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Broekhuis, Hans

### **published in**

The Cambridge Handbook of Germanic Linguistics  
2020

### **document version**

Peer reviewed version

[Link to publication in KNAW Research Portal](#)

### **citation for published version (APA)**

Broekhuis, H. (2020). The unification of object shift and object scrambling. In M. T. Putnam, & B. R. Page (Eds.), *The Cambridge Handbook of Germanic Linguistics* (pp. 413-35). (Cambridge Handbooks in Language and Linguistics). Cambridge University Press.

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# The unification of object shift and object scrambling<sup>1</sup>

## Hans Broekhuis (August 2019)

**Abstract:** This chapter reviews a number of issues concerning Scandinavian object shift and object scrambling of the type found in the Germanic OV-languages. It differs from earlier reviews in that it adopts as its null hypothesis that the two phenomena should be given a unified treatment. An important reason for this is that object shift and scrambling are subject to similar effect-on-output conditions. This raises the question why object shift and scrambling behave differently with respect to, e.g., Holmberg's Generalization. It will be argued that this is due to the fact that object movement is subject to various language-specific, violable constraints.

### 1 Introduction

The examples in (1) illustrate for Icelandic and Dutch that in specific Germanic languages the order of nominal objects and clause adverbials is relatively free; the angled brackets indicate the alternative positions of the direct object. I will follow the linguistic literature in referring to this phenomenon in the Scandinavian and West-Germanic languages as object shift and object scrambling (henceforth: OS and scrambling), respectively.<sup>2</sup> Note that we will see later that the notion of scrambling is actually too wide, as it is normally used to refer to a *set* of rules; see, e.g., Mahajan (1994), Neeleman (1994a), and Haider and Rosengren (1998).

- (1) a. Jón las <þessa bók> ekki <þessa bók>. [OS]  
Jón read this book not  
'Jón didn't read this book.'
- b. Jan las <dit boek> waarschijnlijk <dit boek>. [scrambling]  
Jan read this book probably  
'Jan probably read this book.'

This review of OS and scrambling takes a different point of departure than earlier ones like Thráinsson (2001) and Vikner (2006) in that it adopts as a null hypothesis that the two phenomena should be given a unified treatment. More specifically, I will assume that we are dealing with leftward movement of the direct object into some, yet to be determined, designated position external to the lexical projection of the verb, *vP* in the current version of mainstream generative grammar.

- (2) a. ... ADV [<sub>VP</sub> ... [<sub>VP</sub> ... object ...]]  
b. ... object<sub>i</sub> ... ADV [<sub>VP</sub> ... [<sub>VP</sub> ... *t<sub>i</sub>* ...]]

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<sup>1</sup> I am indebted to Frits Beukema for proofreading an earlier version of this article; his comments have led to a large number of clarifications and other improvements. I thank Mike Putnam for fine-tuning the final version.

<sup>2</sup> Dutch and German differ from the Scandinavian languages (and English) in that the subject moves into the subject position (SpecTP) only optionally. The restrictions on subject movement are similar to those on object scrambling so that we may conclude that scrambling may also apply to subjects; due to space limitations I have to refer the reader to, e.g., Haider and Rosengren (1998) and Broekhuis (2007/2008:§4.2).

The derivation sketched in (2b) seems to be fairly standard for OS, although the details of the analyses proposed since Holmberg (1986) differ considerably; cf. Thráinsson (2001), Vikner (2006), and Engels and Vikner (2014:ch.2) for details. Extending the derivation of OS in (2b) to scrambling, however, is highly controversial because there is hardly any agreement on the analysis of scrambling in the literature; see the contributions in Grewendorf and Sternefeld (1990) and Corver and Van Riemsdijk (1994) as well as the reviews in, e.g., Haider (2000/2006), Chocano (2007:ch.4), and Putnam (2007:ch.4). However, the unification of OS and scrambling has been advocated in more recent works like Broekhuis (2000/2008), Chocano (2007:ch.5), and Engels and Vikner (2014). This chapter discusses some pros and cons of unification and explores the hypothesis in (2) in more detail.

## 2 Effects on output

One reason for unifying OS and scrambling is that they have similar effects on the output: shifted/scrambled objects cannot be part of the information focus (discourse-new information) of the clause and they cannot be assigned non-contrastive accent; cf., e.g., Verhagen (1986), Diesing (1997), and Holmberg (1999).

- (3) Effect on output:
- a. A shifted/scrambled object is part of the presupposition of the clause.
  - b. A shifted/scrambled object cannot be assigned neutral clause accent.

The information-structural effect (3a) can be readily accounted for by assuming that the information focus is prototypically located within the lexical domain of the clause ( $vP$ ), while the presupposition (discourse-old information) is preferably located in the functional domain. That the post-adverbial objects in (1) are indeed construed as part of the focus is clear from the fact that clauses with this order can be used as answers to questions like “*What happened?*”, and that the pre-adverbial objects are construed as part of the presupposition is clear from the fact that the clauses with this order would rather be construed as answers to questions like “*What happened to the book?*”.

The prosodic effect in (3b) can be made to follow from Cinque’s (1993) hypothesis that neutral clause accent is assigned to the most deeply embedded phrase in the clause: if the object occupies its base position within  $vP$ , as in (2a), it counts as the most deeply embedded phrase and, consequently, it must be assigned clause accent; if it is moved into the functional domain, it no longer counts as the most deeply embedded phrase and the accent will therefore shift to some other phrase that counts as most deeply embedded in the derived structure.

That the effects in (3) can be derived from the claim that the object is moved out of the lexical domain of the clause can be seen as support for a movement approach, especially since Haider (2000/2006) argues that a similar simple account of (3) is not available in base-generation approaches like Bayer and Kornfilt (1994), Neeleman (1994a/1994b), Sells (2001) and Fanselow (2001).<sup>3</sup>

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<sup>3</sup> Fanselow (2003:§2.4) maintains that this does not hold for his proposal, in which scrambling requires the main verb to undergo V-to-*v*. This correlation is difficult to test for OV-languages, however, because it entails that  $vP$  and VP are both head-final so that V-to-*v* always applies string-vacuously: if  $vP$  were head-initial, we would wrongly predict that scrambling forces movement of the clause-final verb in front of VP-adverbials and VP-internal material in embedded clauses.

### 3 Pronominal versus non-pronominal noun phrases

The hypothesis that *vP* constitutes the focus domain of the clause also accounts for the fact illustrated in (4) that OS/scrambling cannot apply to non-specific indefinite objects because these belong to the information focus by definition, while weak (unstressed/phonetically reduced) definite pronouns must undergo OS/scrambling because they are always presuppositional. Note that the hash signs in (4) are used to express that indefinites may occur in pre-adverbial position if they are interpreted specifically or generically, and that the asterisks are used to indicate that weak pronouns are always unacceptable in post-adverbial position.

- (4) a. Jón las <þær/#bækur> ekki <bækur/\*þær>.  
 Jón read them/books not  
 b. Jan las <ze/#boeken> waarschijnlijk <boeken/\*ze>.  
 Jan read them/books probably

The data in (1) and (4) are only partly captured by the formulation of the hypothesis in (3a); it correctly predicts that the pre-adverbial objects in (1) are part of the presupposition of the clause but does not account for the fact that the post-adverbial objects must be construed as part of the information focus; it also correctly predicts that the indefinite bare-plurals in (4) must follow the adverbial, but it does not account for the fact that the definite pronouns must be shifted/scrambled. Of course, this can be easily remedied by adding that presuppositional objects must be shifted, but this would clearly be an undesirable step in view of the fact that the Mainland Scandinavian languages categorically prohibit OS of non-pronominal objects. This is illustrated for Danish in (5), taken from Vikner (1994:502): the definite object *artiklen* ‘the article’ occurs in post-adverbial position regardless of whether it belongs to the focus or the presupposition of the clause, which shows that presuppositional objects can sometimes remain in the lexical domain of the verb.

- (5) a. Hvorfor læste studenterne <\*artiklen> ikke <artiklen>?  
 why read the students the.article not  
 b. Hvorfor læste studenterne <den > ikke <\*den>?  
 why read the students it not

The contrast in (5) raises another issue: can leftward movement of non-pronominal and pronominal objects be treated on a par? It is clear that the two forms of object movement exhibit different properties in Dutch; (6) shows that object pronouns normally occur right-adjacent to either the subject or the finite verb in subject-initial main clauses, while scrambled non-pronominal objects may also occur in a lower, that is, more rightward position; cf. Van Bergen en De Swart (2010).

- (6) a. dat Jan <dit boek/'t> gisteren <dit boek/\*'t> waarschijnlijk las.  
 that Jan this book/it yesterday probably read  
 ‘that Jan probably read this book/it yesterday.’  
 b. Jan las <dit boek/'t> gisteren <dit boek/\*'t> waarschijnlijk.  
 Jan read this book/it yesterday probably  
 ‘Jan probably read this book/it yesterday.’

This is a first illustration of the fact that scrambling is often used as a cover term for different movement types: it refers to the movement deriving (7b) from (7a), but in

addition it refers to the movement in (7c) that obligatorily places object pronouns right-adjacent to the regular subject position, SpecTP.

- (7) a. ... ADV [<sub>VP</sub> ... [<sub>VP</sub> ... object ...]]  
 b. ... object<sub>i</sub> ... ADV [<sub>VP</sub> ... [<sub>VP</sub> ... t<sub>i</sub> ...]]  
 c. ... object<sub>i</sub> ... [t<sub>i</sub> ... ADV [<sub>VP</sub> ... [<sub>VP</sub> ... t<sub>i</sub> ...]]]

Scandinavian definite object pronouns are like the Dutch ones in that they also obligatorily occur right-adjacent to either the subject or the finite verb in subject-initial main clauses (cf. Holmberg 1991), but they do not differ in this respect from shifted non-pronominal objects in Icelandic, which must occur in the same position. This is shown by the Icelandic examples in (8), taken from Vikner (1994/2006).

- (8) I gær las Pétur <bókina/hana> eflaust <\*bókina/\*hana> ekki.  
 yesterday read Pétur the.book/it doubtlessly not  
 ‘Yesterday Pétur undoubtedly did not read the book.’

This suggests that OS and scrambling differ in that movement of weak object pronouns should be distinguished from other cases of object movement in the case of scrambling only (but see fn. 9 below). This can be further supported by means of the contrast between the Danish and Dutch double object constructions in (9) and (10). The (a)-examples show that in both languages the indirect object precedes the direct object if they occupy their base positions. Example (9b), taken from Vikner (1989), shows that OS of the corresponding pronouns does not affect this order, while (10b) shows that scrambling of the pronouns resembles Romance clitic movement in that it inverts the object order.

- (9) a. Peter viste jo Marie bogen. (IO>DO)  
 Peter showed indeed Marie the.book  
 b. Peter viste <\*den> hende <den> jo. (IO>DO)  
 Peter showed it her indeed
- (10) a. Jan geeft waarschijnlijk Marie het boek. (IO>DO)  
 Jan gives probably Marie the book  
 b. Jan geeft <’t> ’r <\*’t> waarschijnlijk. (DO>IO)  
 Jan gives it her probably

However, scrambling of pronominal objects cannot be fully assimilated with Romance clitic placement because these objects do not syntactically cliticize to a verbal head. It is in fact quite doubtful that they target any designated head position in the functional domain of the clause. If we adopt the claim discussed in note 2, that Dutch subjects do not obligatory move into SpecTP but optionally remain in their base position within *vP* following the clause adverbials, the examples in (11b-c) show that *in-situ* subjects block scrambling of weak pronouns; they do not obligatory move into some specific head position in the functional domain of the clause but seem to be phonologically supported by the subject; see Broekhuis and Corver (2016:ch.13) and Haider and Rosengren (1998:§5.4) for similar data from German.

- (11) a. dat Jan ’t ’r waarschijnlijk gaf.  
 that Jan it her probably gave  
 ‘that Jan probably gave it her.’  
 b. dat waarschijnlijk Jan ’t ’r gaf.  
 c. \*dat ’t ’r waarschijnlijk Jan gaf.

I conclude from the discussion above that while there are good reasons for assuming that scrambling of weak object pronouns differs syntactically from other forms of object scrambling, there is no reason to make a similar distinction in the case of OS. This raises the question as to why the Mainland Scandinavian languages prohibit non-pronominal OS. It is not *a priori* clear that this question should receive a syntactic answer, given that there is also variation in mainland Scandinavian with respect to pronominal OS: Holmberg (1986/1999) observes that while this is obligatory in Danish, it is optional in most varieties of Swedish and excluded in Finnish-Swedish, without there being any obvious syntactic property to which this variation can be attributed.

#### 4 Verb movement

Section 3 has shown that the formulation of the information-structural effect on the output in (3a) is consistent with the fact that the Mainland Scandinavian languages do not allow non-pronominal OS. It is also needed to account for the fact that even Icelandic definite objects can be interpreted as part of the presupposition if OS is blocked for independent reasons. For instance, OS is categorically blocked if the main verb remains within its lexical projection, as in perfect-tense constructions such as Icelandic (12), taken from Holmberg (1986) and Thráinsson (2001); (3a) correctly predicts that the definite noun phrase/pronoun can be presuppositional in such cases.

- (12) a. Jón hefur <\*bókina> ekki keypt <bókina>.  
 Jón has the.book not bought  
 b. Nemendurnir hafa <\*hana> ekki lesið <hana>.  
 The.students have it not read

The fact that OS cannot cross the participle in (12) is a special case of a more general condition stating that the *canonical* word order within the lexical projection of the verb cannot be affected by OS, formulated in Holmberg (1999) as in (13). We will only discuss verbs here but return to the case of arguments in Section 6.

- (13) Holmberg's Generalization (HG): Object shift cannot apply across a phonologically visible category within VP: verbs, arguments, particles, etc. (but excluding adverbials).

HG also accounts for the contrast between the Icelandic and Danish examples in (14), taken from Vikner (1994). The position of the finite verb relative to negation reveals that while Icelandic requires leftward movement of the finite verb in embedded clauses (V-to-I), the finite verb remains *vP*-internal in Danish; HG therefore correctly predicts that while Icelandic allows OS in embedded clauses, as in (14a), this is blocked by the main verb in Danish, as in (14b).

- (14) a. að hann keypti <bókina> ekki <bókina>.  
 that he bought the book not  
 'that he didn't buy the book.'  
 b. at Peter <\*den> ikke købte <den>.  
 that Peter it not bought  
 'that Peter didn't buy it.'

HG exploits the fact that OS should cross specific *vP*-internal material preceding the objects such as the main verb in perfect-tense constructions or Danish embedded clauses. If HG were a universal, this would correctly predict that scrambling is possible

in perfect-tense constructions as well as embedded clauses in OV-languages like Dutch, where the main verb follows the objects in the canonical word order.

- (15) a. Jan heeft <het boek/het> waarschijnlijk <het boek/\*het> gekocht.  
 Jan has the book/it probably bought  
 b. dat Jan <het boek/het> waarschijnlijk <het boek/\*het> koopt.  
 that Jan the book/it probably buys

The assumption that HG-effects depend on the VO/OV-status of the language has given rise to the claim that OS is found in VO-languages only, while scrambling is only found in OV-languages. This neat picture is disturbed by the fact that Yiddish seems to allow object movement across non-finite verbs. The judgments are similar to the ones given earlier for Icelandic and Dutch: definite noun phrases move leftward (into pre-adverbial position) depending on whether they belong to the focus or the presupposition of the clause, non-specific indefinites do not allow movement, and weak definite pronouns must be moved; cf. Diesing (1997:§5.1).

- (16) a. Maks hot <dos bukh> mistome nit geleyent <dos bukh>.  
 Maks has the book probably not read  
 b. Maks hot <\*a bukh> mistome nit geleyent <a bukh>.  
 Maks has a book probably not read  
 c. Maks hot <undz> gekent <\*undz>.  
 Maks has us known

The data in (16) revived the discussion initiated in Den Besten and Moed-van Walraven (1986) whether Yiddish should be considered a VO or an OV-language; Diesing (1997) advocates a VO-analysis and claims that Yiddish should be seen as an exception to the rule that scrambling occurs in OV-languages only, while Haider and Rosengren (1998) argue that Yiddish is an OV-language but obligatorily moves the non-finite verb to the left of the objects.<sup>4</sup> The outcome of this debate seems less relevant to me: what is crucial is that (16) shows that the *canonical* order of the main verb and direct object is VO and that leftward object movement therefore violates HG in Yiddish. If correct, this entails that HG is a violable constraint and that attempts to derive it from inviolable conditions on movement such as the equidistance principle in Chomsky (1995:ch.3) are doomed to fail. The conclusion that HG is not a universal has as a desirable effect that it allows object movement in examples like (15) and (16a&c) without the need of postulating “invisible” movement of formal verbal features, as in Zwart (1997), or the phonetically empty light verb *v*, as in Broekhuis (2000).

## 5 Remnant VP-topicalization

The conclusion that HG is not an inviolable condition on derivations entails that it is a language-specific constraint on output representations. This claim is empirically supported by the fact that OS is possible in Remnant VP-topicalization constructions;

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<sup>4</sup> Broekhuis (2008:ch.2) argues that participle movement is a property of the Germanic languages in general; Yiddish may actually be an exception to this rule. Be this as it may, it seems that Haider and Rosengren’s proposal does not solve the problem: the participle follows negation, which demarcates the boundary between the functional and the lexical domain of the clause, so that we must conclude that the participle remains part of the lexical domain of the clause.

cf. Fox and Pesetsky (2005) and Engels and Vikner (2013/2014). Consider the Swedish examples in (17a-b), taken from Holmberg (1999) and Engels and Vikner (2014).

- (17) a. Jag har <\*henne> inte kysst <henne>.  
 I have her not kissed  
 b. Kysst har jag <henne> inte <\*henne>.  
 kissed have I her not

Holmberg claims that (17b) is not derived by Remnant VP-topicalization but by V-topicalization followed by OS. However, if both of these movements were syntactic, OS should precede V-topicalization and this would make the derivation anti-cyclic. This makes Holmberg conclude that OS is not a syntactic but a stylistic rule that applies *after* the syntactic derivation has concluded. A problem for this proposal pointed out by Engels and Vikner is that OS is obligatory in (17b) while it is normally optional for Swedish speakers. This problem does not arise for Fox and Pesetsky, who derive (17b) by means of Remnant VP-topicalization, in accordance with the standard assumption that the sentence-initial position must be occupied by a phrase (and not a head). Their derivation proceeds as in (18), with the crucial steps of OS in (18b) and VP-topicalization in (18d); I placed the auxiliary in *v* only for concreteness' sake as I believe that the actual structure of perfect-tense constructions is slightly more complex than suggested here. The crucial thing is that the unacceptable order in (17b) cannot be derived: VP-topicalization with OS must strand the object in pre-adverbial position, while VP-topicalization without OS results in obligatory pied piping of the object, as in the fully acceptable sentence [*Kysst henne*] *har jag inte*  $t_{VP}$ , taken from Holmberg (1999:7).

- (18) a.  $int_e [_{VP} jag har [_{VP} kysst henne]]$   
 b.  $henne int_e [_{VP} jag har [_{VP} kysst t_{henne} ]]$   
 c.  $[_{TP} jag har [henne int_e [_{vP} t_{jag} t_{har} [_{VP} kysst t_{henne} ]]]]$   
 d.  $[_{CP} [_{VP} kysst t_{henne} ] har [_{TP} jag t_{har} henne int_e [_{vP} t_{jag} t_{har} t_{VP} ]]]]$

Fox and Pesetsky propose that HG results from the conditions on linearization of syntactic structures in (19), where at least VP and CP are considered Spell-out domains.

- (19) a. The relative ordering of words is fixed at the end of each Spell-out domain.  
 b. Ordering established in an earlier phase may not be revised or contradicted in a later Spell-out domain.

Table 1, in which the two final columns provide the relative orders of the main verb and the object at the relevant Spell-out domains, shows that (19) provides the correct prediction for OS. The first two rows show that movement of the main verb to T or C is independent of OS because it does not change the linearization at the CP-level. The last two rows show, however, that OS crucially depends on verb movement: OS inverts the linearization at the CP-level, but this can be “repaired” by subsequent V-to-T/C.

Table 1: linearization of VO-languages

OS	V-to-T/C	Structure	VP	CP
—	—	$.. ADV [_{vP} .. [_{VP} V_{main} O]]$	V>O	V>O
—	+	$[_{CP} .. V_{main} .. ADV [_{vP} .. [_{VP} t_V O]]]$	V>O	V>O
+	—	$*.. O .. ADV [_{vP} .. [_{VP} V_{main} t_O]]$	V>O	O>V
+	+	$[_{CP} .. V_{main} .. O ADV [_{vP} .. [_{VP} t_V t_O]]]$	V>O	V>O



The acceptability of VP-topicalization constructions such as (17b) with OS follows from the linearization approach because VP-topicalization has the same effect as V-to-T/C: (20b) shows again that OS normally results in a violation of (19b), while (20c) shows that this violation is “repaired” by VP-topicalization.

- (20) a. Jag har inte [<sub>VP</sub> kysst henne]. (V>O;V>O)  
 b. \*Jag har henne inte [<sub>VP</sub> kysst *t*<sub>henne</sub>] (V>O;O>V)  
 c. [<sub>VP</sub> kysst *t*<sub>henne</sub>] har jag henne *t*<sub>VP</sub> (V>O;V>O)

The linearization approach provides the novel prediction that VP-topicalization is only possible if the object is base-generated in the right periphery of the VP; if not, VP-topicalization will not be able to restore the contradictory ordering resulting from OS. Consider the Danish example in (21a) from Engels and Vikner (2013/2014): since the object is followed by a predicative PP, the ordering at the VP-level is V>O>PP. VP-topicalization of the full VP, as in (21b), is allowed as it results in the same ordering at the CP-level, but Remnant VP-topicalization in (21c) is excluded because it results in the contradictory ordering V>PP>O.

- (21) a. Jeg har ikke [<sub>VP</sub> stillet det på bordet].  
 I have not put it on the table.  
 ‘I haven’t put it on the table.’  
 b. [<sub>VP</sub> Stillet det på bordet] har jeg ikke *t*<sub>VP</sub>.  
 c. \*<sub>VP</sub> Stillet *t*<sub>det</sub> på bordet] har jeg det ikke *t*<sub>VP</sub>

Despite its obvious description success in the case of OS, the linearization approach faces severe problems with OV-languages with V-second. Table 2 shows that (19) wrongly predicts that V-movement is categorically disallowed because it results in a contradictory ordering statement (regardless of the position of the object); cf. Müller (2007).<sup>5</sup>

Table 2: linearization of OV-languages

OS	V-to-T/C	Structure	VP	CP
—	—	.. ADV [ <sub>VP</sub> .. [ <sub>VP</sub> O V <sub>main</sub> ]]	O>V	O>V
—	+	*[ <sub>CP</sub> .. V <sub>main</sub> [.. ADV [ <sub>VP</sub> .. [ <sub>VP</sub> O <i>t</i> <sub>V</sub> ]]]]	O>V	V>O
+	—	.. O ADV [ <sub>VP</sub> .. [ <sub>VP</sub> <i>t</i> <sub>O</sub> V <sub>main</sub> ]]	O>V	O>V
+	+	*[ <sub>CP</sub> .. V <sub>main</sub> .. O ADV [ <sub>VP</sub> .. [ <sub>VP</sub> <i>t</i> <sub>O</sub> <i>t</i> <sub>V</sub> ]]]]	O>V	V>O

Since VP-topicalization has the same effect as V-to-T/C, it is also incorrectly predicted that it is incompatible with scrambling: the Dutch example in (22c) is fully acceptable despite the contradictory orderings at the VP and CP-level.

<sup>5</sup> Müller’s revision of Fox and Pesetsky’s proposal is claimed to allow V-second in main clauses *without* scrambling, as in his example (47), which corresponds to the second representation in Table 2. Unfortunately, he does not discuss similar examples *with* scrambling (corresponding to the fourth representation), which still seem problematical for his approach.

- (22) a. Jan heeft <Marie> vaak [<sub>VP</sub> <Marie> geholpen]. (O>V;O>V)  
 Jan has Marie often helped  
 ‘Jan has often helped Marie.’  
 b. [<sub>VP</sub> Marie geholpen] heeft Jan vaak. (O>V;O>V)  
 c. [<sub>VP</sub> *t*<sub>Marie</sub> geholpen] heeft Jan Marie vaak. (O>V;V>O)

The failure of the linearization approach can be attributed to the presumed fact that (19) is universal; it suggests an optimality-theoretic approach to HG.<sup>6</sup> Broekhuis (2008), for instance, proposes the order preservation constraint H-COMPL in (23), which favors preservation of the universal underlying base order verb-object, predicted by Kayne’s (1994) Linear Correspondence Axiom.

- (23) HEAD-COMPLEMENT (H-COMPL): a head precedes all terminals originally dominated by its complement.

This violable OT-constraint is argued to be ranked relatively high in the Germanic VO-languages but fairly low in the Germanic OV-languages, so that its effects will be readily observable in the former only. Broekhuis argues that this constraint accounts for two things: (i) a high ranking of H-COMPL results in an unmarked VO-order when the verb remains within its lexical domain, while a low ranking results in an unmarked OV-order; (ii) languages with a high ranking of H-COMPL will exhibit HG-effects while languages with a low ranking will not. We can now add that the ranking of this constraint also accounts for the VP-topicalization examples discussed in this section: a high ranking of H-COMPL ensures that VP-topicalization preserves the unmarked word within VP, while a low ranking allows this order to be changed.<sup>7</sup>

## 6 Argument order preservation

HG, in tandem with the standard assumption that a nominal indirect object (IO) canonically precedes a direct object (DO), correctly predicts that OS of the latter cannot cross the former. This is illustrated in (24) for Icelandic; the objects may both stay in post-adjectival position, they can both shift, the IO may shift alone but this is impossible for the DO. The examples in (25) show that the same holds for scrambling in Dutch.

<sup>6</sup> Optimality Theory (OT) defines different languages by postulating a universal set of violable constraints {A,B,C,...}, that are ranked in a language-specific manner. If A outranks B, and A and B impose conflicting requirements on the output of the grammar, an output that satisfies A but violates B is preferred to an output that satisfies B but violates A. The ranking A>>B thus gives rise to a different language than B>>A. See Archangeli (1997) for more details.

<sup>7</sup> Space limitations bar me from providing the formal proof. Broekhuis (2008) did not discuss languages such as Yiddish with an unmarked VO-order, which nevertheless do not exhibit HG-effects. For readers familiar with my work, it suffices to say that Yiddish can be derived by means of a specific ranking of H-COMPL and the EPP-constraints EPP( $\phi$ ) and EPP(case). First, Broekhuis (2008:ch.2) established that the relative ranking of H-COMPL and EPP( $\phi$ ) determines whether we are dealing with a VO or an OV-language (provided, of course, that the ranking of the economy constraint STAY allows movement). Second, Broekhuis (2008:ch.3) showed that the ranking in (ib,i) is responsible for the HG-effects found in the Scandinavian languages; the alternative ranking in (ib,ii) therefore derives OV-languages without HG-effects.

- (i) a. Unmarked OV order: EPP( $\phi$ ) >> H-COMPL  
 b. Unmarked VO order: H-COMPL >> EPP( $\phi$ )  
 (i) HG-effects: H-COMPL >> EPP(case)  
 (ii) no HG-effects: EPP(case) >> H-COMPL

- (24) a. Pétur sýndi oft Maríu<sub>IO</sub> bókina<sub>DO</sub>.  
 Pétur showed often Maríu the book  
 b. Pétur sýndi Maríu oft  $t_{IO}$  bókina.  
 c. Pétur sýndi Maríu bókina oft  $t_{IO}$   $t_{DO}$ .  
 d. \*Pétur sýndi bókina oft Maríu  $t_{DO}$ .
- (25) a. dat Peter waarschijnlijk Marie het boek getoond heeft.  
 that Peter probably Marie the book shown has  
 b. dat Peter Marie waarschijnlijk  $t_{IO}$  het boek getoond heeft.  
 c. dat Peter Marie het boek waarschijnlijk  $t_{IO}$   $t_{DO}$  getoond heeft.  
 d. \*dat Peter het boek waarschijnlijk Marie  $t_{DO}$  getoond heeft.

The same can be shown for cases with a pronominal DO although the effect on the output is radically different in this case: OS of the DO-pronoun must apply and seems to push the IO up into pre-adverbial position regardless of its informational-structural status; see Matthews (2000:158-9) and Broekhuis (2007/2008:171). Judgments on OS in ditransitive constructions are unfortunately not always clear, as is evident by comparing Rustick (1991:§3.1.2) and Vikner (1989), but the crucial thing is that the order in (26c) is clearly the preferred one.

- (26) a. \*Pétur sýndi oft Maríu hana.  
 Pétur showed often Maríu it  
 b. \*Pétur sýndi Maríu oft  $t_{IO}$  hana.  
 c. Pétur sýndi Maríu hana oft  $t_{IO}$   $t_{DO}$ .  
 d. \*Pétur sýndi hana oft Maríu  $t_{DO}$ .

The examples in (27) provide similar cases for Dutch; recall that the judgments only hold for non-contrastive intonation patterns and that the DO-pronoun may also precede the scrambled IO in (27c) as a result of weak pro-form shift.

- (27) a. \*dat Peter waarschijnlijk Marie het getoond heeft.  
 that Peter probably Marie it shown has  
 b. \*dat Peter Marie waarschijnlijk  $t_{IO}$  het getoond heeft.  
 c. dat Peter Marie het waarschijnlijk  $t_{IO}$   $t_{DO}$  getoond heeft.  
 d. \*dat Peter het waarschijnlijk Marie  $t_{DO}$  getoond heeft.

The Dutch examples are important because they show that HG is not exclusively applicable to the Scandinavian languages but at least partly also to specific scrambling constructions. We can account for this by assuming that Icelandic and Dutch both obey constraint (28); cf., e.g., Müller (2000/2001), Williams (2003), and Broekhuis (2008).

- (28) DEFAULT ARGUMENT ORDER PRESERVATION (DAOP): OS/scrambling does not affect the underlying order of arguments.

Like H-COMPL, DAOP cannot be a locality condition on derivations because standard assumptions on movement ensure that the (c)-examples in (25)-(27) are derived by first moving the DO across the IO and subsequent movement of the IO across the derived position of the DO. VP-topicalization provides support for assuming that DAOP is a constraint on representations; the Danish examples in (29), taken from Engels and Vikner, show that VP-topicalization may pied pipe the two pronominal objects, the IO without the DO but not the DO without the IO, or strand the two objects (the judgments are originally due to Anders Holmberg).

- (29) a. [<sub>VP</sub> Givet hende den] har jeg ikke *t*<sub>VP</sub>.  
           given her it have I not  
 b. ?[<sub>VP</sub> Givet hende *t*<sub>den</sub>] har jeg den ikke *t*<sub>VP</sub>.  
 c. \* [<sub>VP</sub> Givet *t*<sub>hende</sub> den] har jeg hende ikke *t*<sub>VP</sub>.  
 d. [<sub>VP</sub> Givet *t*<sub>hende</sub> *t*<sub>den</sub>] har jeg hende den ikke *t*<sub>VP</sub>.

The Danish data in (29) are somewhat surprising because pronominal OS is suddenly optional, but the crucial fact is the contrast between the two examples in (29b-c): example (29b), in which the DO has been shifted across the IO, is markedly better than (29c), in which OS does not involve crossing. Example (29b) illustrates once more that remnant VP-topicalization may repair a violation of DAOP created by DO shift, but (29c) shows that it may in fact also invoke a violation of DAOP in a structure that would otherwise satisfy it. The Dutch examples in (30) illustrate essentially the same as (29): although (30b-c) are clearly marked compared to the two other examples, there is a clear difference in acceptability between them.<sup>8</sup>

- (30) a. [<sub>VP</sub> Marie het boek gegeven] heeft hij zeker.  
           Marie the book given has he certainly  
 b. ? [<sub>VP</sub> Marie *t*<sub>het boek</sub> gegeven] heeft hij het boek zeker.  
 c. \* [<sub>VP</sub> *t*<sub>Marie</sub> het boek gegeven] heeft hij Marie zeker.  
 d. [<sub>VP</sub> *t*<sub>Marie</sub> *t*<sub>het boek</sub> gegeven] heeft hij Marie het boek zeker.

Fox and Pesetsky's linearization approach and Engels and Vikner's OT-approach differ in that the former takes (28) to be inviolable and thus predicts that OS/scrambling should respect DAOP in all languages, while the latter allows cross-linguistic variation here. That the OT-approach is to be preferred is clear from the fact illustrated in (31/32d) that German and Yiddish allow DO to move across IO in violation of (28); cf. Vikner (1994), Diesing (1997), Haider and Rosengren (1998:§7.3.2.), Fanselow (2003), and many others.

- (31) a. dass Peter wirklich Maria das Buch gezeigt hat.  
           that Peter probably Maria the book shown has  
 b. dass Peter Maria wirklich *t*<sub>IO</sub> das Buch gezeigt hat.  
 c. dass Peter Maria das Buch wirklich *t*<sub>IO</sub> *t*<sub>DO</sub> gezeigt hat.  
 d. dass Peter das Buch wirklich Maria *t*<sub>DO</sub> gezeigt hat.
- (32) a. Maks hat nit gegeben Rifken dos bukh.  
           Maks has not given Rifken the book  
 b. Maks hat Rifken nit gegeben dos bukh.  
 c. Maks hat Rifken dos bukh nit gegeben.  
 d. Maks hat dos bukh nit gegeben Rifken.

Engels and Vikner suggest that the constraint H-COMPL in (23) and the constraint DAOP in (28) can be unified into the more general constraint ORDER PRESERVATION: however, this is clearly not possible if one would like to give a unified account of OS and scrambling: the fact that Dutch is insensitive to the default order of the verb and its object while it is sensitive to the default order of arguments shows that the constraints are both needed.

<sup>8</sup> Order preservation constraints are normally also applicable to subjects, and favor preservation of the order S>IO>DO. In order to evaluate the proposal in Engels and Vikner (2013/2014) in full, more discussion will be necessary to account for the fact that VP-topicalization affects this order in (29/30a), while OS and Dutch scrambling normally respect it.

## 7 Categorical restrictions

This section discusses the kind of movement OS/scrambling instantiates. I adopt the standard assumption that two main types of XP-movement can be distinguished: A and A'-movement. OS is generally taken to be A-movement because it affects nominal phrases only: PP-arguments, selected AP/PP-predicates and clauses do not shift.<sup>9</sup> This is illustrated by the Icelandic examples in (33), taken from Vikner (2006:404).

- (33) a. Ég borgaði <\*fyrir hana> ekki <fyrir hana>.  
 I paid for it not  
 b. Pétur er <\*veikur> aldrei <veikur>.  
 Pétur is ill never

That OS cannot be applied to object clauses strongly suggests that the A-movements involved are triggered by features responsible for structural case assignment. This conclusion has various controversial consequences. First, it implies that dative case is a structural case, which was independently concluded in Broekhuis and Cornips (1994/2012). Second, phrases lexically case-marked with e.g. genitive or dative case must also be assigned structural case since such noun phrases can undergo OS, as is shown by the Icelandic examples in (34), adapted in a slightly simplified form from Engels and Vikner (2013:20). That lexically case-marked phrases are also assigned structural case has been proposed on independent grounds in Jónsson (1996:146) and Chomsky (2000:127) for quirky subjects.

- (34) a. Pétur leitiðaða <þessarar bókar> sennilega ekki <þessarar bókar>.  
 Pétur looked.for this book<sub>gen</sub> probably not  
 b. Pétur lýsti <þessari bók> sennilega ekki <þessari bók>.  
 Pétur described this book<sub>dat</sub> probably not

If OS does target the specifier position of a head responsible for structural case assignment, we would expect to find similar movements in other, typologically different, languages; the conjecture that OS and scrambling are instantiations of the same movement type should therefore be considered the null hypothesis. The null hypothesis is problematical, however, as it is generally assumed that scrambling is not restricted to noun phrases: while predicative complements of the verb such as *groen* in (35b) are well-behaved with respect to the hypothesis in that they resist scrambling, PP-objects such as *naar Peter* in (35a) seem to refute it by allowing scrambling.

- (35) a. dat Jan <naar Peter> nauwelijks <naar Peter> luisterde.  
 that Jan to Peter hardly listened  
 ‘that Jan hardly listened to Peter.’  
 b. dat Jan de deur <\*groen> waarschijnlijk <groen> verft  
 that Jan the door green probably paints  
 ‘that Jan will probably paint the door green.’

<sup>9</sup> I did not find any examples specifically illustrating the ban on clausal OS. Locational adverbial pro-forms meaning “here” and “there” constitute an exception to this generalization. Since Icelandic does not allow shift of complex locational adverbials, Vikner (2006:421-2) argues that the exceptional behavior of the adverbial pro-forms supports the cliticization approach to pronominal object shift discussed in Section 3, especially because the corresponding French pro-form *y* ‘there’ evidently behaves as a clitic as well.

If we want to maintain the null hypothesis, we must conclude that the movement placing the PP in pre-adverbial position cannot be A-movement. This conclusion is not bizarre since it is widely appreciated that the clause-internal order can be affected by various movement operations that should be distinguished from scrambling of the sort discussed so far; see Neeleman (1994a/1994b), Haider and Rosengren (1998), Müller (1998) and references cited there. Broekhuis and Corver (2016:ch.13) propose that minimally the three main types in (36) should be distinguished in Dutch; recall that weak pro-form movement was already discussed in Section 3.

- (36) a. A-movement: object shift and scrambling  
 b. A'-movement: Negation movement; contrastive focus/topic movement  
 c. Weak pro-form movement

Object shift/scrambling should be seen as a specific instantiation of A-movement. If the movement of the PP in (35a) is indeed of a different kind, it should instantiate some type of clause-internal A'-movement such as contrastive focus/topic movement. Before illustrating that this might really be the case, I will briefly discuss the clause-internal A'-movements in (36b): the main conclusion will be that they resemble *wh*-movement in that they do not exhibit HG-effects. That *wh*-movement does not exhibit HG-effects is clear from the fact that the Scandinavian languages allow it to cross the main verb, as illustrated by the Danish example in (37) from Jónsson (1996:17).

- (37) Hvilken film har børnene set?  
 which movie have the.children seen

The same holds for Neg-movement, as is illustrated for Danish by (38a): the negative direct object obligatory shifts leftward while violating the constraints on OS: it violates H-COMPL in (23) because the direct object precedes the main verb and DAOP in (28) because the direct object precedes the indirect object. Example (38b) shows that pronominal OS restores the base-order of the arguments due to the fact that it clearly targets a structurally higher position than the negative phrase: while shifted objects precede clause adverbials such as *faktisch* negative phrases must follow them; (38b) thus clearly establishes that OS and Neg-movement target different positions and confirms the standard assumption that Neg-movement is A'-movement. The examples in (38) are taken from Christensen (2005:163-5).

- (38) a. Jeg har <ingen bøger> lånt hende <\*ingen bøger>.  
 I have no books lent her  
 'I haven't lent her any books.  
 b. Jeg lånte hende faktisk ingen bøger  
 I lent her actually no books

Neg-movement is less easy to illustrate in OV-languages such as Dutch because it normally does not cross other *vP*-internal material such as the verb, but Haegeman (1995:130-1) has shown that Neg-movement is obligatory in such languages by means of PP-complement of predicative adjectives: (39a) shows that while such PP-complements may normally precede or follow the adjective, they obligatorily precede the adjective if they are negative. Example (39b) serves the same purpose as (38b) by showing that scrambling targets a higher position than Neg-movement.

- (39) a. Jan is <op Peter/niemand> erg trots <op Peter/\*niemand>.  
 Jan is of no.one/him very proud  
 ‘Jan is quite proud of Peter/not quite proud of anyone.’  
 b. Jan heeft Marie waarschijnlijk geen boeken geleend.  
 Jan has Marie probably no books lent

The examples in (40) show that contrastive foci can also be moved into a position following the clause adverb, while contrastive topics are rather placed in front of them; the two cases differ in meaning and intonation (indicated by “/” for rising and “\” for falling) but for reasons of space I cannot discuss this here; see, e.g., Haider and Rosengren (1998:§6), Molnarfi (2003), Neeleman and Van de Koot (2008) or Broekhuis and Corver (2016:§13.3) for relevant discussion.

- (40) a. dat Jan waarschijnlijk op PETER\ erg trots is. [focus-movement]  
 that Jan probably of Peter very proud is  
 b. dat Jan op /PETER waarschijnlijk erg trots is. [topic-movement]  
 that Jan of Peter probably very proud is

The crucial thing for our present purpose is that the nominal part of the PP *op Peter* cannot be a weak pronoun due to the fact that it must be accented. Let us now return to example (35a), repeated here as (41a), which motivated the claim that PPs may be scrambled as well. Neeleman (1994a) argues that we are not dealing with contrastive focus/topic movement because the nominal part of the PP need not be accented. Example (41a) shows, however, that PP-movement is excluded if the PP contains a weak pronoun, which indicates that the complement of the scrambled PP is obligatorily assigned accent. Because this is a typical property of contrastive foci/topics but not of scrambled objects, which are typically destressed, we conclude that the movement of PP should be distinguished from scrambling. Another reason for assuming this is that leftward movement of the PP is possible with a restricted set of adverbial phrases only: while object scrambling across a time adverbial like *gisteren* is easily possible, (41c) shows that this gives rise to a severely degraded result in the case of PP-movement under a non-contrastive intonation pattern.

- (41) a. dat Jan <naar Peter> nauwelijks <naar Peter> luisterde.  
 that Jan to Peter hardly listened  
 b. dat Jan <\*naar 'm> nauwelijks <naar 'm> luisterde.  
 that Jan to him hardly listened  
 c. dat Jan <?\*naar Peter> gisteren <naar Peter> luisterde.  
 that Jan to Peter yesterday listened

## 8 A and A'-scrambling of objects

Section 7 has shown that scrambling of the type intended is what we may call A-scrambling: scrambling of an object into a structural case position. A-scrambling should be carefully distinguished from cases of A'-scrambling such as contrastive focus/topic-movement. Making the distinction between A and A'-scrambling may provide a better understanding of the longstanding problem that scrambling often seems “Janus-faced”, in the sense that it exhibits properties of both A and A'-movement; cf. Webelhuth (1992). Consider the examples in (42): (42a) shows that scrambling may feed anaphor binding, which is considered a typical A-movement property; (42b) on the other hand shows that it can also license parasitic gaps, which is normally considered a typical property of A'-movement.

- (42) a. dat Jan <de rivalen> namens elkaar <\*de rivalen> feliciteert.  
 that Jan the rivals on.behalf.of each.other congratulates  
 ‘that Jan congratulates the rivals on behalf of each other.’  
 b. dat Jan <de rivalen> [zonder pg<sub>i</sub>; aan te kijken] <\*de rivalen> feliciteert.  
 that Jan the rivals without prt. to look congratulates

Example (43a) shows that a scrambled object may in fact exhibit both properties simultaneously: the object *de gasten* binds the reciprocal *elkaar* and licenses a parasitic gap. Webelhuth assumes that the object is moved into its surface position in one fell swoop, as in (43b), and concludes that the target position of scrambling has mixed A/A'-properties. An alternative possibility is that the scrambled object is moved in two steps, as in (43b'): the object is first moved into an A-position, from where it binds the reciprocal, and is subsequently moved into an A'-position, from where it licenses the parasitic gap.

- (43) a. Hij had de gasten [zonder pg te bekijken] aan elkaar voorgesteld.  
 he had the guests without to look-at to each.other introduced  
 ‘He had introduced the guests to each other without looking (at them).’  
 b. Hij had *de gasten*<sub>i</sub> [zonder *pg* te bekijken] aan *elkaar* *t*<sub>i</sub> voorgesteld.  
 b'. Hij had *de gasten*<sub>i</sub> [zonder *pg* te bekijken] *t*'<sub>i</sub> aan *elkaar* *t*<sub>i</sub> voorgesteld.

The alternative analysis in (43b') is in line with the finding from Section 3 that scrambled non-pronominal objects may occupy (at least) two positions in the clause: one more deeply embedded A-position to the left of the modal adverbs and a higher one right-adjacent to the regular subject position. If we assume that the second position is an A'-position, the facts in (42) and (43) follow. A nice bonus is that it may also give us a handle on the fact that OS does not license parasitic gaps, as shown by the Icelandic example in (44), taken from Thráinsson (2001); this is expected if the conclusion from Section 3 that OS is uniformly A-movement is indeed correct.

- (44) Pétur bauð Maríu<sub>i</sub> aldrei *t*<sub>i</sub> [án þess að sækja hana<sub>i</sub>/\*pg<sub>i</sub>]  
 Pétur invited Maríu never without it to fetch her  
 ‘Pétur never invited Maríu without picking her up.’

I am aware that the parasitic-gap analysis of the Dutch examples in (42b) and (43) is controversial. Broekhuis (1987), Neeleman (1994a), and De Hoop and Kosmeijer (1995), for instance, claimed that the presumed parasitic gaps differ from “true” parasitic gaps in that they can be licensed by subjects in passive constructions. Fanselow (2001:412) and Haider and Rosengren (1998) added other properties that are not expected in parasitic-gap constructions.<sup>10</sup> However, even if the parasitic-gap analysis should be abandoned, the logic of the argument still provides a useful guide for addressing the many other “mixed” properties of object scrambling, which are frequently assumed.

## 9 More on the information-structural effect on output

Section 7 has argued that OS is triggered by structural case features. If we adopt the controversial but generally accepted claim that case features are checked under Agree,

<sup>10</sup> It is not clear whether Fanselow’s argument can be replicated for Dutch; Dutch parasitic-gap constructions comparable to his examples in (22) with non-referential reflexive antecedents and (23) with multiple gaps have an unacceptable feel about them.



and that as a result of this, the subsequent A-movement of the noun phrase into the specifier of the case-assigning head is not needed for syntactic reasons, we must conclude that the derivations deriving the two representations in (2), repeated as (45), are both convergent. This does not entail, however, that the two representations are acceptable in all languages, due to language-specific filters: Icelandic allows (45b) with non-pronominal as well as pronominal noun phrases, Danish allows it with pronouns only, and Finnish-Swedish does not allow it at all. Additionally, the representation in (45b) is subject to HG in all OS-languages. Furthermore, the assumption that HG functions as a language-specific filter on representations predicts that there are languages like Dutch, German and Yiddish which do not exhibit (all) HG-effects on A-scrambling.

- (45) a. ... ADV [<sub>VP</sub> ... [<sub>VP</sub> ... object ...]]  
 b. ... object<sub>i</sub> ... ADV [<sub>VP</sub> ... [<sub>VP</sub> ... *t<sub>i</sub>* ...]]

What we have not yet accounted for, however, is the information-structural effect of object movement. One possibility, already suggested by Haider and Rosengren (1998) but fully exploited in Broekhuis (2000/2008) and Chomsky (2001), is that alternate representations tend to undergo meaning specialization. I will follow Chomsky in assuming that (45b) is subject to an effect-on-output condition: the shifted/scrambled object in (45b) must be construed as presuppositional. This proposal allows the object in (45a) to be construed as either part of the focus or the presupposition of the clause, which is needed for cases in which (45b) is blocked for language-specific reasons; cf. Section 2. This leaves us with the fact that the object in (45a) is normally construed as part of the information focus. We can account for this in a Gricean (1975) manner: the Maxim of Quantity requires the speaker to select (45b) as the more restrictive option if the object is part of the presupposition of the clause, and representation (45a) will consequently be used only if the object provides new information. Chomsky (2001) formalized this by means of an output filter, which can be expressed in a more sophisticated way (with wide empirical ramifications) in an OT-fashion by appealing to constraints like H-COMPL and DAOP discussed earlier.

## 10 Remaining problems and consequences

I have argued that OS and A-scrambling can both be considered A-movement triggered by structural case features. This is problematic under the current mainstream generative view that accusative case features are located on the light verb *v*, and that these features attract the theme argument into the outer specifier of *vP*; this leads to representation (46), where the displaced object *follows* the clause adverbial.

- (46) ... ADV [<sub>VP</sub> object<sub>i</sub> [<sub>VP</sub> ... [<sub>VP</sub> ... *t<sub>i</sub>* ...]]]

Chomsky (2001) repaired this deficiency by assuming that the object must undergo an additional phonological dislocation movement that places it in front of the clause adverbial; this proposal was extended to A-scrambling in Chocano (2007). Since the nature of phonological movement is still unexplored, this solution has an *ad hoc* flavor and, in my view, should not be resorted to, if possible. This is all the more pressing because the problem results from the theory-specific assumption of multiple specifiers: the predecessor of this theory with AgrPs, for instance, seemed to fare much better in this respect, as will be clear from the representation in (47a). Other alternatives are available that result in more or less the same structure; Broekhuis (2008), for instance,

follows the line of thinking in Grimshaw (1997) by claiming there is no functional head Agr but that the object crosses the adverbial by moving into the specifier of an extended projection of  $vP$  as in (47b).

- (47) a. ... [<sub>AgrP</sub> object<sub>i</sub> Agr [<sub>vP</sub> ADV [<sub>vP</sub> ... $v$  [<sub>VP</sub> ...  $t_i$  ...]]]]  
 b. ... [<sub>vP</sub> object<sub>i</sub>  $v$  [<sub>vP</sub> ADV [<sub>vP</sub> ...  $t_v$  [<sub>VP</sub> ...  $t_i$  ...]]]]

Another issue that should receive attention is the fact that Dutch and German differ from the Scandinavian languages in that definite noun phrases cannot follow negation if they are assigned neutral clause accent; cf. Schaeffer (2000). Given that moved objects may either precede or follow the clause adverbial with the by now familiar effect-on-output, it seems that we must conclude that placement of the object in post-adverbial position cannot be the result of A-scrambling of the type discussed earlier.

- (48) a. \*dat Jan waarschijnlijk niet het boek gelezen heeft.  
 b. dat Jan <het boek> waarschijnlijk <het boek> niet gelezen heeft.  
     that Jan the book probably not read has  
     ‘that Jan probably hasn’t read the book.’

Finally, the hypothesis that A-scrambling is like OS in being triggered by structural case features defines a research program aiming at systematically distinguishing A-scrambling from the various types of A'-scrambling; a first attempt for Dutch can be found in Broekhuis and Corver (2016:ch.13) and it is clear that the existing literature on German contains abundant material bearing on this issue.

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