

Interpreting verb clusters

Stefan Keine Rajesh Bhatt

University of Massachusetts Amherst

(to appear in *Natural Language and Linguistic Theory*)

We argue for syntactic verb cluster formation in certain restructuring configurations, the result of which is interpreted via function composition. This cluster formation can be diagnosed by its semantic consequences. In particular, we observe that in these configurations all embedded elements must receive a matrix interpretation even if there is no evidence that these elements leave the embedded VP at any stage of the derivation. We show that verb cluster formation and function composition provide a solution to this puzzle. We propose that the process of cluster formation takes place whenever two lexical verbs are part of the same phasal Spell-Out domain, which we relate to Richards' (2010) *distinctness* proposal. Our analysis entails that (i) some instances of head movement have semantic effects and hence cannot take place at PF; (ii) the set of rules of semantic composition must include function composition; and (iii) it provides additional support for the notion of *distinctness* and extends its application to head movement.

Keywords: head movement · function composition · restructuring · semantics of movement · distinctness · phases · long passive

1	Introduction: Verb clusters vs. deficient complementation	1
1.1	Compactness in the long passive	3
1.2	Non-compactness in the long passive	5
1.3	Overview of our proposal	6
2	Scope restrictions in long and local passives	8
2.1	The ubiquity of wide scope	10
2.2	A constraint on QR?	14
2.3	Constraints on modification	15
2.4	Section summary	18
3	The syntax and semantics of verb incorporation	19
3.1	The proposal	19
3.2	Application	23
4	The nature and motivation of verb incorporation	28
5	Verb incorporation and phrasal movement	32
6	Concluding remarks	35
	Appendix: Questionnaire study	39
	References	44

1 Introduction: Verb clusters vs. deficient complementation

A phenomenon that has received a considerable amount of attention in the recent syntactic literature is the German LONG PASSIVE (see, e.g., Höhle 1978, Fanselow 1987, von Stechow 1992, Haider 1993, 2010, Sabel 1996, Wöllstein-Leisten 2001, Bayer & Kornfilt 1990, 1994, Wurmbrand 2001, 2007, Bobaljik & Wurmbrand 2005). Some verbs taking infinitival complement clauses like *vergessen* ‘forget’, *versuchen* ‘try’, and *beschließen* ‘decide’ can be passivized in two distinct way, as illustrated in (1). Passivization of the active clause in (1a) can give rise to either the LOCAL PASSIVE in (1b), in which the accusative case of the object *den Traktor* ‘the tractor’ is preserved, or alternatively to the LONG PASSIVE in (1c), in which this DP receives nominative case and controls verb agreement.¹

- (1) a. *ACTIVE*
 Gestern hat Fritz den Traktor zu reparieren versucht.
 yesterday has Fritz.NOM the tractor.ACC to repair tried
 ‘Yesterday Fritz tried to repair the tractor.’
- b. *LOCAL PASSIVE*
 Gestern wurde **den Traktor** zu reparieren versucht.
 yesterday was the tractor.ACC to repair tried
 ‘Yesterday it was tried to repair the tractor.’
- c. *LONG PASSIVE*
 Gestern wurde **der Traktor** zu reparieren versucht.
 yesterday was the tractor.NOM to repair tried
 ‘Yesterday it was tried to repair the tractor.’

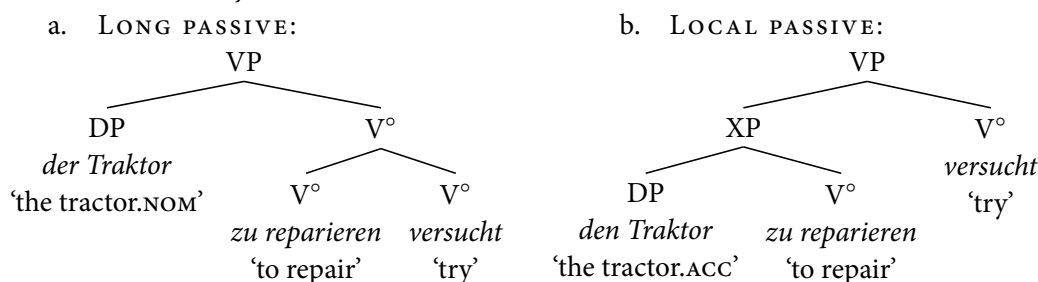
Despite the fact that the passives look almost identical on the surface, they exhibit strikingly different behavior for a variety of syntactic tests. As laid out in greater detail shortly, the two lexical verbs *zu reparieren* ‘to repair’ and *versuchen* ‘try’ appear to form a unit in the long passive but not in the local passive. The case difference between (1b) and (1c) can be used for illustration. What is passivized in both structures is the matrix verb *versuchen* ‘try’. This passivization affects the case feature of the internal argument of *zu reparieren* in the long passive but not in the local passive. To borrow Haider’s (2010) terminology, the two verbs are descriptively *compact* for case purposes in the long passive.²

¹ In the example sentences, we provide the grammatical case of a DP regardless of whether or where it manifests itself morphologically. In, e.g., (1a) *den Traktor* is glossed as ‘the tractor.ACC’ despite the fact that morphologically the accusative case is realized on the determiner and not the head noun. In other examples (e.g., (9c)), case is not realized on a DP at all but can be deduced from verbal agreement. We do so to have a consistent glossing scheme and because the morphological expression of case is irrelevant for our concerns here.

² A remark about the use of long passive constructions in this paper is in order: It is often acknowledged that for some speakers the long passive is rather marked. For other speakers it is entirely impossible. These facts are sometimes taken to show that the long passive either is not a proper part of German grammar (Höhle 1978: 177) or few theoretical conclusions can be drawn from it (Kiss 1995: 137). We decidedly disagree with this sentiment. First, the majority of the speakers we have consulted accept the construction. Second, for speakers whose grammar contains the long passives the semantic restrictions reported here and in the

Two lines of analysis have been put forth in the literature to handle compactness effects of this kind. One family of accounts proposes that the two verbs form a syntactic unit in the long passive but not in the local passive. In other words, the two verbs form a **VERB CLUSTER** and (1c) involves a monoclausal structure projected over a complex verb. Local passives, on the other hand, have both verbs projecting their own verbal projections. This is sketched in (2). We use the variable name ‘XP’ to designate the embedded verbal projection in the local passive as nothing hinges on its exact categorial status.

(2) *Verb cluster analysis*



While some verb cluster approaches treat the cluster as base-generated (Haider 1993, 2010), others treat it as syntactically derived (Bayer & Kornfilt 1990, 1994, von Stechow 1992).³ This analysis derives in a straightforward fashion why passivization affects the case of *der Traktor* in the long passive. Because there is only a single verb, which *der Traktor* is the object of, passivization of this verb affects the case of this DP.

A second line of approach proposes that both the long and the local passive involve verbal complements, but claims that the verbal complement in the long passive contains less functional structure than in the local passive. Because these approaches assume that the matrix verb takes a phrasal constituent as its complement which may moreover vary in size, we will refer to these approaches as **XP-COMPLEMENTATION** accounts, following the terminology in Wurmbrand (2007). This line of approach has been developed in great detail by Wurmbrand (2001, 2007) and Bobaljik & Wurmbrand (2005), who propose that the

(fn. cont'd)

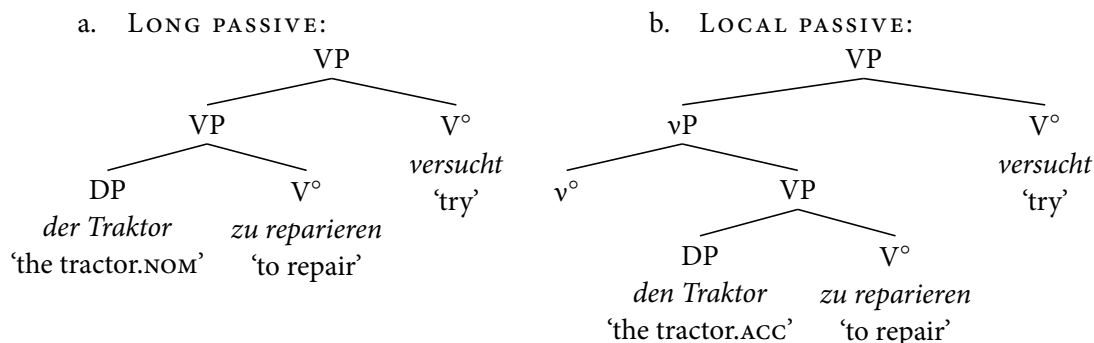
previous literature are remarkably clear and robust. Third, large scale data collections carried out by Wöllstein-Leisten (2001) and Schmid, Bader & Bayer (2005) confirm that the long passive is readily accepted by speakers. According to Wöllstein-Leisten (2001: 86), the set of verbs allowing long passives include include *ablehnen* ‘reject’, *anbieten* ‘offer’, *anfangen* ‘start’, *aufhören* ‘stop’, *beabsichtigen* ‘intend’, *beginnen* ‘begin’, *beschließen* ‘decide’, *geloben* ‘pledge’, *probieren* ‘try’, *vergessen* ‘forget’, *versuchen* ‘try’, and *vorschlagen* ‘suggest’.

³ While we will primarily focus on the long passive here, verb cluster analyses are of course not limited to this construction (see, e.g., Evers 1975, Haegeman & van Riemsdijk 1986, Fanselow 1987, Bayer & Kornfilt 1990, 1994, von Stechow 1992, Grewendorf & Sabel 1994, Williams 2003).

Complex head approaches have likewise been explored for the clause-final clusters of a lexical verb along with modals and auxiliary verbs. Various authors argue that these verbs are either base-generated as a complex head that subsequently combines with its thematic arguments (Steedman 1985, Jacobs 1992, Haider 1993, 2003, Hinrichs & Nakazawa 1994, Kiss 1995, Müller 1999, 2002, 2006, Meurers 2000, Williams 2003) or that this complex head is syntactically derived (Evers 1975, Haegeman & van Riemsdijk 1986, von Stechow & Sternefeld 1988, Bayer & Kornfilt 1990, 1994, Salzmann 2011, 2013). In this paper we will limit our attention to cases of *prima facie* VP/vP complementation, viz., the combination of various lexical verbs.

embedded complement is a bare VP in the long passive but a vP in the local passive. This is schematized in (3):

(3) *XP-complementation analysis*



On this analysis, the case alternation in the long passive is a result of the structural deficiency of the embedded complement. Assuming that accusative case is assigned by a v head, passivization of the matrix clause does not have an impact on accusative case assignment in the local passive, where the v head within the complement can still assign accusative case. In the long passive, on the other hand, the complement lacks an accusative case assigner. Passivization of the matrix clause renders the matrix v head unable to assign accusative case as well. As a result, the embedded direct object receives nominative case from matrix T.

Both types of analyses offer elegant explanations of some aspects of long passives but are challenged by other properties.⁴ On the one hand, the compactness of long passives is pervasive and this pervasiveness is most straightforwardly captured on a verb cluster analysis. On the other hand, movement facts call into question whether the two verbs form a syntactic unit in the long passive and thus support XP-complementation approaches. These two points are illustrated in the following sections.

1.1 *Compactness in the long passive*

As just discussed, case is one area in which the long passive, but not the local passive, descriptively displays compactness of the two lexical verbs.

A second point of divergence between the two structures concerns the possible placement of negation. While it is possible for negation to occur between the two verbs in the local passive (4a), this is ruled out in the long passive (4b). In the latter, the two verbs are descriptively compact in that they may not be split up by negation (Haider 2010: 313):

⁴ As is typically the case for dichotomies of this type, some accounts fall between the two poles. Sabel (1996), for instance, takes the infinitival complement to be a full-fledged CP, which is rendered transparent by incorporation of an embedded functional head into the matrix predicate. As such, this account relies on complex head formation but not between the two lexical verbs. Similarly, Wurmbrand (2013) takes the embedded complement to be a vP, the v head of which incorporates into the matrix verb.

- (4) a. *LOCAL PASSIVE*
 Gestern wurde den Traktor zu reparieren (nicht) versucht.
 yesterday was the tractor.ACC to repair not tried
 ‘Yesterday it was (not) tried to repair the tractor.’
- b. *LONG PASSIVE*
 Gestern wurde der Traktor zu reparieren (*nicht) versucht.
 yesterday was the tractor.NOM to repair not tried
 ‘Yesterday it was (*not) tried to repair the tractor.’

Similarly, while relative clause extraposition above the matrix verb is possible in both structures, an extraposed clause may intervene between the two verbs only in the local passive (Haider 2010: 334):

- (5) a. weil {der Brief} / {den Brief} einzuwerfen vergessen wurde, **der**
 since the letter.NOM / the letter.ACC in-to-put forgotten was that
hier liegt
 here lies
 ‘since it was forgotten to post the letter that is lying here’
- b. weil {*der Brief} / {den Brief} einzuwerfen, **der hier liegt**,
 since the letter.NOM / the letter.ACC in-to-put that here lies
 vergessen wurde
 forgotten was

A fourth illustration comes from prosody. In the local passive, an intonational break occurs between the two verbs while they are prosodified as one unit in the long passive (Wurmbrand 2001: 295f.), as shown in (6). Intonational breaks are designated via a ‘|’.⁵

- (6) a. *LOCAL PASSIVE*
 weil | den Löwen den Kindern zu zeigen | vergessen wurde
 because the lion.ACC the children.DAT to show forgotten was
- b. *LONG PASSIVE*
 weil der Löwe (|) den Kindern (|) zu zeigen vergessen wurde
 because the lion.NOM the children.DAT to show forgotten was
 ‘because it was forgotten to show the lion to the children’

Descriptively, the two verbs thus form a compact unit in the long passive but not in the local passive. The verb cluster account offers a simple and elegant analysis of the compactness of the long passive: Because the two verbs form a syntactic unit, the restrictions on negation, relative clause extraposition and the placement of intonational breaks receive a principled

⁵ The prosodic boundaries in (6b) is the unmarked option. For many speakers it is the only one. There are, interestingly, some speakers that marginally allow a long passive sentence to have a prosody similar to the local passives, viz., with a prosodic break between the two verbs. This issue is addressed in fn. 32.

explanation. In the local passive, by contrast, no compactness arises because the verbs do not form a cluster.

XP-complementation accounts are able to recast compactness in terms of functional deficiency but are forced to do so in a more piecemeal fashion. That negation and extraposed relative clauses cannot intervene between the two verbs in the long passive requires additional assumptions. For example, extraposition might be able to target vPs but not VPs. Likewise, the process that yields the V–Neg–V order might apply to vPs but not VPs. Furthermore, the absence of a prosodic break between the two verbs can be captured by assuming that only vPs are correlated with intonational units (in line with Kratzer & Selkirk 2007).

While stipulations of this character capture the empirical facts, they are not without problems. First, for at least a subset of the compactness effects it is unclear whether an account in terms of functional deficiency is tenable. Haider (2010), for instance, argues that extraposition in German can target a VP. If this is correct, extraposition should be able to interrupt the two verbs in the long passive, contrary to fact (though see Wurmbrand 2007). A second point worth noting is that the overall compactness of the long passive emerges as nothing more than a coincidence. While the verb cluster account offers a uniform account of the various compactness properties, the XP-complementation account has to invoke a multitude of unrelated stipulations, a point elaborated on in the next section. This can be taken to indicate that this line of attack misses a generalization that a verb cluster account captures in a more elegant way.

1.2 *Non-compactness in the long passive*

In spite of the numerous compactness properties that long passives display and that receive a straightforward explanation in terms of verb clusters, there is a severe problem that this analysis faces (see Wurmbrand 2001, 2007). It is possible in the long passive to move the infinitival verb, either on its own or alongside other elements, while stranding the higher verb. Examples are given in (7). (7a,b) are from Wurmbrand (2007: 264), (7c) is taken from Bayer & Kornfilt (1994: 46) (also see Fanselow 1987: 183 for an example involving scrambling). The two verbs do not display compactness with respect to movement.

- (7) a. [Zu reparieren]₁ wurden nur blaue Autos t₁ vergessen.
 to repair were only blue cars.NOM forgotten
 ‘Only blue cars were forgotten to be repaired.’
- b. die₂ hier t₁ versucht wurden [möglichst kurz t₂
 which.NOM here tried were as.DEG.as.possible short
 zusammen zufassen]₁
 to.summarize
 ‘which we tried to summarize here as briefly as possible’
- c. dass der Wagen₂ t₁ vergessen wurde [in die Garage t₂ zu fahren]₁
 that the car.NOM forgotten was into the garage to drive
 ‘that it was forgotten to drive the car into the garage’

To derive, e.g., (7c), there must be a constituent [*in die Garage t zu fahren*], which undergoes extraposition. Yet (7c) is a long passive. To derive the movement, it must be the case that the sentences in (7) contain an XP-complementation structure and that, consequently, the two verbs cannot form a syntactic unit. If long passives are invariably projected over a complex verbal base as in (2a), the string *in die Garage zu fahren* does not form a constituent and extraposition should be ungrammatical, contrary to fact. Movement thus entails a constituency which the verb cluster crucially has to deny.⁶ The possibility of movement in (7) has been taken as one of the strongest arguments against a verb cluster approach and in favor of an XP-complementation approach (Wurmbrand 2001, 2007).

An intriguing feature of long passives is thus that they are compact with respect to some tests but non-compact with respect to movement, giving rise to seemingly contradictory behavior.

1.3 Overview of our proposal

As noted above, it is possible in XP-complementation accounts to treat compactness effects as the by-product of the structural deficiency of the complement. In this paper, we will first present evidence for compactness that cannot plausibly be accommodated under such a treatment. Concretely, we will show that long passives form a compact domain for scope-taking elements and the construal of adjuncts. While parts of this observation have been discussed and implemented in an XP-complementation account by Bobaljik & Wurmbrand (2005), we will demonstrate that the compactness is much more pervasive than such an account predicts. We will argue that the full scale of the pattern lies beyond a pure XP-complementation account but falls out neatly on a verb cluster account. One conclusion, then, is that verb clusters do play a crucial role in the syntax of the long passive.

This finding will reinforce the conclusion drawn in the preceding section: On the one hand, the pervasive compactness of the two verbs strongly supports a verb cluster analysis. On the other hand, the possibility of moving a phrasal constituent that contains the infinitival verb but not the matrix verb provides a compelling argument for an XP-complementation account. Because previous approaches treat long passives as either obligatorily forming a syntactic unit or as obligatorily not doing so, this ambivalent behavior remains a contradiction under either analysis.

In the theoretical part of this paper, we argue for a syntax and semantics of verb cluster formation that likens it to phrasal movement with respect to its conditioning (distinctness, see section 4) and the fact that it can be semantically contentful (section 3). We will show how the various intricate properties of the long passive fall out from such a treatment. First, we argue that verb clusters are derivationally created in a subset of long passive configurations,

⁶ Haider (2010: 307), who presents a verb cluster account, treats the topicalized verbal projection in (7a) as base-generated in its surface position, semantically linked to a silent verb in the base position which forms a cluster with the in-situ verb. As he himself notes, no current conception of movement is able to derive structures like (7) from a verb cluster structure. Moreover, this analysis requires the existence of pronominal verbs that can be bound by a verbal projection. It is not at all clear that there is evidence for such elements beyond the fact that a verb cluster account requires them.

namely those in which the verbal complement remains in situ. In local passives and in long passives in which the verbal complement is moved, no verb cluster is formed. This derivational characterization of long passives will allow us to handle both compactness and non-compactness properties. In addition to verb cluster formation, we will follow the core insight of XP-complementation accounts: the complement in long passives is a bare VP while it is a vP in local passives. This results in the following distribution of verb cluster formation:

- (8) a. $[\text{VP } [\text{VP DP } V^\circ \text{ VP}] V^\circ] \Rightarrow [\text{VP } [\text{VP DP } t \text{ VP}] [\text{V}^\circ V^\circ V^\circ]]$
 b. $[\text{VP } [\text{vP } v \text{ [VP DP } V^\circ \text{ VP]} \text{ vP}] V^\circ] \Rightarrow \text{no cluster formation}$
 c. $[\text{VP } [\text{VP DP } V^\circ \text{ VP}] V^\circ] \Rightarrow \text{no cluster formation}$

A key difference from previous accounts that postulate derived verb clusters is that the cluster is the result of regular head-to-head movement. To stress its derivational character, we will refer to it as *verb incorporation* throughout. Another hallmark of our analysis is that XP-complementation and verb clusters do not merely exist side by side. Rather, they are closely connected: a defective XP-complementation structure is the derivational cause for verb cluster formation. As such, an understanding of one necessitates an understanding of the other.

We furthermore argue that the properties of verb incorporation can be understood if head movement is subject to the same syntactic conditions as phrasal movement. We will propose that the distribution in (8) is a reflex of a more general *distinctness* requirement on syntactic structures, which prohibits identical elements too close to each other and which has been independently proposed for phrasal movement by Richards (2010). A second important question is how verb incorporation is to be interpreted semantically. Again, we adopt the null assumption: the interpretation of head movement follows the same mechanisms as the interpretation of phrasal movement. This gives rise to a curious result: movement of the lower verb in (8a) will have the effect that the DP obligatorily takes scope over the higher verb even though it does not c-command it syntactically. Schematically, incorporation of α into β has the semantic effect that both α and β are interpreted in α 's base position. In other words, raising of α to β pulls β down semantically. This account provides an explanation of the scope and construal facts we observe.

The remainder of this paper is structured as follows: Section 2 investigates in detail the semantic restrictions that hold in the long passive, in particular regarding the scope of quantificational elements and the construal of adverbial modifiers. We will argue that these restrictions provide compelling evidence for the existence of verb clusters. We then propose our analysis in terms of verb incorporation in sections 3 and 4. Section 3 develops an account of the syntactic and semantic properties of verb incorporation and demonstrates how it yields the semantic restrictions in the long passive. Section 4 explores the syntactic distribution and rationale of verb incorporation. Section 5 examines a prediction that emerges from this characterization and demonstrates it to be borne out. Finally, section 6 concludes.

2 Scope restrictions in long and local passives

This section presents empirical evidence in support of the view that verb clusters must play an integral role in the syntax of the long passive. We will demonstrate scope and adjunct construal restrictions that cannot be plausibly attributed to lack of functional structure in the complement and therefore are problematic for XP-complementation accounts but entirely consistent with verb cluster approaches. Because the long passive is sometimes considered a substandard phenomenon of German (see fn. 2), we conducted a questionnaire study to give a first approximation to the amount of cross-speaker variability that is evident in the data. The results of this questionnaire study are reported in the Appendix.

Bobaljik & Wurmbrand (2005) observe that long passives exhibit scope restrictions not shared by either the local passive nor the active clause. While the embedded object may take scope below the matrix verb in the latter two, only matrix scope is available in the long passive. This is illustrated in (9), modelled after Bobaljik & Wurmbrand (2005: 810, 835).

- (9) a. *ACTIVE*
 weil er **alle Traktoren** zu reparieren vergessen hat
 because he all tractors.ACC to repair forgotten has [forget >> ∀]
 ‘because he forgot to repair all tractors’
- b. *LOCAL PASSIVE*
 weil **alle Traktoren** zu reparieren vergessen wurde
 because all tractors.ACC to repair forgotten was [forget >> ∀]
 ‘because it was forgotten to repair all tractors’
- c. *LONG PASSIVE*
 weil **alle Traktoren** zu reparieren vergessen wurden
 because all tractors.NOM to repair forgotten were
 ‘because it was forgotten to repair all tractors’ [*forget >> ∀; ∀ >> forget]

According to the low reading (*forget* >> ∀), at least one tractor was not repaired. The high reading (∀ >> *forget*) is considerably stronger. It entails that not a single tractor was repaired. The long passive in (9c) only has this stronger reading.

The paradigm in (9) establishes that the embedded object has to take matrix scope in long passives. It is, however, uninformative about whether or not the active and the local passive have only a low reading or also a high reading. The reason is that there exists an entailment relation between the two readings: any situation that would make the high reading true (i.e., ones in which no tractor was repaired) would also make the low reading true. Consequently, while (9a,b) are true in such a scenario, this does not constitute evidence for the existence of a ∀ >> *forget* reading. Paradigms like (9) that utilize the universal quantifier allow us to diagnose the absence of an embedded scope but not the absence of matrix scope.

This limitation may be circumvented by employing a quantifier like *nur ein* ‘only one’ instead of the universal. With this adjustment, the two readings differ in their presuppositional content and can hence be distinguished. (10) then corroborates the conclusion that the direct

object has to take matrix scope in long passives but in addition demonstrates that only a low reading is possible in local passives (see Appendix A. for more information).⁷

- (10) a. *ACTIVE*
 Gestern hat er **nur einen einzigen Traktor** zu reparieren vergessen.
 yesterday has he only a single tractor.ACC to repair forgotten
 ‘Yesterday he forgot to repair only one tractor.’ [*forget* >> *only*; *only* >> *forget*]
- b. *LOCAL PASSIVE*
 Gestern wurde **nur einen einzigen Traktor** zu reparieren vergessen.
 yesterday was only a single tractor.ACC to repair forgotten
 ‘Yesterday it was forgotten to repair only one tractor.’
 [*forget* >> *only*; **only* >> *forget*]
- c. *LONG PASSIVE*
 Gestern wurde **nur ein einziger Traktor** zu reparieren vergessen.
 yesterday was only a single tractor.NOM to repair forgotten
 ‘Yesterday it was forgotten to repair only one tractor.’
 [**forget* >> *only*; *only* >> *forget*]

The obligatory wide scope of the nominative DP constitutes yet another example of the compactness of long passives: it is not possible for this element to take scope between the two verbs. As such, the restriction follows without further ado from a verb cluster analysis, where this DP is projected as an argument of the complex verb *zu reparieren vergessen*.

On an XP-complementation account, further assumptions are necessary to capture this scope restriction and it is instructive to consider these assumptions. Bobaljik & Wurmbrand (2005) attribute it to the independent observation that the nominative DP cannot remain inside the verbal complement in long passives. If the complement is, e.g., extraposed, the nominative element cannot be within it, as shown by (11), based on Wöllstein-Leisten (2001: 88).⁸

- (11) dass ([✓]der Hund) bis jetzt noch nicht t₁ versucht wurde [([✓]der Hund) abzurichten]₁
 that the dog.NOM until now still not tried was the dog.NOM
 train

⁷ Scenarios unambiguously diagnosing the scope relations in (10) are given in (i):

- (i) a. *forget* >> *only*:
 There are five tractors. John was told to repair only one of them. He forgot about that and inadvertently fixes all five.
- b. *only* >> *forget*:
 There are five tractors. John was told to repair all of them. He repaired four of them but forgot about the fifth one.

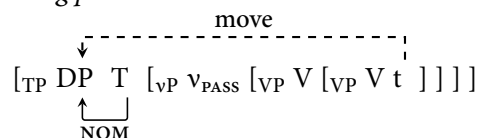
⁸ The reverse holds in local passives, where non-focus scrambling out of the verbal complement is impossible:

- (i) dass (*den Hund) bis jetzt noch nicht t₁ versucht wurde [([✓]den Hund) abzurichten]₁
 that the dog.ACC until now still not tried was the dog.ACC train
 ‘that it was not yet tried to train the dog’

‘that it was not yet tried to train the dog’

Based on this general fact, Bobaljik & Wurmbrand (2005) propose that the embedded DP in the long passive has to raise into the matrix clause in order to receive nominative case from matrix T as the verbal complement, an embedded VP, does not contain a case assigner (12a). Because in the local passive the verbal complement is a vP, it contains a v head. The object therefore receives accusative case there and does not need to raise (12b).

(12) a. *Long passive*



b. *Local passive*



Moreover, Bobaljik & Wurmbrand (2005) stipulate that nominative case assignment takes place at LF and that as a consequence the DP cannot reconstruct into its base position in (12a). This yields the obligatory wide scope in (9c) and (10c).

An account along these lines is faced with a number of conceptual and empirical challenges, however. The requirement that case checking takes place at LF and can therefore not reconstruct, for instance, is inconsistent with the large body of evidence that A-movement may reconstruct (see, among others, Barss 1986, Romero 1997, Fox 2000, Sportiche 2006, Lebeaux 2009). Furthermore, it has been observed by Takahashi (2010, 2011, 2012) and others for Japanese that the wide scope requirement is not limited to direct objects but encompasses other quantificational elements, even though these receive their case within the verbal complement. As demonstrated in the next section, this also holds for German. This makes it clear that the high scope restriction cannot be reduced to case assignment, a problem for XP-complementation accounts. In what follows, we provide a general account of the wide scope restriction. However, the obligatory raising of the subject out of the embedded clause in the long passive will not follow from this account. Bobaljik & Wurmbrand’s (2005) proposal provides one model of what could drive such a movement.

2.1 *The ubiquity of wide scope*

As just mentioned, the scope restriction in long passives is not limited to the direct object. It extends to indirect objects and, surprisingly, the construal of adjuncts. Because none of these elements receive case from the matrix clause, a mechanism other than case assignment must be responsible for their scope behavior. We consider and reject a QR-based alternative that has been proposed in the XP-complementation literature. Instead, we conclude that these facts favor a verb cluster analysis. To underscore the generality of this conclusion we will provide evidence from a number of constructions, namely quantificational DPs, negative polarity items and the *de re/de dicto* distinction.

2.1.1 Quantifier scope

Recall from (9) and (10) that the direct object has to take scope over the matrix verb in long passives. As (13) illustrates, this restriction also holds for the indirect object of an embedded ditransitive predicate for most speakers (also see fn. 11 and 32). Moreover, matrix scope is absent in local passives (see Appendix B.).⁹

- (13) a. *LOCAL PASSIVE*
 Erst gestern wieder wurde *den Fritz* nur einem einzigen Studenten
 just yesterday again was the Fritz.ACC only a single student.DAT
 vorzustellen vergessen.
 to.introduce forgotten
 ‘Just yesterday it was forgotten to introduce Fritz to only one student.’
 [*forget* >> *only*; **only* >> *forget*]
- b. *LONG PASSIVE*
 Erst gestern wieder wurde *der Fritz* nur einem einzigen Studenten
 just yesterday again was the Fritz.NOM only a single student.DAT
 vorzustellen vergessen.
 to.introduce forgotten
 ‘Just yesterday it was forgotten to introduce Fritz to only one student.’
 [**forget* >> *only*; *only* >> *forget*]

The scope possibilities of indirect objects are thus restricted in a way that is entirely parallel to direct objects. Because there is no evidence that case assignment to the dative argument differs between local and long passives, a case-driven approach to the scope restrictions does not extend to (13b). (13b) thus poses the following problem for the XP-complementation approach in Bobaljik & Wurmbrand (2005): Because (13b) involves an XP-complementation structure and there is no requirement for the dative DP to raise into the matrix clause, it should be able to remain below the matrix verb and hence receive narrow scope. Yet such scope is impossible.

2.1.2 Negative polarity items

Diagnostics of scope other than quantifiers produce identical results. Due to the implicit negation in its semantics, the verb *vergessen* ‘forget’ may license a negative polarity item (NPI) in its verbal complement. The sentences in (14) demonstrate the behavior of the NPI *auch nur ein einziger Traktor* ‘even a single tractor’ in the two passives. As (14), where the NPI is the

⁹ We provide here the sentences we used in our questionnaire study for ease of comparability. As a consequence, we diverge from the standard practice of giving embedded clauses. The material *erst gestern wieder* in (13) serves the dual purposes of (i) filling the prefield, and (ii) providing for a minimal pair with the topicalization structures to be discussed in Sect. 5. Analogous judgments hold for V-final clauses. In the interest of space, we will not present the active clauses corresponding to the passive examples in this section. For all the tests we are aware of, the active clause allows whatever reading is available in either the local or the long passive. We have also refrained from giving example analogous to (13) for the universal quantifier. Due to the confound identified above, these examples are less informative than ones employing *nur* ‘only’.

direct object of the verbal complement, shows, *vergessen* may license an NPI in this position in the local passive but not the long passive.¹⁰

- (14) a. *LOCAL PASSIVE*
 Gestern wurde **auch nur einen einzigen Traktor** zu reparieren
 yesterday was also only a single tractor.ACC to repair
 vergessen.
 forgotten
 ‘Yesterday it was forgotten to repair even a single tractor.’
- b. *LONG PASSIVE*
 #Gestern wurde **auch nur ein einziger Traktor** zu reparieren
 yesterday was also only a single tractor.NOM to repair
 vergessen.
 forgotten

If it is the indirect object that is an NPI, a parallel generalization emerges, as (15) illustrates. As before, *vergessen* cannot license an embedded NPI in long passives regardless of the case assigned to this NPI (see Appendix C.).

- (15) a. *LOCAL PASSIVE*
 Gestern wurde *den Fritz* **auch nur einem einzigen Studenten**
 yesterday was the Fritz.ACC also only a single student.DAT
 vorzustellen vergessen.
 to.introduce forgotten
 ‘Yesterday it was forgotten to introduce Fritz to even a single student.’
- b. *LONG PASSIVE*
 #Gestern wurde *der Fritz* **auch nur einem einzigen Studenten**
 yesterday was the Fritz.NOM also only a single student.DAT
 vorzustellen vergessen.
 to.introduce forgotten

Like quantifier scope, the distribution of NPIs falls under the generalization that no argument of the verbal complement can be construed below the matrix predicate in long passives and above it in local passives.

2.1.3 *De re vs. de dicto predicates*

Another relevant observation comes from intentional interpretations of DPs. Due to the intensional meaning component of *versuchen* ‘try’, DPs embedded in its complement can normally receive a *de dicto* or a *de re* interpretation. As (16) illustrates, an embedded direct object can be interpreted *de dicto* in local passives but not long passives. According to the *de re* reading, there exist two good students and those particular two students were being looked for. According to the *de dicto* reading, on the other hand, someone tried to find two good

¹⁰ (14b) and (15b) are grammatical under a non-NPI reading of *auch nur ein einziger Traktor*.

students, regardless of whether or not there actually are good students in the real world. Put somewhat differently, the *de re* reading commits us to the existence of two good students in the real world while the *de dicto* reading only implicates their existence in someone's doxastic alternatives. The same restriction applies to the indirect object, as shown in (17). Here, the long passive commits one to the existence of specific good students in the relevant situation, whereas the local passive does not.

- (16) a. *LOCAL PASSIVE*
 Gestern wurde **zwei gute Studenten** zu finden versucht.
 yesterday was two good students.ACC to find tried
 'Yesterday it was tried to find two good students.' [de re/de dicto]
- b. *LONG PASSIVE*
 Gestern wurden **zwei gute Studenten** zu finden versucht.
 yesterday were two good students.NOM to find tried
 'Yesterday it was tried to find two good students.' [de re]
- (17) a. *LOCAL PASSIVE*
 Gestern wurde *den Fritz* **zwei guten Studenten** vorzustellen
 yesterday was the Fritz.ACC to good students.DAT to.introduce
 versucht.
 tried
 'Yesterday it was tried to introduce Fritz to two good students.' [de re/de dicto]
- b. *LONG PASSIVE*
 Gestern wurde *der Fritz* **zwei guten Studenten** vorzustellen
 yesterday was the Fritz.NOM two good students.DAT to.introduce
 versucht.
 tried
 'Yesterday it was tried to introduce Fritz to two good students.' [de re]

Assuming that the *de dicto* interpretation requires the DP to take semantic scope under the intensional predicate *versuchen* 'try', the facts in (16) and (17) fall under the same generalization as the quantifier scope and NPI data just discussed. In all of these cases, the long passive requires embedded arguments to take matrix scope. Note that a *de re* reading is possible in both the local and the long passive. This is unsurprising because such a reading only requires the world variable of the DP to be bound from the matrix clause and hence does not require actual raising into the matrix clause. The *de dicto* reading, on the other hand, requires binding by an operator contributed by *versuchen* and hence requires the DP to take scope under *versuchen*. Crucial for our present concerns is thus the absence of a *de dicto* reading in the long passive.

2.2 A constraint on QR?

We have seen converging evidence that the wide scope requirement in long passives is not limited to the nominative element and hence cannot be reduced to the mechanics of case assignment. This raises the question of whether an XP-complementation account could recast the restriction as a by-product of some other property of the deficient verbal complement. Wurmbrand (2013), who analyzes similar facts from Japanese, explores this option (see also Takahashi 2011, 2012). While she does not explicitly address the German long passive construction, it is instructive to consider whether her proposal can be applied to the scope restrictions observed here. The guiding idea behind her proposal is that the structural deficiency of the embedded VP in long passives does not provide for a QR landing site. Therefore, QR must target a position in the matrix clause, giving rise to obligatory matrix scope. To execute this idea, Wurmbrand (2013) follows Heim & Kratzer (1998) in assuming that only nodes of type $\langle t \rangle$ can be targeted by QR. If the verbal complement is a bare VP, it does not project an external argument and must therefore be of type $\langle e, t \rangle$. In the local passive, on the other hand, the verbal complement projects a PRO and is hence of type $\langle t \rangle$. QR can thus target a position below the matrix verb in the local passive but not the long passive.

While this analysis is empirically more adequate than Bobaljik & Wurmbrand's (2005), it is not without problems either. The crucial assumption that the type of the verbal complement is affected by the presence or absence of the external argument is fundamentally incompatible with Wurmbrand's view that external arguments are not introduced by the lexical verb itself but rather by the designated functional head v . The reason is the following: The verbal complement is of type $\langle e, t \rangle$ only if it semantically selects the external argument which is not projected. But if the external argument is introduced by v , then there is no head in the long passive that would select it. This point is emphasized by Kratzer (1996). There transitive verbs are treated as type $\langle e, \langle s, t \rangle \rangle$, i.e., a function from individuals to event predicates. After projecting the internal argument, the VP node denotes an event predicate (type $\langle s, t \rangle$). Crucially, there is no unsaturated individual-type variable corresponding to the external argument precisely because the external argument is not introduced by the main verb. External arguments are introduced by a v head, which is itself of type $\langle e, \langle s, t \rangle \rangle$. The resulting vP is again of type $\langle s, t \rangle$. If the v head does not introduce an external argument, it simply is of type $\langle s, t \rangle$ and so is the vP it projects. In either case, VP's and vP 's *necessarily* have the same semantic type. In other words, the type of the verbal complement is invariably $\langle s, t \rangle$, regardless of whether it is a bare VP, a vP containing a PRO or a defective vP that does not introduce an external argument. This entails that the possibility of QR within the verbal complement cannot be correlated with the semantic type of the complement and that a type-driven approach to QR does not, after all, offer an explanation for the scope restrictions observed in the previous section.

Apart from these conceptual problems, the approach also faces an empirical problem. As discussed in the next section, the scope facts extend to elements whose construal is independent of scope. An analysis that attributes the scope facts to restrictions on QR does not extend to them.

2.3 Constraints on modification

Long passive constructions do not only impose restrictions on the scopal properties of embedded arguments but also on the construal of adverbs. Event-modifying adverbs like *fünfmal* ‘five times’ can be used for illustration. In the active clause in (18a) the adverb can be interpreted as either modifying the matrix or the embedded event, a straightforward attachment ambiguity. Under the former reading, five events of forgetting took place. Under the latter interpretation, the button should have been pressed five times and it is this requirement that was forgotten. The local passive counterpart in (18b) is ambiguous in precisely the same way. The long passive in (18c) is strikingly different in that it lacks the lower reading. It can only mean that five events of forgetting took place.¹¹

- (18) a. *ACTIVE*
 Gestern hat er diesen Knopf **fünfmal** zu drücken vergessen.
 yesterday has he this button.ACC five.times to press forgotten
 ‘Yesterday he forgot to press the button five times.’
 [5.times(forget); 5.times(press)]
- b. *LOCAL PASSIVE*
 Gestern wurde diesen Knopf **fünfmal** zu drücken vergessen.
 yesterday was this button.ACC five.times to press forgotten
 ‘Yesterday it was forgotten to press the button five times.’
 [*5.times(forget); 5.times(press)]
- c. *LONG PASSIVE*
 Gestern wurde dieser Knopf **fünfmal** zu drücken vergessen.
 yesterday was this button.NOM five.times to press forgotten
 ‘Yesterday it was forgotten to press the button five times.’
 [5.times(forget); *5.times(press)]

The same point can be illustrated with adverbs that are pragmatically compatible only with an embedded construal. In (19) the adverb *mit einem Spezialwerkzeug* ‘with a special tool’ is pragmatically plausible only when modifying the event of repairing. In line with the conclusions suggested by (18), this adverb is felicitous in the active and the local passive but results in an odd interpretation in the long passive (see Appendix D.).

- (19) a. *LOCAL PASSIVE*
 Erst gestern wieder wurde den Traktor **mit einem Spezialwerkzeug**
 just yesterday again was the tractor.ACC with a special.tool
 zu reparieren vergessen.
 to repair forgotten
 ‘Just yesterday it was forgotten to repair the tractor with a special tool.’
- b. *LONG PASSIVE*

¹¹ We should point out that there are some speakers for whom an embedded construal of the adverb is marginally possible in (18c) under certain prosodic conditions (cf. fn. 5). This will be briefly addressed in fn. 32 below.

#Erst gestern wieder wurde der Traktor mit einem Spezialwerkzeug
 just yesterday again was the tractor.NOM with a special.tool
 zu reparieren vergessen.
 to repair forgotten

Like (18), then, (19) suggests that the embedded event cannot be modified by an adverb in the long passive. QR-based analyses like Wurmbrand (2013) do not extend to the adverbs fact despite the clear similarity in the generalizations underlying the two. A stipulation that adverbs have to undergo QR cannot capture the facts in (18) and (19) because an adverb base-generated in the verbal complement will semantically modify the embedded event even if it undergoes QR. QR can affect the scopal properties of an element but as long as QR leaves a trace, it will not modify the construal of the element that undergoes QR. Because the problem in (18) and (19) is one of construal and not scope, it cannot be handled in terms of QR. Adverbs are not the only elements obligatorily construed in the matrix clause in long passives. Negation patterns in exactly the same way, as the examples in (4) show, which are taken from Wurmbrand (2001: 117f.).

- (20) a. *LOCAL PASSIVE*
 weil dem Hans den Spinat nicht zu essen erlaubt wurde
 since the Hans.DAT the spinach.ACC not to eat allowed was
 ‘since Hans was allowed not to eat the spinach’ [allow >> ¬; *¬ >> allow]
- b. *LONG PASSIVE*
 weil dem Hans der Spinat nicht zu essen erlaubt wurde
 since the Hans.DAT the spinach.NOM not to eat allowed was
 ‘since Hans was not allowed to eat the spinach’ [*allow >> ¬; ¬ >> allow]

It is altogether unclear what it would mean for negation to undergo QR or how it would affect what event is being negated.¹²

QR-based accounts are thus more successful than purely case-based ones but remain unsatisfactory for theory-internal as well as empirical reasons. One might counter this objection by invoking separate constraints on the base-generation sites of adjuncts. In particular, one might assume that the lack of functional structure in the verbal complement in long passives prevents the generation of adverbs. First of all, such an account would miss the generalization that scope and construal pattern in the same way, precisely because the account invokes separate constraints to handle the two. In addition, even such a stipulation is insufficient, as we now show.

It is well-known since at least Dowty (1979) and Fabricius-Hansen (1983) that adverbial modification with *again* gives rise to an ambiguity. Consider (21) as an example, taken from von Stechow (1996: 87), which shows that the German counterpart of *again* (*wieder*) is likewise ambiguous. According to the *RESTITUTIVE* reading, the door had been open some time before but it is not required that Ali Baba had opened it before. The *REPETITIVE* reading, on the other hand, entails that Ali Baba had opened the door before.

¹² Wurmbrand (2001) suggests instead that in long passives the verbal complement is too small to contain a layer of negation whereas local passives, on the other hand, are structurally large enough to host a negation.

- (21) dass Ali Baba Sesam wieder öffnete
 that Ali Baba Sesam again opened
 ‘that Ali Baba opened Sesam again’ [restitutive/repetitive]

Von Stechow (1995, 1996) argues that this ambiguity has a structural origin, a claim further supported by Beck & Johnson (2004). Concretely, von Stechow (1995, 1996) assumes a syntactic decomposition of verbs like *öffnen* ‘open’ into a phrase denoting a state (of being open) and an inchoative verbal head that transforms this state in an event (of opening). *Wieder* is then taken to attach to either the stative phrase, yielding the restitutive reading, or the inchoative phrase, resulting in a repetitive reading. This is schematized in (22), where ‘StateP’ designates the stative phrase.

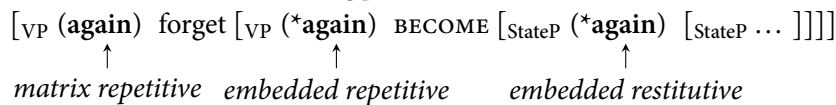
- (22) [_{VP} Ali Baba [_{VP} (**again**) BECOME [_{StateP} (**again**) [_{StateP} Sesam open]]]]

Adopting this general view on *wieder*, we turn to its semantic impact in the local and long passive. If these structures always involve XP-complementation, the restitutive/repetitive ambiguity is crossed with the distinction between a matrix vs. embedded construal. As (23) demonstrates, the two passives differ in what readings of *wieder* they allow. The local passive in (23a) has an embedded restitutive reading. It is hence true in a scenario in which the closet has never been closed before (it was manufactured in a closed state), was then opened and not closed. Crucially, such a reading is absent in the corresponding long passive in (23b). (23b) neither has this embedded restitutive reading nor the embedded repetitive reading. The only permitted reading is one where *wieder* modifies *vergessen* ‘forget’.¹³

- (23) a. Gestern wurde den Schrank wieder zu schließen vergessen.
 yesterday was the closet.ACC again to close forgotten
 ‘Yesterday it was forgotten to close the closet again.’
 [restitutive, ??matrix repetitive]
- b. Gestern wurde der Schrank wieder zu schließen vergessen.
 yesterday was the closet.NOM again to close forgotten
 ‘Yesterday it was forgotten to close the closet again.’
 [*restitutive, *embedded repetitive, matrix repetitive]

The pattern in (23) is consistent with our generalization above that adjuncts are unable to modify the embedded event in the long passive but not the local passive. Yet they are particularly revealing because they are outside the scope of an account that syntactically restricts where adjuncts can be base-generated. To see this, consider the attachments of *wieder* that would have to be blocked in the long passive:

¹³ All else equal, we would expect four different possible interpretations of *wieder* (restitutive vs. repetitive crossed with embedded vs. matrix). It is not clear to us what a restitutive reading with *vergessen* would mean and we will ignore this reading here as it is irrelevant for our purposes. Second, no judgment is provided for the embedded repetitive reading in (23a). This is because the repetitive reading is entailed by the restitutive reading. Every scenario verifying the repetitive reading necessarily also verifies the restitutive one. As a result, the existence of the latter prevents us from diagnosing the former. Nothing hinges on this complication as all that matters for the point at hand is that (23a) has a restitutive reading.

(24) *Attachment restrictions in long passive*

An account that constrains where adjuncts can be attached has to ensure that neither an attachment to the embedded VP nor the embedded StateP is permissible. It is the latter in particular that is fundamentally at odds with standard assumptions about structure building because attachment of *wieder* to StateP is possible in the local passive (see (23a)). As a consequence, whether *wieder* can attach to StateP or not would have to be determined by whether the verbal complement contains a v layer or not. Because StateP and vP are not even adjacent to each other structurally, such a restriction would not only require a non-local constraint on attachment but also derivational look-ahead. It is hence irreconcilable with a standard bottom-up derivational theory of syntax.

In sum, the *wieder* facts illustrate that adverbs which attach so low that even the clause pruning in the long passive does not affect the availability of their attachment site nonetheless cannot be interpreted inside the verbal complement. Syntactic constraints on adverb placement do not successfully capture this generalization because the adjunction site is so low that it should not interact with clause pruning. We conclude that there is no reason to believe that *wieder* cannot be attached inside the complement (to either the StateP or the VP). Instead, we take (23b) to show that even when *wieder*, or any other adverb, is attached inside the complement, it nevertheless modifies the main clause predicate semantically in the long passive.

2.4 Section summary

This section has presented evidence that in long passives quantificational scope and adverb construal exhibit compactness effects. First, no quantificational element can take scope under the matrix verb. Second, no adverb can be construed below this predicate either. We have argued that these restrictions are puzzling on a pure XP-complementation account because they cannot plausibly be attributed to the structural defectiveness of the complement.

We can make sense of them if we adopt the position that these two verbs form a cluster. Intuitively, quantificational scope and construal between these two verbs is ruled out because they form a unit. Yet as discussed in section 1, verb cluster accounts face their own problems. In particular, the possibility of moving what appears to be the verbal complement (e.g., (7)) militates against the basic constituency verb cluster accounts attribute to the long passive.

The following sections will develop our own account of this puzzle. We propose that XP-complementation and verb cluster accounts both constitute an integral part of the proper analysis. We follow the former in treating long passives as obligatorily involving an embedded VP, while local passives contain a vP. In addition, we will suggest that a verb cluster is created via standard head movement in a subset of long passive constructions, namely if the verbal complement remains in situ. This general analysis captures the fundamental observation that long passives are sometimes compact (if a verb cluster is formed) and sometimes not (if no cluster formation takes place). The following sections develop this basic idea in detail. In

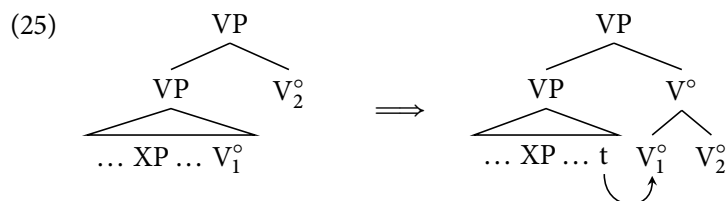
section 3 we will propose a semantics for head movement that has the effect that material inside the verbal complement will semantically take matrix scope if verb movement takes place. Section 4 investigates the question why verb cluster formation obligatorily applies in some configurations but does not apply in others. We adopt Richards' (2010) work on distinctness requirements in syntax and extend it to head movement.

3 The syntax and semantics of verb incorporation

3.1 *The proposal*

Because it is possible to move a verbal complement that contains the embedded verb to the exclusion of the embedding verb (recall (7)), we will assume that the base configuration of both long and local passives involves an XP-complementation structure. In the long passive, the complement is a VP, in the local passive it is a vP , à la Wurmbrand (2001) and as illustrated in (12) above.¹⁴ Following Wurmbrand (2001) and much related work, we assume that voice morphology is associated with v . As a consequence, the passive morphology is expressed only on the higher verb in the long passive irrespective of whether verb incorporation takes place or not.

Ignoring for now instances of the long passive in which the verbal complement moves away, we propose that incorporation of the lower verb into the higher one forms a verb cluster in the long passive. We adopt the null assumption that this movement is regular head movement. The schematic structure of verb incorporation is given in (25), where 'XP' designates some other element that may be present inside the verbal complement.¹⁵




¹⁴ Questions arise with respect to the status of the infinitival marker *zu* that appears in both local and long passives. Wurmbrand (2001: 109–115) argues against the common assumption that either *zu* or its English counterpart reside in T. Instead, she proposes that *zu* is part of the projection of the lexical V. Its presence in long and local passives is hence consistent with the structures assumed here. That *zu* occupies a very low position is supported by the fact that *zu* might appear between a verbal stem and a prefix that are non-compositionally related. An example is *abzurichten* 'to train' in (11), where the verb *abrichten* 'train' morphologically consists of the stem *richten* 'align' and the prefix *ab* 'away', combined in an idiomatic way. Pullum (1982) and Pollard & Sag (1994) argue for a related position for English *to*. We will adopt these claims and will thus leave aside considerations about *zu* for the remainder of this paper.

¹⁵ Because the long passive structure in (25) involves recursive VP embedding, it predicts that long passive formation is an iterative process. While judgments decline, it does seem possible to go beyond one level of embedding as the following example from Haider (2010: 313) shows:

- (i) dass er zu reparieren zu versuchen vergessen wurde
 that he.NOM to repair to try forgotten was
 'that it was forgotten to try to repair it (e.g., the tractor)'

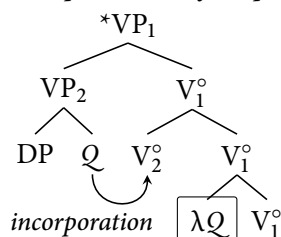
Verb incorporation changes the syntactic position of the raised verb V_1° but does not affect the syntactic relation between the embedded XP and the matrix verb V_2° . We will propose a semantics of head movement that nonetheless has the effect that XP in (25) takes scope over V_2° if V_1° raises. This derives the pervasive wide scope and adverb construal effects observed in the previous section.

To develop this semantic effect of head movement, let us first consider the interpretation of phrasal movement. The standard semantic technique is to replace the launching site with a variable and insert a λ -operator binding this variable in the position immediately below the landing site (see, e.g., Heim & Kratzer 1998, Nissenbaum 1998, Sauerland 1998), as in (26):

(26) [John [λx [I like x]]]


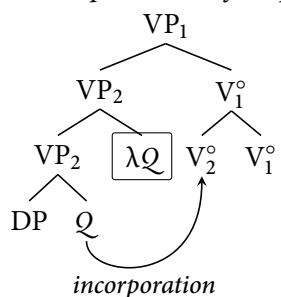
An immediate question arises when this procedure is applied to head movement. Head movement differs from phrasal movement in that the landing site does not c-command the launching position. If the λ -operator were inserted directly below the sister of the landing site, as in the case of regular phrasal movement, the structure would simply be uninterpretable as the operator would not bind the variable in the trace position of the moving head. This is illustrated in (27), where Q is used to refer to the variable and the λ -operator is inserted directly below the landing site of V_1 . Given the relative placement of the variable and the operator, the structure is semantically non-sensical.

(27) *Illicit placement of λ -operator*



To semantically interpret head movement, the λ -operator must be inserted into a position c-commanding the variable. The only available position is one *below the entire verbal complex created by movement* and shown in (28).

(28) *Correct placement of λ -operator*



We would like to emphasize that the λ -placement in (28) follows directly from the way movement dependencies are interpreted and the non-extension property of head movement. As we will see shortly, the λ -placement in (28) has the result that the entire verbal complex comprising both V_1 and V_2 will be interpreted in the position of the variable Q .

A second question concerns the interpretation of the verbal complex created by incorporation. Standard methods of semantic combination like (intensional) function application or predicate modification are not applicable here because neither verb can take the other as its argument and the two verbs do not share the same semantic type. Instead, we propose that the two denotations are combined via FUNCTION COMPOSITION (see Ades & Steedman 1982, Steedman 1985, Di Sciullo & Williams 1987, Jacobson 1990, 1992, von Stechow 1992, Gärtner 2011; also see the concept of *c-locality* in Lidz & Williams 2002, 2005), as defined in (29).

- (29) a. SIMPLE FUNCTION COMPOSITION
 $(B \rightarrow C) \circ (A \rightarrow B) := (A \rightarrow C)$
 b. GENERALIZED FUNCTION COMPOSITION
 $(C \rightarrow D) \circ (A \rightarrow (B \rightarrow C)) := (A \rightarrow (B \rightarrow D))$

We illustrate function composition through kin names in Swedish and other Scandinavian languages. The basic terms *mor* ‘mother’ and *far* ‘father’ can be combined to designate ancestors further removed, giving rise to expressions like *farfar* ‘paternal grandfather’, *morfar* ‘maternal grandfather’, *farmor* ‘paternal grandmother’ and the like. This system is entirely transparent and any account has to relate the meaning of the composed expressions to that of its parts. To do so, the meaning of the two parts have to be functionally composed. In such cases, function application is systematically undefined and predicate modification would yield the wrong denotation.

- (30) a. $\llbracket \text{far} \rrbracket = \lambda x. \lambda y. \text{FATHER}(x)(y)$
 b. $\llbracket \text{mor} \rrbracket = \lambda x. \lambda y. \text{MOTHER}(x)(y)$
 c. $\llbracket \text{farfar} \rrbracket = \llbracket \text{far} \rrbracket \circ \llbracket \text{far} \rrbracket = \lambda x. \llbracket \text{far} \rrbracket(\llbracket \text{far} \rrbracket(x))$
 $= \lambda x. \lambda y. \text{FATHER}(\lambda z. \text{FATHER}(x)(z))(y)$
 d. $\llbracket \text{morfar} \rrbracket = \llbracket \text{far} \rrbracket \circ \llbracket \text{mor} \rrbracket = \lambda x. \llbracket \text{far} \rrbracket(\llbracket \text{mor} \rrbracket(x))$
 $= \lambda x. \lambda y. \text{FATHER}(\lambda z. \text{MOTHER}(x)(z))(y)$

This example makes it clear that function composition must be in principle available in natural languages below the word level. Di Sciullo & Williams (1987: 34–40) argue that function composition must likewise be available for the interpretation of affixation.¹⁶ Resorting to function composition to interpret the clusters created by verb incorporation is hence a natural extension of an independently required mode of semantic composition.

¹⁶ Function composition is a powerful device. If left unrestricted, it would allow for the formation of syntactic dependencies across island boundaries. A proper assessment of the distribution of function composition in the grammar is beyond the purview of this paper. For the purposes of our account it is sufficient if function composition is limited to elements within a single, though possibly complex, syntactic head.

($\llbracket f \rrbracket \circ \llbracket g \rrbracket$) as its argument. This yields ($\llbracket XP \rrbracket$)($\lambda x. \llbracket f \rrbracket(\llbracket g \rrbracket(x))$). As a result XP ends up with f in its semantic scope even though f is not in its syntactic scope.¹⁸ We see therefore that the presence/absence of function composition has a semantic effect. In the absence of function composition, an embedded quantificational object can stay in the semantic scope of the embedding predicate f . When function composition takes place, f ends up in the semantic scope of the object; consequently the object cannot be interpreted de dicto with respect to f and if f is an NPI licenser and XP is an NPI, then f will not be able to license XP.

Note that in many of the cases at hand, τ is of type $\langle e \rangle$, but this is not essential. If g takes property type arguments and XP is of property type, then ($\llbracket f \rrbracket \circ \llbracket g \rrbracket$)($\llbracket XP \rrbracket$) is equivalent to $\llbracket f \rrbracket(\llbracket g \rrbracket(\llbracket XP \rrbracket))$.

Next let us consider adjuncts. Within the neo-Davidsonian program, we assume that adjuncts modify the event variable associated with their sister node. So in the structure without function composition “ f [g YP_{Adjunct}]”, YP modifies the event variable associated with g . However when function composition takes place, then only the event variable associated with f is still accessible; g 's event variable is too deeply embedded for the YP_{Adjunct} to modify. Consequently YP can only modify the event variable of f .

A more general point is that function composition makes scopal positions between f and g inaccessible. Any process that requires access to such positions will be blocked by function composition.

3.2 Application

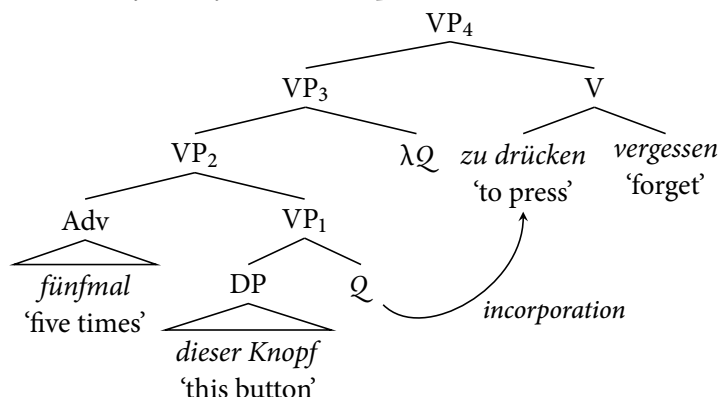
This section illustrates how the semantic facts observed here follow from verb incorporation and function composition. Consider the example in (18c), repeated here as (32) for convenience. Ignoring the prosodic complications for the time being, the adverb *fünfmal* ‘five times’ can only be construed as modifying *vergessen* ‘forget’, not the embedded predicate *drücken* ‘press’, as discussed above.

- (32) Gestern wurde dieser Knopf fünfmal zu drücken vergessen. = (18c)
 yesterday was this button.NOM five.times to press forgotten
 ‘Yesterday it was forgotten to press this button five times.’
[5.times(forget); *5.times(press)]

The structure of (32) is given in (33). For readability, we do not indicate nominative case assignment to *dieser Knopf* by matrix T as it is irrelevant for the semantic point illustrated here. Crucially, the lower verb *drücken* ‘press’ is incorporated into the matrix verb *vergessen* ‘forget’. A variable is inserted into the base position of the lower verb and λ -binder immediately below the verbal complex.

¹⁸ Note that there is no independent evidence (word order, intonation) that the quantificational object needs to move into the matrix clause.

(33) Structure of (32) after verb incorporation



The semantic interpretations assigned to crucial nodes in (33) are shown in (34). The verbal cluster is interpreted by combining the two predicates, yielding (34c). As a direct result of function composition, only the event variable associated with *vergessen* is available at the level of the verb cluster. The event variable of *zu drücken* (viz., e' in (34c)) is buried inside the expression, which renders it inaccessible for further modification. Due to the placement of the λ -operator and the variable it binds, this verbal cluster is effectively interpreted in the position of the variable Q . The verbal complement receives the denotation in (34h), which then combines with the denotation of the verbal complex, leading to the denotation of VP_4 in (34i). Because *fünfmal* requires access to the event variable of the event it modifies, and because the event variable of *zu drücken* is inaccessible, the only possible construal of *fünfmal* is one where it modifies the matrix predicate.

- (34)
- a. $\llbracket \text{zu drücken} \rrbracket = \lambda x_{\langle e \rangle} \lambda e_{\langle s \rangle} [\text{PRESS}(e) \wedge \text{THEME}(e) = x]$
 - b. $\llbracket \text{vergessen} \rrbracket = \lambda P_{\langle st \rangle} \lambda e_{\langle s \rangle} [\text{FORGET}(e) \wedge \text{THEME}(e) = P]$
 - c. $\llbracket V \rrbracket = \llbracket \text{vergessen} \rrbracket \circ \llbracket \text{zu drücken} \rrbracket =$
 $\lambda x \lambda e [\text{FORGET}(e) \wedge \text{THEME}(e) = \lambda e' [\text{PRESS}(e') \wedge \text{THEME}(e') = x]]$
 - d. $\llbracket \text{dieser Knopf} \rrbracket = \iota x. \text{BUTTON}(x)$
 - e. $\llbracket VP_1 \rrbracket = Q(\iota x. \text{BUTTON}(x))$
 - f. $\llbracket \text{fünfmal} \rrbracket = \lambda e [\text{FIVE.TIMES}(e)]$
 - g. $\llbracket VP_2 \rrbracket = \lambda e [Q(\iota x. \text{BUTTON}(x))(e) \wedge \text{FIVE.TIMES}(e)]$
 - h. $\llbracket VP_3 \rrbracket = \lambda Q \lambda e [Q(\iota x. \text{BUTTON}(x))(e) \wedge \text{FIVE.TIMES}(e)]$
 - i. $\llbracket VP_4 \rrbracket = \lambda e [\text{FORGET}(e) \wedge \text{THEME}(e) = \lambda e' [\text{PRESS}(e') \wedge$
 $\text{THEME}(e') = \iota x. \text{BUTTON}(x)] \wedge \text{FIVE.TIMES}(e)]$

This analysis derives the otherwise puzzling property that *fünfmal* ‘five times’ may only modify the event of forgetting. Importantly, it achieves this result without imposing ad hoc syntactic restrictions on the placement of the adverb. In (33) *fünfmal* is generated inside the verbal complement and stays there over the course of the derivation. Despite its placement below the matrix predicate, it semantically ends up modifying the matrix predicate. This result is achieved because verb incorporation of *drücken* ‘press’ into *vergessen* ‘forget’ semantically

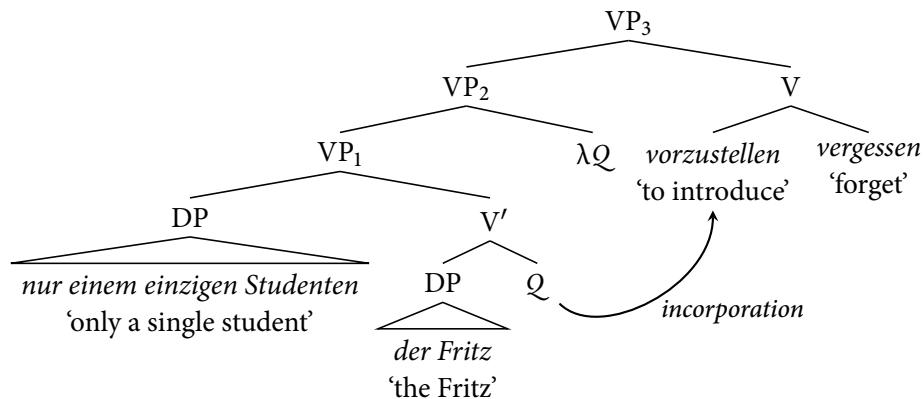
‘pulls down’ *vergessen* into its base position and both verbs are interpreted in this position as a result. In this position *fünfmal* has access to the event variable of *vergessen* ‘forget’ but not to that of *drücken* ‘press’ for principled reasons.

The account extends to the *wieder* facts. Incorporation of the embedded verb into the higher verb is an instance of head movement and thus obeys the Head Movement Constraint (Travis 1984). As a consequence, the embedded root will move to the next-higher head (e.g., BECOME) and the resulting complex head will incorporate into the next-higher head and so on until this roll-up movement reaches the matrix verb. The iterated application of function composition along with semantic reconstruction of the complex verb into the base position of the higher verb then has the desired effect: An embedded *wieder* cannot semantically modify any projection inside the verbal complement, thereby ruling out the embedded restitutive and repetitive reading. Only a modification of the matrix verb is possible, regardless of the actual syntactic position of *wieder*.

The system likewise derives the generalization that all quantificational expressions have to take scope over the matrix predicate. Consider, for concreteness, the example in (13b), repeated here as (35). The structure for (35) is given in (36).¹⁹

- (35) Erst gestern wieder wurde der Fritz nur einem einzigen Studenten
 just yesterday again was the Fritz.NOM only a single student.DAT
 vorzustellen vergessen. = (13b)
 to.introduce forgotten
 ‘Just yesterday it was forgotten to introduce Fritz to only one student.’
 [*forget >> only; only >> forget]

- (36) Structure of (35) after verb incorporation



¹⁹ Notice that we assume here that the indirect object is directly introduced by the lexical verb instead of a designated functional Appl head. The reason for this assumption is entirely presentational. Under the more complex structure, the embedded verb first incorporates into the Appl head and the resulting complex head moves to the matrix verb (as forced by the Head Movement Constraint). Function composition and λ -reconstruction would thus apply iteratively. While entirely feasible, the denotations for such structures quickly become very cumbersome. We have therefore opted for the simpler structure for the sake of exposition.

The semantic calculations proceed as before. The crucial outcome is that the verbal complex, comprising both *vorzustellen* ‘to introduce’ and *vergessen* ‘forget’, will be semantically constructed as if it were inside the base position of the lower verb *vorzustellen* ‘to introduce’. As a result, the quantificational noun phrase *nur einem einzigen Studenten* ‘only a single student’ will take scope over *vergessen* despite the fact that it occupies a syntactic position lower than that of *vergessen*.²⁰

- (37) a. $\llbracket \text{vorzustellen} \rrbracket = \lambda x \lambda y \lambda e [\text{INTRODUCE}(e) \wedge \text{THEME}(e) = x \wedge \text{GOAL}(e) = y]$
 b. $\llbracket \text{vergessen} \rrbracket = \lambda P \lambda e [\text{FORGET}(e) \wedge \text{THEME}(e) = P]$
 c. $\llbracket \text{vergessen} \rrbracket \circ \llbracket \text{vorzustellen} \rrbracket = \lambda x \lambda y \lambda e [\text{FORGET}(e) \wedge \text{THEME}(e) = \lambda e' [\text{INTRODUCE}(e') \wedge \text{THEME}(e') = x \wedge \text{GOAL}(e') = y]]$
 d. $\llbracket \text{nur einen einzigen Studenten} \rrbracket = \lambda R \exists ! x [\text{STUDENT}(x) \wedge \exists e [R(x)(e)]]$
 e. $\llbracket V' \rrbracket = Q(\text{FRITZ})$
 f. $\llbracket \text{VP}_1 \rrbracket = \exists ! x [\text{STUDENT}(x) \wedge \exists e [Q(\text{FRITZ})(x)(e)]]$
 g. $\llbracket \text{VP}_2 \rrbracket = \lambda Q \exists ! x [\text{STUDENT}(x) \wedge \exists e [Q(\text{FRITZ})(x)(e)]]$
 h. $\llbracket \text{VP}_3 \rrbracket = \exists ! x [\text{STUDENT}(x) \wedge \exists e [\text{FORGET}(e) \wedge \text{THEME}(e) = \lambda e' [\text{INTRODUCE}(e') \wedge \text{THEME}(e') = \text{FRITZ} \wedge \text{GOAL}(e') = x]]]$

As in the previous example, the system derives the scope facts without imposing a designated syntactic constraint. Instead, the scope restriction are the necessary consequence of the semantics of verb incorporation. As a result, the adverb construal facts and the constraints on quantifier scope are derived from the same underlying principles of verb incorporation and its semantic interpretation.

This account straightforwardly extends to all the restrictions observed in section 2. Assuming, as before, that the *de re/de dicto* distinction follows from the scopal properties of the nominal element with respect to the matrix verb (e.g., *try* in (16–17)), the effective construal of this verb in the base position of the infinitival verb entails that a quantificational element inside the verbal complement will take wide scope with respect to the matrix verb and hence be unable to be interpreted *de dicto* with respect to the embedding predicate. A *de re* interpretation is then the only option.

Finally, to account for the fact that NPIs inside the verbal complement cannot be licensed by *vergessen* ‘forget’ (recall (14, 15)), we note that *forget* can in general only license NPIs inside complement clauses but not if the NPI is its complement:

- (38) a. John forgot to eat anything.
 b. *John forgot anything.

Krifka (1995) captures the contrast in (38) by requiring NPIs to undergo QR. In (38a) *anything* can undergo QR within the verbal complement and hence remain within the semantic scope

²⁰ The semantics we assume for *only one* is an oversimplification. As it stands, VP_3 denotes a truth value. A more accurate treatment would have the quantification range over situations (Elbourne 2005) or make use of intensional function application (Heim & Kratzer 1998). We are also abstracting away from considerations of focus. We adopt the simpler semantics in (37) for the purposes of simplicity here.

of *forget*. In (38b), on the other hand, QR of *anything* automatically places it outside the c-command domain of *forget* and thus prevents its from being licensed. With this additional assumption in place, the system now readily handles the NPI facts in section 2.1.2. Because the verb cluster containing *vergessen* will be semantically construed in the base position of the infinitival verb, the NPI will either be its complement (if it is the direct object as in (14b)) or higher than the cluster (if it is the indirect object as in (15b)). In either case, *vergessen* will end up in the semantic scope of the NPI, not the other way around, and the resulting structure will hence be ill-formed (see the discussion on page 23).

As a reviewer has pointed out, this account makes a clear prediction. Because verb incorporation only fixes the scopal relations between embedded quantifiers and the matrix verb, it should leave unaffected scopal interactions with other matrix material. That is, an embedded quantifier that has to take wide scope with respect to the matrix verb in a long passive should still be able to take narrow scope with respect to an adverb in the matrix clause. This expectation is borne out, as (39) attests. This sentence has a prominent reading according to which a tractor was forgotten to be repaired multiple times and each time it was a different tractor.

- (39) Hier wurde manchmal nur ein Traktor zu reparieren vergessen.
 here was sometimes only one tractor.NOM to repair forgotten
 ‘Here it was sometimes the case that only a single tractor was forgotten to be repaired.’
 [sometimes > only > forget]

Before moving on to the remaining questions about the syntax of verb incorporation, it should be emphasized that the scope reversal between the embedded element and the matrix verb is brought about in a rather unconventional, yet principled, way. A widely held conception of scope is that an element α has scope over an element β if α c-commands β at LF. As a result of this general approach, covert raising of α is employed if it has scope over β but does not c-command β in the surface syntax. This is not the case for verb incorporation, as illustrated in (40). (40a) schematizes incorporation of Z° into X° over YP. As a result of the semantic system proposed here both Z° and X° will be interpreted in the base position of Z° and YP will take scope over both, indicated in (40b). This means that the scopal relation between X° and YP have been flipped despite neither of the two element undergoing any syntactic movement. Rather, the scope inversion between the two is brought about by raising of a third element.²¹

- (40) a. Syntactic structure
 [X° [YP [Z° ...
 ↑
 b. Scope relations in (40a)
 YP >> {X, Z}

In summary, we have demonstrated in this section how the ubiquitous wide scope and matrix construal facts in the long passive receive a unified analysis in terms of verb incorporation.

²¹ Frey (1993) and Krifka (1998) argue that in German an element α can take scope over another element β only if α c-commands β or β 's trace. If the present account is correct, the scope restriction in the long passive constitutes a counter-example to this generalization because elements within the verbal complement take scope over the matrix predicate without ever c-commanding it. Thanks to Joachim Sabel for pointing this out to us.

The proposal derives that (i) all quantificational elements take matrix scope; (ii) all adjoined material must be construed as modifying the matrix clause; and (iii) the embedded verb is nonetheless able to take arguments of its own. The next section will turn to the syntactic distribution of verb incorporation.

4 The nature and motivation of verb incorporation

We have seen in the preceding section how matrix scope and adverb construal effects can be treated as the natural semantic consequence of verb cluster formation via head movement, a process we are calling ‘verb incorporation’. Because, as shown in section 2, matrix scope and adverb construal are obligatory in long passives in which the verbal complement remains *in situ*, we can conclude that verb incorporation must be obligatory in this configuration. Furthermore, because wide scope of embedded quantificational elements is impossible in the local passive, we have to conclude that verb incorporation is impossible if the verbal complement is a vP. Finally, because it is possible to disrupt the adjacency between the two verbs in the long passive by moving the verbal complement as in (7), we can likewise deduce that no verb incorporation takes place in this configuration either. The distribution of verb incorporation is summarized in (41), repeated from (8) above.

- (41) a. $[\text{VP} [\text{VP DP } V^\circ \text{ VP}] V^\circ] \Rightarrow [\text{VP} [\text{VP DP } \text{t}_{\text{VP}}] [V^\circ V^\circ V^\circ]]$
 b. $[\text{VP} [\text{vP } v [\text{VP DP } V^\circ \text{ VP}] \text{vP}] V^\circ] \Rightarrow \text{no cluster formation}$
 c. $[\text{VP} [\text{VP DP } V^\circ \text{ VP}] V^\circ] \Rightarrow \text{no cluster formation}$

In this section and the next, we address the question as to why verb incorporation should be distributed in such a way. We will propose that this distribution can be readily made sense of if verb incorporation is conceptualized as distinctness-driven movement. In a nutshell, Richards (2010) proposes that elements within a phasal Spell-Out domain must be distinct from each other. In case a Spell-Out domain does contain elements that are non-distinct, movement can be employed to obviate this violation. Verb incorporation is one available option. We thus extend Richards’ (2010) proposal to instances of head movement.

In a study of a large variety of constructions in several unrelated languages, Richards (2010) proposes a general DISTINCTNESS requirement, which demands that no two elements in a phasal Spell-Out domain be too similar to each other. Richards (2010) suggests that configurations that violate distinctness lead to contradictory linearization statements and are ungrammatical as a result.²²

²² As a reviewer points out, distinctness is conceptually similar to Hoekstra’s (1984) *Unlike Category Condition* and van Riemsdijk’s (1988, 1998) *Unlike Feature Condition*. Yet they differ from distinctness in a crucial way: they do not straightforwardly differentiate between complements of different sizes because all of them would count as verbal. Because verb incorporation is size-sensitive in that it applies if the verbal complement is a VP but not if it is a vP, a more fine-grained differentiation within verbal projections is required. Richards’ (2010) notion of distinctness provides such a differentiation.

(42) DISTINCTNESS (Richards 2010: 5)

If a linearization statement $\langle \alpha, \alpha \rangle$ is generated, the derivation crashes.

Working within phase theory (Chomsky 2000, 2001), Richards (2010) adopts the concept that syntactic structure is spelled-out cyclically. Specifically, once a phase is completed, the complement of that phase is spelled-out and linearized. If Spell-Out of the complement violates (42), the derivation crashes. A general question is what it means for two elements to be non-distinct. Richards proposes that, at least in English, two elements are non-distinct if they bear the same category label.²³

Due to the fact that distinctness is not evaluated throughout the derivation but merely targets spelled-out material, distinctness may be temporarily violated in the course of a derivation as long as the final output representation obeys it. Exploiting this aspect of his proposal, Richards suggests that languages employ different strategies to preempt violations of distinctness. Converging with related proposals by Moro (2000) and Alexiadou & Anagnostopoulou (2001, 2007) (also see Barrie 2011a, Ott 2012, 2015, Chomsky 2013), Richards (2010: 87–127) argues that one strategy to overcome a temporary violation of distinctness is to move one of the offending elements into a higher Spell-Out domain. As a result, the two elements will be linearized in distinct domains and (42) is not violated.

We propose that verb incorporation is an instance of this general class of distinctness-driven movements. The underlying idea is that in regular long passives, two lexical V heads co-exist in the Spell-Out domain of matrix *v*, thereby creating a distinctness violation. Incorporation of one into the other takes place to obviate this violation and rescue the derivation. On the other hand, if a phasal *v* head separates the two verbs, the lower verb will be spelled-out in a domain that does not contain the higher verb and hence no distinctness violation arises. As a consequence, no verb incorporation takes place.

We should note that while this approach is in line with Richards' program, it is at variance with his claim that distinctness only applies to functional, but not to lexical, heads. If this distinction were correct, two V heads could never give rise to a distinctness violation. One reason for exempting lexical heads from distinctness could be the existence of compounds containing multiple elements of the same category, like *table cloth*, *mother-daughter relationship* or *green-blue* (Barrie 2011b). If distinctness were to apply to them, they should all be ungrammatical. There are, however, reasons to doubt that it is the distinction between lexical and functional heads that is crucial here. First, even functional material can be repeated within a compound. An example is *school admission consultation*, where the functional head *-tion* appear twice without violating distinctness. The same point can be made for German examples like *Unterlassungserklärung* 'declaration to cease and desist' (*lit.* 'desist-NMLZ-declare-NMLZ'), in which the nominalizing suffix *-ung* occurs twice. Second, the details of Richards' (2010) proposal in fact predict that two occurrences of the *same* lexical element within a compound

²³ Richards attributes the importance of category labels to the temporal ordering of operations. Adopting the framework of Distributed Morphology (Halle & Marantz 1993, 1994), vocabulary insertion into functional heads is taken to be post-syntactic. Linearization, on the other hand, is taken to apply before vocabulary insertion. As such, linearization does not have access to information contributed by vocabulary insertion. Richards concludes from this that only coarse-grained information like the category label can enter into the computation of distinctness.

should still incur a distinctness violation.²⁴ As Richards (2010: 210, n. 34) himself notes, this is incorrect. Recall, for instance, the Swedish example *farfar* ‘paternal grandfather’ (*lit.* ‘father father’) from section 3.1 above. This suggests that it is not the distinction between lexical and functional heads that is at play here. What all these observations point to instead is that the elements below the level of a lexical head generally do not induce a distinctness violation. In other words, repetition of the same element—be it lexical or functional—is possible within a single head. Finally, it should be noted that the conceptual reason Richards gives for the lexical–functional distinction has been argued against even within Distributed Morphology.²⁵

We hence adapt Richards’ proposal in that distinctness is not evaluated within complex syntactic heads, which in turn is in line with the fact that the linearization algorithm at the super-head levels generally exhibits quite different properties than that at the sub-head level.²⁶

Verb incorporation is thus a result of the Condition on Head Uniqueness in (43), itself a particular consequence of distinctness and our claim that distinctness is not violated within a lexical head. If a Spell-Out domain contains two heads of the same type (V in the case at hand), the lower verb incorporates into the higher verb and the resulting configuration does not violate distinctness. Importantly, we take verb incorporation to be a last resort operation. It applies only if necessary. If it is not, general constraints on the economy of derivations (Chomsky 1993, 1995) prevent its application.²⁷

(43) CONDITION ON HEAD UNIQUENESS

No Spell-Out domain may contain more than one maximal head of the same type.

If a verb embeds a complement that does not itself contain a phase head, as in regular long passives, (43) is violated because the Spell-Out domain of matrix *v* contains two V heads, as shown in (44).²⁸

²⁴ The reason for this prediction is as follows: Richards argues that linearization takes place before vocabulary insertion into functional heads. Following some work in Distributed Morphology, he also claims that vocabulary insertion into lexical heads invariably applies pre-syntactically, thus necessarily preceding linearization. As a result, linearization has access to a much richer array of information regarding these heads that allows it to distinguish them even if they bear the same category label.

²⁵ Marantz (1996, 1997), for instance, notes that Distributed Morphology is consistent with both pre- and post-syntactic insertion of lexical heads. Thus, the distinction does not follow from the basic assumptions of Distributed Morphology but is an axiom itself.

²⁶ To give just one example, the projecting element is consistently linearized to the left at the super-head level in English but to the right at the sub-head level. That linearization and distinctness seem to operate differently in these two domains clearly indicates that more work needs to be done towards a fully general theory of linearization.

²⁷ An anonymous reviewer wonders about the possibility of having adjacent prepositions or adjectives (e.g., *from under the bed, a tasty red apple*). It has been argued for on independent grounds that prepositions constitute phases (Abels 2003) and that adjectives do as well (Preminger 2011). The reviewer’s observation can hence be construed as providing converging evidence for these views.

²⁸ While the verbal complement in (44) is a bare VP, it might also contain more functional projections (e.g., Appl), as long as these projections are not phasal.

(44) *Phase-less verbal complement*

- a. $[_{CP} C [_{TP} T [_{vP} v [_{VP} V [_{VP} DP V]]]]]]$
- b. *Spell-Out domains:*
- (i) $*[_{VP} \boxed{V} [_{VP} DP \boxed{V}]]$ \leadsto *verb incorporation forced*
- (ii) $[_{TP} T [_{vP} v]]$

Verb incorporation thus applies to create a single complex verbal head, with the pervasive semantic effects discussed in the preceding sections. At the super-head level at which distinctness is evaluated, there is only a single verb—the complex head created by verb incorporation. Distinctness is hence respected and the derivation converges. Because the structure incurs a distinctness violation if verb incorporation does not apply, its application is obligatory. Its semantic consequences—viz., wide scope and wide construal of embedded material—are thus a necessary consequence of the structural configuration in (44).

If, on the other hand, the complement of the matrix verb contains a phasal *v* projection, the two verbs will be part of distinct Spell-Out domains and head uniqueness will hence be satisfied. Because verb incorporation is a last resort operation by assumption, it may not apply in this case and wide scope of embedded elements is impossible.²⁹

(45) *Phasal verbal complement*

- a. $[_{CP} C [_{TP} T [_{vP} v [_{VP} V [_{vP} v [_{VP} V]]]]]]]]$
- b. *Spell-Out domains:*
- (i) $[_{VP} V]$
- (ii) $[_{VP} V [_{vP} v]]$
- (iii) $[_{TP} T [_{vP} v]]$
- $\left. \begin{array}{l} \text{(i)} \\ \text{(ii)} \\ \text{(iii)} \end{array} \right\} \leadsto$ *verb incorporation unnecessary and thus impossible*

²⁹ A reviewer wonders whether verb incorporation requires string adjacency or only structural proximity and suggests coordinate structures as a suitable test case. Consider, for example, the examples in (i):

- (i) a. weil der Traktor fünfmal zu streichen und zu polieren vergessen wurde
because the tractor.NOM five.times to paint and to polish forgotten was
- b. weil der Traktor zu streichen und fünfmal zu polieren vergessen wurde
because the tractor.NOM to paint and five.times to polish forgotten was

Due to the various well-known intricacies of coordinations, the predictions of our account depend on the structure of the conjuncts in (i). First, (i) could involve a right node raising structure. In this case, *fünfmal* should take wide scope within its respective conjunct. Second, (i) could involve bare VP coordination. If verb incorporation is thus enforced but at the same time prevented by the Coordinate Structure Constraint, the entire structure should simply be ineffable. A third option is that coordination itself constitutes a phase (Reich 2007), in which case *fünfmal* should be able to take narrow scope in both conjuncts. Overall, the one core prediction of the present analysis is that the two conjuncts should pattern symmetrically. An adjacency based characterization, on the other hand, would lead one to expect that wide scope of *five times* is possible in (i.b) but not (i.a). However, judgments are tricky and additionally clouded by a strong inclination to have *fünfmal* in (i.a) take scope over the entire coordination. That said, narrow scope seems to be a possibility in both cases. Based on these admittedly unclear judgments there is no evidence for a direct role of string adjacency.

This analysis hence extends Richards' (2010) typology of distinctness-driven movement to head movement. Put differently, the underlying cause for verb cluster formation is the same that underlies some instances of phrasal movement.

5 Verb incorporation and phrasal movement

Let us take stock: we have proposed that verb cluster formation via verb incorporation plays a crucial role in our understanding of the pervasive compactness effects displayed by the long passive. We have developed a semantic system in which raising of a head α to a head β has the direct interpretive consequence that elements syntactically lower than β take scope over β . This captures the pervasive wide scope and construal facts we observed in section 2. On the syntactic side, we have suggested that verb incorporation is but one instance of a much more general phenomenon of distinctness-driven movement: verb incorporation takes place in exactly those environments in which two V heads coexist within the same Spell-Out domain, configurations that would otherwise result in a distinctness violation. Conceptualizing verb incorporation in this way offers an account of why verb incorporation obligatorily applies if the complement is a VP but not if it is a vP. In other words, it allows us to understand the properties of verb cluster formation as a function of the structural deficiency of the complement and thus combines the key insights of verb cluster and XP-complementation accounts.

This final section considers the interactions between movement of the verbal complement and verb incorporation. As noted in section 1 above, it is possible to move the complement in long passives, while stranding the higher verb. A relevant example is repeated from (7c) in (46).

- (46) dass der Wagen₂ t₁ vergessen wurde [in die Garage t₂ zu fahren]₁ = (7c)
 that the car.NOM forgotten was into the garage to drive
 'that it was forgotten to drive the car into the garage'

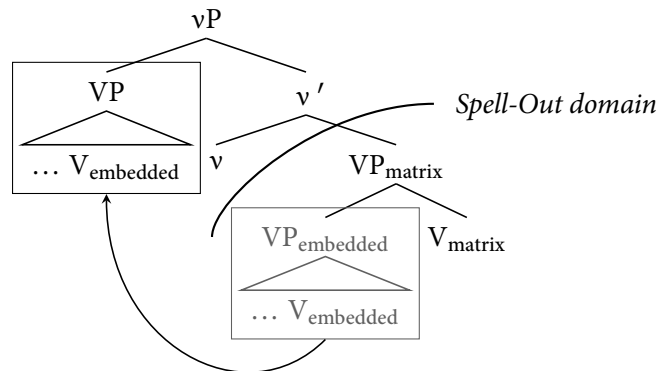
Because the two verbs *zu fahren* and *vergessen* are not adjacent to each other, it is clear that no verb incorporation has taken place and no verb cluster is created. In this section, we will show that the distinctness-driven view of verb incorporation extends to these facts without further ado. The two crucial features of the analysis are that (i) phrasal and head movement do not differ with respect to distinctness, i.e., distinctness violations may be obviated by both, and (ii) such movement constitutes a last resort, viz., it is not possible in the absence of a distinctness violation. It then follows straightforwardly that phrasal movement that obviates a distinctness violation should bleed verb incorporation.³⁰

We will furthermore see that our account makes specific predictions about the scope and construal properties of long passives with a moved verbal complement and we will show that, to the extent that they can be evaluated, these prediction are borne out.

³⁰ A reviewer wonders whether verb-second movement could likewise bleed verb incorporation and thereby obviate its semantic repercussions. Unfortunately, this prediction is impossible to test because passives are periphrastic. The main verb appears as a participle, which never undergoes verb-second movement.

Because verb incorporation is one instance of a more general class of distinctness-driven movements, violations of distinctness can in principle be circumvented by phrasal and head movement alike. Following Richards (2010), phrasal movement can undo a distinctness violation in the long passive if the embedded VP is moved to the specifier of the matrix *v*P, as schematized in (47), where the bold lines indicates the Spell-Out domain induced by *v*.

(47) *Movement of embedded complement to edge of matrix vP*



As a result of moving the verbal complement, the two verbs reside in separate Spell-Out domains and distinctness is thus respected. Verb incorporation is hence not necessary and due to its last resort nature it should not be possible. This derives the example in (46). The embedded VP has to be moved into the *v* phase edge to be accessible for extraposition. This movement yields the schematic structure in (47). Distinctness is not violated and as a result, verb incorporation is unnecessary and hence impossible. Consequently, the two verbs do not form a cluster. This reasoning extends straightforwardly to other movement types such as topicalization.

This account makes an immediate prediction. Because no verb incorporation applies in (47), its interpretive effects should likewise be absent. Thus, the analysis predicts that the pervasive wide scope and construal restrictions otherwise associated with long passives should vanish if the embedded VP undergoes movement.

To assess this prediction, it is necessary to consider long passives in which the verbal complement has been moved, such as (7) above, and insert a quantificational element into this complement. A note of caution is in order here: while it is clearly possible to move the embedded VP in long passives, the results are often somewhat less acceptable than the in-situ versions. When quantificational elements are added to the remnant, there is considerable variation among speakers regarding the grammaticality of the resulting sentence, regardless of its scopal properties. See Appendix E. for more information. It should be emphasized that our proposal does *not* predict that these structures are necessarily grammatical for all speakers. Rather, the proposal predicts that *to the extent that these structures are grammatical*, they should only exhibit a narrow scope reading of VP-internal material. That some speakers do not find these structures grammatical in the first place does not constitute counter-evidence to this prediction, it merely makes it harder to investigate.

Consider the paradigm in (48). (48a) gives the in-situ baseline: the embedded *nur* ‘only’ can only take matrix scope. In (48b) the verbal complement is topicalized. Here the scope options

flip: only a narrow reading of *nur* is available. (49) demonstrates an analogous generalization for embedded adverbs. The embedded adverb *mit einem Spezialwerkzeug* ‘with a special tool’ has to receive a matrix construal in (49a), rendering the sentence odd. If the embedded VP is topicalized, on the other hand, a narrow reading improves. These sentences are investigated in greater detail in Appendix E.

- (48) a. Erst gestern wieder wurde der Fritz **nur einem einzigen**
 just yesterday again was the Fritz.NOM only a single
Studenten vorzustellen vergessen. = (13b)
 student.DAT to.introduce forgotten
 ‘Just yesterday it was forgotten to introduce Fritz to only one student.’
 [**forget* >> *only*; *only* >> *forget*]
- b. %[**Nur einem einzigen Studenten** t_2 vorzustellen] $_1$ wurde der Fritz $_2$
 only a single student.DAT to.introduce was the Fritz.NOM
 erst gestern wieder t_1 vergessen.
 just yesterday again forgotten
 ‘Just yesterday it was forgotten to introduce Fritz to only one student.’
 [*forget* >> *only*; **only* >> *forget*]
 (%: indicates that not all speakers find this sentence grammatical)
- (49) a. #Erst gestern wieder wurde der Traktor **mit einem Spezialwerkzeug**
 just yesterday again was the tractor.NOM with a special.tool
 zu reparieren vergessen. = (19b)
 to repair forgotten
- b. %[**Mit einem Spezialwerkzeug** t_2 zu reparieren] $_1$ wurde der Traktor $_2$
 with a special.tool to repair was the tractor.NOM
 erst gestern wieder t_1 vergessen.
 just yesterday again forgotten
 ‘Just yesterday it was forgotten to repair the tractor with a special tool.’
 (%: indicates that not all speakers find this sentence grammatical)

The other scope and construal diagnostics discussed in section 2 display analogous behavior: NPIs within the verbal complement are licensed if the complement undergoes movement. A *de dicto* interpretation of embedded material is likewise possible. Finally, *wieder* ‘again’ can receive an embedded restitutive reading.

Taken together, these data demonstrate that verb incorporation and its semantic implications are absent if phrasal movement remedies a distinctness violation.³¹ This result is achieved in our account because verb incorporation is not an isolated type of movement but

³¹ Movement of the verbal complement also makes it clear that not all instances of wide scope in the long passive can be reduced to verb incorporation. Consider as an example the sentence in (7a), repeated here as (i):

rather an example of a larger range of distinctness-driven movement phenomena. Interactions between different movement types within that broader class thus receive a natural account.³²

6 Concluding remarks

In this paper we have argued for a process of verb incorporation that applies to certain restructuring configurations and has discernable semantic effects. This process creates a verb cluster, which is semantically interpreted via function composition. In combination with a general theory about the interpretation of movement chains, function composition has the effect that elements which are syntactically attached within the verbal projection out of which verb incorporation takes place behave semantically as if they were inside the matrix clause. Following work by Richards (2010), we furthermore proposed that this head movement is part of a larger family of distinctness-driven movements in syntax. Due to a general ban on category-identical nodes within the same Spell-Out domain, verb incorporation applies to form a complex verbal head, which does not violate distinctness.

General consequences of our proposal are that head movement cannot be entirely relegated to PF (contra Chomsky 2001) because at least some instances have semantic effects.³³

(fn. cont'd)

- (i) [Zu reparieren]_i wurden nur blaue Autos t_i vergessen.
 to repair were only blue cars.NOM forgotten
 ‘Only blue cars were forgotten to be repaired.’

(i) only has a reading in which *nur blaue Autos* ‘only blue cars’ takes scope over *vergessen* ‘forget’. Because (i) involves VP topicalization we can infer that no verb incorporation takes place. Instead, the matrix scope of *nur blaue Autos* is the direct result of its raising into the matrix clause and an independent constraint against reconstruction into a remnant (Barss 1986, Lechner 1998, Sauerland 1998). That not all types of scope reversals can be reduced to head movement is unsurprising, of course.

³² As noted in fn. 5, a few speakers marginally allow for a prosodic break to occur between the two verbs in the long passive (we are grateful to Klaus Abels, Gereon Müller and Susi Wurmbrand for pointing this out to us). Interestingly, it seems that in this case the wide scope and construal restrictions noted in section 2 disappear: only a narrow construal of embedded material is possible:

- (i) %weil der Knopf | fünfmal zu drücken | vergessen wurde
 because the button.NOM five.times to press forgotten was
 [*5.times(forget); 5.times(press)]

While this observation is tentative at this point, the interactions between phrasal and head movement discussed in this section may extend to this further intricacy as well. Given the independent availability of string-vacuous scrambling in German, pointed out to by an anonymous reviewer, it is plausible to assume that the embedded VP in (i) has undergone short scrambling, which is masked in the surface string. This short scrambling step obviates the distinctness violation in the way just discussed and a low construal of the adverb is possible. In addition, because the embedded VP is thus moved away from its base position, it is no longer placed into a prosodic unit with the matrix verb. This captures the codependence between prosodification and construal.

³³ Our work thus adds to a line of work by Wechsler (1991), Truckenbrodt (2006), and Lechner (2006) that associates certain instances of head movement with semantic effects. Our proposal differs though in how it does so. In Wechsler (1991) and Truckenbrodt (2006), verb movement itself does not have a semantic effect but the presence/absence of its trigger has a semantic effect. In Lechner’s (2006) treatment, the movement of a modal verb is semantically contentful but the movement does not leave a trace; the modal can simply be completely interpreted in its landing site. Note, however, that we are not claiming that all instances of

Moreover, because the semantic effects follow straightforwardly from function composition, the analysis presented here also provides support for function composition as a mode of semantic composition (albeit a highly constrained one, see fn. 16). Third, the account offers additional support for the role of distinctness in syntax and extends its application to instances of head movement.

Syntactic effects of incorporation: While we have primarily focused on how the wide scope and construal facts exhibited by the long passive receive a natural account in terms of verb incorporation and its semantic interpretation, it is worth noting that our account also captures various non-semantic restrictions that verb cluster accounts were originally developed for. Recall from section 1 that in a long passive with an in-situ verbal complement (i) no elements may intervene between the two verbs and (ii) the two verbs may not be separated by an intonational break (modulo the complication discussed in fn. 32). These restrictions are unsurprising: because the lower verb incorporates into the higher verb, forming a complex head, no syntactic material can appear between them and they are prosodified as a unit. The effects of verb incorporation are thus not limited to prosody and semantics, they also include purely syntactic restrictions. This provides evidence for our characterization of verb incorporation as a syntactic process, which has repercussions at both PF and LF.

Compactness vs. non-compactness in the long passive: Recall from section 1 above the central tension that analyses of long passives face. On the one hand, in the normal case, long passives exhibit compactness: the two verbs form a unit with respect to intervening elements, prosodic breaks, quantificational scope and adverb construal (modulo the complication discussed in fn. 32). On the other hand, it is possible to move only the verbal complement and strand the higher verb, a movement that is only possible if the two verbs do not form a cluster. As noted in section 1, this ambivalent behavior poses problems for both verb cluster and XP-complementation accounts of the long passive because both approaches treat the long passive as either uniformly a verb cluster structure or uniformly an XP-complementation structure.

The analysis we have developed here reconciles these seemingly contradictory properties of the long passive. The crucial aspect of our account is that verb cluster formation is in principle independent of the long passive. While cluster formation is obligatory if the verbal complement remains in situ, it does not apply if the complement moves away, for principled reasons relating to phase-based distinctness. This resolves the paradox observed above: if the verbal complement remains in situ, distinctness requires obligatory verb cluster formation, which results in the various compactness properties. If the verbal complement is moved away, on the other hand, distinctness is satisfied and no compactness arises. In other words, some instances of the long passive involve a cluster while others do not.

Crucial to this explanation is the synthesis of accounts that have so far mainly been pursued in isolation. In the present account, both verb clusters and XP-complementation play a central role in the syntax of the long passive. Moreover, they are intimately linked: formation of the verb cluster is triggered by deficient XP-complementation.

(fn. cont'd)

head movement are semantically contentful. Some instances of head movement might also be motivated by purely morphosyntactic concerns and not distinctness. In other words, not all instances of head movement are amenable to the interpretation procedure developed here.

Implications for the structure of coherent infinitives: While we have so far focused extensively on the differences between long passives and local passives, it is worth determining where regular active clauses fall with regard to this divide. The null assumption is that active clauses are structurally ambiguous. Their verbal complement could be either a vP or a VP, with verb incorporation taking place in the latter case but not the former. Because the embedded object will receive accusative from the embedded v in the former case and from the matrix v in the latter, the structures emerge as surface-identical. There is, however, reason to believe that this expectation is not borne out. As the discussion above has made clear, every embedded element has to take matrix scope in VP structures but embedded scope in vP structures. If active clauses were simply ambiguous between the two structures, we would expect *bandwagon effects*: If the verbal complement contains two scope-bearing elements, they should either both take matrix or both take embedded scope. This is not correct. Consider (50), which has at least the two readings indicated.

- (50) weil er nur einen Knopf fünfmal zu drücken vergessen hat
 because he only one button.ACC five.times to press forgotten has
 ‘because he forgot to press only one button five times’
 possible readings: [*only* > *forget* > 5 times; *forget* > *only* > 5 times]

According to the first indicated reading of (50), *fünfmal* ‘five times’ takes scope under *vergessen* ‘forget’, while *nur einen Knopf* ‘only one button’ takes scope above it. For *fünfmal* to be able to take embedded scope, the complement needs to be a vP. The question then is why *nur einen Knopf* can take matrix scope in a active clause but not a local passive. It is clear that this high scope cannot be the result of verb incorporation: If it were, *fünfmal* should likewise receive a matrix construal. One possible answer to this question lies in independently observed effects of accusative case assignment. Rackowski & Richards (2005) argue that an otherwise opaque clause becomes transparent for extraction if it receives accusative case. The embedded vP in (50) is thus rendered transparent and *nur einen Knopf* is able to scramble into the matrix clause, taking high scope. Because this scrambling is an optional process, matrix scope is optional as well.

The solution just given is related to an independent observation: Some verbs, which Bech (1955/1957) calls ‘coherent’, embed infinitival complements that are transparent for scrambling. As a reviewer has pointed out to us, not all of these verbs also allow for the long passive.³⁴ This is now unsurprising: If a verb can embed a vP but not a VP complement, a long passive will be impossible. Yet the embedded verb will be coherent if it is assigned accusative case. The relation between complement size and their syntactic behavior is summarized in (51):

- (51) *Properties of verbal complements*
- a. VP → coherent, long passive
 - b. vP → coherent, no long passive
 - c. TP → incoherent, no long passive

³⁴ To give just one example, Bech (1955/1957: 66) gives a coherent example with *glauben* ‘believe’, a verb that cannot occur in the long passive (Reis & Sternefeld 2004: 473).

Verbs differ in what kind(s) of complements they accept. Thus, while our account of the factors underlying verb incorporation and its semantic effects is very general, whether or not any given verb is compatible with a verb incorporation structure is solely dependent on whether this verb is able to embed bare VP complements. This preserves the traditional picture that clause union effects are verb-specific.

Long passives beyond German: Although our discussion has focussed on German, the long passive has also been reported for several other languages (see Wurmbrand 2013, 2014 for an overview and discussion). Interestingly, Lødrup (2014) argues that Norwegian has a long passive in which the passive feature of the matrix clause is morphologically realized on both the matrix and the embedded verb by means of the suffix *-s*. An example from Lødrup (2014: 368) is given in (52). He specifically argues this is an instance of voice agreement, rather than independent passivization of the two verbs.

- (52) Ifølge Bergo må klimaproblemene forsøkes å løses ...
 according.to Bergo must climate.problems.DEF try.INF.PASS to solve.INF.PASS
 ‘According to Bergo, one must try to solve the climate problems ...’ (Norwegian)

A similar can arguably also be observed in Turkish (Kornfilt 1996) and a variety of other languages (again, see Wurmbrand 2013 for extensive discussion). A Turkish example from Kornfilt (1996: 123) is provided in (53).

- (53) üniversitel-ler (polis tarafından) kuşat-ıl-mak iste-n-di
 university-PL police by surround-PASS-INF want-PASS-INF
 ‘The universities were wanted to be surrounded by the police.’ (Turkish)

As far as we know, the kinds of tests we employed in this paper have not been systematically conducted for these languages (though see Lødrup 2014: 375 for suggestive evidence from adverbial modification). The results of the present paper encourage similar investigations in other languages to deepen our understanding of restructuring and its syntactic and semantic effects.

Acknowledgments

We are greatly indebted to three anonymous *NLLT* reviewers and our editor Marcel den Dikken for extensive comments and valuable suggestions on earlier versions of this paper. We also benefited from very helpful discussions with Klaus Abels, Alan Bale, Jonathan Bobaljik, Annabel Cormack, Vincent Homer, Norbert Hornstein, Kyle Johnson, Winnie Lechner, Gereon Müller, Ethan Poole, Joachim Sabel, Martin Salzmann, Bernhard Schwarz, Dominique Sportiche, Gary Thoms, Lisa Travis, Michael Wagner and Susi Wurmbrand, all of whom we would like to thank. We are also indebted to the people who have agreed to take our questionnaire. We are also grateful to audiences at UMass Amherst, UCL, McGill, Chicago, Tübingen, GLOW 36, WCCFL 32 and LISSIM 8. All errors are our own.

Appendix: Questionnaire study

As we have observed throughout this paper, there exists some amount of variation between speakers with respect to the scope and construal restriction discussed here. For example, we have noted in fn. 5, 11, and 32 that it is possible for some but not all speakers to obviate the wide scope/construal restriction in long passives by placing a prosodic break between the two verbs. Second, speakers differ in the acceptance of long passives with a moved embedded clause, as noted in section 5. To provide a first approximation to the variability in these domains, we report here grammaticality and truth value judgments from 12 linguistically sophisticated German speakers. No attempt was made to systematically control for dialectal affiliation. We thus stress that this questionnaire was of a preliminary nature, and that a more systematic investigation would be required to pinpoint dialectal differences with any precision.

The questionnaire comprised 35 sentences, all of which involved long passives, local passives or their active counterparts. Both grammaticality and truth-value judgments were carried out on a 5-point Likert scale, with ‘5’ indicating ‘grammatical’/‘definitely true’ and ‘1’ representing ‘ungrammatical’/‘definitely false’. For truth value judgments, participants had the additional option of indicating that a sentence is ungrammatical for them and not give a truth judgment. Only one lexicalization per condition was used, except for the establishment of the baseline acceptability of long passives. Here two items were used: one in which nominative case is reflected on the DP itself, and another where it is reflected in verb agreement only (see fn. 1). Because it is well-known that not all speakers of German allow for the long passive, the questionnaire contained two simple examples of the construction without scope-bearing elements, such as (1c) above, in order to allow us to identify speakers who fall into this group. Two of 14 speakers who filled out the questionnaire gave both sentences a rating of ‘2’ or ‘1’ and were excluded from analysis. In what follows, we report the *mean* score for each construction we tested, together with the *sample standard deviation* and the *absolute range* of judgments.

Regular active clauses such as (54) obtained an average rating of 5 points (*sd*: 0.2, *range*: 4–5). A corresponding long passive as in (1c) elicited a rating of 4.0 (*sd*: 1.1, *range*: 2–5) and the rating of the corresponding local passive as in (1b) was 4.1 (*sd*: 1.4, *range*: 1–5).

(54) Gestern hat Fritz den Traktor zu reparieren versucht. = (1a)
 yesterday has Fritz.NOM the tractor.ACC to repair tried

A. *Embedded direct objects (section 2)*

Bobaljik & Wurmbrand (2005) observe that an embedded direct object has to take matrix scope in the long passive. This claim is corroborated by our study. The scope options of embedded direct objects was assessed using (55). Scenarios analogous to those in fn. 7 were used for disambiguation.

- (55) a. *LOCAL PASSIVE* = (10b)
 Gestern wurde **nur einen einzigen Traktor** zu reparieren vergessen.
 yesterday was only a single tractor.ACC to repair forgotten
 → Rating for narrow scope of *only*: 5.0 (*sd*: 0, *range*: 5–5)
 → Rating for wide scope of *only*: 1.5 (*sd*: 0.8, *range*: 1–3)
- b. *LONG PASSIVE* = (10c)
 Gestern wurde **nur ein einziger Traktor** zu reparieren vergessen.
 yesterday was only a single tractor.NOM to repair forgotten
 → Rating for narrow scope of *only*: 1.2 (*sd*: 0.4, *range*: 1–2)
 → Rating for wide scope of *only*: 5.0 (*sd*: 0, *range*: 5–5)

This demonstrates that wide scope of the embedded direct object is obligatory in long passives but impossible in local passives, in line with Bobaljik & Wurmbrand's (2005) generalization.

B. *Embedded indirect object (section 2.1.1)*

Section 2.1.1 claims that indirect objects are subject to the same scope constraint as direct objects in the long passive. We used the sentences in (56):

- (56) a. *LOCAL PASSIVE* = (13a)
 Erst gestern wieder wurde *den Fritz* **nur einem einzigen Studenten**
 just yesterday again was the Fritz.ACC only a single student.DAT
 vorzustellen vergessen.
 to.introduce forgotten
 → Rating for narrow scope of *only*: 5.0 (*sd*: 0, *range*: 5–5)
 → Rating for wide scope of *only*: 1.3 (*sd*: 0.5, *range*: 1–2)
- b. *LONG PASSIVE* = (13b)
 Erst gestern wieder wurde *der Fritz* **nur einem einzigen**
 just yesterday again was the Fritz.NOM only a single
Studenten vorzustellen vergessen.
 student.DAT to.introduce forgotten
 → Rating for narrow scope of *only*: 2.2 (*sd*: 1.4, *range*: 1–5)
 → Rating for wide scope of *only*: 3.9 (*sd*: 1.5, *range*: 1–5)

The constraints observed for direct objects thus extends to indirect objects. It is worth noting that the variability in the judgments of the long passives increase compared to (55b). This is consistent with the observations in fn. 5, 11, and 32 and the claim there that speakers differ with respect to the availability of string-vacuous scrambling.

C. *NPIs (section 2.1.2)*

The key observation of section 2.1.2 is that embedded NPIs can be licensed by *vergessen* 'forget' only in the local passive, and not in the long passive. (57) shows this to be correct for direct objects and (58) demonstrates the same point for indirect objects.

- (57) a. *LOCAL PASSIVE* = (14a)
 Gestern wurde **auch nur einen einzigen Traktor** zu reparieren
 yesterday was also only a single tractor.ACC to repair
 vergessen.
 forgotten
 ‘Yesterday it was forgotten to repair even a single tractor.’
 → Rating: 4.7 (*sd*: 0.5, *range*: 4–5)
- b. *LONG PASSIVE* = (14b)
 Gestern wurde **auch nur ein einziger Traktor** zu reparieren
 yesterday was also only a single tractor.NOM to repair
 vergessen.
 forgotten
 → Rating: 2 (*sd*: 1.3, *range*: 1–5)
- (58) a. *LOCAL PASSIVE* = (15a)
 Gestern wurde *den Fritz* **auch nur einem einzigen Studenten**
 yesterday was the Fritz.ACC also only a single student.DAT
 vorzustellen vergessen.
 to.introduce forgotten
 ‘Yesterday it was forgotten to introduce Fritz to even a single student.’
 → Rating: 4.8 (*sd*: 0.4, *range*: 4–5)
- b. *LONG PASSIVE* = (15b)
 Gestern wurde *der Fritz* **auch nur einem einzigen Studenten**
 yesterday was the Fritz.NOM also only a single student.DAT
 vorzustellen vergessen.
 to.introduce forgotten
 → Rating: 3.2 (*sd*: 1.5, *range*: 1–5)

Note: The relatively high rating for the long passive is presumably a consequence of the fact that the non-NPI reading of (58b) (cf. fn. 10) is easily accessed due the possibility of satisfying the using *Fritz* to satisfy the presupposition of *auch* locally, in contrast to (57b). This may have artificially increased the rating of (58b). Yet in any case, there is a clear contrast between the local and the long passive.

D. *Adverb construal* (section 2.3)

The central claim of section 2.3 is that adverbs have to be construed with the matrix predicate in long passives. We employed the sentences (59) to assess this claim. These are particularly suitable because one of the two readings is nonsensical, a judgment that is easier to arrive at than the discrimination between two plausible readings.

- (59) a. *LOCAL PASSIVE* = (19a)
 Erst gestern wieder wurde den Traktor mit einem Spezialwerkzeug
 just yesterday again was the tractor.ACC with a special.tool
 zu reparieren vergessen.
 to repair forgotten
 → Rating: 5.0 (*sd*: 0, *range*: 5–5)
- b. *LONG PASSIVE* = (19b)
 Erst gestern wieder wurde der Traktor mit einem Spezialwerkzeug
 just yesterday again was the tractor.NOM with a special.tool
 zu reparieren vergessen.
 to repair forgotten
 → Rating: 3.4 (*sd*: 1.7, *range*: 1–5)

Note: Again, the fact that the latter rating is relatively high is plausibly due to the fact that the sentence is grammatical, albeit on a non-sensical matrix construal of *mit einem Spezialwerkzeug*. In either case, the contrast between the two is clear: The sentence is degraded in the long passive relative to the local passive.

E. *Moved verbal complements (section 5)*

As noted in the main text in section 5, while long passive sentences with a moved verbal complement are often judged grammatical in the literature (see (7)), they are somewhat degraded compared to their non-moved counterparts. Thus, the in-situ long passive in (60a) received a higher rating than a structure in which the embedded VP is topicalized (60b). The questionnaire did not only test topicalization of the complement but also scrambling and extraposition, not reported here. While these constructions elicited lower ratings overall, the basic patterns in the judgments reported here for topicalization holds for these other constructions as well.

- (60) a. Erst gestern wieder wurde der Fritz den anderen Studenten
 just yesterday again was the Fritz.NOM the other students.DAT
 vorzustellen vergessen.
 to.introduce forgotten
 ‘Just yesterday it was forgotten to introduce Fritz to the other students.’
 → Rating: 3.7 (*sd*: 1.2, *range*: 2–5)
- b. [Den anderen Studenten t_2 vorzustellen] $_1$ wurde der Fritz $_2$ erst
 the other students.DAT to.introduce was the Fritz.NOM just
 gestern wieder t_1 vergessen.
 yesterday again forgotten
 ‘Just yesterday it was again forgotten to introduce Fritz to the other students.’
 → Rating: 2.5 (*sd*: 1.3, *range*: 1–5)

Against this background, we tested analogous sentences with scopal material inside verbal complement. All 12 participants accepted the in-situ variant in (61a) as grammatical on at

least one reading, while only 8 did so for the moved variant (61b). (61) gives the average truth value ratings of the speakers that do accept the respective sentences.

- (61) a. Erst gestern wieder wurde der Fritz **nur einem einzigen Studenten**
 just yesterday again was the Fritz.NOM only a single student.DAT
 vorzustellen vergessen.
 to.introduce forgotten
 → Rating for narrow scope of *only*: 2.2 (*sd*: 1.4, *range*: 1–5)
 → Rating for wide scope of *only*: 3.9 (*sd*: 1.5, *range*: 1–5)
- b. [**Nur einem einzigen Studenten** t_2 vorzustellen] t_1 wurde der Fritz $_2$
 only a single student.DAT to.introduce was the Fritz.NOM
 erst gestern wieder t_1 vergessen. = (48b)
 just yesterday again forgotten
 → Rating for narrow scope of *only*: 3.5 (*sd*: 1.0, *range*: 2–5)
 → Rating for wide scope of *only*: 1.6 (*sd*: 0.7, *range*: 1–3)

While the in-situ variant (61a) is much more acceptable on a wide scope reading of *only*, the opposite is true for the topicalization structure (61b), where the narrow scope reading receives a substantially higher rating than the narrow scope interpretation. This supports our characterization in the main text that wide scope reading of *only* is possible only in the in-situ variant, whereas narrow scope is possible only in the moved counterpart.

Finally, we tested embedded adverbs. The in-situ variant (62a) was accepted by 12 participants and the topicalization structure (62b) by 9. Limiting our attention to the participants who do accept these structures, the average acceptability ratings are given in (62):

- (62) a. Erst gestern wieder wurde der Traktor **mit einem Spezialwerkzeug**
 just yesterday again was the tractor.NOM with a special.tool
 zu reparieren vergessen. = (49a)
 to repair forgotten
 → Rating: 3.4 (*sd*: 1.7, *range*: 1–5)
- b. [**Mit einem Spezialwerkzeug** t_2 zu reparieren] t_1 wurde der Traktor $_2$
 with a special.tool to repair was the tractor.NOM
 erst gestern wieder t_1 vergessen. = (49b)
 just yesterday again forgotten
 → Rating: 4.0 (*sd*: 0.9, *range*: 3–5)

This contrast is again remarkable in light of the ratings for (60). There, topicalization incurred a lower rating. It is striking, therefore, that topicalization is associated with an increase in acceptability, albeit only a slight one, when the verbal complement contains an adverb that requires low scope. Inspecting the range of judgments is revealing here: While judgments range from 1 to 5 in the absence of movement, they uniformly fall in the upper half the scale if topicalization takes place. This pattern is expected on our characterization in the main text: an embedded construal is possible only if the verbal complement is moved.

References

- Abels, Klaus (2003). Successive cyclicity, anti-locality, and adposition stranding. Ph.D. dissertation, University of Connecticut, Storrs, Connecticut.
- Ades, Anthony & Mark Steedman (1982). On the order of words. *Linguistics and Philosophy* 4: 517–558.
- Alexiadou, Artemis & Elena Anagnostopoulou (2001). The subject in situ generalization, and the role of Case in driving computations. *Linguistic Inquiry* 32: 193–231.
- Alexiadou, Artemis & Elena Anagnostopoulou (2007). The subject-in-situ generalization revisited. In: *Interfaces + Recursion = Language?*, ed. by Uli Sauerland & Hans-Martin Gärtner, Berlin: de Gruyter, pp. 31–60.
- Barrie, Michael (2011a). *Dynamic Antisymmetry and the Syntax of Noun Incorporation*. Dordrecht: Springer.
- Barrie, Michael (2011b). Review of *Uttering Trees* by Norvin Richards. *Journal of Linguistics* 47: 736–741.
- Barss, Andrew (1986). Chains and anaphoric dependence. Ph.d. thesis, MIT, Cambridge, MA.
- Bayer, Josef & Jaklin Kornfilt (1990). Restructuring effects in German. In: *Parametric Variation in Germanic and Romance: Proceedings from a DYANA Workshop*, ed. by Elisabeth Engdahl, Mike Reape, Martin Mellor & Richard Cooper, Edinburgh: University of Edinburgh, Centre for Cognitive Science, pp. 21–42.
- Bayer, Josef & Jaklin Kornfilt (1994). Against scrambling as an instance of move-alpha. In: *Studies on Scrambling: Movement and Non-Movement Approaches to Free Word-Order Phenomena*, ed. by Norbert Corver & Henk van Riemsdijk, Berlin: Mouton de Gruyter, pp. 17–60.
- Bech, Gunnar (1955/1957). *Studien über das deutsche Verbum Infinitum*. Copenhagen: Munksgaard, 2 vols.
- Beck, Sigrid & Kyle Johnson (2004). Double objects again. *Linguistic Inquiry* 35: 97–123.
- Bobaljik, Jonathan & Susanne Wurmbrand (2005). The domain of agreement. *Natural Language and Linguistic Theory* 23: 809–865.
- Chomsky, Noam (1993). A minimalist program for syntactic theory. In: *The View from Building 20*, ed. by Ken Hale & Samuel Jay Keyser, Cambridge, MA: MIT Press, pp. 1–52.
- Chomsky, Noam (1995). *The Minimalist Program*. Cambridge, MA: MIT Press.
- Chomsky, Noam (2000). Minimalist inquiries: The framework. In: *Step by Step: Essays in Syntax in Honor of Howard Lasnik*, ed. by Roger Martin, David Michaels & Juan Uriagereka, Cambridge, MA: MIT Press, pp. 89–155.
- Chomsky, Noam (2001). Derivation by phase. In: *Ken Hale: A Life in Language*, ed. by Michael Kenstowicz, Cambridge, MA: MIT Press, pp. 1–52.
- Chomsky, Noam (2013). Problems of projection. *Lingua* 130: 33–49.
- Di Sciullo, Anna-Maria & Edwin Williams (1987). *On the Definition of Word*. Cambridge, MA: MIT Press.
- Dowty, David (1979). *Word Meaning and Montague Grammar*. Dordrecht: Kluwer.
- Dowty, David (1985). On recent analyses of the semantics of control. *Linguistics and Philosophy* 8: 291–331.
- Elbourne, Paul D. (2005). *Situations and Individuals*. Cambridge, MA: MIT Press.
- Evers, Arnold (1975). The transformational cycle in Dutch and German. Ph.D. dissertation, University of Utrecht, reproduced 1975 by Indiana University Linguistics Club, Bloomington.
- Fabricius-Hansen, Cathrine (1983). Wieder ein wieder? Zur Semantik von wieder. In: *Meaning, Use and Interpretation of Language*, ed. by Rainer Bäuerle, Christoph Schwarze & Arnim von Stechow, Berlin: de Gruyter, pp. 26–41.
- Fanselow, Gisbert (1987). *Konfigurationalität: Untersuchungen zur Universalgrammatik am Beispiel des Deutschen*. Tübingen: Narr.

- Fox, Danny (2000). *Economy and Semantic Interpretation*. Cambridge, MA: MIT Press.
- Frey, Werner (1993). *Syntaktische Bedingungen für die semantische Interpretation: Über Binding, Implizite Argumente und Skopus*. Berlin: Akademie Verlag.
- Gärtner, Hans-Martin (2011). Function composition and the linear local modeling of extended NEG-scope. In: *Local Modelling of Non-Local Dependencies in Syntax*, ed. by Artemis Alexiadou, Tibor Kiss & Gereon Müller, Berlin: de Gruyter, pp. 337–352.
- Grewendorf, Günther & Joachim Sabel (1994). Long scrambling and incorporation. *Linguistic Inquiry* 25: 263–308.
- Haegeman, Liliane & Henk van Riemsdijk (1986). Verb projection raising, scope, and the typology of rules affecting verbs. *Linguistic Inquiry* 17: 417–466.
- Haider, Hubert (1993). *Deutsche Syntax – generativ*. Tübingen: Narr.
- Haider, Hubert (2003). V-clustering and clause union: Causes and effects. In: *Verb Constructions in German and Dutch*, ed. by Pieter Seuren & Gerard Kempen, Amsterdam: John Benjamins, pp. 91–126.
- Haider, Hubert (2010). *The Syntax of German*. Cambridge: Cambridge University Press.
- Halle, Morris & Alec Marantz (1993). Distributed Morphology and the pieces of inflection. In: *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, ed. by Ken Hale & Samuel Jay Keyser, Cambridge, MA: MIT Press, pp. 111–176.
- Halle, Morris & Alec Marantz (1994). Some key features of Distributed Morphology. In: *Papers on Phonology and Morphology*, ed. by Andrew Carnie, Heidi Harley & Tony Bures, Cambridge, MA: MITWPL, MIT Working Papers in Linguistics 21, pp. 275–288.
- Heim, Irene & Angelika Kratzer (1998). *Semantics in Generative Grammar*. Oxford: Blackwell.
- Hinrichs, Erhard & Tsuneko Nakazawa (1994). Linearizing AUXs in German verbal complexes. In: *German in Head-Driven Phrase Structure Grammar*, ed. by John Nerbonne, Klaus Netter & Carl Pollard, Stanford: CSLI, pp. 11–38.
- Hoekstra, Teun, ed. (1984). *Transitivity: Grammatical Relations in Government-Binding Theory*. Dordrecht: Foris.
- Höhle, Tilman (1978). *Lexikalistische Syntax: Die Aktiv-Passiv-Relation und andere Infinitivkonstruktionen im Deutschen*. Tübingen: Niemeyer.
- Jacobs, Joachim (1992). Bewegung als Valenzvererbung. *Linguistische Berichte* 138: 82–122.
- Jacobson, Pauline (1990). Raising as function composition. *Linguistics and Philosophy* 13: 423–475.
- Jacobson, Pauline (1992). Raising without movement. In: *Control and Grammatical Theory*, ed. by Richard Larson, Dordrecht: Kluwer, pp. 149–194.
- Kiss, Tibor (1995). *Infinite Komplementation*. Tübingen: Niemeyer.
- Kornfilt, Jaklin (1996). NP-movement and “restructuring”. In: *Current Issues in Comparative Grammar*, ed. by Robert Freidin, Dordrecht: Springer, pp. 121–147.
- Kratzer, Angelika (1996). Severing the external argument from its verb. In: *Phrase Structure and the Lexicon*, ed. by Johan Rooryck & Laurie Zaring, Dordrecht: Kluwer, pp. 109–137.
- Kratzer, Angelika & Lisa Selkirk (2007). Phase theory and prosodic spellout: The case of verbs. *The Linguistic Review* 24: 93–135.
- Krifka, Manfred (1995). The semantics and pragmatics of polarity items. *Linguistic Analysis* 25: 209–257.
- Krifka, Manfred (1998). Scope inversion under the rise-fall contour in German. *Linguistic Inquiry* 29: 75–112.
- Lebeaux, David (2009). *Where Does Binding Theory Apply?* Cambridge, MA: MIT Press.
- Lechner, Winfried (1998). Two kinds of reconstruction. *Studia Linguistica* 52: 276–310.
- Lechner, Winfried (2006). An interpretive effect of head movement. In: *Phases of Interpretation*, ed. by Mara Frascarelli, Berlin: de Gruyter, pp. 45–70.

- Lidz, Jeffrey & Alexander Williams (2002). Reflexivity and resultatives. In: *Proceedings of the 21st West Coast Conference on Formal Linguistics (WCCFL 21)*, ed. by Line Mikkelsen & Christopher Potts, Somerville, MA: Cascadilla Press, pp. 250–263.
- Lidz, Jeffrey & Alexander Williams (2005). C-locality and the interaction of reflexives and ditransitives. In: *Proceedings of the 34th Meeting of the North East Linguistic Society (NELS 34)*, ed. by Keir Moulton & Matthew Wolf, Amherst, MA: GLSA, pp. 389–404.
- Lødrup, Helge (2014). Long passives in Norwegian: Evidence for complex predicates. *Nordic Journal of Linguistics* 37: 367–391.
- Marantz, Alec (1996). ‘Cat’ as a phrasal idiom: Consequences of late insertion in Distributed Morphology. Ms., MIT, Cambridge, MA.
- Marantz, Alec (1997). No escape from syntax: Don’t try morphological analysis in the privacy of your own lexicon. In: *UPenn Working Papers in Linguistics, Volume 4.2*, ed. by Alexis Dimitriadis, University of Pennsylvania, Philadelphia: PLC, pp. 201–225.
- Meurers, Walt Detmar (2000). Raising spirits (and assigning them case). *Groninger Arbeiten zur Germanistischen Linguistik* 43: 173–226.
- Moro, Andrea (2000). *Dynamic Antisymmetry*. Cambridge, MA: MIT Press.
- Müller, Stefan (1999). *Deutsche Syntax – deklarativ*. Tübingen: Niemeyer.
- Müller, Stefan (2002). *Complex Predicates: Verbal Complexes, Resultative Constructions and Particle Verbs in German*. Stanford: CSLI.
- Müller, Stefan (2006). Complex predicates. In: *Encyclopedia of Language and Linguistics*, ed. by Keith Brown, Oxford: Elsevier, 2nd edn., pp. 697–704.
- Nissenbaum, Jon (1998). Movement and derived predicates: Evidence from parasitic gaps. In: *The Interpretive Tract*, ed. by Uli Sauerland & Orin Percus, Cambridge, MA: MITWPL, MIT Working Papers in Linguistics 25, pp. 247–295.
- Ott, Dennis (2012). *Local Instability: Split Topicalization and Quantifier Float in German*. Berlin: de Gruyter.
- Ott, Dennis (2015). Symmetric Merge and local instability: Evidence from split topics. *Syntax* 18: 157–200.
- Pollard, Carl J. & Ivan A. Sag (1994). *Head-Driven Phrase Structure Grammar*. Chicago: University of Chicago Press.
- Preminger, Omer (2011). Asymmetries between person and number in syntax: A commentary on Baker’s SCOPA. *Natural Language and Linguistic Theory* 29: 917–937.
- Pullum, Geoffrey (1982). Syncategorematicity and English infinitival *to*. *Glossa* 16: 181–215.
- Rackowski, Andrea & Norvin Richards (2005). Phase edge and extraction. *Linguistic Inquiry* 36: 565–599.
- Reich, Ingo (2007). From phases to “across the board movement”. In: *Proceedings of the 43rd Meeting of the Chicago Linguistic Society (CLS 43)*, Chicago: CLS, pp. 217–232.
- Reis, Marga & Wolfgang Sternefeld (2004). Review article of S. Wurmbrand “Infinitives: Restructuring and clause structure”. *Linguistics* 42: 469–508.
- Richards, Norvin (2010). *Uttering Trees*. Cambridge, MA: MIT Press.
- Romero, Maribel (1997). The correlation between scope reconstruction and connectivity effects. In: *Proceedings of the Sixteenth West Coast Conference on Formal Linguistics (WCCFL 16)*, ed. by Emily Curtis, James Lyle & Gabriel Webster, Stanford: CSLI Publications, pp. 351–366.
- Sabel, Joachim (1996). *Restrukturierung und Lokalität: Universelle Beschränkungen für Wortstellungsvarianten*. Berlin: Akademie-Verlag.
- Salzmann, Martin (2011). Resolving the movement paradox in Verb Projection Raising: In favor of base-generation and covert predicate raising. In: *Empirical Issues in Syntax and Semantics* 8, ed. by Olivier Bonami Patricia Cabredo Hofherr, Paris: CSSP, pp. 453–486.

- Salzmann, Martin (2013). New evidence for verb cluster formation of PF and a right-branching VP. In: *Proceedings of the 42nd Meeting of the North East Linguistic Society (NELS 42)*, ed. by Stefan Keine & Shayne Sloggett, Amherst, MA: GLSA, pp. 135–148.
- Sauerland, Uli (1998). On the making and meaning of chains. Ph.D. dissertation, MIT, Cambridge, MA.
- Schmid, Tanja, Markus Bader & Josef Bayer (2005). Coherence: An experimental approach. In: *Linguistic Evidence: Empirical, Theoretical, and Computational Perspectives*, ed. by Stephan Kepser & Marga Reis, Berlin: de Gruyter, pp. 435–456.
- Sportiche, Dominique (2006). Reconstruction, binding, and scope. In: *The Blackwell Companion to Syntax, Vol. IV*, ed. by Martin Everaert & Henk van Riemsdijk, Oxford: Blackwell, pp. 35–93.
- Steedman, Mark (1985). Dependency and coördination in the grammar of Dutch and English. *Language* 61: 523–568.
- Takahashi, Masahiko (2010). Case, phases, and the nominative/accusative conversion in Japanese. *Journal of East Asian Linguistics* 19: 319–355.
- Takahashi, Masahiko (2011). Some consequences of Case-marking in Japanese. Ph.D. dissertation, University of Connecticut, Storrs.
- Takahashi, Masahiko (2012). On restructuring infinitives in Japanese: Adjunction, clausal architecture, and phases. *Lingua* 122: 1569–1595.
- Travis, Lisa (1984). Parameters and effects of word order variation. Ph.D. dissertation, MIT, Cambridge, MA.
- Truckenbrodt, Hubert (2006). On the semantic motivation of syntactic verb movement to C in German. *Theoretical Linguistics* 32: 257–306.
- van Riemsdijk, Henk (1988). The representation of syntactic categories. In: *Proceedings of the Conference on the Basque Language, Basque World Congress, Vol. 1*, pp. 104–116.
- van Riemsdijk, Henk (1998). Categorial feature magnetism: The endocentricity and distribution of projections. *Journal of Comparative Germanic Linguistics* 2: 1–48.
- von Stechow, Arnim (1992). Kompositionsprinzipien und grammatische Struktur. In: *Biologische und soziale Grundlagen der Sprache*, ed. by Peter Suchsland, Tübingen: Niemeyer, pp. 175–248.
- von Stechow, Arnim (1995). Lexical decomposition in syntax. In: *Lexical Knowledge in the Organization of Language*, ed. by Urs Egli, Peter Pause, Christoph Schwarze, Arnim von Stechow & Götz Wienold, Berlin: John Benjamins, pp. 81–118.
- von Stechow, Arnim (1996). The different readings of *wieder*: A structural account. *Journal of Semantics* 13: 87–138.
- von Stechow, Arnim & Wolfgang Sternefeld (1988). *Bausteine syntaktischen Wissens: Ein Lehrbuch der generativen Grammatik*. Opladen: Westdeutscher Verlag.
- Wechsler, Stephen (1991). Verb second and illocutionary force. In: *Views on Phrase Structure*, ed. by Katherine Leffel & Denis Bouchard, Dordrecht: Kluwer, pp. 177–191.
- Williams, Edwin (2003). *Representation Theory*. Cambridge, MA: MIT Press.
- Wöllstein-Leisten, Angelika (2001). *Die Syntax der Dritten Konstruktion: Eine repräsentationelle Analyse zur Monosententialität von 'zu'-Infinitives im Deutschen*. Tübingen: Stauffenberg.
- Wurmbrand, Susanne (2001). *Infinitives: Restructuring and Clause Structure*. Berlin: Mouton de Gruyter.
- Wurmbrand, Susanne (2007). How complex are complex predicates? *Syntax* 10: 243–288.
- Wurmbrand, Susanne (2013). Complex predicate formation via voice incorporation, Ms., University of Connecticut, Storrs.
- Wurmbrand, Susi (2014). Restructuring across the world. In: *Complex Visible Out There: Proceedings of the Olomouc Linguistics Colloquium 2014: Language Use and Linguistic Structure*, ed. by Ludmila Veselovská & Markéta Janebová, Olomouc: Palacký University, pp. 275–294.