

Scrambling as Formal Movement*

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0. Introduction and Overview

The choice of a marked word order typically goes hand in hand with a marked pragmatic potential. Quite a number of different accounts for this observation have been proposed, which range from the direct encoding of pragmatic functions in the syntactic representation (as in the cartographic model of Rizzi 1997) to the idea that information structure plays no role at all for syntax, and is only loosely linked to surface structure, e.g., as a consequence of the prosodic properties of the sentence, or as a consequence of relatively high processing costs of marked structures.

In their analysis of movement to the left periphery (Spec,CP) in Czech and German, Fanselow & Lenertová (2009) argue for an indirect interaction of syntax and information structure. Movement is triggered by an unspecific edge feature of Comp (in the sense of Chomsky 2005), and the choice of the category to be moved is constrained by the theory of linearization (adapted from Fox & Pesetsky 2005) rather than by considerations of information structure.

This insight raises the issue of whether movement is in general independent of considerations of information structure, or whether the absence of a direct link between the two domains is a peculiarity of the left periphery in languages such as Czech, German, Hungarian or Italian. The present paper investigates one aspect of this broader issue, *viz.* whether the model proposed by Fanselow & Lenertová (2009) can be extended to two further types of movement in German, A-Scrambling and A-bar-Scrambling.

The answer to this question will turn out to be a mixed one. Both types of scrambling are compatible with a purely formal analysis not making reference to information structure. In particular, scrambling can affect meaningless material and allows 'partial fronting'. Therefore, scrambling has at least some of the properties of movement to the left periphery that imply there is no direct link between the triggering of movement and information structure.

Scrambling differs from movement to the left periphery of the clause in one important respect, however. Unlike what holds for movement to Spec,CP, scrambling is not triggered by an edge feature, and it always serves a purpose. However, the functions of scrambling are formal in nature, or relate to operator scope and accentuation. We

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propose that these functions are due to ordering statements established when phrases are merged, The functions of scrambling do not directly involve concepts of information structure. Therefore, the analysis of scrambling defended here fits the view that syntax and information structure do not interact directly.

1. Syntactic Analyses of A-Scrambling

Let us first confine our attention to A-scrambling, and in particular the placement of object arguments relative to adjuncts and relative to each other, i.e., to pairs of examples such as (1). In the standard analysis, (1b) is derived from (1a) by scrambling *Bücher* 'books' to the left of the adverb *heute* 'today' (A-Scrambling), but analyses without movement have also been proposed (see Bayer & Kornfilt 1994, Fanselow 2001, 2003, Neeleman 1994, among others).

- (1) ich denke "I think"
- a. dass ich heute Bücher kaufe
that I today books buy
 - b. dass ich Bücher heute kaufe
"I think that I'll buy books today"

 - c. dass ich Kindern Bücher gebe
that I children.dat books give
 - d. dass ich Bücher Kindern gebe
"I think that I'll give books to children"

The local movement relating (1a) and (1b) is an instance of A-movement (see, e.g. Neeleman & de Koot 2008). The diversity of models for the syntax-information structure interaction is mirrored by a corresponding diversity of ideas concerning what is responsible for the application of A-scrambling. A first class of models postulates that A-scrambling answers demands of information structure. That A-scrambling is caused by a general ordering principle "given > new" is an idea that can be traced back to Prague School (cf. Mathesius 1975) and that reflects a stable cross-linguistic linearization tendency (cf., e.g., Skopeteas & Fanselow 2009). This tendency itself may be the consequence of syntactic features triggering movement that are directly linked to discourse anaphoricity (cf. e.g. Meinunger 1996), but there are also proposals that explain it in terms of the syntax-semantics interface, in particular in terms of the placement of XPs within or outside the scope of a givenness operator (Kučerová 2007).

Distinctions of information structure are linked to prosodic properties in many languages. This opens the possibility that information structure is expressed only indirectly in the syntax of these languages: word order may have to be changed in the interest of making a sentence compatible with the rules of prosodic structure (as argued for by Samek-Lodovici 2005, Szendrői 2001, Zubizarreta 1998, among others), while the prosodic properties leading to such word order changes may then express distinctions of information structure. Krifka (1998) suggests that XPs may be A-scrambled in German in order to allow focused phrases to appear in the prominent position preceding the clausefinal slot of the verb, cf. also Rosengren (1993), Büring (2008).

A third group of theories denies that scrambling has a function that triggers the movement. Haider & Rosengren (2003) take A-scrambling to be a freely applicable

operation that adjoins any argument to an (extended) projection of the verb. In its net effect, such a conception is equivalent to proposals that have A-scrambling be triggered by a formal feature such as 'scr' without linking this feature to any semantic or discourse function (Müller 1998), or that make an edge feature responsible for scrambling (e.g. Assmann & Heck 2009). In a base-generation account (Fanselow 2001, Neeleman & de Koot 2008), the generation of marked word order itself is also normally not driven by an pragmatic or prosodic function.

How can one decide between these three models of A-scrambling? Haider & Rosengren (2003) point out that, up to now, no uniform function of A-scrambling has been identified, and they consider it doubtful that future research will change this situation. Haider & Rosengren take this insight to imply that the generation of marked word order is not linked to any function at all, but obviously, their conclusion is not warranted: the observation that scrambling has many functions is compatible with the view put forward in Müller (2000) according to which several different ordering principles outrank (or tie with) the ban against movement. In such a conception of grammar, A-scrambling always has a function, but possibly different ones in different sentences. In the next sections, we will discuss such functions in more detail. A-Scrambling can be shown to be licensed by formal syntactic, prosodic, and semantic properties, but information structure plays no role.

2. Givenness and Definiteness

The major discourse function of A-scrambling seems to lie in the syntactic expression of givenness. Apparently, contextually given phrases can always be scrambled in front of new ones, as shown by the placement of a definite direct object in front of an indirect object (2b) and a subject (3b), while the reverse does not hold.

- (2) *Who did she show the book?*¹
- a. Sie hat einem Kind das Buch gezeigt
She has a.dat child the book shown
 - b. Sie hat [das Buch]_i einem Kind t_i gezeigt
"She showed the book to a child"

- (3) *Who solved the problem yesterday?*
- a. Gestern hat ein Engländer das Problem gelöst
Yesterday has an Englishman the problem solved
 - b. Gestern hat [das Problem]_i ein Engländer t_i gelöst
"Yesterday, an Englishman solved the problem"

It is tempting to interpret such data as evidence for a fairly direct impact of information structure on syntax, but they do not show that givenness itself triggers A-scrambling. The facts in (2) and (3) can also be captured by a formal grammatical statement that allows definite XPs to be fronted (as proposed by Lenerz 1977), e.g., by assuming a violable grammatical constraint "definite > indefinite" (definites precede indefinites) with an Optimality-theoretic model such as Müller (2000).

¹ In the interest of space, contexts sentences are given only in English.

Slioussar (2007) notes a considerable problem for the idea that contextual effects on word order can easily be translated into a discrete syntactic feature 'given' triggering A-scrambling. She suggests that the *relative* context accessibility of the objects influences their order in Russian. A phrase can cross another one if it is more accessible in discourse than the latter.

Consider sentence (4a) in this respect, a modified counterpart of Slioussar (2007)'s (1-7b)). Neither of the objects is given, yet reordering (relative to DAT > ACC normal order) is possible, in contrast to (4b). Note that *sogar* "even" takes the whole VP as its semantic domain, so that the reordering of the objects happens *within* the focus.

- (4) a. *Imagine how strangely John behaved yesterday!*
 Er hat sogar sein Lunchbrot einem Hund gegeben
 he has even his lunch sandwich a.dat dog given
 "he even gave his lunch sandwich to a dog"
 b. ?*Er hat sogar ein Lunchbrot einem Hund gegeben²
 he has even a lunch sandwich a.dat dog given
 "he even gave his lunch sandwich to a dog"

There is an alternative account for examples such as (4a), however, that avoids the invocation of 'relative accessibility' in the triggering of movement: though not given, *sein Lunchbrot* 'his lunch sandwich' is at least a definite noun phrase. Data such as (4) thus lend support to the view that definiteness rather than givenness licenses reordering.

The judgements in (5) with *sogar* 'even' again modifying the complete VP point in the same direction. None of the direct objects in (5a-c) is given. The definite article showing up in (5a) is just a reflex of the uniqueness of a liver. Nevertheless, the scrambling of the direct object is fine in (5a), but questionable in (5b). There is no contrast in givenness that might be invoked here, but a clear difference in definiteness that seems responsible for the acceptability of A-scrambling in (5a). Surprisingly, (5c) with an definite genitive DP embedded in the scrambled object is even worse than (5b).

- (5) a. *Imagine how strangely John behaved yesterday!*
 Er hat sogar die Leber eines Hundes einem Bettler geschenkt
 he has even the liver a.gen dog.gen a.dat beggar given
 "he even presented the liver of a dog to a beggar"
 b. ??Er hat sogar ein Bein eines Hundes einem Bettler geschenkt
 he has even a leg a.gen dog.gen a.dat beggar given
 "he even presented a leg of a dog to a beggar"
 c. ?*Er hat sogar ein Bein des Hundes einem Bettler geschenkt
 he has even a leg the.gen dog.gen a.dat beggar given
 "he even presented a leg of the dog to a beggar"

There is a fairly direct way of choosing between givenness/accessibility and definiteness as licensing factors for A-scrambling. Givenness and accessibility are pragmatic notions. They can be applied only to elements that have an interpretation. Definiteness, on the other hand, is a formal concept (the definite article bears a syntactic feature [+def]) that is normally interpreted semantically as well, but does not have to be so. In particular,

² Note that (4b) and (5b) improve when the preposed direct object is prosodically the most prominent category in the clause. This will be discussed in section 4.

definite articles appearing in idioms come with no meaning (only the complete idiom is interpreted, not its parts) but formally, they bear the definiteness feature.

If the scrambling of a definite DP belonging to an idiom is possible, and if it yields more acceptable results than the scrambling of an indefinite DP, then we have good reason to believe that formal definiteness licenses scrambling.

It has often been noted (e.g., Horn 2003) that (in contrast to English) parts of idioms can be moved quite freely to the left periphery of clauses in German, as illustrated in (6), in which the idiom *die Flinte ins Korn werfen* has been split by moving its direct object part to the left.

- (6) *And what did he do then?*
Die Flinte hat er ins Korn geworfen
the gun has he into-the grain thrown
"he gave up too early"

Such data have been interpreted by Fanselow & Lenertová (2009) as evidence for the view that movement to the left periphery is triggered by an unspecific edge feature in German, and not by a pragmatic property: The parts of an idiom do not bear meaning by themselves. Being meaningless, they cannot be salient, focal, topical, or given. They can be fronted on the basis of a formal property only.

Quite surprisingly, when we consider the interaction of DPs and adverbial expressions, there is ample evidence that parts of idioms can be A-scrambled, too. This is a particularly strong challenge for any theory that assumes that (German) A-scrambling serves the goal of placing given material (understood in a discourse sense) in front of new material, because parts of idioms are meaningless, and can therefore not be given. (7) is an illustration of the kind of example we have in mind. The left part *die Flinte* of the idiom *die Flinte ins Korn werfen* has been placed in front of the adverbial *zu früh*.

- (7) Vielleicht hat er die Flinte zu früh ins Korn geworfen
Perhaps has he the gun too early into-the grain thrown
"Perhaps he gave up too early."

(7) is not an example made up by linguists, but can be found in the world wide web. A Google search (March 24th 2009, 10am) yielded 169 examples with *die Flinte* scrambled in front of *zu früh* (search string "*die Flinte zu früh ins Korn*") as compared to 99 sentences with 'normal' word order (search string "*zu früh die Flinte ins Korn*"). The A-scrambling of parts of an idiom across an adverbial is thus not a rare phenomenon. Other adverbs that can be crossed by *die Flinte* include *mal wieder* 'once again', *wohl* 'presumably', *vielleicht* 'perhaps', *heute* 'today' (Google search, Sept 21st 2009, 5pm).

In order to find out whether these corpus findings are in line with native speaker intuitions, and in order to find out whether definiteness plays a role for the scrambling of idioms, we conducted a rating experiment³:

³ The experiment is joint work with Thomas Weskott, and has been funded by DFG-grant FA 255-6. For technical assistance, I am indebted to Maria Miller.

Method:

26 first semester students of the University of Potsdam with linguistics as their first, second, or only subject (who were paid for participation or received course credits) rated 88 sentences on a 7 point scale (1 standing for worst, 7 for best acceptability) appearing on a written questionnaire.

Material:

16 sentence pairs with idioms involving a direct object, a PP and a verb were constructed such that the composition of the sentences strongly favored the idiomatic rather than a literal interpretation: the idiom was embedded in a conditional clause that itself was composed of two conjoined sentences. The idiom appeared in the second conjunct, while the first conjunct gave a paraphrase of the idiomatic reading, or stood in a hyperonymic relation to this reading. The sentence pair in (8) illustrates such an experimental item. The two members of a sentence pair differed as to the placement of an adverbial such as *zu früh* "too early", which could precede (8a) or follow (8b) the direct object. In the latter case, part of the idiom was scrambled to the left.

- (8) a. wenn man Mut hat und nicht zu früh die Flinte ins Korn wirft,
if one courage has and not too early the gun into-the grain throws
dann wird man sehr erfolgreich sein.
then will one very successful be
"if one is courageous and does not give up too early, one will be very successful"
b. wenn man Mut hat und nicht die Flinte zu früh ins Korn wirft. dann wird man
sehr erfolgreich sein.

In half of the sentence pairs, the indirect object came with a definite article, as in (8). In the other half, the direct object had no article or an indefinite one, as illustrated in (9). This factor allowed us to investigate whether definiteness plays a similar role in idiom scrambling as it does in the scrambling of meaningful material.

- (9) Wenn man unehrlich ist und seinen Freunden immer Honig ums
If one dishonest is and one's friends always honey around-the
Maul schmiert, dann wird man bald sehr einsam sein
mouth smears then will one soon very lonely be
"If one is not honest and always flatters one's friends, then one will soon be very
lonely"

There were thus two subexperiments (definite vs. indefinite direct object) with two experimental conditions each (direct object *in situ* or scrambled). Each participant saw four items in each condition of the two subexperiments, such that each sentence pair contributed exactly one experimental item, and both conditions of each sentence pairs were used in half of the questionnaires. The items appeared in pseudorandomized order.

Results

In the subexperiment involving definite objects, the unscrambled version got a mean rating of 5.83 on the 7-point scale, the corresponding value for the scrambled version was 5.39. This difference was not significant in the subject analysis ($t_1(23)=1.66, p=.11$), but marginally significant in the item analysis ($t_2(7)=1.96, p=.09$).

The subexperiment with indefinite objects had a different result. For unscrambled items, the mean acceptability was 5.9, but acceptability dropped to 4.44 in the scrambled case. This difference was significant ($t_1(23)=5.42$, $p<.001$ $t_2(7)=6.32$, $p<.001$). A direct comparison of the two subexperiments is difficult because different idioms had to be used in them, but effect sizes can at least be compared, which are smaller in the definite object subexperiment ($\eta^2_1=.107$, $\eta^2_2=.354$) than in its indefinite counterpart ($\eta^2_1=.562$, $\eta^2_2=.851$).

Discussion

The first result of our experiment lies in a confirmation of the claim that parts of idioms can be scrambled⁴. The difference between normal and marked order in the definite subexperiment is very small; the roughly equal status of the two linear arrangements of the direct object and the adverb is in line with the corpus finding reported above, in which both orders were realized by a comparable number of items.

Interestingly, the scrambling of part of an idiom has at least some of the properties of standard A-scrambling. A comparison of the two subexperiments⁵ reveals that the scrambling of indefinite parts of idioms is worse than the scrambling of definite parts, in line with what holds for A-scrambling in general. The definiteness effect of normal scrambling in non-idiomatic contexts can (often) be analyzed in terms of givenness, but in the case of idiom scrambling, this interpretation is hardly a possibility, because the formal contrast between definite and indefinite parts of idioms does not reflect a difference in givenness (parts of idioms are meaningless). The definiteness effect found in our experiment allows an interpretation in which definiteness figures as a *formal* rather than a semantic property when it comes to licensing A-scrambling in German, i.e., the order with a left alignment of a definite XP is preferred quite independent of the (given) discourse status of the formally definite XP. Note that sentences such as (7) can be uttered in situations in which the early giving up is the new/focal information (=the whole VP is in focus), so that scrambled *die Flinte* is not even part of a given phrase.

The involvement of a formal feature of definiteness in the licensing of A-scrambling constitutes a strong parallel between A-scrambling and movement to the left periphery⁶.

The scrambling of parts of idioms behaves like normal A-scrambling in other respects, too. Thus, the scrambling of the DP and the PP part of the idiom across a temporal adverb is as odd as such a crossing movement of the direct PP would be in the literal interpretation of the sentence. We found no single item in the web corresponding to (10) (search term: "die Flinte ins Korn zu früh").

⁴ In Czech, the XPs belonging to a VP idiom cannot be separated from each other by A-scrambling, although both may be separated from V by scrambling (Denisa Lenertová, p.c.). This difference between Czech and German is interesting because the two languages treat idioms in the same way in the context of movement to Spec,CP. It may show that Czech A-scrambling is not licensed by a definiteness features but rather by prosodic considerations.

⁵ Different idioms had to be used in the two subexperiments because there are no V + object idioms that allow a definiteness alternation in the object position. Of course, we cannot exclude it that these lexical difference contributed substantially to the contrast between the two subexperiments.

⁶ The scrambling of definite objects is not tolerated in all idioms. A discussion of the factors that play a role here is beyond the scope of the present paper. That certain idioms do not allow object scrambling does not undermine the point made above: even if an idioms such as *die Flinte ins Korn werfen* is semantically transparent to a certain degree, there is still no way in which *die Flinte* could be analysed as contextually given.

(10) ??Ich habe die Flinte ins Korn zu früh geworfen
I have the gun into-the grain too early thrown
"I gave up too early"

For the A-scrambling of objects to the left of adverbs, formal definiteness thus turns out to be a licensing factor. Formal definiteness should therefore also be sufficient for the A-scrambling of an object across a subject, as exemplified in (11).

(11) *Should (even) Bill continue with his fight against drinking in schools?*
Ja ich denke dass die Flinte keiner zu früh ins Korn werfen sollte
Yes I think that the gun noone too early into-the grain throw should
"Yes, I think nobody should give up too early"

(11) is certainly less acceptable than (8), at least in the sense that structures such as (11) are rejected more often by speakers of German, and may require special prosodic prominence of the subject *keiner*.⁷ If (11) is indeed not grammatical, the scrambling of idiom parts would have to be confined to adjunction to VP, while movement of an idiom part to the left of the subject into the left periphery of vP/TP would have to be excluded. Such an effect could be due to a lack of reconstruction for A-scrambling (cf. Assmann & Heck 2009 for arguments), combined with the assumption that syntactic constructions are interpreted when a phase is completed. If a part of an idiom has left the projection it was merged in, and if reconstruction is excluded, it may be too far away from the remainder of the idiom for allowing the computation of the non-literal interpretation. This attempt of an explanation for a contrast between (7) and (11) is in harmony with the observation that idiom scrambling is more liberal in Japanese (see Miyagawa 1997), probably because reconstruction of scrambling is generally easy in Japanese⁸, leading to phenomena such as the scrambling of wh-words beyond their scope and downward scrambling. Given that (11) is, nevertheless, accepted by a number of speakers, it remains an open question whether the idiomatic interpretation of (11) is not just very hard to compute rather than ungrammatical. An anonymous reviewer suggests that the acceptability difference between (7) and (11) is no greater for the idiomatic reading of the sentence than for its literal one.⁹ This is an important observation, because it shows that what is at stake in (11) is not linked to the focus of our discussion, viz. whether A-scrambling can affect meaningless material.

Summing up the discussion so far, we have seen that formal definiteness¹⁰ rather than contextual givenness/acceptability is the crucial factor in licensing scrambling.

⁷ When the PP-part of the idiom is placed in front of the subject, too, the structure becomes perfect.

⁸ Richards (1999) notes that parts of idioms cannot cross each other in Japanese scrambling. In this respect, Japanese scrambling behaves like German movement to the left periphery, too (cf. Fanselow & Lenertová 2009).

⁹ Note that the acceptability of the scrambling of parts of idioms is incompatible with base generation accounts of scrambling to the extent that only contiguous segments of a tree can receive an idiomatic interpretation.

¹⁰ One issue that we will have to leave open here is how languages such as Czech or Polish without an overt marking of definiteness fit into the model proposed here. The least interesting option is to postulate an invisible marking of definiteness for these languages. Alternatively, one could assume that definiteness does not license scrambling in these languages, as suggested in note 4. Other factors such as prosody would be relevant. The latter model predicts that there should be gross or subtle differences in scrambling data between Czech/Polish on the one hand, and German on the other. The contrast noted for idiom scrambling might indeed be a case in point.

This interpretation of definiteness as a formal factor is supported by word order facts in another domain. There are more serialization principles in German than just definite > indefinite. In particular, animacy is a major factor for linear order, as noted by Hoberg (1981). Müller (2000) has argued that the surface ordering principle animate > inanimate is sufficient for the licensing of the placement of the accusative in front of the dative object in (12a) (but, of course, not in (12b)) without any effect on discourse structure or semantic scope. Scrambling serves no interpretive purpose in (12a), it just makes the sentence compatible with the animate > inanimante rule.

- (12) a. er hat ein Kind einem schlechten Einfluss entzogen
 he has a.acc child a.dat bad influence removed
 "that he removed a child from a bad influence"
- b. ?er hat ein Kind einem schlechten Vater entzogen
 he has the.acc child the.dat bad father removed
 "that he withdrew the child from the bad father"

The formalization of the effects of the formal features 'definite', 'animate' and others on word order is a non-trivial issue, at least if one does not allow global comparisons of complete derivations. The difficulty is that, in a sense to be made precise below, A-scrambling cannot be 'undone' by later operations. If constraints such as "definite > indefinite" simply license an application of A-scrambling derivationally, there is no guarantee that further movement does not restore the pre-scrambling word order. This may be an unwanted result.

On the other hand, a constraint on surface structure requiring that definite DPs precede indefinite ones can license A-scrambling. The constraint must be violable and tied with the constraint penalizing movement, because A-scrambling is optional (cf., e.g., Müller 2000 for a formalization). The restoration of base-generated order $\alpha \beta$ in a derivation involving A-scrambling is then ruled out on grounds of the economy of derivation, because $X \alpha \beta t_\alpha t_\beta Y$ with two scrambling steps involves two traces more than the scrambling-free representation $X \alpha \beta Y$. The surface structure constraint model works well for feature-licensed A-scrambling, but, as we shall see, not for scope driven scrambling. We therefore postpone the formulation of our analysis of A-scrambling to the end of the next section.

3. Scope

Phrases can also undergo A-scrambling in order to take wide scope (see also Neeleman & de Koot 2008, among many others), as illustrated in (13). Without scrambling, the only available scope option is $\forall x - \exists y$ in (13a), because scope in normal word order corresponds to surface c-command (cf., e.g., Frey 1993). In order to express wide scope for the negative quantifier, it must be scrambled (13b) (or a passive must be chosen, as in English). Likewise, the scrambling of the non-specific indefinite *wen* is necessary in (13c) in the interest of avoiding the interpretation "if nobody kissed anyone".

- (13) a. dass jeder niemanden liebt ist klar
 that everyone nobody loves is clear
 "it is clear that everyone loves noone"

- b. dass niemanden jeder liebt ist klar
 that nobody.acc everone.nom loves is clear
 "it is clear that nobody is loved by everyone"
- c. wenn wen niemand geküsst hat
 if anyone.acc nobody.nom kissed has
 "if anyone has not been kissed by anybody"

The preposing of generically interpreted indefinite noun phrases illustrated in (1d) above can also be understood along these lines. Furthermore, the scope-enlarging function of A-scrambling can be made responsible for the establishment of new binding options as in (14).

- (14) dass jeden_i seine_i Mutter liebt
 that everyone.acc his mother loves
 "that everyone's mother loves him"

Consider also the circumvention of weak crossover effects. Haider (1981, 1986) was the first to observe that certain subject object asymmetries that are stable in English are absent in German, among them being the weak crossover effect. In contrast to English (15b), *seine* 'his' can be bound by the preposed *wh*-phrase in German for many (but not all) speakers¹¹. The fact that A-scrambling also creates new binding possibilities for many (but not all) speakers of German (since it is an A-movement process) suggests a simple analysis of (15a): this sentence is derived with an intermediate scrambling step placing the *wh*-object into an A-position c-commanding the subject before it goes to Spec,CP. The A-scrambling of the *wh*-phrase is thus motivated by the enlargement of scope, leading to a new binding possibility. Note that we cannot say alternatively that German disobeys the weak crossover condition in general, because 'long' *wh*-movement is not exempt from weak crossover effects, as the ungrammaticality of (15c-d) shows. Crucially, A-scrambling is clause-bound, so that *wen* cannot be placed in an A-position c-commanding the matrix subject in (8c) or (8d).

- (15) a. wen_i hat seine_i Mutter geküsst?
 who has his mother kissed
 "who has been kissed by his mother"
- b. who_i has his_i mother kissed
- c. *wen_i hat sein_i Vater gesagt dass die Maria heiraten sollte?
 who has his father said that the Mary marry should
 "who is such that his father said that Mary should marry him?"
- d. *jeden_i hat sein_i Vater gesagt dass die Maria heiraten sollte
 everyone has his father said that the Mary marry should
 "Everyone's fatehr said that Mary should marry him"

The scrambling account of the absence of weak-crossover effects has often been criticized on the basis of the claim (going back to Engel 1972) that *wh*-phrases cannot undergo A-scrambling. However, there is even direct evidence for the A-scrambling of *wh*-phrases, *viz.* in triple questions when all *wh*-phrases are realized as independent

¹¹ Cf. Fanselow, Kliegl, & Schlesewsky (2006) for experimental results concerning this issue.

prosodic words. (16) has a preferred "single triplet interpretation", while (17) shows a preference for a "triplets-list" reading¹².

- (16) warum hat wem wer Gift in den Kaffee geschüttet?
why has who.dat who.nom poison into the coffee poured
"who has poured poison into whose coffee, and why?",
- (17) Der Spitzel hat aufgelistet, wann wen wer besucht hat
The snout has enlisted when who.acc who.nom visited has
"the snout enlisted who visited who when"

In a similar vein, indefinites can be scrambled in front of an adjunct clause in the interest of licensing a parasitic gap, as shown in (18). Parasitic gaps need to be within the scope of the operator that licenses them. (18) is thus a further type of evidence for the claim that A-scrambling figures in scope determination in German.

- (18) Wenn wer wen anstatt zu grüssen ignoriert
if anyone anyone instead to greet ignores
"If anyone ignores anyone instead of greeting him"

The data in (12) - (18) show that indefinites can undergo scrambling, too - on the condition that scrambling extends their semantic scope. When it does not, as in (19), the sentence is not acceptable¹³.

- (19) *What happened?*
?*Vermutlich sang ein Lied der Mann
Presumably sang a song the man
"Presumably, the man sang a song"

The scrambling of indefinites is thus not triggered by a formal feature (otherwise, it would be hard to block (19)) but on grounds of interpretation. It is licensed by a scope principle such as "when α takes scope over β , then α c-commands β ". This means that the licensing of scrambling is, in a sense, not always purely formal in nature, but the scope principle makes no reference to information structure. It is thus in line with the general view on movement that we defend here.

The most straightforward implementation of this idea would have scrambling figure as a scope shifting operation (cf., e.g., Nakamura 2004). However, as in many other scrambling languages, scrambled structures such as (20b) are scope-ambiguous in German¹⁴. As such, this is not surprising, because scope is not the only factor licensing scrambling, but the observation suffices to establish that the constraint "when α takes scope over β , then α c-commands β " must be violable. But if it is, the question arises why sentences with normal word order are not scope-ambiguous (under 'normal' prosodic conditions, cf. Frey 1993).

¹² The function of wh-scrambling in these examples is not clear to me. It adds a certain "coordinative" flavour to the multiple question.

¹³ (19) becomes acceptable when the definite subject is contrastively focused, and therefore prosodically prominent, as discussed in the next section.

¹⁴ This holds for many speakers, but not for all, as Assmann & Heck (2009) point out.

- (20) a. dass mindestens einer fast jeden mag only $\exists\forall$
 that at least one.nom nearly everyone.acc likes
 "that at least one likes nearly everyone"
- b. dass mindestens einen fast jeder t mag $\exists\forall$ and $\forall\exists$
 that at least one.acc nearly everyone.nom likes
 "that nearly everyone likes at least one"

The standard (but insufficient) analysis of the scope pattern in (20) involves the idea that the scope principle can not only be satisfied by an appropriate relation between two categories α and β , but also by their traces. Aoun & Li (1993) and Frey (1993) propose that α can take scope over β if α c-commands β or its trace. In the scrambled structure (20b), the relative scope of *mindestens einen* 'at least one' can thus be computed with respect to both its actual position and the position of its trace, so that an ambiguity is predicted. In the absence of a scrambling trace, there is only one option for computing scope in (20a). Thus, the model seems to capture the generalization that two quantifiers appearing in 'normal' order show no scope ambiguities.

However, the surface string of (20a) is in principle compatible with the analysis (21), in which a subject scrambled over by an object is itself scrambled to the left of the preposed object, so that normal order is restored. The trace-related algorithm for scope computation yields an ambiguous result because of the presence of the traces, clearly an unwelcome result.

- (21) dass mindestens einer_i fast jeden_j $t_i t_j$ mag
 that at least one.nom nearly everyone.acc likes
 "that at least one likes nearly everyone"

In our discussion of scrambling triggered by definiteness, we saw that the economy of derivations can block analyses in which the surface effect of scrambling is later undone by a further movement. In contrast, it turns out to be quite difficult to block the unwanted structure (21). Note first that (20a) and (21) express different contents (the object can outscope the subject in (21) but not in (20a)), so that the creation of the chain $\langle \text{fast jeden}_j, t_j \rangle$ is justified. One could object to the derivation leading to (21) by claiming that the second scrambling step is not licensed. When the object first moves across the subject, this movement can be triggered by the scope principle, but it seems unclear why the subsequent movement of the subject restoring base order is warranted, because the subject is neither definite nor takes scope over the object (recall the opposite scope relation was necessary for motivating object scrambling).

This objection addresses an important issue that is, however, relevant for the ambiguous (20b) as well. While the derivation of (20b) is straightforward when the object takes scope over the subject, it is not obvious how the scrambling of the indefinite object is licensed when the subject takes wide scope. As we shall see below, a plausible solution can be found in the prosody-syntax interaction, but if a preference for placing the focus accent at the right edge allows scrambling in (20b), it is unclear why it would not do so in (21) as well.

Furthermore, the idea that (21) is blocked because the second scrambling step is illegal overlooks the fact that the operation restituting relative base order need not be A-scrambling. Wh-movement and topicalization might undo the effects of A-scrambling,

too, and if they do, the resulting structure again comes with no scope-ambiguity. Wh-movement and topicalization are licensed as feature driven operations. They can hardly be prevented from restoring base order after an object crossed a subject in the interest of getting wide scope.

Consider first scope in *wh*-questions. As in English, (22a) is not ambiguous but (22b) is, as expected under the Aoun & Li / Frey account, because scope computation relative to the position of the *wh*-phrase vs. relative to its trace makes a difference in (22b) but not in (22a). As (22c) shows, a quantified object *jeden Studenten* 'each student' scrambled across an *in situ* *wh*-subject *welcher Professor* 'which professor' can take scope over the subject, so that the (natural) reading "for each student x, which professor examines x" is available. But if the *wh*-subject could then be *wh*-moved across an object initially scrambled to the left of it, as in (22d), we would have to explain why scope becomes rigid again.

(22) Hier finden Sie aufgelistet "Here you can find it enlisted

- a. wer t jeden einladen soll
 who.nom everyone.acc invite should
 "who should invite everyone"
- b. wen jeder t einladen soll
 who.acc everyone.nom invite should
 "who everyone should invite"
- c. wann jeden Studenten welcher Professor t prüfen soll
 when each.acc student which.nom professor examine should
 "which professor should examine each student when"
- d. wer jeden t t einladen soll

The same is true for topicalization, as already noted in Krifka (1998). Without the rise-fall intonation discussed below, (23) is unambiguous although the movement of the subject to Spec,CP might start below the position of a scrambled object.

(23) Mindestens ein Kind hat jeden Tisch (t) ruiniert
 at least one child has each.acc table ruined
 "at least one child ruined every table"

Consider also pronominal binding. Recall that there is no weak crossover effect for many speakers of German because of an intermediate A-scrambling step in (24a) licensing the A-binding of the pronoun by *wen*. Binding relations are not destroyed by *wh*-movement: *sein* can be bound by *wer* in (24c) as in (24b) because the preposed DP "reconstructs" for the purposes of binding. Binding of *sein* by *wen* in (24d) should thus be okay, exploiting the new A-binding of (24a), and the ability of *wh*-movement to reconstruct, but it is not: when a derivation would restore the original relative order, the object cannot take scope over the subject and is hence unable to bind a pronoun in subject position. What is exemplified in (24) by topicalization out of indirect questions (possible in Southern German) is exemplified in (25) by topicalization within fronted *wh*-questions (also possible in South German) and by left dislocation (possible in all varieties of German) in (26).

(24) a. wen_i liebt t_i sein_i Sohn t_i
 who.acc loves his son?

- "who is loved by his son"
- b. ich weiss nicht wer_i seinen_i Sohn liebt
I know not who his son loves
- c. seinen_i Sohn weiss ich nicht wer_i t liebt
his.acc son know I not who.nom loves
"I do not know who loves his son"
- d. *sein_i Sohn weiss ich nicht wen_i t ,liebt
his.nom son know I know who.acc loves
"I do not know who is loved by his son"
- (25) a. [Seine_i Mutter]_k wer_i t_k liebt weiss ich nicht
his mother who.nom loves know I not
"I do not know who loves his mother"
- b. *Seine_i Mutter wen_i t liebt weiss ich nicht
his mother who.acc loves know I not
"I do not know who is loved by his mother"
- (26) a. Seinen_i Vater, wer_i würde den nicht küssen?
His.acc father, who would the.acc not kiss?
"who would not kiss his father?"
- b. *Sein_i Vater, wen_i würde der nicht küssen?
his.nom father, who.acc would the.nom not kiss?
"who would not be kissed by his father"

Let us briefly sum up what we have seen so far. Derivations in which β is scrambled across α in the interest of scope taking are problematic once α is later moved across β for other reasons, because structures in which two arguments appear in their normal order do not allow wide scope for the lower argument. How such derivations can be blocked is not obvious, however, because the scrambling of the lower argument seems motivated in terms of scope taking while the movement of the higher argument can be licensed in a variety of ways.

Given that one cannot block the second movement step restoring base order on independent grounds in (22) and (23), one might take recourse to simply banning any application of scrambling that eventually yields a string-vacuous result. A constraint against string-vacuous scrambling has been proposed by Hoji (1985) for Japanese and Haider & Rosengren (2003) for German.

The identification of what counts as a string vacuous movement is not a trivial task, however. Yatsushiro (1998) observed that scope is rigid in Japanese when both the dative and the accusative precede the subject in the order *dat* > *acc*, but not when they are inverted. The dative and the accusative have been scrambled to the left of the subject in such constellation, but their *relative* order is the one they had before movement. The restoration of this relative order is sufficient for eliminating the ambiguity potential, although it is clear that the two objects were scrambled. As Fanselow (2001) observes, facts are similar in German. (27) (his (37)) has the indirect and direct object scrambled in front of the subject, and the relative scope of the two object is fixed, apparently because their linear order is the one they have when they were merged. Likewise, the two objects have been scrambled in front of an adjunct clause in (28b) in order to

license parasitic gaps, but because they end up in base order, their scope is fixed in (28b) as it is in (28a).

- (27) dass jedem Kind mindestens ein Buch nur Hans vorlas
 that each.DAT child at least one.ACC book only Hans read
 'that only Hans read at least one book to nearly every child'
- (28) a. dass er einer Frau jeden Mann vorstellte only: $\exists\forall$
 that he a.DAT woman every.ACC man introduced
 b. dass er einer Frau jeden Mann ohne e e beschrieben zu haben vorstellte
 that he a woman every man without described to have introduced
 'that he introduced every man to some woman (without describing her to him)'

The objects in (27) and (28) have been scrambled -- What matters for scope is thus not whether scrambling has a linear effect at all (in which case a ban on string vacuous scrambling would be helpful), what matters rather is whether the relative order of two categories at the surface is identical to their base-generated order. This importance of base-generated order for quantifier scope has already been recognized by Strigin (1994) and Fanselow (2001).

As far as scope itself is concerned, we assume a principle that requires that α can take scope over β only if α is more 'prominent' than β . Prominence has several dimensions, and for α taking scope over β it appears to suffice that α outranks β on one of them. The first dimension of prominence is argument structure (as expressed in base order). The prominence principle thus implies directly that all sentences allow an interpretation in which scope corresponds to base order/the hierarchy in argument structure.

C-command and the precedence relation linked to it constitute a second dimension of prominence. It is only when this dimension is different from argument hierarchy that scope ambiguities arise. The idea pursued here¹⁵ is that the scope of a phrase α is fixed when α is merged. In particular, if α is merged to Γ , and if β is part of Γ not separated from α by a phase boundary¹⁶, either the scope statement ' $\alpha \supset \beta$ ' standing for " α takes scope over β " or ' $\beta \supset \alpha$ ' is created. These scope statement must be in line with prominence, however. If scope corresponds to argument structure, nothing needs to happen, if it does not, an ordering¹⁷ statement $\alpha > \beta$ or $\beta > \alpha$ must be added, too, when α is merged. This tight connection between the creation of a scope statement and the entering of a corresponding ordering statement is the central aspect of the analysis proposed here.

Our idea presupposes a modified version of the cyclic linearization theory of Fox & Pesetsky (2005). Cyclic linearization theory assumes that the merge operation itself leaves the order of the branches in the tree open. XPs are linearized by creating specific ordering statements (at least) at the end of specific spellout domains. Crucially, once an ordering statement has been entered, it cannot be changed later or abandoned in the course of the derivation. An ordering statement $\alpha > \beta$ does not, however, prevent α and

¹⁵ The model sketched here owes much to the proposal made by Takita (to appear), although there are considerable differences in detail.

¹⁶ XPs that are separated from α by a phase boundary Θ are in the scope of α if Θ is.

¹⁷ Perhaps, it would be more accurate to assume that a hierarchy statement on the c-command relations of the merged phrase is entered together with the scope statement. The strict link between c-command and linear precedence would then guarantee that scope is translated into linear order.

β from moving any further, as long as they eventually end up in accord with the ordering statement.

Scope inversion (a lower argument α taking scope over a higher argument β) presupposes a justification in terms of precedence¹⁸, and our proposal is that this justification comes in the form of an ordering statement $\alpha > \beta$ added already at the point of merger of β . Cyclic linearization theory predicts that this ordering statement cannot be changed later in the course of the derivation. When phases are spelt out, the linear order of α and β must be in line with the ordering statement. This linear order can be effected by a feature driven transformation (as in the case of movement to the subject position) or in terms of scrambling.

In general, we hypothesize that scrambling is triggered by ordering statements added in the derivation at some point. In the case of definite DPs, the ordering statement $\alpha > \beta$ is not entered because of the scope-prominence correlation, but is based on and optionally derived from a general constraint such as "definite DPs appear at the left edge of X" or "definite DPs precede X". Such a formulation is preferable to "definite > indefinite", because it allows definite XPs to scramble across other definite XPs, as required. A pertinent ordering statement $A > X$ in the sense of cyclic linearization theory may be entered whenever X has been merged/completed, with definite A not being separated from X by a phase boundary.

Before we conclude this section, a few remarks on inverse scope and base order are required. As was noted by, e.g., Krifka (1998), (20a) with normal order is unambiguous with 'normal' intonation, but ambiguous under appropriate prosodic conditions, *viz.* with a rise-fall contour (Krifka) or a double focus contour (Sauerland & Bott 2002). Similar facts hold in Hungarian (Gyuris 2004) and Japanese (Hara, to appear). Recall that scope is linked to prominence. Additional readings linked to special prosody can be captured if prosodic prominence is a third dimension relevant for scope taking, and if prosodic prominence is highest at the right edge of a fall-rise and a double focus structure. Taking up a proposal of Ishihara (2008), pertinent prosodic prominence statements may thus be an alternative way of justifying scope statements yielding inverse scope.

4. Prosodic optimization

We still have to explain why the scrambling of the indefinite object across the indefinite subject is possible at all in (20b), repeated here as (29), when the subject takes wide scope. While the ambiguity of (20b) has often been noted, the triggering of the scrambling is rarely discussed.

To my ears, the wellformedness of (20b) with subject wide-scope clearly presupposes that the subject is, again, prosodically more prominent than the object. Ideally, the object is somewhat deaccented, while the subject bears a full accent.

¹⁸ Scope statements in line with argument structure hierarchy are automatically justified, and do not have to be flanked by an ordering statement. Therefore, non-inverted scope is compatible with both linear arrangements of the two phrases involved.

(29) dass mindestens einen fast jeder t mag $\exists V$ and $\forall V$
 that at least one.acc nearly everyone.nom likes
 "that nearly everyone likes at least one"

If givenness/accessibility is involved at all in such examples, it characterizes the whole VP 'like at least someone' rather than the direct object, cf. (30).

(30) *Will the birding trip be successful?*
 Well, I am not sure, but I think
 dass einen Schreiadler fast jeder sehen wird
 that a spotted eagle nearly everyone see will
 "that nearly everyone will see a spotted eagle"

Given the prosodic conditions for the well-formedness of (29) and (30), it seems plausible to follow Zubizarreta (1998) (cf. also Krifka 1998 for German) and have the scrambling of the direct object be licensed by a prosodic property of the subject: prosodic prominence can be aligned with the right edge of the clause, the preverbal position. The alignment of prosodic prominence with the right edge also allows the scrambling of indefinite direct objects across definite but (contrastively) focused subjects.

This interpretation of the non scope-related scrambling of indefinites presupposes a cyclic concept of spellout, in which prosodic prominence is determined early enough for having an impact on movement. This, however, is necessary in any event, given that the presence of structural accent on a phrase may trigger syntactic intervention effects (Fanselow & Lenertová 2009).

Consider now (31). In this sentence, the direct object has scrambled across the indirect object. Both objects are indefinite and not discourse-given. *Sogar* 'even' is one of the discourse particles that attach to VP and TP but not to DP in German (see Büring & Hartmann 2001). In (31) it focuses the whole VP. The direct object *eine Käseschnitte* is *prosodically* more prominent than the indirect object (but the two objects do not differ in givenness), and it can but need not be scrambled to the left in the VP. We could explain this scrambling in terms of a constraint that requires adjacency (cf. Büring & Hartmann for a related idea) between focus particles and the focus exponent.

(31) *Imagine how strangely John behaved yesterday*
 Er hat (sogar) [eine Käseschnitte einem Hund gegeben]
 he has even a cheese sandwich a.dat dog given
 "he even gave a chesse sandwich to a dog"

Sogar does not even have to be present for the scrambling of the direct object across the indirect object being licensed. As Féry (2007) argues, there is a preference for a leftward placement of the most prominent accent (in addition, we should say, to the presence of a prominent position in the right-edge preverbal slot), and the scrambling in (31) may also serve the purpose of fulfilling the pertinent constraint. Note that *er* "he" is deaccented in (31) so that the scrambled direct object indeeds ends up as the leftmost accented phrase.

This analysis predicts that the A-scrambling of the direct object across an indirect object is not licensed when the subject is accented itself, as it is when it is a negative quantifier. As (32) shows, scrambling is indeed much worse in such a context. A well-formed answer to the context question must have the indirect object precede the direct object, as in normal word order. (32) would only be fine in a context in which the VP is given, as it is an answer to *Who gave a dog a cheese sandwich?*

- (32) *Did anything strange happen yesterday?*
 ?Niemand hat eine Käseschnitte einem Hund gegeben
 Nobody has a cheese sandwich a dog given
 "Nobody gave a cheese sandwich to a dog"

Prosodically motivated scrambling has also effects on movement to the left periphery. Fanselow & Lenetová (2009) have given an analysis of object fronting in VP (or TP) focus contexts as in (33) in terms of an unspecific edge feature of C that can, in principle, move any phrase to the left periphery of the clause. However, as mentioned, there is an accent-related intervention effect: wide focus interpretations are very difficult if the leftward movement of an XP crosses another accented category. as in (34). Cf. Féry (2007) for experimental studies confirming this intervention effect.

- (33) *What did you do on Sunday?*
 Ein Buch hab ich gelesen
 A book have I read
 "I read a book"
- (34) *Why are you so upset?*
 a. ?Eine Bank hat ein Student überfallen
 A bank has a student raided
 "A bank has been raided by a student"
 b. Ein Student hat eine Bank überfallen.
What did you do in the morning?
 c. Die Bücher hab ich ins Regal gestellt
 The books have I in-the shelf placed
 "I have put the books on the shelf"
 d. ??Ins Regal hab ich die Bücher gestellt

Given this intervention effect, it is somewhat surprising that the two objects typically do not block each other in wide focus movement contexts¹⁹. Consider (35) in this respect. All examples are acceptable in a context in which the element preceding the finite auxiliary is the narrow focus of the utterance. In a wide focus context, only (35a-c) are fine, however.

- (35) *What good things have you done this morning?*
 a. ich hab einer alten Frau Kohlen aus dem Keller getragen
 I have an.dat old woman coals out the cellar carried
 "I brought an old woman coals out of the cellar"
 b. Einer alten Frau hab ich Kohlen aus dem Keller getragen
 c. Kohlen hab ich einer alten Frau aus dem Keller getragen

¹⁹ Thanks to Daniel Büring for insisting that an answer be given to this question.

- d. ??Aus dem Keller hab ich einer alten Frau Kohlen getragen
- e. *Getragen hab ich einer alten Frau Kohlen aus dem Keller

The data in (35a,b) fall out of the proposal of Fanselow and Lenertová in a straightforward way: the subject is given and therefore deaccented, so there is no crossing of an accented XP in either of the two examples. The indirect and the direct objects are not given and therefore accented. Fronted verbs (35e) and fronted prepositional objects (35d) cross these accented XPs, which renders the wide focus interpretation impossible, as required.

The grammaticality of (35c) with a wide focus reading thus is somewhat surprising, because *Kohlen* seems to cross the accented direct object when it goes to Spec,CP. However, the availability of the A-scrambling of prominent XPs to the left allows an analysis of (35c) in which the direct object has been scrambled to the left of the indirect object before the former moves to Spec,CP. When it goes to Spec,CP from this intermediate position, *Kohlen* therefore crosses no accented XP. (35d) is compatible with this analysis under the well-motivated assumption that PP objects are prosodically integrated with the verb and prosodically less prominent than the direct object, so that their scrambling cannot be driven prosodically. Furthermore, it is always harder to scramble PP objects than DP-objects.

5. Remnant Movement and Differences in Information Structure

Up to now, we have identified three core cases of the licensing of A-scrambling: definiteness, scope, and prosodic prominence. Information structure is thus linked to scrambling, but only indirectly so.

Direct reference to information structure may seem inevitable in an analysis of remnant movement constructions (Müller 1998) such as (36); to the extent that the evacuation operation preceding remnant movement is A-scrambling, this would constitute indirect evidence for the relevance of information structure in a model of scrambling. However, the indirect pragmatic effects visible in remnant movement constructions are not confined to this construction, and cannot be attributed to A-scrambling. It is even plausible that no A-scrambling is involved at all in the derivation of (35).

- (36) Geküsst hat sie den Jungen nicht
 kissed has she the.acc boy not
 "She has not kissed the boy"

The standard analysis of (36) assumes that a VP rather than a verb is moved to Spec,CP. Incomplete category fronting arises because the direct object (and other categories) can be moved out of VP before VP goes to the left periphery. The evacuation operation preceding incomplete category fronting is scrambling, but extraposition may also contribute to the formation of remnant categories (see Müller 1998 for a discussion).

Such an analysis presupposes that *all* kinds of XPs can be scrambled out of the verb phrase before the latter is moved to Spec,CP, as illustrated in (37a-d). In particular, the extraction preceding remnant movement may affect phrases that have (incorrectly) been claimed to not undergo A-scrambling at all, as non-specific indefinites (37a,c),

question words (37b), and secondary predicates (37d)²⁰. Sabel (2005) considers (37c) ungrammatical, an assessment that at least does not hold for all speakers, because people usually find (37c) acceptable as an answer to (38).

- (37) a. Geküsst hat er wen
 Kissed has he someone
 "Kiss someone, he did"
- b. Geküsst hat er wen?²¹
 Kissed has he who?
 "Who has he kissed?"
- c. Geschickt wurde wem was!
 Sent was someone something
 "Something has been sent to someone"
- d. Gegessen hat er den Fisch roh.
 Eaten has he the.acc fish raw
 "He ate the fish raw"
- (38) Wurde wem was geschickt?
 Was someone something sent?
 "Has anyone been sent anything?"

A plausible view on (37) interprets these data as further evidence for the claim that A-scrambling is not restricted to material that is discourse anaphoric. This observation implies that scrambling can be involved in the derivation of remnant movement constructions, but it does not answer the question of what actually licenses A-scrambling in such a remnant movement context, because scrambling must be viewed as completely unrestricted here.

A pragmatic dimension for scrambling comes into the picture indirectly: Remnant movement typically presupposes a difference in the discourse status of the stranded and the fronted material. In (39), *gekauft* 'bought' may be given information, and *ein Buch* 'a book' may be the new information. Alternatively, the transfer of some book may also be presupposed in a context licensing (39), with *gekauft* being contrasted with borrowing, stealing, etc. (39) cannot, however, be used in a context with VP focus (e.g., as an answer to "what did Mary do?"), and not in a context in which the VP is given (e.g., as an answer to "who bought a book?"). The informational status of the parts of VP in remnant movement contexts has to differ. In that sense, the applicability of A-scrambling seems to depend on information structure in remnant movement contexts.

²⁰ Fanselow (2002) interpreted the observation that (virtually) all XPs can leave YPs before remnant movement as potential but not compelling evidence against the view that it is scrambling that feeds remnant movement (and he goes on to conclude on the basis of further considerations that (36) should not be analyzed as instanced of remnant movement at all).

²¹ (37b) is a perfect constituent question in a context which gives the speaker of (37b) enough justification to conclude that the person referred to as *er* has kissed someone without that information having been given explicitly. The sentence is then best when preceded by *und* 'and'. Interestingly, this construction is much less acceptable in the case of a multiple question such as (i).

(i) Und geschenkt hat er dann wem was?
 and presented has he then who.dat what
 "And then: who did he present what"

- (39) Gekauft hat Maria ein Buch
 Bought has Mary a book
 "Maria bought a book"

While the need for a pragmatic difference between the parts of a VP split up in a remnant movement context seems empirically well established²², it is quite difficult to implement this generalization in terms of a constraint on A-scrambling. Recall that definite DPs can be scrambled independently of any pragmatic consideration, this means, in particular, that a definite DP with pragmatic function F can leave a VP with the same pragmatic function. The same is true for pairs of indefinite DPs, as we saw above. The need for a pragmatic difference can therefore at most be expressed as a constraint on the later movement of the remnant itself.

The A-scrambling preceding remnant movement would be the only application of this process that is not driven formally. From a theoretical point of view, it thus is desirable to do without A-scrambling in the analysis of partial VP fronting constructions. Frey & Tappe (1993) had already pointed out that remnant movement is superfluous for 'partial' VP fronting in many situations if all complex verbal projections count as maximal projections (as sketched in (40)). (41) illustrates the effects of the movement of these maximal projections of the verb. (41b,c) are structures that would often be analysed as remnant VP movement, with the indirect object (41b) and the locative (41c) being extracted out of the largest VP before the latter was moved to Spec,CP in such an analysis, but the analysis of VP in (40) makes such extractions preceding VP-fronting superfluous.

- (40) dass niemand [_{VP} dem Kind [_{VP} im Hotel [_{VP} einen Schlüssel gegeben]]] hat
 that nobody the.dat child in-the hotel a.acc key given has
 "that nobody gave a key to the child in the hotel"
- (41) a. [_{VP} dem Kind im Hotel einen Schlüssel gegeben] hat niemand
 b. [_{VP} im Hotel einen Schlüssel gegeben] hat niemand dem Kind
 c. [_{VP} einen Schlüssel gegeben] hat niemand dem Kind im Hotel

Such an analysis is quite straightforward in the case of complex verb phrases, in particular if a grammatical analysis in terms a sequence of maximal projections of the same head V is replaced by a more sophisticated structure of the verbal projection in the sense of Larsonian shells (Larson 1988), or in a system in which different heads introduce different arguments and adjuncts. In this case, [_{FP} dem Kind [_{GP} im Hotel [_{HP}

²² The need for a pragmatic difference in remnant movement is voided only if the material left behind is deaccented, as illustrated by (ic) involving a deaccented indefinite object pronoun. Cf. Fanselow & Lenertová for an analysis of such facts.

- (i) *What have you done today?*
 a. ein Buch hab ich gelesen
 a book have I read
 "I have read a book"
 b. *gelesen hab ich ein Buch
 read have I a book
 c. gelesen hab ich was
 read have I something
 "I have read something"

einen Schlüssel gegeben]]] is composed of different maximal projections which can, in principle, not be prevented from moving to Spec,CP.

The replacement of remnant VP movement by the fronting of a complete verbal projections in the sense just outlined may appear somewhat counterintuitive only in the case of (42). Without the possibility of remnant movement, we have to assume that the direct object can be merged with a *maximal* projection of the verb.

- (42) [_{VP} Gezeigt] hab ich ihm was
Shown have I him something
"I have shown him something"

Fanselow (2002) and Haider & Rosengren (2003) argue that such a high linking of the direct object must, however, be possible, since it can precede oblique objects (43a) and modal adverbs (43b) in base order.

- (43) a. er hat den Mann des Mordes angeklagt
he has the.acc man the.gen murder accused
"he accused the man of murder"
b. er hat das Bier schnell getrunken
he has the beer quickly drunk
"he drank the beer quickly"

Remnant VP movement fed by A-scrambling can thus be dispensed with if objects can indeed be merged in a position higher than the complement slot of the verb. It would also be sufficient to assume that direct objects may optionally A-move to the position where they receive structural case (e.g. a specifier position of vP). Accusative DPs would thus behave like nominative DPs in German, for which it is a standard assumption that they can, but need not move to Spec,TP. (42) can then still be analysed as involving remnant movement, but the trace of *was* in [_{VP} t *gezeigt*] would be a trace of case-driven A-movement rather than a trace of A-scrambling.

Both views on the analysis of (42) allow us to conclude that A-scrambling does not feed remnant VP-movement²³. Consequently, we can confine the licensing of scrambling to formal features and the scope and prosody driven effects of ordering statements. A-Scrambling is thus not linked to information structure directly.

6. A few remarks on A-bar-Scrambling

Formally, the distinction between A-scrambling and A-bar-scrambling (Deprez 1989, Mahajan 1990) involves the syntactic nature of the landing site of movement: is it an A-position (linked to the assignment of Case, agreement features, or thematic roles) or not? It has furthermore been observed that the two scrambling types differ in terms of

²³ Fanselow (2002) presents some empirical arguments involving missing island effects and constraints on remnant movement which are meant to show that remnant VP movement fed by A-scrambling cannot exist. We believe that the difficulties for remnant movement mentioned in that paper can be circumvented in one way or the other, so that there are no strong empirical reasons for preferring or rejecting remnant VP movement fed by A-scrambling, but the latter option allows a restrictive theory of scrambling, as shown above. Note that, as Fanselow (2002) points out, the issue is not whether remnant movement exists or not, but whether it can be fed by scrambling. The assumption of remnant VP movement fed by head movement and A-movement to Spec,TP cannot be avoided.

their pragmatic status. A-Scrambling has been linked to the displacement of given material (the severe limitations of this view have been discussed above), while A-bar-scrambling figures in the marking of contrastive focus and contrastive topics. A particularly interesting view of A-bar-Scrambling has been put forth by Neeleman & de Koot (2008), who argue that A-bar movement fixes the pragmatic status of the category adjoined to (as comment, or background) rather than of the category that has moved.

In the following, we will show that not all instances of A-bar-scrambling show this strong link to information structure in German. In this sense, German A-bar-scrambling is compatible with our general perspective on movement, viz. that it is neither triggered by nor directly tied to information structure features. Let us first consider long distance scrambling. Long distance scrambling must be A-bar-scrambling because A-movement cannot leave a finite clause.

The examples in (44a-b)²⁴ show that A-bar-scrambling can involve *partial* fronting if distinctions of information structure are at stake, just like A-bar movement to Spec,CP (44c). The context question implies that the focus of (44) is the complete VP (or even the TP) of the complement clause, yet only the direct object of the complement clause has undergone long distance scrambling into the matrix VP. The movement of this object thus cannot have been triggered by a focus feature, because the VP and not the DP is in focus (cf. Fanselow & Lenertová 2009 for more details concerning (44c), which apply to (44a-b) as well). Both definite and non-specific indefinite objects can be moved in this way. (44b) shows that it would not help to reanalyze (44a) as involving full topic fronting rather than partial focus fronting. After all, 'die Prinzessin' is NOT the topic of (44a).

- (44) *What did the brave knight demand after he had killed the dragon?*
- a. Er hat die Prinzessin verlangt dass er heiraten darf
 he has the princess demanded that he marry may
 "he demanded that he be allowed to marry the princess"
 - b. Er hat ne Prinzessin verlangt dass er heiraten darf
 he has a princess demanded that he marry may
 "he demanded that he may marry a princess"
 - c. Die Prinzessin hat er verlangt dass er heiraten darf

This type of A-bar scrambling is subject to conditions similar to the ones identified for movement to Spec,CP in Fanselow & Lenertová (2009). E.g., the fronting of the direct object yields best results when the direct object is the only accented element (as in (44)). The moving category can hardly cross a further accented element, cf. (45).

²⁴ Examples such as (44) are also fine with matrix verbs such as *sagen* 'say' that disallow animate direct objects of their own. (44a-b) thus cannot be explained away by the assumption that *die Prinzessin* figures (at least temporarily) as the direct object of the matrix clause. Speakers often reject (44a-b) because they apparently do not accept long distance scrambling at all, i.e., they reject these sentences even with a narrow focus on *die Prinzessin* as triggered by a context question such as *who did he demand that he may marry?* Such judgments therefore do not affect the validity of our claims.

- (45) *What did the brave knight demand after he had killed the dragon?*
 *Er hat die Prinzessin verlangt dass nur sein Bruder küssen darf
 he has the princess demanded that only his brother kiss may
 "he demanded that only his brother be allowed to kiss the princess"

For (44), it is tempting to postulate a functional head position F above TP with an unspecific edge feature that attracts XPs to the position of α independent of their discourse status, as shown in (46). If (46) is plausible for German, verb movement to second position in main clauses should be reinterpreted as movement to F, so that movement to the left periphery in main and embedded clauses targets the same position.

- (46) [_{CP} COMP [_{FP} α F [_{TP} subject VP T]]]

The only disadvantage of this view is that it fails to capture the complementarity of verb second movement and the presence of an overt complementizer in German. However, this complementarity should not follow on principled grounds in any event, because it holds in Dutch and German only, but in other verb second languages as as Danish, Icelandic, Kashmiri, Norwegian, Swedish, and Yiddish.

Under an analysis such as (46), (44) would not necessarily instantiate A-bar-scrambling in a strict sense but standard movement to the left periphery. This may be in line with the observation that the fronting in (44) does not come with the discourse effects on the target of movement identified by Neeleman & de Koot (2008) for Dutch.

We can, however, observe partial fronting (in the sense of discourse categories) in apparent A-bar-scrambling contexts even when the fronted element is not part of a wide focus (as it is in (44)), but also when it is part of a contrastive topic/focus. The context sentence in (47) introduces praying as a topic, the reply has bible reading as a contrastive topic, which is split because the direct object alone has been fronted. (47) is acceptable only with a rising accent *on in der Bibel*.

- (47) *Do you know when one has to pray? No, that I don't know, but*
 ich denke dass in der Bibel jeder vor Sonnenaufgang lesen muss
 I think that in the bible everyone before sunrise read must
 "I think that everyone must read in the bible before sunrise"

In terms of prosody but not in terms the pragmatic function of the XP that has been fronted, (47) resembles A-bar-scrambling quite closely. If (47) is an instance of A-bar-scrambling (rather than a further case of movement to Spec,FP) it would not be compatible with the analysis offered by Neeleman & de Koot (2008), because the scrambling does not identify the discourse status of the category adjoined to: the latter contains the focus (*vor Sonnenaufgang*), given material (*jeder*) and part of the contrastive topic (*lesen*). On the basis of the available evidence, it is however hard to exclude the Spec,FP analysis.

7. Conclusions

We have reviewed several constructions in German that cover the range of possible instances of scrambling. We have shown that A-scrambling is a formal operation not

directly linked to discourse status, provided that we do not need to use A-scrambling in the analysis of remnant VP fronting. In A-bar-scrambling structures, categories with a single discourse function may be split up, which shows that the operation is not driven by features related to information structure. Even if the A-bar-scrambling has to be replaced by movement to the specifier position of a functional head below Comp, we can maintain the conclusion that German has no movement operations that are triggered or licensed by distinctions of information structure.

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