Opaque Intervention

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Abstract

Arguments differ in their capacities to function as antecedents for certain associates (e.g., floating quantifiers and parasitic gaps in German). These differences cannot always be read off the argument's surface position but are sometimes opaque. We argue that such cases of opaque syntactic intervention can be derived in a strictly derivational fashion. Concretely, we assume that the capacities of an argument to function as an antecedent can be traced back to an earlier stage of the derivation where the antecedent-associate relation is established in a transparent manner. Later stages of the derivation may alter the configuration but not the associations established before. Within this derivational approach, there is no need for representational devices such as copies/traces or constraints on representations like the MLC.

1. Introduction and Overview

The purpose of this paper is to account for cases of opaque intervention[1] as they arise with binding of parasitic gaps (PGs) and association with floating quantifiers (FQs) in German. In what follows, we subsume FQs and PGs under the term "associate"; the argument that establishes a relation with the associate is called its "antecedent". Our central claim is that an argument's capacity to function as the antecedent of an associate cannot always be read off the argument's surface position but is often opaque. To begin with, one can observe that the relations under discussion (FQ-association, PG-binding) are

* For helpful comments and questions we would like to thank the audiences at Generative Grammatik im Süden (Universität Stuttgart, May 2010) and at the GLOW workshop 'Empty Categories in Syntax' (Universität Potsdam, March 2012) as well as the participants of the Colloquium on Syntax and Morphology at the Universität of Leipzig. Particular thanks go to Klaus Abels, Petr Biskup, Sandra Döring, Gisbert Fanselow, Eric Fuss, Doreen Georgi, Stefan Keine, Ivona Kučerová, Denisa Lenertová, Gereon Müller, Martin Salzmann, Florian Schäfer, Radek Šimík, Volker Struckmeier, Philipp Weisser, and Malte Zimmermann.

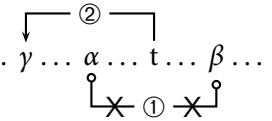
[1] For now, the notion of intervention can be understood in a pre-theoretical sense; see sections 4 and 5 for qualification.

Rule Interaction in Grammar, 463–509
Fabian Heck & Anke Assmann (eds.)
Linguistische Arbeits Berichte 90, Universität Leipzig 2013

subject to an intervention restriction: An antecedent α cannot associate with β if there is another potential antecedent γ that intervenes on the surface between α and β. Crucially, however, sometimes association between α and β is impossible although no γ intervenes. And sometimes, there is an intervening γ, and yet association between α and β is not disrupted. These cases, which are at variance with the surface intervention effect observed elsewhere, are, we claim, to be analyzed as instances of opacity. Before moving on, we would like to briefly recall the notion of opacity familiar from generative phonology (Chomsky 1951, Kiparsky 1976, Kenstowicz and Kisseberth 1979).

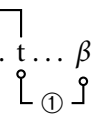
In derivational phonology, there are two types of opaque interaction between two rules R_1 and R_2: counter-feeding and counterbleeding. In the first type, application of R_1 provides the application context for R_2 but the surface form ψ indicates that R_2 has not applied; thus, application of R_1 does not feed application of R_2, which is usually explained by assuming that R_2 applies before R_1. As a consequence, the application context for R_2 created by R_1 comes about too late to feed R_2. Similarly, in the second type, application of R_1 destroys the application context for R_2, yet ψ suggests that R_2 has applied nevertheless; thus application of R_1 does not bleed application of R_2. Again, the explanation consists of assuming that R_2 applies before R_1, thus R_1 does not have a chance to destroy the application context for R_2. In the first case, ψ does not transparently indicate why R_2 has not applied; in the second case, ψ does not show in a transparent manner why R_2 has in fact applied. In this sense, ψ (or the rule interaction deriving it) is opaque.

Syntactic association that does not obey surface intervention can be understood in terms of opacity, too. Concretely, if association between α and β is impossible although there is no intervening γ on the surface, then, we claim, this is because there is an earlier derivational stage where γ does intervene between α and β (blocking association between them) but later moves away and thus no longer intervenes on the surface (counter-feeding). This is schematically illustrated in (1), with the order of steps indicated by the number labels.[2]

(1) 

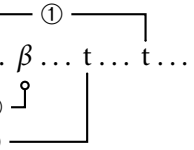
[2] Here and in what follows, traces are indicated for expository reasons only. Thus, we will not take a firm stand on whether movement leaves a copy behind, a trace, or nothing at all.

If association between α and β is possible although some γ intervenes on the surface, then there must be a previous stage of the derivation where α occupies a position such that γ does not intervene between α and β (allowing association between them). In a later step, α moves across γ, thereby giving the surface impression of intervention (counter-bleeding), see (2).

(2) 

As noted before, the relation between an antecedent and its associate is not always opaque. There are also well-behaved cases of association without intervention (feeding) and cases where association is blocked by surface intervention (bleeding). The question then is what determines whether an antecedent relates (or does not relate) to an associate in an opaque or in a transparent way. It turns out that there are asymmetries between arguments with respect to whether they can act as antecedent for an associate in the presence of a particular co-argument (leading to feeding and counter-bleeding) or whether they cannot (resulting in bleeding and counter-feeding). Descriptively, of those arguments that (ultimately) precede the associate, it is always the one that has been merged *lowest* that becomes its antecedent.

The analysis that we propose follows the same general pattern for both types of association. Simplifying somewhat, we propose that the associate is merged to a fixed position to the left of its potential antecedents. Association requires that the antecedent must move to the left of the associate (to c-command it). The surface true associations (involving feeding or bleeding) can then be traced back (a) to the order in which the arguments (the potential antecedents α, γ etc.) are merged and (b) to the idea that their relative order is preserved if they move together across the associate. As a consequence, (a) and (b) interact to the effect that of the arguments that move across the associate β the one that has been merged lowest moves first (see α in (3)). It then immediately establishes association and thus becomes the antecedent, blocking association of any other argument that moves later (such as γ in (3)).

(3) 

The non-surface true associations (involving counter-feeding and counter-bleeding) are accounted for by further movement of the antecedent, which changes the relative order of the potential antecedents, thereby rendering feeding and bleeding opaque. These are the movements indicated in (1) and (2).

A desideratum of a derivational account of opacity is that the order of rules is intrinsic, that is, it follows from independent properties of the system. It will be shown that the rule order involved in the present study is (almost) completely determined by independently motivated principles of the derivational architecture (such as strict cyclicity or the requirement that feature checking applies as early as possible).

We proceed as follows. In section 2, we illustrate the opacity effects that arise with FQ-association (2.1) and PG-binding (2.2). We make explicit the theoretical background (section 3) and then show how the opacity effects observed in section 2 can be made to follow for both empirical domains under investigation (sections 4.1–4.2). Section 5.1 discusses some complications that arise with *wh*-in-situ. In section 5.2, we explain why the findings presented in the present study are at variance with certain diagnostics that have been argued to distinguish verb classes (in German) with respect to the underlying word orders they project. Section 5.3 illustrates that the findings provide an argument against the idea that scrambling is to be derived by base generation. Finally, we show that the analysis suggests that the theory of tucking-in is not well-suited to account for order preservation effects in a strictly derivational framework (section 5.4). Section 6 provides a conclusion.

2. Observations

2.1. Floating Quantifiers

German possesses a FQ *alles* "all", which obligatorily associates with a *wh*-phrase (Pafel 1991, Reis 1992).[3] This is illustrated in (4-a-c), where association is represented by co-indexation. In (4-a), *alles* associates with a subject *wh*-phrase (marked by nominative case), in (4-b,c) the associates of *alles* are a direct and an indirect object (marked by accusative and dative), respectively.

[3] Giusti (1991) argues that *alles* combining with *wh*-phrases in German must be distinguished from other uses of *alles*.

(4) a. Wer_2 hat euch alles_2 geholfen?
who$_{nom}$ has you all helped
"Who all helped you?"
b. Wen_2 habt ihr alles_2 kennengelernt?
who$_{acc}$ have you all met
"Who all did you meet?"
c. Wem_2 habt ihr alles_2 geholfen?
who$_{dat}$ have you all helped
"Who all did you help?"

The grammatical function of the associate has no impact on the morphology of *alles*. Thus, *alles* is morphologically invariant. In this respect, it differs from its kin, the FQ *all(es)* "all" (and also from the FQ *beide* "both") in German. Syntactically and semantically, *alles* and *all(es)* must also be distinguished (see in particular Reis 1992). In what follows, we focus on invariant *alles*.[4]

If a subject *wh*-phrase associates with floating *alles*, then no indefinite object, be it indirect or direct, may intervene between the *wh*-phrase and the FQ, see (5-a,b). Also, an indirect object *wh*-phrase cannot be separated from *alles* associated with it by an indefinite direct object (5-c).

(5) a. *Wer_1 hat einem Professor alles_1 gratuliert?
who$_{nom}$ has a professor$_{dat}$ all congratulated
"Who all congratulated a professor?"
b. *Wer_1 hat einen Professor alles_1 vergöttert?
who$_{nom}$ has a professor$_{acc}$ all idolized
"Who all idolized a professor?"
c. *Wem_1 hat sie einen Professor alles_1 vorgestellt?
who$_{dat}$ has she a professor$_{acc}$ all introduced
"Who all did she introduce a professor to?"

It thus seems as if an indefinite noun phrase that intervenes at the surface between a *wh*-phrase and a FQ associated with the latter disrupts the association between the two.

However, if the *wh*-phrase that associates with floating *alles* is a direct or an indirect object, then an indefinite subject *can* intervene between the *wh*-

[4] Discussions of variant *all(es)* (sometimes with reference to scrambling) can be found in Link (1974), Reis and Vater (1980), Giusti (1990), Haider (1993, 214-215), Merchant (1996). Floating *beide* is addressed in Reis and Vater (1980).

phrase and the FQ, see (6-a,b). Similarly, a direct object *wh*-phrase can be separated from a FQ associated with it by an indefinite indirect object (6-c).

(6) a. Wem$_1$ hat ein Professor alles$_1$ geholfen?
who$_{dat}$ has a professor$_{nom}$ all helped
"Who all did a professor help?"
b. Wen$_1$ hat ein Professor alles$_1$ beleidigt?
who$_{acc}$ has a professor$_{nom}$ all insulted
"Who all did a professor insult?"
c. Wen$_1$ hat sie einem Professor alles$_1$ vorgestellt?
who$_{acc}$ has she a professor$_{dat}$ all introduced
"Who all did she introduce to a professor?"

Against the background of the intervention facts in (5), this state of affairs can be interpreted as an instance of counter-bleeding: although the surface intervention of the indefinite is expected to bleed association of the *wh*-phrase with the FQ (as it does in (5)), no such intervention effect occurs in (6).[5]

The generalization emerging from the asymmetries between (5) and (6) can be stated as follows.

(7) *Intervention Asymmetry for FQs:*
A *wh*-phrase α and a FQ β can associate in the presence of an (indefinite) co-argument γ that precedes β if and only if γ is higher on the hierarchy $nom > dat > acc$ than α.

Finally, it can be observed that the intervention asymmetries vanish if the intervening argument is definite (and not indefinite): a definite argument can

[5] Beck (1997, 41-46) is the only discussion of intervention effects with indefinites and invariant *alles* we are aware of. There, it is proposed that indefinites interpreted as narrow scope existentials block LF-movement of *alles* (assumed to be required for semantic interpretation, cf. footnote 26) while those interpreted as generic or specific (possibly existentials with wide scope) do not. Against this background, the examples in (6) should necessarily involve a generic or specific reading of the indefinites, which they do not in our view; the examples in (5) should become grammatical if a generic or specific reading of the indefinites is forced (in which case we could analyze them as lacking [INDEF], cf. section 4.1). Interestingly, all of Beck's (1997) grammatical examples that exhibit surface intervention and that, according to Beck (1997), involve a generic or specific reading of the indefinite instantiate the type of configuration that is analyzed as counter-bleeding in the present approach. Finally, note that the more recent theory of intervention effects proposed in Beck (2006) no longer covers invariant floating *alles*, thus calling for an alternative account anyway.

freely intervene between a *wh*-phrase and a FQ associated with it, no matter what the grammatical functions of the *wh*-phrase and the intervener are. Obviously, definite noun phrases are not the right type of element to bleed association between a *wh*-phrase and a FQ. This is illustrated in (8), which provides minimal pairs with respect to (5).

(8) a. Wer_1 hat dem Professor alles_1 gratuliert?
who$_{nom}$ has the professor$_{dat}$ all congratulated
"Who all congratulated the professor?"

b. Wer_1 hat den Professor alles_1 vergöttert?
who$_{nom}$ has the professor$_{acc}$ all idolized
"Who all idolized the professor?"

c. Wem hat sie den Professor alles vorgestellt?
who$_{dat}$ has she the professor$_{acc}$ all introduced
"Who all did she introduce the professor to?"

In what follows, we turn to asymmetries that arise with PG-binding in German. It will turn out that these are very similar to the asymmetries discussed in the context of FQ-association.

2.2. Parasitic Gaps

Generally, PGs must be bound by an element in A-bar position (Taraldsen 1981, Engdahl 1983, Chomsky 1982).[6] In addition to that, German PGs exhibit an interesting asymmetry, similar to the asymmetries that show up with FQs, as discussed in section 2.1.

To begin with, if an indirect object *wh*-phrase binds a PG, then no direct object must intervene between the PG and the *wh*-phrase (9-a). Thus, a direct object that intervenes at the surface between a PG and its binder appears to disrupt the binding relation between the two. In contrast, if the PG is bound by a direct object *wh*-phrase, then an indirect object may intervene between the *wh*-phrase and the PG bound by it (9-b) without causing ungrammaticality.[7]

[6] On PGs bound by *wh*-moved categories in German, see Bayer (1984), Fanselow (1993), and Lutz (2001).

[7] Asymmetries with a subject binding a PG cannot be observed for independent reasons: due to the anti-c-command condition on PGs (Engdahl 1983, Chomsky 1982, or Safir 1987), subjects can hardly act as binders for PGs.

(9) a. *Wem$_2$ hat Fritz das Buch [anstatt PG$_2$ zu helfen] geklaut?
who$_{dat}$ has Fritz the book$_{acc}$ instead to help stolen
"Who did Fritz steal the book from instead of helping him?"

b. Was$_2$ hat Fritz der Maria [anstatt PG$_2$ wegzuwerfen] zu essen angeboten?
what$_{acc}$ has Fritz the Maria$_{dat}$ instead away to throw to eat offered
"What did Fritz offer Maria to eat instead of throwing it away?"

Speaking in terms of surface intervention and opacity, intervention of a direct object bleeds the binding relation between an indirect object *wh*-phrase and a P; intervention by an indirect object, however, does not bleed binding of a PG by a direct object *wh*-phrase: again, an instance of counter-bleeding.

As first argued by Felix (1985), scrambled elements in German can also bind PGs (see also Webelhuth 1992: 175-176, Mahajan 1990, Grewendorf and Sabel 1999).[8] In (10), for instance, the direct object has scrambled across the adjunct clause, thereby binding a PG within the adjunct.

(10) Hans hat Maria$_2$ [ohne PG$_2$ anzuschauen] t$_2$ geküsst.
Hans has Maria$_{acc}$ without at to look kissed
"Hans kissed Maria without looking at her."

As has been noted at various occasions (Mahajan 1990: 60, Fanselow 1993: 35, Müller 1995: 232, 261-264; also den Dikken and Mulder 1991 for Dutch), if a PG is bound by a scrambled indirect object, then the direct object must not intervene between the PG and its binder, see (11-a). What has gone unnoticed in the literature so far is the fact that binding of a PG by a scrambled indirect object is impossible even if the direct object has scrambled to a position where it does *not* intervene between the indirect object and the PG, see (11-b).

[8] Independently, the same claim was made for Dutch at about the same time, see Bennis and Hoekstra (1984). The question as to whether scrambled categories can bind PGs is still under debate. Huybregts and van Riemsdijk (1985) argue against binding of PGs by scrambling in Dutch; see also Fanselow (1993, 2001), Haider (1997), Kathol (2001), and Haider and Rosengren (2003) on German.

(11) a. *wenn jemand der Anette$_2$ das Buch [ohne PG$_2$ zu
if someone the Anette$_{dat}$ the book$_{acc}$ without to
vertrauen] ausleiht
trust lends
"if someone lends Anette the book without trusting her"

b. *wenn jemand das Buch der Anette$_2$ [ohne PG$_2$ zu
if someone the book$_{acc}$ the Anette$_{dat}$ without to
vertrauen] ausleiht
trust lends

In its surface position, the indirect object in (11-b) is expected to be able to bind the PG because the direct object does not intervene. But this is not the case. Thus, (11-b) instantiates counter-feeding.

Unsurprisingly, if a scrambled direct object binds a PG, then it is possible to scramble an indirect object to a position to the left of the direct object, where it does not intervene between the binder and the PG (12-a). (The same result obtains if the indirect object scrambles to a position to the left of the subject, example omitted.) More interestingly, the indirect object may be even scrambled to a position where it intervenes between the binder and the PG on the surface without disrupting the binding relation, see (12-b).[9] The same state of affairs holds if scrambling of a PG-binding object targets a position to the left of the subject (as already noted in Fanselow 1993), see (12-c) (example with a dative object omitted). Thus (12-b,c) can be understood as instantiating the pattern of counter-bleeding, again bearing strong similarity to what was observed with respect to FQs in section 2.1.

(12) a. dass Hans der Maria das Buch$_2$ [ohne PG$_2$ durchzulesen]
that Hans the Maria$_{dat}$ the book$_{acc}$ without through to read
zurückgibt
back gives
"that Hans returns the book to Maria without reading it through"

b. dass Hans das Buch$_2$ der Maria [ohne PG$_2$ durchzulesen]
that Hans the book$_{acc}$ the Maria$_{dat}$ without through to read
zurückgibt
back gives

[9] Judgments are not uniform: while Lee and Santorini (1994, 267) agree with our view, Müller and Sternefeld (1994, 375) and Müller (1995, 263) judge similar examples as ungrammatical.

c. dass das Buch$_2$ jemand [ohne PG$_2$ durchzulesen]
that the book$_{acc}$ someone$_{nom}$ without through to read
weggeworfen hat
away thrown has
"that someone threw the book away without reading it"

To summarize, the facts from PG-binding in German may be captured by the following generalization:

(13) *Intervention Asymmetry for PGs:*
A noun phrase α can bind a PG β in the presence of a co-argument γ that precedes β if and only if γ is higher on the hierarchy $nom > dat > acc$ than α.

Again, (13) is almost identical to the generalization in (7), suggesting a unified account.

There are two environments where scrambled categories have been argued to not act as interveners for the binding relation between a scrambled co-argument and a PG in German. First, as (9-b) already suggests and as noted by Fanselow (1993, 35), subjects never act as interveners for PG-binding. This is also the case when the binder has undergone scrambling instead of *wh*-movement (12-c,d). Second, as again noted by Fanselow (1993) (see also Kathol 2001: 329) if the intervening element binds a PG itself, then it does not interfere with the PG-binding relation of a co-argument to its left (14). Both observations will be accounted for by the analysis in section 4.2.[10]

(14) wenn jemand der Anette$_2$ das Buch$_3$ [anstatt PG$_2$ PG$_3$ zu
if someone the Anette$_{dat}$ the book$_{acc}$ instead to
schenken] nur leiht
give only borrows
"if one only borrows Anette the book instead of giving it to her as a present"

[10] It has been argued by den Dikken and Mulder (1991) for Dutch that the intervention asymmetry for PGs does not hold if two weak object pronouns precede an adjunct clause containing the PG. Müller (1995, 263), who discusses den Dikken and Mulder (1991) in another context, seems to presuppose that the same facts hold for German. Our judgment is that clauses with two weak object pronouns are on a par with examples involving full NPs, i.e., the intervention asymmetry is also true for cases with two weak object pronouns.

2.3. Interim Summary

To briefly summarize the findings presented so far, association of an argument α with the FQ *alles* in German is blocked if there is an (indefinite) co-argument γ that intervenes between α and the FQ such that γ is lower on the case hierarchy $nom > dat > acc$ than α. Moreover, similar facts obtain with binding of PGs in German. Abstracting away from certain particularities, the observations from these two domains can be captured by a unified version of the generalizations from sections 2.1–2.2, which is given in (15).

(15) *Generalized Intervention Asymmetry:*
An antecedent α can establish a relation with an associate β in the presence of a co-argument γ that precedes β if and only if γ is higher on the hierarchy $nom > dat > acc$ than α.

The fact that there is a generalization that captures both phenomena under investigation suggests a unified account. Such an account will be presented in section 4. Before we turn to the analysis, however, we must prepare the ground by laying out the theoretical assumptions.

3. Theoretical Background

3.1. EFs and the ISC

The analysis to be presented in section 4 is couched in the probe-goal framework of Chomsky (2000, 2001, 2007). In this framework, the two central operations that form syntactic dependencies are Agree and Move. We adopt the standard view that Agree between two features, the probe and the goal, takes place under c-command (but cf. footnote 27 for qualification). Move is assumed to be subject to the (strict version of the) Phase Impenetrability Condition (PIC, Chomsky 2000), see (16).[11]

(16) *Phase Impenetrability Condition:*
The domain of a head H of a phase HP is not accessible to operations outside of HP. Only H and its edge domain are accessible.

[11] Whether Agree is also subject to the PIC is still under debate. Chomsky (2000, 2001) assumes that it is, Bošković (2007) and Müller (2010, 2011) assume that it is not. Since the present proposal draws on the theory of edge feature insertion proposed by Müller (2010, 2011), we are committed to adopt the latter view.

Chomsky (2000, 2001) assumes that only CP and vP are phases. Various works have criticized the conceptual basis of this assumption (Bošković 2002, Boeckx and Grohmann 2007, Epstein 2007, Richards 2011). Here, we depart from it, instead pursuing the idea that every phrase qualifies as a locality domain in the sense of (16) (cf. Koster 1978, van Riemsdijk 1978, Müller 2004, 2010, 2011). In other words: Every phrase is a phase and is therefore subject to (16). On the conceptual side, this gets around the question as to why CP and vP should be special as opposed to other phrasal categories. As a consequence, movement leaving any phrase β must make an intermediate stop at the edge domain of β (see also Sportiche 1989, Takahashi 1994, Boeckx 2003); extraction out of β in one fell swoop is blocked by the PIC.[12]

The notion of edge domain that we presuppose in the present study is given in (17) (where α is a genuine complement of a head β if and only if α and β are sisters and β projects a specifier).

(17) *Edge Domain:*
α is in the edge domain of a head β if and only if α is not a genuine complement of β.

Standardly, the probe-goal theory incorporates the idea that all movement is feature-driven. It must then be ensured that there is a feature that drives movement to the phase edge, as is indirectly required by the PIC. To this end, Chomsky (2007, 2008) proposes that phase heads can have edge features (EFs) inserted on them (cf. already Chomsky 2001: 34). An EF is a property of a head H, indicating that H can merge with some category, potentially creating a specifier of H. We adopt this proposal.

Following Müller (2010, 2011), we assume that EF-insertion is constrained: an EF can be inserted on a head H only if H is still active, that is, if H bears at least one other feature that needs to be discharged by Merge or Agree.[13] This is called the Edge Feature Condition (EFC) in Müller (2010, 2011), where it

[12] Note that for the account presented in section 4 to effectively work, it would be sufficient to assume that vP (and CP) are phasal categories: The only intermediate landing site crucially invoked there for the purpose of deriving opacity effects is, in fact, the edge of vP. By sticking to the main text assumption, we merely keep as close to the theory of edge feature insertion proposed by Müller (2010, 2011), which the analysis in section 4 makes use of.

[13] Further constraints on the insertion of EFs are necessary. For instance, it must be ensured that no EF is inserted and attracts a *wh*-phrase that is supposed to remain in-situ. We will not discuss this issue here (but see, e.g., Müller 2011; for theories that avoid the problem but

is also shown that it leads to what is dubbed the Intermediate Step Corollary (ISC), see (18).

(18) *Intermediate Step Corollary:*
Intermediate movement steps to specifiers of X (triggered by EFs) must take place before the final specifier is merged within XP.

To see why (18) holds, consider the following scenario. Suppose the derivation has constructed a VP containing a *wh*-phrase that is ultimately to end up in the specifier of an interrogative C-head. Assume that the *wh*-phrase already occupies the edge domain of VP. In the next step, a v-head is merged with VP. The *wh*-phrase must now move to Specv in order to remain PIC-accessible for further operations. By assumption, such intermediate movement is triggered by an EF. An EF can only be inserted on v as long as v is active. Suppose that v introduces an external argument, and that it therefore bears yet another feature, namely a subcategorization feature that is to be discharged by merging the external argument. Consequently, v remains active as long as the external argument has not been merged. It follows that if an EF is to be inserted on v, this must happen before the external argument is introduced.[14]

Suppose next that the features on a head H that trigger Merge are organized on a stack, and that only the element on the top of the stack is accessible. Once the topmost element is discharged, it is removed, and the second topmost element becomes accessible. If EFs are always inserted on top of this stack, then they must be discharged before any other feature on the stack can be accessed (realizing the last-in-first-out property typical of stacks). Thus, the *wh*-phrase in the scenario above must discharge the inserted EF before the external argument can discharge v's subcategorization feature. Provided the Strict Cycle Condition (SCC, Chomsky 1973), a version of which is (19), this

depart from the present approach in that they do not rely on features to derive successive-cyclic movement see, e.g., Takahashi 1994, Bošković 2002, Heck and Müller 2003, Stroik 2009).

[14] Usually, v is assumed to bear ϕ/case features, too. These could equally serve to keep v active, even after the external argument is merged. Thus, insertion of an EF could, in principle, apply after introduction of the external argument. Ultimately, however, this option fails: checking of v's ϕ/case features after the external argument was merged violates strict cyclicity (19) because the creation of a specifier extends the current phrase marker (see Müller 2010, 2011). One may wonder how an EF can be inserted on a head H that does not bear a subcategorization feature that keeps H active. We will not go into this matter here, but see Müller (2011, 179-185).

means that the *wh*-phrase targets an inner specifier of vP while the external argument is merged to the outer Specv.

(19) *Strict Cycle Condition:*
If Σ is the root of the current phrase marker, then no operation can take place exclusively within Ω, where Ω is dominated by Σ.

(20) illustrates the derivation sketched above from the point on where v has been merged. The horizontal arrays to the right of the structures symbolize the status of v's stack at each point. The bottom of the stack is marked by #. [*u*D] stands for v's subcategorization feature.

(20) a. $[_{vP}$ v $[_{VP} \ldots$ *wh* $\ldots]\ ]$ | *u*D # | (EF-insertion) →
b. $[_{vP}$ v $[_{VP} \ldots$ *wh* $\ldots]\ ]$ | EF *u*D # | (Move/EF-deletion) →
c. $[_{vP}$ *wh* v $[_{VP} \ldots t_{wh} \ldots]\ ]$ | *u*D # | (Merge/*u*D-deletion) →
d. $[_{vP}$ subj *wh* v $[_{VP} \ldots t_{wh} \ldots]\ ]$ | # | ...

As is clear from (20-d), the interaction of the ISC and the SCC leads to a configuration where a phrase undergoes movement to a position that ultimately ends up as an inner specifier below a phrase that later undergoes external Merge to become the outer specifier of the same head.[15]

3.2. Scrambling and EFs

If all movement is feature-driven, then the question arises as to what kind of feature drives scrambling. Fanselow (2001, 2003) argues at length that no common morpho-syntactic feature could possibly be a plausible candidate to serve as the trigger for scrambling. A straightforward alternative consists in assuming the existence of some abstract feature [SCR] (see McGinnis 1998, Grewendorf and Sabel 1999, Sauerland 1999, among others). This move has been criticized by Fanselow (2001, 2003) as an unmotivated stipulation (see also Haider 2010: 180), who thus concludes that scrambling does not involve movement to begin with. We would like to point out that if EFs are needed anyway to account for successive-cyclic movement, then one may as well identify them as the trigger of scrambling. This idea is not without precedent. Richards (2004, 4) (building on Chomsky 2001: 34) proposes that scrambling is EPP-driven

[15] The resulting structure is similar to what Richards (2001) calls "tucking-in", however, its derivation is not. We return to the issue of tucking-in in more detail in section 5.4.

movement to Specv.[16] We incorporate this proposal, suggesting that in languages such as German EFs on v and on T trigger scrambling.[17] Moreover, we assume that an EF can only attract categories that lie within its c-command domain.

Recently, Chomsky (2007, 11) suggested that the existence of multiple specifiers indicates that EFs do not delete when they have triggered Merge once but rather remain active (a possibility already alluded to in Chomsky 1995). We adopt this suggestion here, assuming that EFs that trigger scrambling behave just like EFs that trigger successive-cyclic movement in that they do not necessarily delete once they have triggered Merge. As a consequence, they can, in principle, attract an arbitrary number of categories that are within their search space. This is what happens in the case of multiple scrambling. If an EF can attract multiple categories, then it suffices to assume that a head can receive one EF per derivation. In what follows, this will be our working hypothesis.

It is often assumed that probing by a feature is subject to the Minimal Link Condition (MLC; Rizzi 1990, Fanselow 1991, Ferguson 1993, Chomsky 1995), a version of which is given in (21).

(21) *Minimal Link Condition:*
If in a representation $\alpha \ldots [\ldots \beta \ldots [\ldots \gamma \ldots] \ldots]$ both β and γ are of the right type to establish a relation R with α, then α can establish R only with β (but not with γ).

If scrambling is triggered by EFs, then one expects it to be subject to the MLC.[18] This, however, does not seem to be the case in German: In this lan-

[16] Somewhat similarly, Kitahara (2002), Miyagawa (2001), and Bailyn (2004) claim that scrambling to SpecT discharges an EPP feature. However, these works do not establish any link to successive cyclic movement.

[17] Although, provided the PIC, English must allow for EF-insertion on v (and perhaps on other heads, too), it does not exhibit scrambling. Thus, German differs from English in that in the former, a category attracted by an EF to Specv can remain there while in the latter it cannot. We do not know what this difference derives from but we would like to indicate that a related problem arises for any theory that assumes successive-cyclic movement: in many languages, *wh*-phrases cannot remain in positions that they pass through successive-cyclically. This cannot entirely be due to a requirement that *wh*-phrases must end up in SpecC for scope reasons because often they cannot even remain in a position P if the minimal phrase dominating P undergoes subsequent pied-piping to SpecC (see Heck 2009 and references therein).

[18] Successive-cyclic movement, the parade case of EF-driven movement, is often argued to be subject to the MLC, too.

guage (as opposed to, e.g., Dutch), α can scramble across β even if β, too, could in principle undergo scrambling (see, e.g., Fanselow 2001: 407, Haider 2010: 142).

One could, of course, assume that scrambled arguments bear a feature that non-scrambled arguments lack (rendering the latter irrelevant for the MLC with respect to the scrambling probe). This, however, would again beg the question as to what kind of feature is involved in scrambling. To avoid this problem, we would like to suggest that a probe P can in principle skip some potential goal G, thereby targeting a lower goal G′ (see section 3.3 for some qualification). In other words, we propose that the MLC, as it stands in (21), should be dispensed with.[19] In section 3.3, we present another argument that suggests that the MLC is problematic (see also the remarks on multiple PGs at the end of section 4.2). In section 4 we show that the intervention effects observed in section 2, which might suggest an analysis in terms of the MLC, actually follow from a strictly derivational approach without further ado (in particular without reference to the MLC).

3.3. Parallel Movement

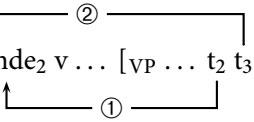
It has been observed that movement of co-arguments is often order preserving, that is, it results in structures that give the impression as if movement had applied "in parallel" (see Müller 2001, Richards 2001, Sells 2002, and Williams 2003 for various cases of order preserving movement and different explanations thereof). Arguably, order preservation effects obtain if co-arguments are attracted by the same feature (see Richards 2001, McGinnis 1998, Anagnostopoulou 2003). To illustrate, consider multiple object shift in Danish (see Vikner 1989, 1995). (22-a,b) show that if two object pronouns in Danish undergo object shift, then their relative order is preserved.

(22) a. Peter viste hende$_2$ den$_3$ jo t_2 t_3.
Peter showed her it indeed
"Peter indeed showed it to her."
b. *Peter viste den$_3$ hende$_2$ jo t_2 t_3.
Peter showed it her indeed

[19] Müller (2004, 2011) makes a related point and offers an account of superiority that does without the MLC; also cf. Chomsky (2008, 151), Fanselow and Lenertová (2011, 184) for pertinent remarks.

In section 4, we will argue that EF-driven movement (subsuming scrambling and successive-cyclic movement) exhibits this property, too.[20] This plays a crucial role when it comes to explaining the asymmetries illustrated in section 2. But before we turn to the analysis let us present the mechanics that we assume to be responsible for such order preservation effects.

Ignoring the external argument for the moment, suppose that (22-a) comes about because v in Danish can be equipped with a feature that obligatorily attracts all pronouns from within VP into its specifier domain, forming multiple specifiers within vP. Since it is exclusively pronouns that are attracted (there is no object shift with full noun phrases in Danish), we assume that the feature driving object shift is an EF relativized to pronouns; in what follows, we write EF_{pron} for short.[21] Now, if both the SCC (19) and the MLC (21) are respected, then these assumptions result in the partial derivation in (23).



Ultimately, however, (23) leads to (22-b), which is ungrammatical. It thus looks as if one either has to give up the SCC or the MLC. In section 3.2, we already suggested that the MLC should be dispensed with.[22] Note, however, that by simply giving up the MLC one does not get order preservation effects for free: Without the MLC, EF_{pron} can choose which pronoun it attracts first, resulting in one order or the other. In what follows, we make a proposal which is compatible with the idea that scrambling is triggered by EFs (as proposed in section 3.2), which obeys strict cyclicity (at the expense of the MLC), and which allows to account for order preservation effects.

Consider again multiple object shift in Danish. To ensure that weak pronouns must move, one may assume that they bear a feature [*u*PRON] that requires checking against EF_{pron}. Suppose that the EF_{pron} scans down the tree in search for a goal G. Once it has found a weak pronoun, it may eliminate

[20] Similarly, Richards (2001, 60-73), argues on the basis of different facts that multiple short scrambling in Japanese must be order preserving if they target the same specifier domain.

[21] It is not implausible to assume that pronouns, which form a closed class, have a particular property which an EF can be relativized to. In contrast, assuming that scrambling is also due to a relativized EF would bring back the problem as to what the EF should be relativized to in this case, cf. section 3.2.

[22] Hunter and Malhotra (2009) propose yet another account of order preservation effects that retains strict cyclicity at the expense of giving up the MLC.

its [*u*PRON]. At this point, we assume, the pronoun is taken from the tree and placed on a stack.[23] EF_{pron} then proceeds scanning. If it finds another goal G′, it may again eliminate its [*u*PRON] and place G′ on the stack, on top of G, etc. At one point, EF_{pron} will have exhausted its search space. Now the derivation starts to remerge the pronouns it has collected on the stack. In the process of remerging, only the pronoun on top of the stack is accessible. Once the topmost pronoun has been remerged, the one below it is promoted and therefore becomes accessible for the next step of remerge. As a result, the order in which the elements on the stack are remerged is the inverse of the order in which they have been attracted. This re-establishes the original order of G, G′, etc. within the vP domain.[24] The relevant part of the derivation of (22-a) thus proceeds as illustrated in (24-a-e).

(24) a.	$[_{vP}$ v $[_{VP} \ldots$ h(ende)$_2$ d(en)$_3 \ldots]\,]$	| | # |	(put *h* on stack) →
b.	$[_{vP}$ v $[_{VP} \ldots t_2\ d_3 \ldots]\,]$	| h | # |	(put *d* on stack) →
c.	$[_{vP}$ v $[_{VP} \ldots t_2\ t_3 \ldots]\,]$	d | h | # |	(remerge *d*) →
d.	$[_{vP}\ d_3$ v $[_{VP} \ldots t_2\ t_3 \ldots]\,]$	| h | # |	(remerge *h*) →
e.	$[_{vP}\ h_2\ d_3$ v $[_{VP} \ldots t_2\ t_3 \ldots]\,]$	| | # |	…

There is nothing that forces EF_{pron} to attract a pronoun. It could, in principle, skip a higher pronoun and attract a lower one instead because there is no MLC (or it could attract nothing at all). However, if a pronoun fails to be attracted by EF_{pron}, its [*u*PRON] will not delete and the derivation crashes. There is, however, one assumption to be made yet: an EF cannot first attract a lower goal and then, in a later step, a higher goal. In other words, when an EF-probe encounters a possible goal G, the derivation must decide once and for all whether G is attracted or not. If G is skipped, no backtracking is possible. This naturally follows from the top-down manner the EF scans its search space.

[23] Note that this stack exclusively contains phrases selected for movement and is thus different from the stack proposed by Müller (2010, 2011) and introduced in section 3.1, which hosts the structure building features of a head (subcategorization features and EFs).

[24] Stroik (2009) and Unger (2010) independently (and based on different assumptions) derive order preservation effects by making use of (some kind of) a stack. Richards (2001) puts forward a different approach to order preservation effects which sacrifices strict cyclicity in order to maintain the MLC. In section 5.4, we discuss why we favor the stack approach.

Turning to scrambling and successive-cyclic movement, the same mechanism applies. The only difference is that the EF triggering these movements is not relativized to any particular category; rather it is a bare EF. Accordingly, categories do not undergo scrambling or successive-cyclic movement because they bear an inherent feature that requires checking. As a consequence, scrambling and successive-cyclic movement can, in principle, skip other potential goals without consequences (cf. section 3.2). Of course, if a bare EF attracts more than one category, then all attracted elements have to pass via the stack, as was the case with attraction by EF_{pron} above. In such a situation, one expects multiple scrambling (or successive-cyclic movement) to show order preservation effects. (As with weak pronouns, backtracking never is an option.) This is exactly what the analysis in section 4 will make use of.

4. Analysis

We are now ready to show how the observations from sections 2.1 and 2.2 can be derived. Since we already introduced some aspects of the mechanics that the analysis is based on, in particular the derivation of the ISC and the analysis of order preserving movement, we will, every now and then, gloss over some of the details, simply speaking of EF-movement and parallel movement instead.

4.1. Floating Quantifiers and Opacity

Let us start by clarifying our assumptions about the FQ *alles* in German. We assume, at least for now, that *alles* adjoins to VP (cf. Bobaljik 1995; but see section 5.1 for qualification).[25] Suppose that, semantically, *alles* associates with a *wh*-phrase and that semantic association corresponds to an Agree relation in the syntax, targeting the feature [INDEF].[26] Thus, the FQ *alles* bears a probe

[25] Adjunction applies after the outermost specifier has been merged. This may derive from the idea that adjunction, as opposed to specifier-formation, is not feature-driven (see, e.g., Adger 2003) and therefore not subject to the earliness requirement on checking (see below). Adjoined elements and specifiers are treated alike by the PIC.

[26] Beck (1997) argues that *alles* undergoes LF-raising in order to semantically combine with the meaning of the whole interrogative clause. In contrast, Zimmermann (2007) argues for an analysis along the lines sketched above.

[*u*INDEF] that must enter into Agree with [INDEF] on an indefinite. We presuppose that this can only happen if the indefinite c-commands the FQ.[27]
We now turn to the account of bleeding effects with floating *alles*. Let us start by illustrating the case of an indefinite object disrupting the association between a *wh*-subject and a FQ:

(25) *Wer$_1$ hat einem Professor alles$_1$ gratuliert?
who$_{nom}$ has a professor$_{dat}$ all congratulated
"Who all congratulated a professor?"

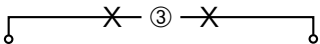
We enter the derivation of (25) at the point where v has been merged with the VP containing the object. The object in (25) precedes the FQ, the latter being adjoined to VP. The object therefore must, at some point, move out of VP, presumably to a specifier of vP. Since it is the only internal argument, the object occupies the complement position of V. No specifier is present in VP and thus the object is on the edge of VP (cf. the notion of edge domain in (17)). Therefore, it is PIC-accessible. Movement of the object is triggered by an EF on v. Due to the EFC, EFs can only be inserted on a head as long as the head is active. Thus, the EF that is supposed to attract the object must be inserted prior to merging the subject: Recall that what keeps v active is the subcategorization feature that is to be discharged by merging the external argument. An EF is thus inserted on top of the feature stack of v. Since only the topmost element of the stack is visible, the EF must be discharged first. This leads to movement of the object to Specv, see ① in (26).

(26) [$_{vP}$ einem Professor$_2$ [$_{VP}$ FQ$_2$ [$_{VP}$ … t$_2$ …]]]
① ②

In line with the requirement that probe features are discharged as early as possible once they have been introduced into the derivation (see Pesetsky 1989, Chomsky 1995: 233, Lasnik 1999, among others), [*u*INDEF] on the FQ

[27] This departs from the standard assumption that the probe must c-command the goal (but cf. Adger 2003, Koopman 2006, Baker 2008 for diverging views). The same non-standard assumption will be made for PGs (see section 4.2) but not for Agree relations in general. That is, we still take it that, generally, a probe [*uϕ*] must c-command the goal [*ϕ*]. Note in passing that if one were to follow Fitzpatrick (2006) in assuming that adverbial FQs are merged with an empty *pro*, and provided that it were *pro* that bears [*u*INDEF], then, given the standard view, [*u*INDEF] could not enter into Agree anyway due to the lack of c-command; similarly for PGs, see section 4.2.

and [INDEF] on the indefinite object immediately enter into Agree (step ② in (26)).[28] Thus, when the subject is merged in the next step, it cannot establish Agree with the FQ, as indicated by the crossed-out association line in (27), because the probe on the FQ has already been eliminated by step ② in (26).



(27) [$_{vP}$ wer$_1$ einem Professor$_2$ [$_{VP}$ FQ$_2$ [$_{VP}$ … t$_2$ …]]]

Since Agree with a FQ, by assumption, is a precondition for semantic association with it, the derivation is doomed to crash at the semantic interface.[29]

Bleeding that involves two objects, an indirect *wh*-object and an indefinite direct object (see (28)) is derived along similar lines. The only assumption we have to add (which is often made for German anyway, cf. section 5.2) is that the indirect object is merged above the direct object within VP.

(28) *Wem$_1$ hat sie einen Professor alles$_1$ vorgestellt?
who$_{dat}$ has she a professor$_{acc}$ all introduced
"Who all did she introduce to a professor?"

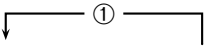
In the derivation of (28), the direct object must again reach a position to the left of the FQ, minimally Specv. But this time, it must first move to SpecV in order to remain PIC-accessible. The reason is that after the indirect argument is merged to SpecV, the direct object, being the sister of the verb, counts as a genuine complement in the sense of (17). As V still bears the subcategorization feature for the indirect object, an EF can be inserted on it, but only before the indirect object is merged.[30] Once inserted, the EF has to be discharged before the subcategorization feature for the indirect object can be accessed.

[28] Arguably, Merge of the subject also discharges an uninterpretable feature on v, namely its subcategorization feature, an operation that must be procrastinated if Agree between the object and the FQ is supposed to apply first. Here, and in what follows, we assume that there is an inherent preference of Agree over Merge in the vP-domain (see Heck and Müller 2007 for a related proposal).

[29] Note that the indefinite object in (26) has checked [*u*INDEF] on the FQ. Thus, syntactically, (25) is fine. Yet, it is not well-formed. Our hunch is that, semantically, the non-*wh* indefinite is not of the right type to combine with the FQ.

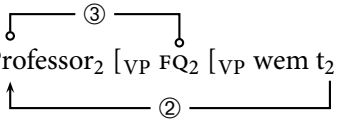
[30] Technically, the direct object is *not* a genuine complement before the indirect object is merged. There is no need to invoke structural look-ahead here, though: By inspecting the subcategorization features on V, the derivation can determine early whether the direct object will end up as a genuine complement within VP or not.

Therefore the direct object moves first. Only then is the indirect object *wh*-phrase merged to an outer specifier of VP (29).



(29) [$_{VP}$ wem einen Professor$_2$ [$_{V'}$ … t_2 …]]

In the following steps, the FQ is adjoined to VP, and the two objects undergo parallel EF-movement to inner Specvs (the subject is later introduced to the outermost Specv). Due to parallel movement, the direct object is remerged first and immediately establishes Agree with the FQ (steps ② and ③ in (30)).



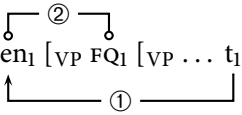
(30) [$_{vP}$ einen Professor$_2$ [$_{VP}$ FQ$_2$ [$_{VP}$ wem t_2' …]]]

When the indirect object *wh*-phrase is remerged to Specv, it cannot enter into Agree with the FQ because the probe of the FQ has already been consumed (step ③ above). Bleeding is the result.

Having said this, it is obvious what happens if an object *wh*-phrase is remerged as the first argument to Specv but later moves to SpecC. In such a scenario, counter-bleeding arises. (31) illustrates:

(31) Wen$_1$ hat ein Professor alles$_1$ beleidigt?
who$_{acc}$ has a professor$_{nom}$ all insulted
"Who all did a professor insult?"

Suppose the derivation of (31) has already constructed vP. The direct *wh*-object has moved into an inner specifier of vP in order to remain PIC-accessible (see ① in (32)). Due to the ISC, the subject is introduced to an outer Specv. However, before this can happen, the *wh*-object enters into Agree with the FQ (step ②). As Agree is the syntactic precondition for semantic association, the *wh*-phrase can associate semantically with the FQ.



(32) [$_{vP}$ wen$_1$ [$_{VP}$ FQ$_1$ [$_{VP}$ … t_1 …]]]

Later, the subject is merged and the object *wh*-phrase moves (via SpecT) to SpecC (step ③ in (33)), thereby giving the surface impression of the indefinite subject intervening between the *wh*-phrase and the FQ. (For simplicity, we

follow Grewendorf 1989 and Diesing 1992 in assuming that subject raising to SpecT is optional in German, but nothing hinges on this.)

(33) [$_{CP}$ wen$_1$ … [$_{vP}$ ein Professor$_2$ t$_1$′ [$_{VP}$ FQ$_1$ …]]]

This derives counter-bleeding. Due to the PIC, the object cannot move in one fell swoop to SpecC, thereby skipping the intermediate landing in Specv, a crucial precondition for opacity to arise. Of course, from a derivational point of view, there is nothing opaque about (31): FQ-association applies in a transparent manner, albeit at an intermediate derivational stage.[31]

4.2. Parasitic Gaps and Opacity

Next, consider opacity effects with PGs. To begin with, suppose that adjunct clauses containing PGs are adjoined to VP (cf. Nissenbaum 2000: 35-36). Suppose further that PGs come about by movement of a zero element OP from the position of the PG to SpecC of the adjunct clause (see Chomsky 1986, Nissenbaum 2000, among others). Similar to what was the case with FQs, we assume that semantic binding of a PG requires previous Agree in the syntax (see Assmann 2012). To this end, we propose that an OP associated with a PG bears a probe [*u*D] which must enter into Agree with an antecedent.[32] Once [*u*D] is eliminated, OP can no longer participate in Agree with another antecedent. Informally, we will speak of agreement between an antecedent and a PG, although technically, what is meant is an Agree relation between an antecedent and the OP associated with a PG. For the sake of brevity, we confine ourselves to PGs bound by scrambled elements, leaving aside PG-binding by *wh*-phrases ((9-b), section 2). This happens without loss of generality because, for our purposes, the latter constitute a subset of the former.

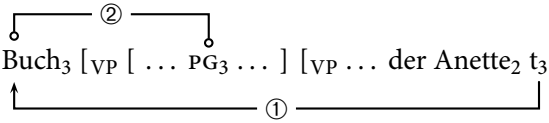
[31] According to Ko (2007), Korean exhibits almost identical asymmetries involving intervention with FQ-association. The analysis Ko (2007) presents is formulated in terms of cyclic linearization (Fox and Pesetsky 2005). For the most part, it can be transferred to German. Space limitations do not permit a detailed discussion at this point. Put briefly, we think that Ko's (2007) theory cannot account for all of the facts involving PGs (section 2.2), or at least not obviously so. In contrast, the present theory provides a unified analysis of the facts from PG-binding and FQ-association, which is motivated for German.

[32] Assmann (2012) derives OP from a lexical rule operating on the antecedent (see also Agbayani and Ochi 2007). This rule can also be held responsible for introducing [*u*D] on OP. Note that, similarly to what we assumed for FQs, [*u*D] must be c-commanded by the goal it agrees with (cf. sections 4.1, in particular footnote 27).

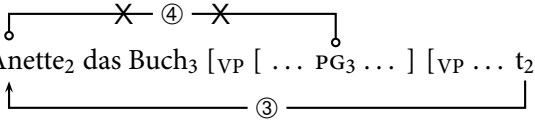
First consider (34), which illustrates that an intervening scrambled direct object blocks a scrambled indirect object from binding a PG.

(34) *wenn jemand der Anette$_2$ das Buch [anstatt PG$_2$ zu helfen]
if someone the Anette$_{dat}$ the book$_{acc}$ instead to help
wegnimmt
away takes
"if someone takes the book from Anette instead of helping her"

By assumption, the indirect object is merged higher within the VP than the direct object. Because the adjunct clause is left-adjoined to VP, both objects have to scramble to Specv in order to precede it. Scrambling is triggered by an EF on v, which attracts both objects in parallel. The direct object is remerged first and enters into Agree with the PG at once, see steps ① and ② in (35).



Agree with the direct object eliminates [*u*D] on the PG. Thus, the PG is no longer active and cannot establish Agree with the indirect object when it is remerged in the next step (③ in (36)). The indirect object simply re-enters the structure too late. This derives bleeding.



In principle, one would expect the PG in (34) to be semantically bound by the direct object. The corresponding reading, however, is blocked by requirements on the binder imposed by the embedded verb with respect to case and animacy (the direct object *das Buch* "the book" is inanimate and bears accusative; in contrast, the embedded verb *helfen* "to help" requires an animate object in the dative).

The interesting question is why the indirect object is still not able to bind the PG if scrambling of the direct object ends up in a position to the left of the indirect object (37).

(37) *wenn jemand das Buch der Anette$_2$ [ohne PG$_2$ zu vertrauen]
if someone the book$_{acc}$ the Anette$_{dat}$ without to trust
ausleiht
lends
"if someone lends Anette the book without trusting her"

Both objects in (37) must minimally target a Specv-position to the left of the adjunct clause. Since v is assigned only one EF per derivation, this EF must attract both objects, preserving their relative order. There is no other way the direct object can reach Specv, and therefore the steps ①, ②, and ③ of the derivation of (37) are identical to those in (35) and (36) above. The direct object moves first (more precisely: is remerged first) and immediately enters into Agree with the PG. The indirect object moves next, but it comes too late: The PG has already become inactive by then. Later, an EF on T in parallel attracts the direct object and the subject, which has been merged to the outermost Specv. Both arguments thus end up in SpecT, to the left of the indirect object (see steps ④ and ⑤ in (38)).

(38) [$_{TP}$ Hans$_4$ das Buch$_3$ [$_{vP}$ t$_4$ der Maria$_2$ t$_3$′ [… PG$_3$ …] …]]
(⑤ and ④ mark the movement steps)

Although, on the surface, the indirect object is closest to the PG, it cannot bind it because, derivationally, the direct object reaches the position relevant for binding first. This leads to counter-feeding. Finally note that movement of the direct object to SpecT in one fell swoop (fusing steps ① and ④ above into one movement step) is blocked by the PIC. The intermediate halt in Specv that leads to the local Agree relation between the direct object and the PG cannot be skipped. Binding of the PG by the direct object is forced and the ungrammaticality of (37) is thus explained.

A direct object that has scrambled to the left of an adjunct clause containing a PG can always bind the PG. This is obvious for cases where the direct object appears closest to the PG on the surface (see (12-a), section 2.2). But even if an indirect object shows up in between the direct object and the adjunct clause is PG-binding by the direct object possible (39).

(39) dass Hans das Buch$_2$ der Maria [ohne PG$_2$ durchzulesen]
that Hans the book$_{acc}$ the Maria$_{dat}$ without through to read
zurückgibt
back gives
"that Hans returns the book to Maria without reading it through"

In all relevant respects, the derivation of (39) is the same as the one of (37) above, but this time it results in counter-bleeding. The reason is that in (39) syntactic binding of the PG by the direct object also leads to semantic binding: there is no incompatibility between the requirements of the embedded verb and the direct object with respect to case and animacy (*durchlesen* "to read through" requires an inanimate object in the accusative, exactly the specification of the direct object *das Buch* "the book"). After Agree, the direct object scrambles to the left of the indirect object, rendering the structure opaque. Recall that subjects never act as interveners for PG-binding by an object. (40) is a case in point.

(40) dass das Buch$_2$ jemand [anstatt PG$_2$ wegzuwerfen] verschenkt
that the book$_{acc}$ jemand instead away to throw give away
"that someone gives the book away instead of throwing it away"

It follows immediately why this should be so. Although the object in (40) precedes the subject on the surface, it must have occupied a position in between the subject and the adjunct clause at some earlier derivational stage, due to the by now familiar interaction of PIC and ISC: the PIC enforces object movement to the edge of vP (see ① in (41)); the ISC ensures that the object occupies an inner specifier, below the external argument. From there, it binds the PG (step ② in (41)).

(41) [$_{vP}$ das Buch$_2$ [$_{VP}$ [… PG$_2$ …] [$_{VP}$ … t$_2$ …]]]
② ①

When the subject is merged to the outermost specifier of vP, the PG has already become inactive. Later, the object scrambles to SpecT, which makes it look as if the subject were closest to the PG and should therefore block PG-binding by the object: counter-bleeding. From the derivational perspective, the subject simply cannot reach a position appropriate for binding before the PG is deactivated by the object.

Finally, remember that a direct object does not interrupt PG-binding by an indirect object if the direct object itself binds another PG (42).

(42) wenn jemand der Anette$_2$ das Buch$_3$ [anstatt PG$_2$ PG$_3$ zu
if someone the Anette$_{dat}$ the book$_{acc}$ instead to
schenken] nur leiht
give only borrows
"if someone only borrows Anette the book instead of giving it to her as a present"

In section 3.2, we suggested that the MLC should be eliminated. From this, it now follows that the direct object in (42) can bind PG$_3$ across PG$_2$, rendering the former inactive. Under a theory that seeks to account for intervention effects with PG-binding in terms of the MLC (see Fanselow 1993; also Müller 1995: 264), it remains unclear why the direct object can skip PG$_2$, binding PG$_3$ instead.

The question arises as to why the direct object does not also enter into Agree with PG$_2$, thereby bleeding binding of PG$_2$ by the indirect object. After all, PG$_2$ also bears [*u*D], and, by assumption, uninterpretable features have to be eliminated as soon as possible once they have been introduced into the derivation (see section 4.1 and also section 5.4 below). At this point, we have no explanation for this and must therefore resort to the stipulation that an antecedent can bind only one PG.[33] Thus, the direct object exclusively binds PG$_3$, leaving PG$_2$ to be bound by the indirect object.[34]

5. Further Issues

5.1. Wh-in-Situ

In section 2.1, we illustrated counter-bleeding in the context of FQ-association. In fact, the analysis suggested there also predicts the existence of counter-feeding within the realm of FQs. The relevant scenario involves surface adjacency between a *wh*-phrase and a FQ that comes about by scrambling an

[33] If there are multiple PGs bound by a single antecedent, then more has to be said here. Ross (1967, 192) mentions potential cases but at the same time judges them as "less than felicitous".

[34] Theoretically, the direct object could as well have bound PG$_2$, leaving PG$_3$ to the indirect object. Such a binding in (42), however, is blocked due to a mismatch with respect to case and animacy.

indefinite away from in between the former two: Before the indefinite scrambles, it associates with the FQ and thus prevents the *wh*-phrase from doing so. The scenario presupposes that the *wh*-phrase does not undergo *wh*-movement at a later step, as is the case with *wh*-in-situ in multiple questions. As we will see shortly, the prediction that counter-feeding as described above exists is *not* borne out. A similar problem arises for counter-bleeding and *wh*-in-situ. In what follows, we will make a proposal as to why this should be so.

To begin with, (43) illustrates that *wh*-in-situ phrases can, in principle, associate with a FQ. (This also holds if the *wh*-phrase bears a grammatical function other than direct object.)

(43) Wann hat sie einem Professor wen$_2$ alles$_2$ vorgestellt?
when has she a professor$_{dat}$ who$_{acc}$ all introduced
"When did she introduce who all to a professor?"

Starting with counter-feeding and *wh*-in-situ, suppose a scenario where a *wh*-object is merged higher than its indefinite co-argument. If both arguments scramble to the left of *alles*, then association of the *wh*-phrase with *alles* is blocked because the indefinite is remerged first and thus eliminates [*u*INDEF] on the FQ. Suppose that, next, the indefinite scrambles to the left of the *wh*-phrase. Then, the surface looks as if it would feed association between the *wh*-phrase and the FQ. But in fact, the FQ has associated with the indefinite and the output is predicted to be ungrammatical. The facts are given in (44).

(44) a. Wann hat sie einen Professor$_1$ wem$_2$ t$_1$ alles$_2$ vorgestellt?
when has she a professor$_{acc}$ who$_{dat}$ all introduced
"When did she introduce a professor to who all"
b. Wann hat einem Professor$_1$ wer$_2$ t$_1$ alles$_2$ geholfen?
when has a professor$_{dat}$ who$_{nom}$ all helped
"Who all helped a professor and when?"
c. Wann hat einen Professor$_1$ wer$_2$ t$_1$ alles$_2$ verklagt?
when has a professor$_{acc}$ who$_{nom}$ all sued
"Who all sued a professor and when?"

The prediction is not borne out. (44-a-c) are on a par with (43). Thus, the theory under-generates.

Turning to counter-bleeding, first note that FQ-association with an in-situ *wh*-phrase can be blocked by an intervening indefinite (45). (Again, examples

where the *wh*-phrase bears a grammatical function other than indirect object are omitted for the sake of brevity.)

(45) *Wann hat sie wem$_1$ einen Professor alles$_1$ vorgestellt?
when has she who$_{dat}$ a professor$_{acc}$ all introduced
"When did she introduce a professor to who all?"

Assume now a scenario where the intervening indefinite is merged higher than the *wh*-phrase. When both arguments scramble in parallel to the left of *alles*, the *wh*-phrase is remerged first and associates with the FQ. Later, the *wh*-phrase scrambles across the indefinite. The result should be well-formed because, in theory, it instantiates counter-bleeding: the surface position of the *wh*-phrase does not indicate transparently that it had the chance to associate with the FQ. Relevant examples are given in (46).

(46) a.?*Wann hat sie wen$_1$ einem Professor t$_1$ alles$_1$ vorstellt?
when has she who$_{acc}$ a professor$_{dat}$ all introduced
"When did she introduce who all to a professor?"
b.?*Wann hat wem$_1$ ein Professor t$_1$ alles$_1$ geholfen?
when has who$_{dat}$ a professor$_{nom}$ all helped
"When did a professor help who all?"
c.?*Wann hat wen$_1$ ein Professor t$_1$ alles$_1$ erkannt?
when has who$_{acc}$ a professor$_{nom}$ all recognized
"When did a professor recognize who all?"

The grammaticality of (46-a-c) seems severly degraded. Therefore, the theory also over-generates.

There are at least two possible reactions to this . First, we could conclude that the theory presented in section 4 is on the wrong track. Second, we could (a) take further possible factors into account that explain the ungrammaticality of (46), and (b) modify the theory such that it derives the grammaticality of (44) without giving up the gist of the analysis. Given that the facts from section 2 are sufficiently robust and that the account proposed so far is conceptually attractive because it also provides an explanation for an asymmetry in another domain (section 4.2), we opt for the second possibility.

We begin with (46). What distinguishes these examples from the well-formed instances of counter-bleeding in (6) (section 2.1) is that in (46) the *wh*-phrase remains in a position it has reached by EF-driven scrambling. While,

according to the present analysis, the *wh*-phrase in (6) must also undergo EF-driven movement in order to reach a position from where it can associate with the FQ, it does not stop there but undergoes subsequent *wh*-movement. Interestingly, it has been argued (see, e.g., Wiltschko 1997, Sauerland 1999) that *wh*-phrases that end up in scrambling positions in German are interpreted as D(iscourse)-linked in the sense of Pesetsky (1987). On the assumption that *which*-phrases in English are inherently D-linked, Pesetsky (1987, 107-108) describes this concept as follows: "When a speaker asks a question like 'Which book did you read?', the range of felicitous answers is limited by a set of books both speaker and hearer have in mind." Now, Reis (1992), drawing on a notion of definiteness proposed by Hawkins (1978), observes that *alles* requires its antecedent to denote an "open set" in the sense that "there is no anaphoric or deictic/situational link to an independently established antecedent set". It is our hunch that these two requirements lead to a semantic incompatibility in (46): *alles* must associate with an antecedent whose denotation is not tied to a situationally constrained set, yet scrambling of the *wh*-phrase (inducing D-linking) creates precisely such an interpretation for the *wh*-phrase. We therefore, once more, suggest that although the examples in (46) are syntactically well-formed, they do not receive a proper interpretation.

Turning to the examples in (44), we saw that they receive an analysis in terms of counter-feeding that, counter-factually, predicts them to be ungrammatical. If there were an alternative analysis such that the *wh*-phrase could associate with the FQ, the grammaticality of the examples in (44) would follow. This alternative must not be available for examples such as (45) and for those in (5) (section 2.1), for which an counter-feeding analysis makes the correct prediction. All this can be achieved by assuming that *alles* can appear in two positions: it can be adjoined to VP (as assumed so far); or it can be merged directly with a *wh*-phrase (similar to the original proposal in Reis 1992). That the second option is needed anyway is suggested by the fact that *alles* can undergo pied-piping together with the *wh*-phrase (47).[35]

[35]It is generally assumed that in German V/2 main-clauses only one constituent can precede the finite verb. Thus, *wen alles* in (47) must form a constituent. Assuming two merge positions for invariant *alles* is not without precedent: In their analysis of the FQ *beide* "both" in German, Reis and Vater (1980) distinguish two positions for floating *beide*, one forming a constituent with the associated argument, the other appearing in isolation. Similarly, Link (1974, 124, footnote 7) argues, also on the basis of facts from V/2 clauses, that there are two positions for variant *all(es)*.

(47) [Wen alles]$_2$ hat sie t_2 beleidigt?
who all has she insulted
"Who all did she insult?"

We would like to propose that the second option is what underlies an alternative derivation of the examples in (44). If the *wh*-phrase and FQ form a constituent, then Agree (and therefore semantic association) can apply between them right away. In the next step, the constituent consisting of *wh+alles* is merged to an argument position above the indefinite. Finally, the indefinite undergoes scrambling across *wh+alles*. (In other words, the traces left by scrambling in (44) should actually be not right-adjacent to the *wh*-phrase but right-adjacent to the FQ.) This derivation does not involve counter-feeding and is therefore predicted to result in grammaticality.

What remains to be explained is why a derivation based on merging the *wh*-phrase directly with the FQ is not available for (45) and the examples in (5). To this end, we propose that a *wh*-phrase cannot strand a FQ it has been merged with. Independent motivation for this proposal can be gained from the hypothesis that pied-piping is a last resort strategy (see Heck 2009 and references therein). To put it in a nutshell, the last resort analysis of pied-piping implies that the existence of a structure such as (47) owes to the non-existence of an alternative derivation (also based on merging the *wh*-phrase and the FQ) that involves stranding of *alles*. Since (47) is grammatical, there must be a ban against stranding *alles*.

5.2. Verb Classes

It is often assumed that the underlying order of object arguments in German is indirect object > direct object (see Lenerz 1977, Thiersch 1982, Webelhuth 1992: 194-199, among others). We have followed this view here. A more fine grained distinction is argued for in Haider (1992, 1993, 2010), where it is claimed that different verb classes project different relative orders of objects in German.[36] Thus, while verbs such as *geben* "give" or *vorstellen* "introduce" project the order indirect object > direct object, verbs such as *aussetzen* "to

[36] A more radical alternative can be found in Müller (1995, 2001): There, it is assumed that direct object > indirect object is the underlying order of objects in German throughout. Obviously, this is incompatible with the analysis presented in section 4.

expose" or *unterziehen* "to subject" are claimed to belong to a minor class of verbs in German that project the order direct object > indirect object.

Since we argued that the underlying order of arguments is preserved by multiple scrambling and that it can be detected by grammatical processes such as FQ-association and PG-binding, the same diagnostics can now be put to use to see whether different verbs impose different relative orders on their objects. If verbs such as *aussetzen*, *unterziehen*, etc. indeed induce the order direct object > indirect object, then this, combined with the present theory, predicts that with these verbs it is always the indirect object which can associate with a FQ or to bind a PG and not the direct object (provided both objects are in a position appropriate for association and binding to begin with).

Let us start by considering examples that involve PG-binding. We think that there is a detectable, albeit subtle, asymmetry in (48-a-d). In fact, however, the asymmetry favors PG-binding by the direct object over binding by the indirect object. This is at variance with the prediction mentioned above.

(48) a. ?weil er das Kind$_2$ dem Test [ohne PG$_2$ zu schonen]
because he the child$_{acc}$ the test$_{dat}$ without to spare
aussetzte
exposed
"because he exposed the child to the test instead of sparing her"

b.*?weil er das Kind dem Test$_3$ [ohne PG$_3$ zu vertrauen]
because he the child$_{acc}$ the test$_{dat}$ without to trust
aussetzte
exposed
"because he exposed the child to the test without trusting it (the test)"

c. ?weil er das Instrument$_2$ der Prüfung [ohne PG$_2$ zu
because he the instrument$_{acc}$ the test$_{dat}$ without to
schonen] unterzog
spare subjected
"because he subjected the instrument to the test without preventing it from damage"

d. *weil er das Instrument der Prüfung$_3$ [ohne PG$_3$ zu
because he the instrument$_{acc}$ the test$_{dat}$ without to
misstrauen] unterzog
distrust subjected
"because he subjected the instrument to the test without distrusting it"

Relevant examples that involve association with the FQ *alles* illustrate the same asymmetry, perhaps more clearly so, see (49).[37]

(49) a. Welche Beziehungen$_2$ hat er einer Belastung alles$_2$ ausgesetzt?
which relationships$_{acc}$ has he a strain$_{dat}$ all exposed
"Which relationships all did he strain?"

b.?*Welchen Belastungen$_2$ hat er eine Beziehung alles$_2$ ausgesetzt?
which strains$_{dat}$ has he a relationship$_{acc}$ all exposed
"Which strains all did he put on a relationship?"

c. Welche Instrumente$_2$ hat er einer Prüfung alles$_2$ unterzogen?
which instruments$_{acc}$ has he a test$_{dat}$ all subjected
"Which instruments all did he subject to a test?"

d. *Welchen Prüfungen$_2$ hat er ein Instrument alles$_2$ unterzogen?
which tests$_{dat}$ has he an instrument$_{acc}$ all subjected
"To which tests all did he subject an instrument?"

Thus, the diagnostics from PG-binding and FQ-association appear to indicate that even with verbs such as *unterziehen*, *aussetzen*, etc., the underlying order of objects in German is indirect object > direct object. As already noted, this is at variance with the claim put forward in Haider (1992, 1993, 2010). There are independent arguments in the literature that support this claim. One such argument is based on the observation (due to Höhle 1982) that maximal focus projection from an argument immediately preceding the verb on the surface is possible in German only if this argument is the underlying sister of the verb. Crucially, with verbs that belong to the minor class maximal focus projection is possible from the indirect object but not from the direct object. Another argument, going back to Frey (1993), relies on the observation that in German a quantifier Q_1 that is c-commanded by another quantifier Q_2 on the surface can scope over Q_2 if it c-commands a trace of Q_2. It turns out that a direct object quantifier can scope over an indirect object quantifier under the surface

[37] The dative marked argument of *aussetzen* and *unterziehen* is typically inanimate. But the simplex inanimate *wh*-phrase *was* "what" in German cannot serve as an argument that is dative marked by a verb (see Pittner 1996). For this reason, the examples (49-b) and (49-d) were chosen to involve *welch*-phrases ("which"-phrases). If German *welch*-phrases were inherently D-linked (as is often assumed for *which*-phrases in English), then they would be semantically incompatible with invariant *alles* (see section 5.1). However, Reis (1992) argues that, despite common believe, *welch*-phrases in German are not inherently D-linked. Hence, another account of the ill-formedness of (49-b) and (49-d) is needed.

order indirect object > direct object only if they are co-arguments of a verb belonging to the minor class. Taking these arguments seriously, the question arises as to how the claim made in Haider (1992, 1993, 2010) can be reconciled with the present findings.

To this end, we would like to invoke a proposal put forward in Meinunger (2000), where it is argued that the indirect objects of verbs belonging to the minor class are actually PPs headed by an empty preposition. Such PPs are merged lower than their direct object co-arguments, namely as the sister of the verb. In this position, the indirect object can project its focus on the whole clause (in line with Höhle's 1982 generalization); and when it moves away, it leaves behind a trace that can be c-commanded by a direct object quantifier, thus leading to scope inversion (in agreement with Frey's 1993 generalization). However, if the indirect object is embedded within a PP, it will not be able to bind a PG or to associate with a FQ, since it does not c-command the PG or the FQ. Therefore, with verbs belonging to the minor class it will always be the direct object that binds a PG or associates with a FQ, even if the underlying order projected by these verbs is direct object > indirect object.

5.3. Scrambling as a Transformation

In the preceding discussion, we presupposed that scrambling comes about by a movement transformation. Of course, this is not a new idea. It goes back at least as far as Bierwisch (1963, 100-101) and Ross (1967, 74-78)[38], and it has often been argued for since then (see Fanselow 1990, Giusti 1990, Webelhuth 1992: 164-178, Müller and Sternefeld 1994, Grewendorf and Sabel 1999). However, there are also approaches, for a variety of languages (including German), that analyze scrambling in terms of base generation (see Haider 1988, Fanselow 1993, 2001, 2003, Bayer and Kornfilt 1994, Kiss 1994, Neeleman 1994, Bošković and Takahashi 1998).

Some proposals that argue for a base generation approach critically discuss the traditional arguments put forward by proponents of the movement based approach to scrambling (see in particular Fanselow 1993, 2001 on German; cf. also Bailyn 2001 and Bošković 2004 for relevant discussion on Russian and Japanese). Sometimes these arguments are based on the assumption that

[38] Although Ross (1967) assumed scrambling to be a transformation, he did not consider it a movement transformation in the narrow sense but argued that it better be placed outside syntax in what he called the "stylistic component".

scrambled categories are associated with their underlying positions. Accordingly, the criticism often focuses on the tests supposed to provide evidence for such positions, trying to show that they are not decisive. Interestingly, the present arguments are based on the existence of *intermediate* positions (instead of underlying ones) because it is these positions that ultimately render opaque configurations transparent. As such, these arguments are not subject to the above mentioned criticism. But more importantly, we now briefly illustrate that, all other things equal, an approach to scrambling in terms of base generation faces problems when confronted with (some of) the opacity effects discussed in the present study.

First consider the case of simple bleeding with a FQ in (50-a).

(50) a. *Wem$_1$ hat sie einen Professor alles$_1$ vorgestellt?
who$_{dat}$ has she a professor$_{acc}$ all introduced
"Who all did she introduce a professor to?"

b. Wem$_1$ hat sie alles$_1$ einen Professor vorgestellt?
who$_{dat}$ has she all a professor$_{acc}$ introduced

Given that (50-a) is ungrammatical, a base-generation approach to scrambling could, as a first hypothesis, assume that indefinites that are base generated in between a *wh*-phrase and a FQ interrupt the association between the latter two. Provided the assumption that there is no scrambling transformation, the *wh*-phrase and the FQ in (50-b) must then be base generated adjacent to each other (and to the left of the indefinite) before *wh*-movement applies. Moreover, since the indirect and the direct object can appear in any order, it follows that it must also be possible to base generate an indefinite direct object to the left of an indirect *wh*-object to the left of a FQ. If *wh*-movement applies to such a configuration, then the result is again (50-a). To block this derivation of (50-a), the base generator could formulate the second hypothesis that movement of a *wh*-phrase associated with a FQ must not cross an indefinite.

But now consider the case of counter-bleeding in (51):

(51) Wen$_1$ hat ein Professor alles$_1$ beleidigt?
who$_{acc}$ has a professor$_{nom}$ all insulted
"Who all did a professor insult?"

In (51), the *wh*-phrase successfully associates with the FQ. On the one hand, it could have been generated adjacent to the FQ, in line with the base-generator's

first hypothesis. This, however, is at variance with the second hypothesis because the *wh*-phrase must then move across the indefinite. If, on the other hand, the *wh*-phrase and the FQ are base generated separately (in agreement with the second hypothesis), with the indefinite in between them, then this is in conflict with the first hypothesis. To conclude, there is no way the base generator can account for both (50-a,b) and (51), at least not obviously so. The present study thus provides a novel argument for the idea that scrambling is a movement transformation.

5.4. Tucking-in

In section 4, we presented an analysis of ordering effects with multiple specifiers which distinguishes two cases. First, there are multiple specifiers that come about by a mixture of two operations: inner specifiers are created by Move, the outermost specifier is created by Merge. Second, there are multiple specifiers created by pure movement. Multiple specifiers of the mixed type were assumed to be the result of the ISC (based on the theory of EF insertion in Müller 2010, 2011). Instances of the pure type were argued to follow from the way the derivation handles multiple attraction by a single EF: first, the attracted categories are collected on a stack; then, they are remerged in the inverse order.

Richards (2001) provides an alternative mechanism to derive ordering effects in multiple specifiers of the pure type, which he dubs the theory of tucking-in. The gist of this theory is as follows. Suppose that α and β are attracted by the same probe on a head H. If α asymmetrically c-commands β, then the transderivational constraint Shortest Paths ((52); Chomsky 1995, Collins 1994, Nakamura 1998) requires that H first attracts α and then β:

(52) *Shortest Paths*:
If two derivations D_1 and D_2 are in the same reference set and the movement paths of D_1 are shorter than the movement paths of D_2, then D_1 is to be preferred over D_2.

If α asymmetrically c-commands β, then the path from α to SpecH is shorter than the path from β to SpecH. Therefore, the derivation where α moves first blocks the derivation where β moves first. In a second step, then, β undergoes movement and "tucks in" to the innermost specifier position γ, which is below the one occupied by α. Richards (2001) argues that tucking-in to the

innermost specifier is also forced by Shortest Paths because the path from a position P to the innermost specifier of some head H is shorter than the path from P to an outer specifier of H. In the above scenario, β's movement path to the innermost specifier γ is shorter than β's movement path to an outer specifier position above α.

Order effects with multiple specifiers of the mixed type are only briefly touched upon by Richards (2001, 75). But it seems as if the tucking-in theory were also applicable to those. The reason is that in this theory the question as to whether movement targets an inner or an outer specifier does not depend on whether an already existing specifier β in the same specifier domain has been created by Move or by Merge. All that counts is that the path to a position below β is shorter than the path to a position above it. The only thing that needs to be added to the theory of tucking-in in order to derive the same order within mixed multiple specifiers as derived by the ISC is the assumption that Merge applies before Move (see Chomsky 1995), i.e., the specifier that comes about by Merge must be created first.

Since, representationally, multiple specifiers are the same, no matter whether they come about by pure movement or by a mixture of Move and Merge, it is natural to derive them by the same mechanism. In contrast, the theory on EF insertion that underlies the ISC has nothing to say about multiple specifiers of the pure type. Thus, the broader domain of application of Richards' (2001) tucking-in theory as compared to the one covered by the theory of EF insertion and the stack theory, respectively, when considered in isolation, speaks in favor of the theory of tucking-in.[39] Despite this, we have opted against the tucking-in theory for the following conceptual reasons.[40]

[39] This is not entirely correct because, as noted above, the theory of tucking-in must resort to the additional principle Merge before Move in order to derive the whole range of ordering effects in multiple specifiers. For the sake of argument, we grant here that this principle is well motivated.

[40] Empirically, the two theories make different predictions for mixed specifier domains where at least two specifiers are formed by Merge and one comes about by Move. In such a scenario, the tucking-in theory predicts that the movement in question targets the innermost specifier, due to Shortest Paths. The theory of EF insertion predicts that movement either targets the innermost specifier or a position in between two specifiers. The reason is that as long as the outermost specifier is yet to be merged, the head is still active, and therefore EF insertion can apply. The predictions are hard to test, though, because bona fide instances of multiple specifiers created by pure Merge are rather rare (if they exist at all).

First, tucking-in is incompatible with strict cyclicity: it involves movement to a position that forms a proper part of the current phrase marker, thus violating the SCC ((19) in section 3). Technically speaking, this violation is not effective for Richards (2001) because in this work a weaker notion of cyclicity is presupposed. The weaker notion is, of course, not violated by tucking-in. However, on purely conceptual grounds, strict cyclicity is to be preferred over weak cyclicity, following the general strategy that more restrictive theories should be preferred over less restrictive ones. As both the derivation of the ISC in (18) as well as the stack theory of parallel movement obey strict cyclicity, this is a first conceptual argument against tucking-in and in favor of the theory proposed here.[41]

Second, Richards' (2001) derivation of tucking-in relies on the transderivational constraint Shortest Paths.[42] Transderivational constraints are inherently more complex than local constraints in that they require the comparison of (parts of) derivations, which local constraints do not. Therefore, attempts have been made to replace transderivational constraints by local constraints (Chomsky 1995, Collins 1997, Frampton and Gutman 1999). It is not clear how the notion of Shortest Paths invoked in the derivation of tucking-in could be rephrased in terms of a local constraint, presumably because it comprises both one-to-many relations (between a head and the categories it attracts) and many-to-one relations (between various positions and a category that is supposed to move to one of them).[43] While we would not generally reject transderivational constraints as such, we believe that if an analysis can be shown to do without them, then it is to be preferred over one that cannot. The analysis in section 4 exclusively relies on local constraints.

Third, and perhaps most importantly, tucking-in does not fit into the strictly derivational account of opacity effects presented in section 4. To see this, reconsider the case of counter-bleeding as it shows up with PG-binding (12-a), here repeated as (53).

[41] Compare also Collins and Stabler (2011), who derive strict cyclicity as a theorem within their theory.

[42] The definition of Shortest Paths in Richards (2001, 98) differs from the one in (52), but it is still transderivational.

[43] Chomsky (1995) successfully replaces a weaker version of Shortest Paths, which is exclusively concerned with one-to-many relations, by the MLC. Crucially, this weaker version is not sufficient to fully derive tucking-in.

(53) dass Hans das Buch$_2$ der Maria [ohne PG$_2$ durchzulesen]
that Hans$_{nom}$ the book$_{acc}$ the Maria$_{dat}$ without through to read
zurückgibt
back gives
"that Hans returns the book to Maria without reading it through"

Given the background of the present analysis, a derivation of (53) based on tucking-in would involve an intermediate state where the indirect object has scrambled across the adjunct while the direct object still occupies its base position, waiting to tuck-in below the indirect object in the next step, see (54).

(54) [$_{vP}$ Hans der Maria$_3$ [... PG$_3$ ...] t$_3$ das Buch$_2$ ...]
② ①

In this configuration, nothing prevents Agree (and thus binding) to apply between the indirect object and the PG (see ② above). Consequently, binding of the PG by the direct object should be blocked: When the direct object undergoes tucking-in below the indirect object, the PG is already bound. Binding by the direct object, however, is exactly what is attested empirically in (53). In principle, the tucking-in theory could be complemented by an additional assumption to the effect that Agree does not apply until the current phrase (vP in (54)) has been completed, which would procrastinate Agree from being established with the PG until the direct object has undergone tucking-in. Once tucking-in has applied, one may argue, binding of the PG by the indirect object is blocked by the MLC because the direct object is closer to the PG than the indirect object.

Although this solution works technically, it runs against two important tenets of derivational syntax. First, it has been argued that Agree (and syntactic operations in general) should apply as early as possible once the feature that triggers the operation has been introduced (see section 4.1 for references). Procrastinating Agree in (54) is at variance with this assumption.[44] Second, Brody (2002) argues that the representational residue of derivational theories should be minimized. In the derivational account of opacity that we proposed, intervention effects as such do not exist; rather, they are simply a side effect of the way the derivation unfolds over time. For instance, binding of the PG

[44] Incidentally, the earliness requirement is also adopted by Richards (2001, 38-42), where it serves to derive the weaker version of cyclicity, on the basis of which tucking-in is derived.

by the indirect object in (53) is impossible simply because the direct object reaches a position from where it c-commands the PG and is thus able to bind it *before* the indirect object does. No reference to any particular representational relation between the two objects (such as intervention) is necessary to achieve this. In contrast, the alternative account based on tucking-in that procrastinates Agree makes reference to the MLC, which in turn refers to a particular representation in which the direct object intervenes between the indirect object and the PG. Thus, the present theory arguably reduces its representational residue relative to a comparable theory based on tucking-in. From this perspective, a theory without tucking-in seems more appropriate to account for order preservation effects within a derivational framework.

6. Conclusion

In this paper, we illustrated that syntactic relations between an associate and its antecedent are often opaque. The evidence came from association with floating quantifiers and binding of parasitic gaps in German. We argued that these instances of syntactic opacity and the asymmetries they involve can be given a derivational account within the probe-goal framework if (a) both the associate and its potential antecedents (the arguments of a verb) are merged in fixed positions, (b) multiple attraction of the potential antecedents by the same probe preserves their relative order, (c) association applies as soon as the structural context for its application is given, and (d) there is subsequent movement that renders the context of application opaque. To achieve this, we proposed that scrambling is triggered by EFs (subject to the ISC), and that order preservation is the result of collecting multiply attracted elements on a stack. As a result, the intervention effects with respect to antecedent and associate, which usually receive a representational treatment in terms of the MLC, were shown to follow without further ado in a strictly derivational fashion. Since the MLC introduces a representational residue, which should be minimized in derivational theories, and since it also poses various other problems (order preservation effects, anti-superiority, the analysis of multiple parasitic gaps), we argued that the MLC should be dispensed with. We made a proposal as to how the approach can be reconciled with apparent counter-evidence coming from *wh*-in-situ and from the claim that there is a minor class of verbs in German that project their objects in a non-standard order. It was argued that the

analysis provides a novel argument to the effect that scrambling is to be analyzed as a transformation, and we finally suggested that the present account is suited better to account for order preservation effects within a derivational framework than the theory of tucking-in.

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