfilled. To give just one example, (40) and (41) show that A'-scrambling across an object behaves just like A'-scrambling across a subject as regards the distribution of subordinate and superordinate foci.

- (40) Op wat voor dingen moet jij je medewerkers allemaal wijzen, David?
 'What kind of things do you have to remind your employees of, David?'
 Ik moet veel medewerkers op hun WERK wijzen, maar ik geloof
I must many employee to their work point but I believe
 dat ik [_{PP} aan de VAKANTIE] alleen Marie t_{DP} hoeft te herinneren
that I of the holiday only Mary need to remind
 'I have to remind many employees of their work, but I believe that I have to remind only Mary of her holidays.'
- (41) Welke medewerkers vereisen veel aandacht van jou, David?
 'Which employees require a lot of your attention, David?'
 #Ik moet J_{AN} op veel dingen wijzen, maar ik geloof
I must John to many things point but I believe
 dat ik [_{PP} alleen aan de vakantie] MARIE t_{DP} hoeft te herinneren
that I only of the holiday Mary need to remind
 'I have to remind John of many things, but I believe that I have to remind Mary only of her holidays.'

The data reviewed so far establish a double dissociation between position and interpretation: abstracting away from the restrictions on focus movement discussed above, all positions that allow a topic interpretation also allow an interpretation as focus, while topics and foci can each surface in a range of positions. This state of affairs is precisely what one should expect if discourse templates are mapping rules.²⁴

²⁴ Fanselow (2004) argues for a further dissociation of syntax and information structure. He suggests that only *part* of the focus of a sentence may be fronted, something that goes well beyond the proposal advanced here. We believe, however, that the data are also compatible with an analysis in which a nested focus moves within an all-focus sentence (see Neeleman and Szendrői 2004, Féry and Samek-Lodovici 2006, and references mentioned there, for discussion of nested foci). This analysis explains some of the pragmatic and phonological conditions that hold of the construction discussed in Fanselow's paper. First, the context must make it possible for the material following the fronted category to be interpreted as given (hence this material must be destressed). Second, the fronting operation cannot cross a topic, as shown in (i) below. Both observations fall out from an analysis according to which fronting of a nested focus triggers application of the mapping rule in (9b).

2.2. Templates as Functional Projections

We now compare our proposal with an approach to discourse templates as functional projections. As we have shown, the challenge is to reconcile the flexibility of topic and focus movement with restrictions on material contained in the sister of the landing site. We will argue that a theory based on functional projections can only meet this challenge by sacrificing its distinguishing features and imitating the approach based on mapping rules.

There are three alternatives to consider, all based on the idea that topic and focus movement target designated functional projections. The first implementation of this idea assumes that the clause contains one or more topic projections that dominate a unique focus projection. Given that any suitable constituent can be a topic or a focus, the functional projections that license these interpretations must be located quite high in the extended verbal projection. For example, if they were located below the subject, then this constituent could not function as either topic or focus. Indeed, Rizzi (1997, 2004) argues that the projections in question are part of an articulated version of CP. (Rizzi assumes an additional set of ‘low’ topic projections dominated by the unique focus projection. However, the specifiers of these projections seem to be reserved for discourse-anaphoric elements rather than contrastive topics. For evidence that ‘low topics’ are not topics in the sense adopted here, see Benincà and Poletto 2004, Samek-Lodovici 2006, and references cited there.)

To what extent can a proposal along these lines account for the Dutch facts? As it stipulates that topic projections dominate the focus projection, moved topics must precede moved foci. This, however, is not enough to capture the generalizations established previously. We showed (i) that the order of topic and focus is free as long as both are in situ, (ii) that a topic can move out of a constituent containing a focus, and (iii) that a focus cannot move out of a constituent containing a topic.

The data cannot be captured if any topic or focus is required to move to its checking position in overt syntax. Such an assumption would require that apparent in situ topics and foci are analyzed as having moved, a fact obscured by subsequent movement of other material (see below for discussion). The resulting theory would be too strong, because it incorrectly predicts that any topic will precede any focus.

The data can also not be captured if topics and foci are allowed to move optionally. This hypothesis is too weak because it fails to derive the generalization that a focus cannot move across an in situ topic: if the two movements are independent, it should be possible for the focus to move while the topic remains in situ. We may conclude, then, that ordering restrictions on topic and focus remain unexplained.

The same conclusion can be drawn with regard to ordering restrictions on superordinate and subordinate foci. We showed (i) that the ordering of in-situ superordinate and subordinate foci is free, (ii) that a superordinate focus can move out of a constituent containing a subordinate focus, and (iii) that a subordinate focus cannot move out of a constituent containing a superordinate focus.

If focus movement is obligatory, it is impossible to distinguish between in-situ and moved foci, as the former are analyzed as involving ‘hidden’ movement. This would allow an account of the first generalization, or of the second and third, but not of all three.

If focus movement is optional, a straightforward account of the first generalization is possible. One might think that some notion of superiority could be helpful in explaining the second and third generalization. It follows from current assumptions about movement that the

-
- (i) Wat is er met de kerst gebeurd? (Shared: addressee didn’t know what to give his mother.)
‘What’s happened over Christmas?’
#Een BOEK heb ik mijn vriendin gegeven.
A book have I my girlfriend given
‘I’ve given my girlfriend a book.’

single focus displaced in sentences featuring multiple foci will be the one closest to the relevant functional head. However, that is not enough to explain the data, as the focus in the highest structural position is not necessarily interpreted as superordinate to foci in lower structural positions (see (40b)). Furthermore, a superordinate focus can move across a subordinate one, showing that the moving focus is not always the one closest to the landing site. We may conclude that there is no account of ordering restrictions on foci either.²⁵

The final problem for the theory under discussion concerns the free positioning of moved topics and foci with respect to other material in the sentence. If topic and focus movement are obligatory, we would expect constituents with the relevant interpretation to always occupy a very high position in the clause. If these movements are optional, topics and foci should be able to occupy their base position as well. Neither view can be correct, given the apparent availability of landing sites in other positions than those in the left periphery.

As far as we can see, the only way a left-peripheral position for topic and focus can be reconciled with the data is to postulate landing sites for movement located higher in the CP layer than the topic and focus positions themselves. This would allow material not interpreted as topic or focus to be fronted, creating the impression that topic and focus movement have targeted lower positions. Thus, an example like (37a) would be structured as in (42).

- (42) dat [_{XP} Jan₁ [_{FocP} [_{DP} alleen DIT boek] [_{IP} t₁ Marie t_{DP} zou geven]]]
that John only this book Mary would give
 ‘that John would give Mary only this book’

A drawback of an analysis along these lines is that there does not seem to be a trigger for movement to the extra landing sites in the CP layer. In (42), for example, the subject *Jan* does not seem to acquire any new properties in virtue of its position in the specifier of XP.

Moreover, if more than one element must have moved across the left-peripheral topic and focus positions, their surface order is subject to exactly the same conditions as would hold of them in their base positions. We have already shown that A-scrambling in Dutch cannot change the order of arguments. This condition can also be observed in positions c-commanding a moved topic or focus. In (43), for instance, the resultative AP *zo bruin* ‘that brown’ has undergone A’-scrambling (we know this to be the case because resultatives must surface in a position adjacent to the verb, unless they are interpreted as topic or focus). Therefore, on the analysis under discussion, both the subject and the object must have moved to additional left-peripheral landing sites. Curiously, their original order must be replicated in the derived structure. (This is an instance of the general problem of ‘shape preservation’ faced by standard minimalist analyses. See Williams 2004 for extensive discussion.)

- (43) a. dat [_{XP1} Jan₁ [_{XP2} [_{DP} de broodjes]₂ [_{TopP} [_{AP} zo bruin]₃ alleen tijdens de
that John the buns that brown only during the
 VAKANTIE [_{IP} t₁ t₂ t₃ zou bakken]]]]
holidays would bake
 ‘that John would bake the buns that brown only during the holidays’
 b. *dat [_{XP1} [_{DP} de broodjes]₂ [_{XP2} Jan₁ [_{TopP} [_{AP} zo bruin]₃ alleen tijdens de
that the buns John that brown only during the
 VAKANTIE [_{IP} t₁ t₂ t₃ zou bakken]]]]
holidays would bake

²⁵ It would not help to adopt a variant of the present proposal allowing recursion of the focus projection. In that case, the difficulties encountered are parallel to those found with structures containing both a topic and a focus. We will not demonstrate this here.

The problem of order presents itself in a second guise. The movement of both the subject and the object in (43a) must be optional, give the grammaticality of the following examples:

- (44) a. dat [_{XP1} Jan₁ [_{TopP} [_{AP} zo bruin]₃ alleen tijdens de VAKANTIE [_{IP} t₁ [_{DP} de broodjes] t₃ zou bakken]]]
that John that brown only during the holidays the buns would bake
 b. dat [_{TopP} [_{AP} zo bruin]₃ alleen tijdens de VAKANTIE [_{IP} Jan [_{DP} de broodjes] t₃ zou bakken]]]
that that brown only during the holidays John the buns would bake
 ‘that John would bake the buns that brown only during the holidays’

In view of this general optionality, one would expect it to be possible for the object to move to a left-peripheral position, while the subject remains in situ. The fact of the matter is, however, that if the object precedes the shifted resultative, then the subject must precede it as well:

- (45) *dat [_{XP1} [_{DP} de broodjes]₂ [_{TopP} [_{AP} zo bruin]₃ alleen tijdens de VAKANTIE [_{IP} Jan t₂ t₃ zou bakken]]]
that the buns that brown only during the holidays John would bake

This means that a condition on movement is required such that the lowest element that moves to a left-peripheral position not licensing a topic or focus reading forces movement of all other material sandwiched between its trace and the topic and focus positions. We know of no well-motivated principle of grammar that would guarantee the observed surface pattern under the derivations outlined above.

We now turn to a second implementation of the idea that discourse templates are functional projections. The proposal at hand does not assume a single topic/focus domain in the CP layer, but rather a topic and focus projection above the neutral positions of the direct object, the indirect object and the subject, and above the ‘second’ position in V2 clauses. It seems to us that such a theory is committed to the claim that all topics and foci move. Given the additional landing sites, apparent in-situ topics and foci can be analyzed as having undergone string-vacuous movement.

The proposal just sketched comes close to that advanced by Grewendorf (2005), except that Grewendorf – like Rizzi (1997) does for the CP layer – assumes further ‘low’ topic positions in each ‘field’. However, these low topics are in fact discourse-anaphoric elements that index a topic, so that they do not qualify as topics in the narrow sense of section 2.1. Related proposals can be found in Belletti 2001, 2003.

With respect to the analysis of Dutch, the main advantage of having multiple topic and focus phrases is that the free positioning of topic and focus receives a straightforward treatment. For example, the word order in (42) can be derived through a single movement of the focus to a functional projection between the indirect object and the subject, as in (46). Since only the focus moves, the properties and order of other constituents are unaffected.

- (46) dat [_{IP} Jan₁ [_{FocP} [_{DP} alleen DIT boek] Marie t_{DP} zou geven]]
that John only this book Mary would give
 ‘that John would give Mary only this book’

However, given the many potential landing sites for topics and foci, the ordering restrictions on these elements remain unaccounted for. Recall that there are two sets of ordering

restrictions. First, the order of topic and focus is free as long as both are in situ, a topic can move out of a constituent containing a focus, but a focus cannot move out of a constituent containing a topic. Second, the ordering of in-situ superordinate and subordinate foci is free, a superordinate focus can move out of a constituent containing a subordinate focus, but a subordinate focus cannot move out of a constituent containing a superordinate focus.

Neither set of restrictions can be adequately captured. Any focus projection, except the lowest, dominates and is dominated by a topic projection. Consequently, it is impossible to rule out structures in which a focus moves to a position c-commanding a topic. Although (12b) can be excluded (assuming only one topic and one focus projection between the subject position in IP and the position of the complementizer), other examples remain problematic. For instance, a root variant of (12b) should be acceptable, as the object can move to a focus position in the CP layer, while the subject moves to a topic position in the IP layer. But (12b') is as bad as (12b).

- (12) b'. #_{[DP Van de BONEN]₁ heeft Wim _{t₁} gegeten.}
- from the beans has Bill eaten*

In the same vein, (47b) should be fully acceptable if the topic moves to an IP-internal topic position, while the focus moves to an IP-external focus position. (Notice, that the topic-focus structure of the answer is acceptable in the given context; it can be realized as in (47a).)

- (47) Hoe zit het met de JONGENS? Wat hebben DIE allemaal gekregen?
 'What about the boys? What sort of things have they received?'
 Nou, dat weet ik niet meer, maar...
 'Well, I don't know anymore, but...'
- a. ik geloof dat Jan de meisjes alleen een BOEK gegeven heeft.
I believe that John the girls only a book given has
 'I believe that John have given the girls only a book.'
- b. #ik geloof dat [_{FocP} [_{DP} alleen een BOEK]₂ [_{IP} Jan [_{TopicP} [_{DP} de meisjes]₁ _{t₁} _{t₂} gegeven heeft]]].
I believe that only a book John the girls given has

Multiple focus structures give rise to similar problems. The example in (30b) can be derived on the assumption that there is a single focus projection between the position of the complementizer and spec-IP. However, a root variant should be acceptable, as there are focus projections both above and below C. (30b'), however, is as bad as (30b). The problem repeats itself in other contexts, but we will not demonstrate this here.

- (30) b'. #_{PIET} leest veel dichters, maar [_{DP} alleen Bloem] leest _{FRED} _{t_{DP}}.
Peter reads many poets, but only Bloem reads Fred

A third and final implementation of the cartographic approach to topic and focus movement combines the idea of unique topic and focus projections with the flexibility of the proposal just evaluated: it allows topic and focus projections to be freely ordered with respect to other functional projections, though not with respect to each other.

On the assumption that topic and focus movement are obligatory, the proposal inherits some of the problems outlined above. It may succeed in capturing the free positioning of moved topics and foci with respect to other material in the clause, but it cannot account for ordering restrictions among these elements. The problems are identical to those encountered by the first proposal discussed in this section. (i) Obligatory movement of topics and foci

incorrectly predicts that topics must precede foci. (ii) There is no way to capture the restriction that a subordinate focus cannot move out of a constituent containing a superordinate focus.

One could attempt to avoid these complications by assuming that (i) Foc^0 divides the clause into a focus and a background, and (ii) projection of TopP and FocP is optional, even in clauses that contain a topic or a focus. The second assumption implies that movement of topic and focus is optional, while the first ensures that movement of a focus has consequences for material stranded in the constituent that is the sister of the attracting head.

The theory thus modified seems empirically adequate, but its core claims are so far removed from standard assumptions about functional projections as to render it self-defeating. In a nutshell it is a hidden implementation of the idea that discourse templates are mapping rules. FocP and TopP have none of the properties usually associated with functional projections: they are projected optionally anywhere in the tree, and they primarily have their effects through the marking of their complements as comment and background. By contrast, well-motivated functional projections are not optional and have a fixed position in the tree. Whenever a sentence contains a WH -phrase, a licensing head must be present at the left edge of the clause (WH -operators move out of IP). Moreover, although functional projections select their complements, they do not determine what material can be contained in them. The head attracting WH -phrases, for example, does not impose any conditions on material contained in the scope of the WH -phrase.

In conclusion, two assumptions are required to capture the properties of Dutch topic and focus constructions. There must be a variety of landing sites, and movement must have marking effect on the sister of the landing site. These assumptions fit well with a theory in which discourse templates are mapping rules, but do not easily lend themselves to an implementation in terms of functional projections.²⁶

3. A-Scrambling

3.1. Template as mapping rules

While A' -scrambling must involve movement, there is some controversy about the nature of A-scrambling: it could result from variation in the base component (see Bayer & Kornfilt 1994, and Neeleman 1994) or from optional A-movement (see Mahajan 1990, and Broekhuis, to appear) or from a combination of obligatory A-movement and freedom in the attachment site of adverbials (see Vanden Wyngaerd 1989, and Zwart 1993).

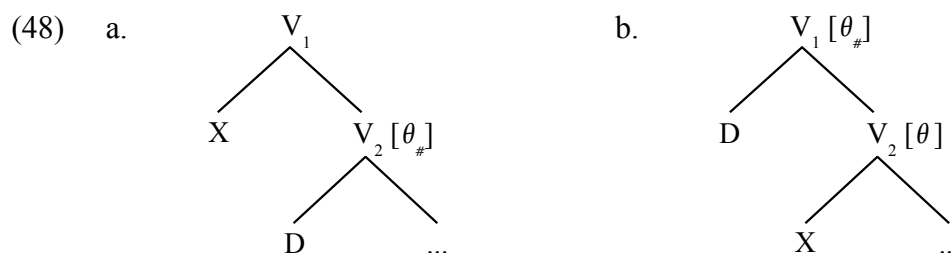
Which of these analyses turns out to be correct is immaterial for our present purposes. On either analysis, the scrambled structures can be considered marked with respect to the neutral

²⁶We have restricted our discussion to Dutch A' -scrambling phenomena, but obviously the analysis should extend to other languages as well. Initial explorations of Japanese and English suggest that the core data patterns carry over, but a wider and better informed evaluation requires more detailed typological study.

The argument presented here against specific topic and focus positions should not be interpreted as a wholesale rejection of the existence of fixed positions. In our view, it is an empirical matter to what extent observed rigid order can be explained in terms of a conspiracy of independent factors or requires a cartographic account. The latter may, for example, be appropriate for movements that seem to have morphosyntactic trigger, such as WH -movement or, as an anonymous reviewer points out, Quantifier Movement (Svenonius 2000) and Neg-Shift (Christensen 2005) in the Scandinavian languages.

Some work on topic and focus suggests that we may push the flexible view a bit further. Szendrői (2003), in particular, argues that the fixed position of focused constituents in Hungarian can be understood in terms of an optimal mapping from syntax to PF (focused constituents move to the main stress position). If this analysis, as well as the proposal made here, are on the right track, then typological variation could be captured in terms of the interaction of three factors, namely (i) economy, (ii) an optimal mapping to information structure, and (iii) an optimal mapping to PF.

order. In the optional A-movement analysis it is more costly because it requires an additional movement, in the obligatory A-movement analysis low attachment of the adverb creates a longer chain, while in the base-generation analysis the scrambled order necessitates less local θ -assignment. The base-generation analysis, which we adopt for concreteness' sake, is illustrated in (48b), where the added complexity of long-distance θ -role assignment is represented by an additional copy of the θ -role satisfied by D.²⁷ θ -role assignment is assumed to apply under direct domination, which forces copying of the θ -role to the first node above an argument (see Neeleman and van de Koot 2002 for discussion of this encoding of θ -marking).



The core of our proposal regarding A-scrambling is similar to what we have said about A'-scrambling: a more costly structure requires an interpretive licence. In the case of A-scrambling that licence is (typically, though not exclusively) provided by a mapping rule that interprets scrambled DPs as discourse-anaphoric:

- (49) *Discourse-Anaphoricity Mapping Rule*
Interpret a D in a marked position as discourse-anaphoric.

There are a few antecedents in the literature for the idea that it is the relative position of an adverbial with respect to an argument that determines whether the argument is interpreted as discourse-anaphoric. Proposals along these lines can be found in Zwart 1993, Reinhart 1996 and Reinhart and Neeleman 1998. Note, however, that these authors all provide a stress-based account of the relevant data, which we think is insufficiently general (for reasons touched upon in footnote 40).

We classify the position occupied by D in (48b) as marked because the θ -role it satisfies could have been assigned earlier, as happens in the structure in (48a). As explained above, this delayed θ -role assignment results in a less economical structure, because more instances of the relevant θ -role need to be generated than in the competing structure in (48a).²⁸

The conceptual basis of the mapping rule in (49) lies in two well-known processing advantages associated with early mention of old information. First, the earlier old information occurs in a sentence, the easier it is to link it to the previous discourse. Second, new information is easier to integrate if the old information that facilitates contextualization has been processed. Since discourse-anaphoric DPs by definition represent old information, it is

²⁷ We are aware of the fact that a base-generation analysis of scrambling, while fairly straightforward for scrambling across adjuncts, is highly controversial for scrambling across arguments. Similarly, it is not clear whether related phenomena, such as Icelandic object shift, lend themselves to a base-generation analysis. We believe that there is evidence for an extension of the base-generation analysis to both these domains, but space does not permit us to explore this highly complex question here. Some initial discussion can be found in Neeleman and Weerman 1999; the full argument will be presented in Neeleman and Van de Koot 2007.

²⁸ It would seem that determining what is a marked position requires comparison of two structures that differ in the order of merger of D and X. But this conclusion is incorrect. All we need to know to determine that D in (48b) occupies a marked position is that V_2 is not a terminal node and that no θ -role has been satisfied in it. These properties can be determined without reference to other structures.

advantageous to place them in a position where they precede new information. Therefore, the mapping rule in (49) could be considered a grammatical adaptation to facilitate processing.

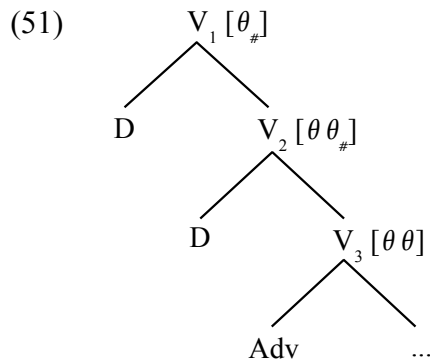
Of course, we do not want to suggest that the generalization that discourse-anaphoric material tends to shift leftward is without exceptions. It holds as long as there are no other factors at play. Indeed, under circumstances discussed in some detail by Lambrecht (1986, 1994), old information can appear at the right periphery of the clause. Suppose that a DP is linked to a pronoun, as in (50).

- (50) a. [... pronoun₁ ...] DP₁
 b. DP₁ [... pronoun₁ ...]

By their very nature, pronouns are discourse-anaphoric: they pick up their reference from material mentioned earlier.²⁹ As a consequence of this, the DP in (50a) must also express old information. If it did not, the relevant condition on the use of pronouns would not be met. In contrast, the DP in (50b) can express new information, as it precedes the co-referring pronoun.

The pragmatic characterization of (50a) and (50b) is valid for clitic right and left dislocation (see Vallduví 1992, and Vallduví and Engdahl 1996 for discussion of dislocation phenomena in Catalan). It is also valid for what Lambrecht calls the topic construction (exemplified by *As for John, he shouldn't wear purple shirts*) and the anti-topic construction (exemplified by *He will arrive later, Bill*). Crucially, scrambled DPs are not linked to a pronoun, so that the correlation between early placement and discourse anaphoricity should extend to them.

Our proposal makes a number of predictions. First, the information-structural effect of A-scrambling should hold of any argument, as in the presence of an adverbial any argument can be generated either in a marked or an unmarked position. We would not expect, for example, that discourse anaphoricity can be marked for objects but not for subjects. Second, since the notion of marked position requires inspection of no more than two nodes in the spine of the tree, the information-structural effects of the mapping rule in (49) should be extremely local. In particular, scrambling of some argument across an adverb should not affect the interpretation of any arguments merged subsequently. The tree in (51) can be used to illustrate this: the lower D occupies a marked position, but since V₂ contains a satisfied θ -role, the higher D does not.



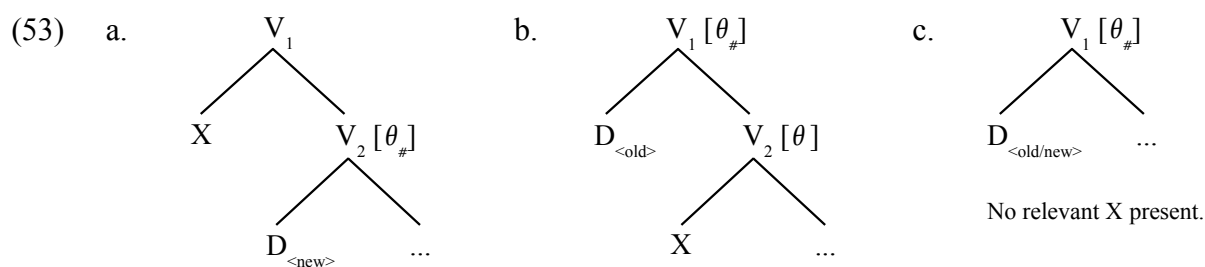
A third prediction of our proposal follows from the Elsewhere Condition, which we formulate below:

²⁹Williams 1994 notes an exception to this condition: if the antecedent of a pronoun is contained in a superordinate clause, it can follow the pronoun. This exception is irrelevant to the constructions at hand, which are mono-clausal.

(52) *Elsewhere Condition*

Let R_1 and R_2 be competing rules with D_1 and D_2 as their respective domains of application. If D_1 is a proper subset of D_2 , R_1 blocks R_2 in D_1 .

What the Elsewhere Condition states is that if a grammar contains a general and a specific rule that achieve the same objective, the general rule cannot apply where application of the specific rule is possible. In the case at hand, the general rule allows any DP to be interpreted as discourse-anaphoric, while the specific rule, formulated in (49), associates discourse-anaphoricity with DPs in marked positions. The Elsewhere Principle blocks application of the general rule where scrambling is a possibility. Consequently, the DP in (53b) is interpreted as discourse-anaphoric (or ‘old’), while the DP in (53a) is interpreted as non-discourse-anaphoric (or ‘new’). The general rule only applies in structures like (53c), where scrambling is not possible.³⁰



Before considering to what extent the predictions made by the mapping rule in (49) in combination with the Elsewhere Condition are borne out, we briefly return to A'-scrambling. The reason for this is that the optionality of A'-scrambling may be surprising, given that A-scrambling of discourse-anaphoric arguments is obligatory where possible. This contrast between A- and A'-scrambling can be understood in terms of our proposal that A-scrambling restricts the interpretation of the scrambled category itself, while A'-scrambling marks the *sister* of the scrambled category.

In the absence of A'-movement, there are few – if any – restrictions on the procedure that constructs a background for a given focus or a comment for given topic. Of course, this general procedure for constructing backgrounds and comments stands in an elsewhere relation with the mapping rules in (9). Therefore, the constituent marked as background by focus movement (YP in (8b)) should not be interpreted as background when the focus remains in situ. But this is in fact true. What is interpreted as background in the in situ structures is *not* YP. Rather, the background in (7b) is discontinuous.

It follows that the Elsewhere Principle will not block an interpretation of the in-situ structure that parallels that of the movement structure. Focus movement will consequently be optional. This conclusion extends straightforwardly to topic movement.

We now return to the predictions made about A-scrambling. It has already been demonstrated in (3) and (4) that scrambling of direct objects marks discourse anaphoricity. This conclusion extends to indirect objects. In (54), ‘our old teacher’ is mentioned in the initial question, and consequently it must be construed as discourse-anaphoric in the answers (this targeted interpretation is indicated here and below by wavy underlining). As the examples show, scrambling is strongly favored in this context; the answer in (54a) is decidedly awkward. The context in (55) is different in that ‘our old teacher’ is not mentioned in the initial question. Assuming that the participants in the discourse do not share knowledge of the

³⁰No cross-derivational comparison is required to decide whether an argument in an unmarked position must be interpreted as new. All we need to know is that its merger is immediately followed by merger of an adverbial, as in (53a).

guest list, ‘our old teacher’ constitutes new information in the answer, and hence scrambling is disfavored.

- (54) Komt onze ouwe leraar nog op het feestje?
 ‘Will our old teacher be coming to the party?’
- a. #Nou, ik heb gisteren onze ouwe leraar een uitnodiging gestuurd.
Well, I have yesterday our old teacher an invitation sent
- b. Nou, ik heb onze ouwe leraar gisteren een uitnodiging gestuurd.
Well, I have our old teacher yesterday an invitation sent
 ‘Well, I invited our old teacher yesterday.’
- (55) Hoe gaat het met de voorbereidingen voor het feest?
 ‘How are the preparations for the party progressing?’
- a. Nou, ik heb gisteren onze ouwe leraar een uitnodiging gestuurd.
Well, I have yesterday our old teacher an invitation sent
 ‘Well, I invited our old teacher yesterday.’
- b. #Nou, ik heb onze ouwe leraar gisteren een uitnodiging gestuurd.
Well, I have our old teacher yesterday an invitation sent

As is the case with the example in (4b), utterance of (55b) can be used to indicate that the speaker expects the hearer to share certain background knowledge – here that ‘our old teacher’ is on the guest list – even if the speaker knows that the hearer does not have such knowledge. Except where indicated otherwise, we abstract away from this usage of old-information marking. We also continue to assume lack of shared knowledge in the absence of previous mention.

The pattern found with direct and indirect objects extends to subjects.³¹

- (56) Gaat het echt zo slecht met onze oude leraar?
 ‘Is our old teacher really in such a bad state?’
- a. #Welnee! Ik geloof dat gisteren onze oude leraar nog een huis
No! I believe that yesterday our old teacher PRT a house
 gekocht heeft
bought has
- b. Welnee! Ik geloof dat onze oude leraar gisteren nog een huis
No! I believe that our old teacher yesterday PRT a house
 gekocht heeft
bought has
 ‘Not at all! I believe that our old teacher bought a house around here only yesterday.’
- (57) Is het moeilijk om in deze buurt een huis te vinden?
 ‘Is it difficult to find a house in this area?’
- a. Welnee! Ik geloof dat gisteren onze oude leraar nog een huis
No! I believe that yesterday our old teacher PRT a house
 gekocht heeft
bought has

³¹ In addition to the usual confounding factor of accommodation of ‘our old teacher’ as given, one must control for focus scrambling in judging (57b). If our old teacher is the last person you would expect to be able to buy a house, then the subject DP classifies as a natural contrastive focus, indicating how easy it is to find a house in the neighbourhood. This is the reading of foci modified by *even*.

- b. #Welnee! Ik geloof dat onze oude leraar gisteren nog een huis
No! I believe that our old teacher yesterday PRT a house
 gekocht heeft
bought has
 ‘Not at all! I believe that our old teacher bought a house around here only
 yesterday.’

The examples in (3) and (4), and (54) through (57) all involve definite DPs, which can of course easily be used as either discourse-anaphoric or non-discourse-anaphoric. Not all DPs share this property. Pronouns are almost always discourse-anaphoric and indeed, as has been pointed out by many authors, scrambling of pronouns is obligatory (except in special circumstances that we abstract away from here). We give a representative example in (58) involving the subject pronoun *ze* ‘they’.

- (58) a. Ik geloof dat ze morgen naar huis gaan.
I believe that they tomorrow to house go
 ‘I believe they are going home tomorrow.’
 b. #Ik geloof dat morgen ze naar huis gaan.
I believe that tomorrow they to house go

At the other end of the spectrum we find indefinite DPs, which typically express new information and are therefore predicted to resist scrambling. As observed by Kerstens (1975), Diesing (1992), Diesing and Jelinek (1995), and de Hoop (1996), among others, this is correct. We illustrate this for direct objects in (59) and for subjects in (60).

- (59) Onze hete-lucht ballon begint te dalen. Wat zal ik doen?
 ‘Our hot-air balloon is beginning to descend. What shall I do?’
 a. Nou, ik denk dat (er) binnen een minuut een zandzak overboord moet.
Well, I think that there within a minute a sandbag overboard must
 ‘Well, I think that within a minute a sandbag will have to go overboard.’
 b. #Nou, ik denk dat (er) een zandzak binnen een minuut overboord moet.
Well, I think that there a sandbag within a minuut overboard must
- (60) Onze hete-lucht ballon begint te dalen. Wat zal ik doen?
 ‘Our hot-air balloon is beginning to descend. What shall I do?’
 a. Nou, ik denk dat je binnen een minuut een zandzak overboord moet
Well, I think that you within a minute a sandbag overboard must
 gooien.
throw
 ‘Well, I think that within a minute you will have to throw a sandbag
 overboard.’
 b. #Nou, ik denk dat je een zandzak binnen een minuut overboord moet
Well, I think that you a sandbag within a minute overboard must
 gooien.
throw

The suggestion that scrambling marks discourse anaphoricity does not only capture the general resistance of indefinites to scrambling, but it also explains some of the conditions under which scrambling of indefinites *is* felicitous. In particular, De Hoop’s (1996) observation that specific and partitive indefinites permit scrambling follows, given that such

indefinites can fairly easily be construed as discourse-anaphoric. We begin by illustrating this for specific indefinites. Consider the following two situations:

- (61) a. A teacher is talking to a parent, while the class is supposed to read quietly but is in fact behaving in a rowdy manner.
 b. A teacher is talking to a parent, while the class is supposed to read quietly. One boy is, however, behaving in a rowdy manner.

The teacher is more likely to utter (62a) in context (61a) than in context (61b), while the reverse is true of (62b). Scrambling, then, indicates that the indefinite refers to an identifiable individual in the common ground (De Hoop calls the relevant reading of the indefinite ‘referential’.)

- (62) a. Ik denk dat ik nu iemand de klas uit ga sturen.
I think that I now someone the classroom out go send
 b. Ik denk dat ik iemand nu de klas uit ga sturen.
I think that I someone now the classroom out go send
 ‘I think I’ll send someone out of the classroom now.’

The same observation can be made for scrambling of indefinite subjects. (63a) is more natural in context (61a) than in context (61b), while the reverse is true of (63b):³²

- (63) a. Ik denk dat ?(er) nu iemand de klas uit gaat.
I think that there now someone the classroom out goes
 b. Ik denk dat (er) iemand nu de klas uit gaat.
I think that there someone now the classroom out goes
 ‘I think that someone is going out of the classroom now.’

The examples in (62b) and (63b) are only felicitous in contexts in which speaker and hearer know what individual they are talking about, but do not want to make this explicit. In other words, they have the flavour of a language game. This effect disappears if a definite description is used instead of an indefinite DP, as that is the normal way in which speakers refer to discourse antecedents.

The claim that scrambling marks discourse anaphoricity implies that specific indefinites that do not pick out an individual in the common ground cannot be scrambled. Suppose John arrives at work and finds the director with a whisky bottle on the table. When he asks her what is the matter, (64a) would be an unacceptable reply if John does not know who will be fired. This is true even if the director knows which employee will be fired and John understands that this is the case. (64b), on the other hand, would be a fully acceptable answer.

- (64) Wat is er aan de hand?
 ‘What’s the matter?’
 a. #Ik moet iemand vandaag ontslaan.
I must someone today fire
 b. Ik moet vandaag iemand ontslaan.
I must today someone fire
 ‘I have to fire someone today.’

³² In our judgment and in that of the native speakers we have consulted, scrambling of the indefinite does not preclude insertion of an expletive in (63b).

A similar point can be made about scrambled indefinites that receive a partitive interpretation. Partitive readings are based on the identification of a set of entities out of which a subset is selected. In the case of indefinite partitives, information about the cardinality of the subset is given, but the members themselves are left unidentified. This need not prevent scrambling, however. If the original set of entities has been made available previously, the subset denoted by the indefinite can be understood as old information. For example, the context in (65) licenses scrambling of *twee krakers* ‘two squatters’. As before, scrambling of an indefinite is not obligatory: such DPs are never obligatorily discourse-anaphoric and consequently a context that excludes a construal of an indefinite as new information through previous mention cannot exist.

- (65) Heb je gehoord dat de politie van plan is deze week zes krakers te arresteren?
 ‘Have you heard that the police are planning to arrest six squatters this week?’
- a. Ja. Volgens mij hebben ze twee krakers gisteren gearresteerd.
Yes. According.to me have they two squatters yesterday arrested
 ‘Yes. I think they have arrested two squatters yesterday.’
- b. Ja. Volgens mij hebben ze gisteren twee krakers gearresteerd.
Yes. According.to me have they yesterday two squatters arrested

The data in (66), which involve scrambling of an indefinite partitive subject, parallel those in (65).

- (66) Heb je gehoord dat de politie van plan is deze week een groep krakers te arresteren?
 ‘Have you heard that the police are planning to arrest a group of squatters this week?’
- a. Ja. Volgens mij hebben twee krakers om die reden net een
yes. According.to me have there squatters for that reason just a
 kort geding aangespannen.
summary procedure started
- b. Ja. Volgens mij hebben om die reden twee krakers net een
yes. According.to me have for that reason two squatters just a
 kort geding aangespannen.
summary procedure started
 ‘Yes. I think two squatters have just begun a summary procedure for that reason.’

Scrambling is not licensed by the partitive reading *per se*, but by the fact that partitive indefinites allow a construal as discourse anaphoric. If the set on which the partitive operates is not given but introduced at the same time as the partitive itself, the partitive must constitute new information. As a result scrambling is predicted to be impossible. This is indeed the case. Suppose that John works in a mathematics department and a colleague enters his office at the end of the working day. Although John usually looks tired and worn out at this time of day, he seems to be in particularly high spirits on this occasion. When asked the question in (67), he may answer as in (67a), but the answer in (67b) would be distinctly odd. The position of the indefinite implies intimate knowledge of John’s research on the part of his colleague (by the rule in (49)). However, if John’s colleague had such intimate knowledge, John would not have referred to the theorem he is working on as ‘a new theorem’.

- (67) Waarom kijk je zo blij?
 ‘Why are you so happy?’
- a. Ik heb vandaag twee (van de vijf) vergelijkingen voor een nieuw theorema
I have today two of the five equations for a new theorem
 opgelost.
solved
 ‘I have solved two of the five equations for a new theorem today.’
- b. #Ik heb twee (van de vijf) vergelijkingen voor een nieuw theorema vandaag
I have two of the five equations for a new theorem today
 opgelost.
solved

A further prediction of our proposal concerns environments in which the effects of the mapping rule in (49) are neutralized because only one structure is available. (68) is a case in point: given that a depictive must be c-commanded by the DP it is associated with, this DP must be generated in a position preceding the depictive. As a result, the mapping rule in (49) need not apply, and an interpretation of *een karbonade* ‘a pork chop’ as new information is permissible.³³

- (68) Waarom is die aardige ober ontslagen? Nou, ik geloof ...
 ‘Why has that nice waiter been fired? Well, I believe ...’
 dat hij een lid van het koninklijk huis een karbonade rauw geserveerd heeft.
that he a member of the royal family a pork-chop raw served has
 ‘that he served a pork chop raw to a member of the royal family.’

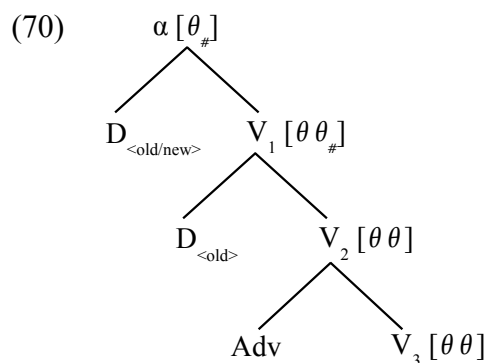
The same pattern can be observed with indefinite subjects:

- (69) Waarom is dat restaurant gesloten? Nou, ik geloof ...
 ‘Why has that restaurant been shut down? Well, I believe ...’
 dat een ober dronken een klant bedreigd heeft.
that a waiter drunk a customer threatened has
 ‘that a drunk waiter has threatened a customer with a knife.’

Further instances of the same phenomenon are found with adverbs that resist high placement, such as *goed* ‘well’ and *nog* (an untranslatable discourse particle), which must be attached lower than the subject, and whose presence consequently does not lead to an interpretation of subjects that precede them as discourse-anaphoric. For reasons of space, we will not demonstrate this here.

The effects of the mapping rule in (49) are also suspended for DPs that cannot scramble. Trivially, in structures without an adverbial, a DP cannot occupy a marked position and therefore its discourse status is left open. However, since the mapping rule in (49) only considers two nodes in the spine of an extended verbal projection, the same is true for any argument that is not adjacent to an adverbial but separated from it by another argument. To begin with, consider (70). In this structure, the highest DP does not occupy a marked position, given that its sister node contains a satisfied θ -role. Therefore, the mapping rule will not apply to it, leaving open whether it is to be interpreted as old or new.

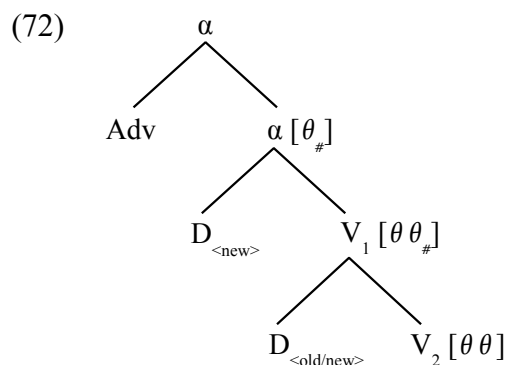
³³ As before, it is not necessary to compare more than one structure in order to determine whether the scrambled DPs in (68) and (69) occupy marked positions. The θ -role assigned to those DPs is composed of the θ -roles originating in the primary and secondary predicates (see Higginbotham 1985 and Neeleman and van de Koot 2002 for discussion). Since the DPs in question are merged immediately after θ -role identification, there is no sense in which θ -assignment of the composed role has been postponed.



An example in which the subject in a configuration like (70) is interpreted as old was given in (3b), where the first person singular subject refers to the speaker, who is part of the shared background in any discourse. In (71), we have an example of the same syntactic configuration, in which the subject introduces new information. We may conclude, then, that low attachment of an adverbial indeed has no effect on the interpretation of the subject, although it does of course affect the interpretation of the object.

- (71) Hoe gaat het met de review van je artikel?
 ‘How is the review of your article progressing?’
 Nou, ik geloof dat (er) een of andere editor het artikel eindelijk gelezen heeft.
Well, I believe that there some or other editor the article finally read has
 ‘Well, I believe that some editor or other has finally read the article.’

For the same reason, the interpretation of an object is predicted to be unaffected by attachment of an adverbial above the subject, as in (72).

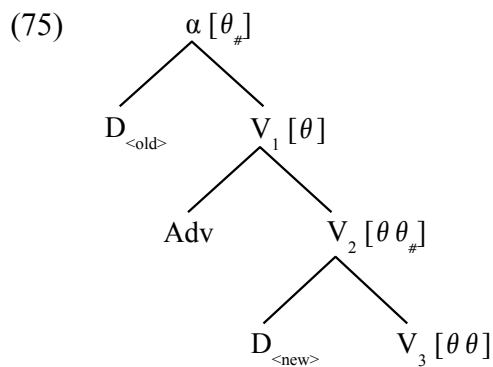


This is indeed the case. The object in the answer in (73) is mentioned in the question and must therefore be discourse-anaphoric. The object *een reviewer* ‘a reviewer’ in (74), by contrast, has not been mentioned previously and therefore requires an interpretation as new (assuming, as before, that it is not part of the common ground).

- (73) Hoe gaat het met de review van je artikel?
 ‘How is the review of your article progressing?’
 Nou, ik geloof dat (er) eindelijk een of andere editor het artikel gelezen heeft.
Well, I believe that there finally some or other editor the article read has
 ‘Well, I believe that some editor or other has finally read the article.’

- (74) Hoe gaat het met je artikel?
 ‘How is your article progressing?’
 Nou, ik geloof dat (er) eindelijk een of andere editor een reviewer
Well, I believe that there finally some or other editor a reviewer
 gevonden heeft.
found has
 ‘Well, I believe that some editor or other has finally found a reviewer.’

The local computation on which the marking of discourse anaphoricity is based has the final consequence that an adverb generated between subject and object does not only result in an interpretation of the subject as old, but also of the object as new. This is because in (75) the subject’s sister node is a nonterminal that does not contain a satisfied θ -role, while merger of the object in an unmarked position has been immediately followed by merger of the adverbial.



In fact, we have already discussed some of the examples that demonstrate that an adverbial sandwiched between a subject and an object affects the interpretation of both arguments. In (4a), an adverb follows a subject that is discourse-anaphoric and precedes an object that is not, the predicted pattern. In (57b), an adverb is placed between a subject and object that both express new information and the result is deviant. The subject in this example is a definite DP, but nothing changes if we replace it with an indefinite, as in (77b) below.³⁴ The example in (3a) shows that an adverbial cannot be placed between two arguments that are both discourse-anaphoric. Finally, the awkwardness of the pattern in (76d) is illustrated by the example in (78).

- (76) a. S_{<old>} Adv O_{<new>} V (4a)
 b. #S_{<new>} Adv O_{<new>} V (57b)/(77b)
 c. #S_{<old>} Adv O_{<old>} V (3a)
 d. #S_{<new>} Adv O_{<old>} V (78)

- (77) Is het moeilijk om in deze buurt een huis te vinden?
 ‘Is it difficult to find a house in this area?’
 a. Welnee! Ik geloof dat (er) gisteren iemand nog een huis gekocht
No! I believe that there yesterday someone PRT a house bought
 heeft.
has
 ‘Not at all! I believe that someone bought a house around here only yesterday.’

³⁴ As predicted, (77b) is acceptable in a context in which ‘someone’ refers to a specific unnamed individual in the common ground. For example, if we see our common friend John dancing in the street and we know that he was looking for a house, then we can felicitously utter the sentence at hand (with omission of the particle *nog* for independent pragmatic reasons).

- b. #Welnee! Ik geloof dat (er) iemand gisteren nog een huis gekocht
No! I believe that there someone yesterday PRT a house bought
 heeft.
has

(78) Hoe gaat het met de review van je artikel?

‘How is the review of your article progressing?’

#Nou, ik geloof dat (er) een of andere editor eindelijk het artikel gelezen heeft.

Well, I believe that there some or other editor finally the article read has

‘Well, I believe that some editor or other has finally read the article.’

This completes our overview of the predictions made by the mapping rule in (49). Before we turn to a comparison with an implementation of the relevant discourse template as a functional projection, we review one further consequence of our proposal. As in the case of topic and focus movement, one would expect there to be a double dissociation between position and interpretation. We have already established one half of this dissociation: the mapping rule in (49) does not mention a specific area in the clausal hierarchy, and can therefore apply to any argument. Consequently, discourse anaphoricity does not seem to be linked to a specific position.

In order to establish the other half of the double dissociation we need to show that scrambling can be motivated by an interpretive effect other than the marking of discourse anaphoricity. In fact, one could interpret the data involving secondary predication in this way. However, even if we put these data to one side, a case for double dissociation can still be made. Ruys (2001) argues at length that A-scrambling can be motivated by a wide-scope reading of the scrambled DP.³⁵ When scrambling is licensed in this way, an indefinite in a marked A-position may introduce new information. Thus, in (79) – adapted from Ruys’s article – scrambling is licensed by the fact that it marks a wide-scope reading of ‘some disease or other’ with respect to ‘usually’. Crucially, the indefinite is not partitive (there is no sense of a pre-established set of diseases) or specific (this is excluded because the indefinite depends on the universally quantified subject).

- (79) Ik denk dat elke arts wel een of andere ziekte meestal met penicilline
I think that each doctor PRT some or other disease usually with penicillin
 behandelt.

treats

‘I think that every doctor usually treats some disease or other with penicillin.’

Intended reading: every doctor > some disease or other > usually

Ruys discusses a large set of examples in which scrambling seems to be licensed by scopal interaction between quantifiers and a wide variety of adverbs. It would take us too far afield to review all these cases here; the main point we want to make is that his data back up the second half of our claim that there is a double dissociation between position and interpretation: the same position that licenses an interpretation as old information may also serve to mark wide scope.³⁶

³⁵ We believe this also explains why indefinites can scramble when interpreted as generic, but we will not attempt to substantiate this claim here.

³⁶ We would not want to adopt a rule “interpret a D in a marked position as having wide scope”. Such a rule does not need to be explicitly stated, as in the normal case scope is determined by c-command (modulo the effects of QR). Of course, in order to license a more costly structure, an interpretive effect is required and an unambiguous wide scope reading of a scrambled indefinite may serve as such. Thus, application of the scope rule is an alternative to licensing through the marking of discourse anaphoricity, at least for

3.2. *Templates as functional projections*

The core of the proposal just outlined is that the marking of discourse anaphoricity is highly flexible. There is no fixed position for DPs that refer to entities introduced earlier in the discourse. In this section, we compare this proposal with an alternative based on the opposite view, namely that discourse anaphoricity is tied to specific positions in the syntactic representation. Such an alternative can be developed in different ways. An anonymous reviewer suggests, for example, that movement of arguments into derived positions at the edge of vP could be motivated by informational-structural considerations (see Chomsky 2001, 2005). A proposal along these lines would associate discourse anaphoricity with a specific syntactic position, namely the edge of vP.³⁷

There are many other conceivable analyses that can be based on the same outlook. For concreteness' sake, we will compare our proposal to an alternative that assumes movement of discourse-anaphoric DPs to the specifier of a specific functional projection labeled AnaP. Nothing hinges on the choice of this label, which is merely meant as a cover term for any fixed position targeted by A-scrambling (including vP, as suggested by the reviewer). Indeed, various authors have proposed that the specifiers of AgrSP and AgrOP, as assumed in the early economy framework, are associated with old information instead of (or in addition to) case or ϕ -features (see Adger 1994, Runner 1995, Bobaljik and Thráinsson 1998, and Meinunger 2000). We show that any proposal that associates discourse anaphoricity with fixed positions runs into the kind of problems previously encountered in section 2.2, namely an inability to capture word-order restrictions.

We can put to one side any proposal according to which there is a single AnaP with a single specifier, simply because more than one argument can scramble in the same clause. This leaves us with two viable alternatives. The first of these assumes a unique 'zone' for discourse-anaphoric expressions, located above the neutral position of the subject and above any functional projections that host adverbials. This zone could consist of a recursive AnaP, or of a unique AnaP with multiple specifiers.

Such a proposal is reminiscent of Diesing's (1992) Mapping Hypothesis, according to which the VP-internal and VP-external parts of a sentence give rise to different interpretations at LF: nuclear scope and restrictive clause, respectively. As presuppositional material obligatorily forms part of the restrictive clause, arguments that are discourse-anaphoric must migrate out of the VP into the old-information zone. (According to Diesing, the extent to which this impacts on surface syntax is determined by cross-linguistic variation in the availability of optional LF-raising and optional LF-lowering).

It was argued in a series of publications in the mid-nineties that Diesing's mapping proposal must be refined in order to deal with the data in Germanic (see Adger 1994, Tsai 1994, and Runner 1995 for relevant discussion). Recall from the previous section that the order of arguments in Dutch is fixed, while their discourse-informational status of each argument is independent of that of the others. This state of affairs is hard to reconcile with a simple version of Diesing's mapping hypothesis, as explained particularly clearly in Bobaljik's (1995) discussion of 'leap-frogging' versus 'stacking' of arguments. Let us consider why this should be so.

To begin with, suppose that in a ditransitive structure subject, indirect object and direct object are all discourse-anaphoric and hence move to the AnaP zone. In order to capture the observation that the order among arguments cannot be affected under these circumstances, a condition must be formulated that guarantees shape preservation. That is, the sequence of

quantified DPs.

³⁷ This is true to the extent that movement to the edge of vP is available. Where it is blocked for independent reasons, discourse-anaphoric constituents are allowed to remain in situ. This is relevant for Icelandic object shift, but not for the argumentation given here regarding Dutch.

positions in the AnaP zone must duplicate the sequence of unmarked argument positions lower in the clause. (The problem is analogous to the shape preservation problem mentioned in section 2.2.)

Another problem arises in a transitive structure in which the object is discourse-anaphoric and has consequently moved to the specifier of an AnaP. If the subject precedes the object, we would expect it to express old information. As the scrambled object is in the old-information zone, any material to its left should be in this zone as well (abstracting away from A'-scrambling). Conversely, if the subject expresses new information, it should follow the scrambled object, because it should remain in its base position within VP. Neither of these predictions is borne out.

This is demonstrated in (80). Because of previous mention in the question, the object *het artikel* 'the article' in the various answers qualifies as old information. In line with its discourse status, it cannot appear to the right of the adverb in (80b), but must be scrambled, as in (80a). This is the pattern we discussed at length in the previous subsection. However, the subject *iemand* 'someone', should appear within VP, as it is interpreted as new information. But in fact (80c) is ungrammatical: the subject must precede the object, even though it expresses new information.

- (80) Hoe gaat het met de review van dat artikel?
 'How is the review of that article progressing?'
- a. Nou, ik geloof dat (er) een of andere editor het artikel eindelijk
Well, I believe that there some or other editor the article finally
 gelezen heeft.
read has
 'Well, I believe that some editor or other has finally read the article.'
 - b. #Nou, ik geloof dat (er) een of andere editor eindelijk het artikel
Well, I believe that there some or other editor finally the article
 gelezen heeft.
read has
 - c. *Nou ik geloof dat het artikel (er) eindelijk een of andere editor
Well, I believe that the article there finally some or other editor
 gelezen heeft.
read has

In order to reconcile the data with the theory, one might adopt the auxiliary hypothesis that the non-discourse-anaphoric subject in (80a) has moved to the specifier of an additional functional projection that dominates the old-information zone and that can host DPs expressing new information. This auxiliary hypothesis on its own is not enough, however. As movement of the subject is obligatory, one would have to argue for a condition that requires movement of all arguments sandwiched between a scrambled DP and its trace. (Again, this recalls the shape preservation problem encountered in section 2.2)

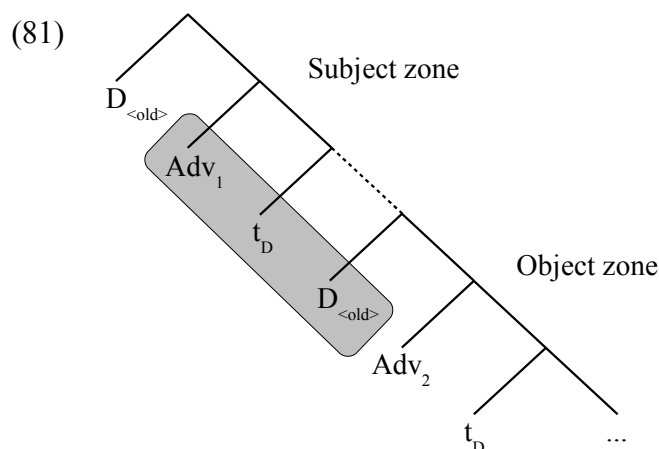
Further reflection reveals that adopting these two auxiliary hypotheses is a self-defeating move. If landing sites are created that allow neutral scrambling of non-discourse-anaphoric material, then the relation between word order and information-structural status must remain elusive.

One could attempt to overcome the shortcomings of the proposal just discussed by associating each argument with its own, independent, old-information zone. A clause would then contain multiple AnaPs, located above the neutral positions of the direct object, the indirect object and the subject. In addition, there would be different regions that host adverbials between each AnaP and the associated neutral argument position. There are several proposals in the literature that come close to a suggestion along these lines. Most prominent to

our minds is Bobaljik's (1995) suggestion that functional structure is interleaved with lexical structure, so that one can find an agreement projection directly above the base position of each argument, giving rise to what Bobaljik calls 'stacking'. If agreement projections are taken to host discourse-anaphoric material and adverbial positions are sandwiched between the various lexical and functional projections, we arrive exactly at the multiple AnaP analysis sketched above.³⁸

A theory that postulates multiple AnaPs can presumably account for the fact that A-scrambling cannot reorder arguments: each argument will only move to an AnaP local to it, and therefore will not cross other arguments. (Of course, locality conditions on movement must be shown to yield this result, but we assume that this will not be too difficult).³⁹

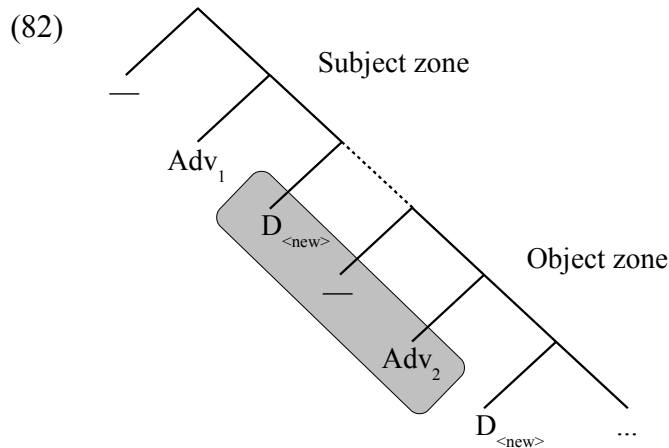
However, the proposed interleaving of AnaPs and adverbial positions has consequences that undermine the viability of the account. The problem is that the correlation between word order and the marking of discourse anaphoricity cannot always be captured, because the specifier of each AnaP, except the highest, is both followed and preceded by adverbial positions. Consider a transitive structure in which the subject is discourse-anaphoric and has therefore moved to the associated AnaP. In such a structure a discourse-anaphoric object could either precede an adverbial located in the object zone, or follow an adverbial located in the subject zone. The latter option is highlighted in (81). The fact of the matter, however, is that a discourse-anaphoric object cannot be immediately preceded by an adverbial, irrespective of the information-structural status of the subject (see (3)). The incorrect prediction concerning the position of discourse-anaphoric objects can be avoided by assuming that there is no Adv₁ position, but without this position the status of the subject can no longer be marked.



Conversely, if both the object and the subject express new information, the subject could either follow an adverbial located in the subject zone or precede an adverbial in the object zone, as highlighted in (82). In other words, it is predicted that the position of the subject vis-à-vis adjacent adverbials does no longer reflect its discourse status when the object expresses new information.

³⁸ A more recent proposal that assumes multiple old-information zones can be found in Grewendorf 2005 (who, however, does not make the distinction between topics and discourse-anaphoric material motivated in this paper).

³⁹ The assessment made here is based exclusively on Dutch. Complications will arise for languages that allow A-scrambling across arguments. As things stand, we do not take this to be an argument for or against the theory under discussion, as we ourselves have not been able to do more than give a promissory note on this type of scrambling in footnote 27.



This is untrue. In the examples in (83), both the subject and the object express new information. Yet, scrambling of the subject is not permitted. As before, the problem can be circumvented by removing the Adv_2 position in (82), but this makes it impossible to mark the discourse status of the object.

- (83) Onze hete-lucht ballon begint te dalen. Wat is er aan de hand?
 ‘Our hot-air balloon is beginning to descend. What’s going on?’
- a. De schipper zegt dat (er) sinds gisteren een brander kuren vertoont.
The skipper says that there since yesterday a burner problems displays
 ‘The skipper says that probably a burner is malfunctioning.’
- b. #De schipper zegt dat (er) een brander sinds gisteren kuren vertoont.
The skipper says that there a burner since yesterday problems displays

The difficulties just outlined extend to indirect objects. In order to accommodate such arguments, another AnaP and another adverbial zone must be introduced, so as to allow them to scramble. Now suppose the subject is discourse-anaphoric and therefore appears to the left of the Adv_1 position. Suppose, furthermore, that the direct object expresses new information and therefore remains in situ, to the right of the lowest adverbial position. In this circumstance, it should be the case that placement of the indirect object with respect to adverbials has no bearing on its discourse status. But as we have already seen in (54) and (55), this is incorrect.

In sum, whether one assumes a single old-information zone in the left periphery or multiple distributed AnaPs, the correlation between scrambling and discourse-anaphoricity is beyond the reach of theories that treat discourse templates as functional projections.⁴⁰

⁴⁰ There is a strong tendency for discourse-anaphoric constituents to be destressed (see Selkirk 1984, 1996; Williams 1997; Schwarzschild 1999; and Reinhart 2006 for discussion). Neeleman and Reinhart (1998) argue that the tendency for discourse-anaphoric material to undergo scrambling in Dutch can be understood from the fact that it facilitates anaphoric destressing. Suppose that the Nuclear Stress Rule assigns main stress in the right periphery of the clause. If so, an object that does not scramble will end up stressed, but an object that does scramble is removed from the domain in which main stress is assigned. Therefore, anaphoric destressing can be brought about by manipulating the order of the sentence rather than its phonology.

Despite its initial attractions, this approach faces a serious problem. It can account for the positioning of direct objects, but not for that of indirect objects and subjects. This is because direct objects that have not scrambled receive main stress, but other arguments do not. In fact, scrambling does not seem to affect the stress levels of scrambled subjects and scrambled indirect objects at all.

4. Beyond hierarchy paradoxes

In this paper we have presented two arguments against a cartographic analysis of word-order restrictions in Dutch. The interpretive effects of neither A'-scrambling nor A-scrambling can be captured on the assumption that there is one-to-one correspondence between interpretation and position. These arguments are reminiscent of the case against cartography made in Bobaljik 1999 (see Haider 2000, Ernst 2001, and Nilsen 2003 for related discussion). Bobaljik observes that arguments, verbs and auxiliaries in Italian can be freely interspersed in Cinque's (1999) adverbial sequence. This fact is incompatible with Cinque's proposal that the adverbial sequence is given by the order of functional projections in the verbal domain.

Bobaljik argues that the hierarchy paradox he identifies may yield to a phrase-structural account. He suggests that there is an argumental hierarchy and an adverbial hierarchy and that these are tiers of the syntactic representation, somewhat comparable to tiers in autosegmental phonology. The two tiers are ultimately collapsed into a single structure. Bobaljik draws an analogy to the shuffling together of two decks of cards, which preserves the internal order of each deck while it intersperses the cards of one deck among those of the other.

There are two crucial aspects to the independence of the tiers in Bobaljik's theory of phrase structure. First, the effects of each tier are nonlocal: no matter how much material is interspersed among elements of a tier, the order required by the tier will be maintained. Second, the effects of each tier are independent: no restrictions are imposed on the order of elements belonging to different tiers. Neither property seems conducive to an adequate analysis of the interpretive effects of scrambling.

In the case of A'-scrambling, one could imagine that positions in a topic-focus hierarchy can be freely interspersed with positions in Bobaljik's argumental hierarchy (this is in fact the third proposal discussed in section 2.2). However, this is not sufficient to capture the fact that the order of constituents interpreted as topic and focus is free when they remain in situ, but rigid as soon movement is involved. In particular, a focus cannot move out of a constituent containing an in situ topic or superordinate focus. The problem is that moved foci occupy a position in the topic-focus hierarchy, while topics and foci that remain in situ occupy positions in the argumental hierarchy. Hence, ordering restrictions must be formulated that involve positions in more than one hierarchy, showing that a simple tier-based account is insufficient.

Comparable, but probably more serious, problems arise in the case of A-scrambling. First, the marking of discourse-anaphoricity is achieved through the ordering of elements that belong to different tiers (namely, adverbs and arguments). But this implies that a statement about word order is required that cannot be phrase-structural in nature (exactly because it must express a relation between positions in different tiers). Second, the interpretive effects of A-scrambling are local. The marking of discourse anaphoricity does not merely require that an argument precede an adverb, it requires that it immediately precede it. Again this is unexpected if 'tier conflation' is essentially free, something that must be assumed to capture the nonlocal ordering restrictions that hold of elements within each tier.

It is for these reasons that we are inclined to go one step further and explain word-order restrictions in terms of rules that map syntactic structures to syntax-external representations.

11 June 2007

5. References

- Adger, David. 1994. *Functional Heads and Interpretation*. PhD dissertation, University of Edinburgh.
- Adger, David. 1997. Deriving the Parameterisation of the Mapping Hypothesis. In: A. Alexiadou and T. A. Hall (eds) *Studies on Universal Grammar and Typological Variation*. Amsterdam: John Benjamins, 109-134.
- Ariel, Mira. 1990. *Accessing Noun-phrase Antecedents*. London: Routledge.
- Ariel, Mira. 1991. The Function of Accessibility in a Theory of Grammar. *Journal of Pragmatics* 16: 443-463.
- Ariel, Mira. 1994. Interpreting Anaphoric Expressions: A Cognitive versus a Pragmatic Approach. *Journal of Linguistics* 30: 3-42.
- Bayer, Josef and Jaklin Kornfilt. 1994. Against Scrambling as an Instance of Move-Alpha. In N. Corver and H. van Riemsdijk (eds.) *Studies on Scrambling; Movement and Non-Movement Approaches to Free Word-Order Phenomena*. Berlin: Mouton de Gruyter. 17-60.
- Belletti, Adriana. 2001. 'Inversion' as Focalization. In Aafke Hulk and Jean-Yves Pollock (eds.) *Subject Inversion in Romance and the Theory of Universal Grammar*. Oxford: OUP.
- Belletti, Adriana. 2003. Aspects of the Low IP area. In Luigi Rizzi (ed.) *The Structure of IP and CP. The Cartography of Syntactic Structures, Vol. 2*. Oxford: OUP.
- Belletti, Adriana (ed.). 2004. *Structures and Beyond; The Cartography of Syntactic Structures*, vol. 3. Oxford: OUP.
- Benincà, Paola, and Cecilia Poletto. 2004. Topic, Focus, and V2: Defining the CP Sublayers. In Luigi Rizzi (ed.) *The Structure of CP and IP: The Cartography of Syntactic Structures, Volume 2*. Oxford: OUP. 52-75.
- Bobaljik, Jonathan. 1995. *Morphosyntax: The Syntax of Verbal Inflection*. PhD dissertation, MIT.
- Bobaljik, Jonathan. 1999. Adverbs: The Hierarchy Paradox. *Glott International* 4.9/10.
- Bobaljik, Jonathan and Höskuldur Thráinsson. 1998. Two Heads aren't Always Better than One. *Syntax* 1: 37-71.
- Broekhuis, Hans. To appear. Object Shift and Subject Shift. *The Journal of Comparative Linguistics* 10.
- Browning, Margaret. 1996. CP Recursion and That-t Effects. *Linguistic Inquiry* 27: 237-256.
- Büring, Daniel. 1997. *The Meaning of Topic and Focus*. London: Routledge.
- Büring, Daniel. 2003a. On D-Trees, Beans and B-Accents. *Linguistics & Philosophy* 26:5: 511-545.
- Büring, Daniel. 2003b. Intonation, Semantics and Information Structure. Ms. UCLA. (To appear in: Gillian Ramchand and Charles Reiss (eds.) *Interfaces*. OUP.)
- Choi, Hye-Won. 1999. *Optimizing Structure in Context; Scrambling and Information Structure*. Stanford: CSLI.
- Chomsky, Noam. 2001. Derivation by Phase. In Michael Kenstowicz (ed.) *Ken Hale. A life in Language*. Cambridge: MIT Press. 1-52.
- Chomsky, Noam. 2005. On phases. Ms. MIT. (To appear in: Carlos Otero et al. (eds.) *Foundational Issues in Linguistic Theory*. Cambridge: MIT Press.)
- Christensen, Ken Ramshøj. 2005. *Interfaces. Negation – Syntax – Brain*. PhD dissertation, University of Aarhus.
- Cinque, Guglielmo. 1999. Adverbs and Functional Heads: A Cross-Linguistic Perspective. Oxford: OUP.
- Cinque, Guglielmo (ed.). 2002. *Functional Structure in DP and IP; The Cartography of Syntactic Structures*. Oxford: OUP.

- Culicover, Peter. 1991. Topicalization, Inversion, and Complementizers in English. OTS Working Papers. Utrecht University.
- De Hoop, Helen. 1996. *Case Configuration and Noun Phrase Interpretation*. New York: Garland. [published version of PhD dissertation, 1992, University of Groningen]
- Diesing, Molly. 1992. *Indefinites*. Cambridge: MIT Press.
- Diesing, Molly and Eloise Jelinek. 1995. Distributing Arguments. *Natural Language Semantics* 3: 123-176.
- Drubig, Bernhard. 1994. Island constraints and the syntactic nature of focus and association with focus. *Arbeitspapiere des Sonderforschungsbereiches* 340, Nr. 51.
- Ernst, Thomas. 2001. *The Syntax of Adjuncts*. Cambridge: CUP.
- Fanselow, Gisbert. 2004. Cyclic Phonology-Syntax-Interaction: Movement to First Position in German. In: Ishihara et al. (eds.), 1-42, *Interdisciplinary Studies on Information Structure I*. Potsdam: Universitätsverlag Potsdam.
- Féry, Caroline and Vieri Samek-Lodovici. 2006. Focus Projection and Prosodic Prominence in Nested Foci. *Language*, Vol. 82.
- Frey, Werner. 2001. About the Whereabouts of Indefinites. *Theoretical Linguistics* 27: 137-161.
- Grewendorf, Günther. 2005. The Discourse Configurability of Scrambling. In: Joachim Sabel and Mamoru Saito (eds.) *The Free Word Order Phenomenon; Its Syntactic Sources and Diversity*. Berlin: Mouton de Gruyter. 75-135.
- Haider, Hubert. 2000. Adverb placement – Convergence of structure and licensing. *Theoretical Linguistics* 26: 95-134.
- Haider, Hubert and Inger Rosengren. 1998. Scrambling. *Sprache und Pragmatik* 49. Lund.
- Hajičová, Eva, Barbara Partee, and Petr Sgall. 1998. Focus, Topic and Semantics. In Elena Benedicto, Maribel Romero and Satoshi Tomioka (eds.) *Proceedings of the Workshop on Focus*. UMass WPL 21. Amherst: GLSA. 101-124.
- Higginbotham, J. 1985. On semantics. *Linguistic Inquiry* 16: 547-593.
- Jackendoff, Ray. 1972. *Semantic Interpretation in Generative Grammar*. Cambridge: MIT Press.
- Jacobs, Joachim. 1997. I-Topikalisierung. *Linguistische Berichte* 168: 91-133.
- Kerstens, Johan. 1975. Over afgeleide structuur en de interpretatie van zinnen [On Derived Structure and the Interpretation of Sentences]. Ms., University of Amsterdam.
- Kiss, Katalin É. 1998. Identificational Focus versus Information Focus. *Language* 74: 245-273.
- Krifka, Manfred. 2006. Association with Focus Phrases. In V. Molnár & S. Winkler (eds.) *Architecture of Focus*. Berlin: Mouton de Gruyter.
- Lambrecht, Knud. 1986. *Topic, Focus, and the Grammar of Spoken French*. PhD dissertation, University of California at Berkeley.
- Lambrecht, Knud. 1994. *Information Structure and Sentence Form*. Cambridge: CUP.
- Mahajan, Anoop. 1990. *The A/A-bar Distinction and Movement Theory*. PhD dissertation, MIT.
- McCloskey, James. 1996. On the Scope of Verb Movement in Irish. *Natural Language and Linguistic Theory* 14: 47-104.
- McCloskey, James. 2005. Questions and Questioning in a Local English. In: Raffaella Zanuttini, Héctor Campos, Elena Herburger and Paul H. Portner (eds.) *Cross-Linguistic Research in Syntax and Semantics: Negation, Tense and Clausal Architecture*. Georgetown University Press.
- Meinunger, André. 1996. Focus Relations and Weak Islands. In: J. Camacho et al. (eds.) *The Proceedings of the 14th WCCFL*. Stanford Linguistic Association.
- Meinunger, André. 2000. *Syntactic aspects of topic and comment*. Amsterdam: John Benjamins.

- Neeleman, Ad. 1994. *Complex Predicates*. PhD dissertation, Utrecht University.
- Neeleman, Ad and Tanya Reinhart. 1998. Scrambling and the PF Interface. In Miriam Butt and Wilhelm Gueder (eds.) *The Projection of Arguments*. Stanford: CSLI. 309-353.
- Neeleman, Ad and Hans van de Koot. 2002. The Configurational Matrix. *Linguistic Inquiry* 33.4: 529-574.
- Neeleman, Ad and Hans van de Koot. 2007. *Theta Theory*. Ms. UCL.
- Neeleman, Ad and Kriszta Szendrői. 2004. Superman Sentences. *Linguistic Inquiry* 35: 149-159.
- Neeleman, Ad and Fred Weerman. 1999. *Flexible Syntax*. Dordrecht: Kluwer.
- Nilsen, Øystein. 2003. *Eliminating Positions: Syntax and Semantics of Sentential Modification*. PhD dissertation. Utrecht University.
- Prince, Ellen. 1981. Topicalization, Focus-Movement, and Yiddish-Movement: A Pragmatic Differentiation. *Proceedings of the Berkeley Linguistic Society* 7: 249-264.
- Reinhart, Tanya. 1981. Pragmatics and Linguistics: An Analysis of Sentence Topics. *Philosophica* 27: 53-94.
- Reinhart, Tanya. 1996. Interface Economy - Focus and Markedness. In: Chris Wilder et al. (eds.) *The Role of Economy Principles in Linguistic Theory*. Berlin: Akademik Verlag.
- Reinhart, Tanya. 1995. *Interface Strategies*. Ms. Utrecht University.
- Reinhart, Tanya. 2006. *Interface Strategies*. Cambridge: MIT Press.
- Rizzi, Luigi. 1997. The Fine Structure of the Left Periphery. In Liliane Haegeman (ed.) *Elements of Grammar*. Dordrecht: Kluwer.
- Rizzi, Luigi. 2004. Locality and Left Periphery. In: Adriana Belletti (ed.) *Structures and Beyond. The Cartography of Syntactic Structures, Vol. 3*. Oxford: Oxford University Press.
- Roberts, Craige. 1996. Information Structure in Discourse: Towards an Integrated Formal Theory of Pragmatics. In James Yoon and Andreas Kathol (eds.) *OSU Working Papers in Linguistics 49: Papers in Semantics*, 91-136.
- Rochmont, Michael. 1989. Topic Islands and the Subjacency Parameter. *Canadian Journal of Linguistics* 34: 145-170.
- Rooth, Mats. 1985. *Association with Focus*. PhD dissertation. University of Massachusetts, Amherst.
- Rooth, Mats. 1992. A Theory of Focus Interpretation. *Natural Language Semantics* 1: 75-116.
- Runner, Jeffrey. 1995. *Noun Phrase Licensing and Interpretation*. PhD dissertation, University of Massachusetts at Amherst.
- Ruys, Eddy. 2001. Dutch Scrambling and the Strong-Weak Distinction. *Journal of Comparative Germanic Linguistics* 4: 39-67.
- Samek-Lodovici, Vieri. 2006. When Right Dislocation Meets the Left-Periphery. *Lingua* 116: 836-873.
- Schwarzschild, Roger. 1999. Givenness, AvoidF and other constraints on the placement of accents. *Natural Language Semantics* 7: 41-177.
- Selkirk, Elisabeth. 1984. *Phonology and Syntax: The Relation between Sound and Structure*. Cambridge: MIT Press.
- Selkirk, Elisabeth. 1996. Sentence Prosody: Intonation, Stress and Phrasing. In: John Goldsmith (ed.) *The Handbook of Phonological Theory*. Oxford: Blackwell.
- Slioussar, Natalia. 2007. *Grammar and Information Structure: A Study with Reference to Russian*. PhD dissertation, Utrecht University.
- Svenonius, Peter. 2000. Quantifier Movement. In: Peter Svenonius (ed.) *The Derivation of VO and OV*. Amsterdam: John Benjamins, 255-292.
- Szendrői, Kriszta. 2003. A Stress-Based Approach to the Syntax of Hungarian Focus. *The Linguistic Review* 20: 37-78.

- Tsai, Wei-Tien Dylan. 1994. *On Economizing the Theory of A'-Dependencies*. PhD dissertation, MIT.
- Vallduví, Enric. 1992. *The Informational Component*. New York: Garland.
- Vallduví, Enric and Elisabet Engdahl. 1996. The Linguistic Realization of Information Packaging. *Linguistics* 34: 459-519.
- Vanden Wyngaerd, Guido. 1989. Object Shift as an A-Movement Rule. *MIT Working Papers in Linguistics* 11: 256-271.
- Van Hoof, Hanneke. 2003. The Rise in the Rise-Fall Contour: Does It Evoke a Contrastive Topic or a Contrastive Focus? *Linguistics* 41: 515-563.
- Van Riemsdijk, Henk. 1978. On the Diagnosis of WH Movement. In: Samuel J. Keyser (ed.) *Recent Transformational Studies in European Languages*. Cambridge: MIT Press.
- Wagner, Michael. 2005. Givenness and Locality. Ms. MIT.
- Williams, Edwin. 1994. *Thematic Structure in Syntax*. Cambridge: MIT Press.
- Williams, Edwin. 1997. Blocking and anaphora. *Linguistic Inquiry* 28: 577-628.
- Williams, Edwin. 2004. *Representation Theory*. Cambridge: MIT Press.
- Zwart, C. Jan-Wouter. 1993. *Dutch Syntax: A Minimalist Approach*. PhD dissertation, University of Groningen.