

# The Short Life Cycle of External Arguments in German Passive Derivations

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## Abstract

In this article, I pursue two main goals. First, I argue for a new empirical generalization: An external argument in German passive constructions ( $DP_{ext}$ ) is *accessible* from positions below it but *inaccessible* from positions above it. And second, I present a new theory of passivization from which this generalization can be derived: I suggest that an elementary operation *Remove* should be postulated in phase-based minimalist syntax that is the complete mirror image of *Merge* in that it triggers structure removal rather than structure building, and that obeys exactly the same restrictions (with respect to triggers, strict cyclicity, etc.). *Remove* provides a principled approach to conflicting structure assignment and reanalysis in general, with short life cycle effects (derivable from strict cyclicity) at its core.

## *Keywords:*

Merge, Strict Cycle Condition, passive, minimality, Agree (binding, control), reanalysis

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## 1. Introduction

In this article, I pursue two main goals. First, I argue for a new empirical generalization: An external argument in German passive constructions is *accessible* from positions below it but *inaccessible* from positions above it. And second, I present a new theoretical approach to passivization from which this generalization can be derived: I suggest that an elementary operation *Remove* should be postulated in phase-based minimalist syntax that is the complete mirror image of *Merge* in that it triggers structure removal rather than structure building, and that obeys exactly the same restrictions (with respect to triggers, strict cyclicity, etc.). I proceed as follows. In section 2, I show that there is conflicting evidence concerning the presence of an external argument DP in passive constructions in German, and propose to resolve this conflict by postulating the Accessibility Generalization according to which the external argument is accessible from items that are lower in the structure and inaccessible from items that are higher in the structure. In section 3, I argue that from a conceptual point of view, there is every reason to postulate an operation of structure-removal (*Remove*) as a counterpart to an operation of structure-building (*Merge*). In section 4, I put the two things together and show that an approach to German passive constructions in terms of structure removal accounts for the Accessibility Generalization without further ado, by correctly predicting (via strict cyclicity) a short life cycle of external arguments. After this, section 5 addresses the question of how variation in the area of passivization can be accounted for in the new model. Section 6 draws a conclusion and presents a general outlook. In an appendix, I discuss attempts to maintain strict accessibility or strict inaccessibility in the light of the empirical evidence presented in section 2.

## 2. Accessibility

### 2.1. Downward Accessibility

Approaches to passivization differ with respect to the question of whether an external argument DP ( $DP_{ext}$ ) is syntactically accessible or not. Over the last decades, some evidence has been presented that  $DP_{ext}$  is indeed present in the syntax in passive constructions, and can be accessed by other operations; cf., e.g., Chomsky (1957), Perlmutter & Postal (1983), Roberts (1987), Baker, Johnson & Roberts (1989), Sternefeld (1995), Stechow (1998), Collins (2005), Harley (2013), Merchant (2013), and Georgi (2014b)).<sup>1</sup>

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<sup>1</sup> For approaches in which  $DP_{ext}$  is not syntactically represented, see Höhle (1978), Chomsky (1981), Brennan (1982), Kiss (1992), Wunderlich (1993), Müller, St. (2007) and Kiparsky (2013), among many others; and for approaches where  $DP_{ext}$  is syntactically represented but not accessible, see Bach (1980), Keenan

A first, well-known argument for the syntactic accessibility of  $DP_{ext}$  is that  $DP_{ext}$  can control into adverbial clauses; cf. the case of purpose clauses in (1-ab).

- (1) a. Das Schiff wurde  $DP_{ext_1}$  versenkt [<sub>CP</sub> um  $PRO_1$  die Versicherung zu  
the ship was sunk in order the insurance to  
kassieren ] ]  
collect  
“The ship was sunk in order to collect the insurance.”
- b. Der Reifen wurde  $DP_{ext_1}$  aufgepumpt [<sub>CP</sub> um  $PRO_1$  die Fahrt  
the tire was inflated in order the journey  
fortzusetzen ] ]  
to continue  
“The tire was inflated in order to continue the journey.”

Second,  $DP_{ext}$  can control into subject-oriented secondary predicates, as in (2-abcd).

- (2) a. Die Daten wurden  $DP_{ext_1}$  [<sub>AP</sub>  $PRO_1$  nackt ] analysiert  
the data were naked analyzed  
“The data were analyzed by someone who was naked.”
- b. Das Handout wurde  $DP_{ext_1}$  [<sub>AP</sub>  $PRO_1$  übermüdet ] verfasst  
the handout was tired written  
“The handout was written by someone who was tired.”
- c. Es wurde [<sub>AP</sub>  $PRO_1$  absichtlich ] ein Fehler gemacht  
it was deliberately a mistake made  
“Someone deliberately made a mistake.”
- d. Dort wird [<sub>AP</sub>  $PRO_1$  freiwillig ] gearbeitet  
there is voluntarily worked  
“People work there voluntarily.”

Third, control by  $DP_{ext}$  into a regular complement infinitive is also possible; see (3-ab) (with impersonal passives based on a transitive control verb and a ditransitive subject control verb, respectively).<sup>2</sup>

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(1980), Stechow (1987; 1992), Bruening (2013; 2014), Schäfer (2012b), Alexiadou & Doron (2013), Hole (2014), and Alexiadou, Anagnostopoulou & Schäfer (2015).

<sup>2</sup> As argued by van Urk (2013), examples like (3-b) do not violate Visser’s generalization because this generalization should be taken to state that control by an implicit subject in the passive ( $DP_{ext}$ ) into a complement infinitive is impossible if an overt DP agrees with T; this is not the case in the examples in (3), which both exhibit impersonal passives (dative case is not absorbed by the regular passive auxiliary *werden*, and agreement is only possible with nominative arguments in German). In line with this, an example like (i), where dative case is absorbed by the marked passive auxiliary *kriegen* and the remaining overt argument (*sie* (‘she’)) agrees with T, is correctly predicted to be impossible under Visser’s generalization.

- (i) \*Gestern kriegte  $DP_{ext_1}$  [<sub>DP<sub>2</sub></sub> sie ] versprochen [<sub>CP</sub>  $PRO_{1/2}$  das Zimmer zu reinigen ]  
yesterday got she<sub>nom</sub> promised the room to clean  
“Yesterday she was promised by someone that (s)he would clean the room.”

- (3) a. Es wurde DP<sub>ext1</sub> versucht [CP PRO<sub>1</sub> zu schlafen ]  
 it was tried to sleep  
 “One tried to sleep.”
- b. Gestern wurde DP<sub>ext1</sub> [DP<sub>2</sub> ihr ] versprochen [CP PRO<sub>1/\*2</sub> das Zimmer zu  
 yesterday was her<sub>dat</sub> promised the room to  
 reinigen ]  
 clean  
 “Yesterday she was promised by someone that (s)he would clean the room.”

Fourth, reflexive pronouns and reciprocal pronouns in German passive constructions can satisfy Principle A, which suggests the presence of an accessible co-indexed subject DP<sub>ext</sub>.

- (4) a. Hier wurde DP<sub>ext1</sub> sich<sub>1</sub> nicht geprügelt  
 here was REFL not hit  
 “There were no rows here.”
- b. Es wurde DP<sub>ext1</sub> einander<sub>1</sub> gedankt  
 it was each other thanked  
 “People thanked each other.”

Fifth, DP<sub>ext</sub> cannot easily be interpreted as coreferential with a proper name object, which follows as a Principle C effect if DP<sub>ext</sub> is syntactically accessible; cf. (5-ab).<sup>3</sup>

- (5) a. \*Gestern wurde DP<sub>ext1</sub> Fritz<sub>1</sub> eingeladen  
 yesterday was Fritz invited  
 “Yesterday, Fritz invited himself.”
- b. ?\*Gestern wurde DP<sub>ext1</sub> Fritz<sub>1</sub> [PP von sich<sub>1</sub> ] eingeladen  
 yesterday was Fritz by himself invited  
 “Yesterday, Fritz invited himself.”

Thus, data such as those in (1)-(5) indicate that DP<sub>ext</sub> is present in the syntax. Note, however, that all the evidence presented so far concerns material lower in the structure, in domains c-commanded by DP<sub>ext</sub>. Therefore, we end up with the following generalization.

(6) *Downward Accessibility Generalization:*

The external argument in passive constructions (DP<sub>ext</sub>) is accessible for items that it c-commands.

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<sup>3</sup> Baker, Johnson & Roberts (1989) analyze this as a strong crossover effect in English; however, since German does not have obligatory fronting to subject position (cf. Grewendorf (1989), Haider (2010), among many others), strong crossover cannot solely be responsible for the illformedness of the sentences in (5).

## 2.2. Upward Inaccessibility

In contrast, a question that does not seem to have been as widely pursued is whether the external argument in passive constructions is also accessible for items higher up in the structure. Closer inspection reveals that this is not the case. Note first that  $DP_{ext}$  can never be bound by a quantified item in a higher clause (see Alexiadou et al. (2015)); this is shown for impersonal passives, where no nominative argument remains after passivization, in (7-a).<sup>4</sup> Such binding is unproblematic if the external argument is resumed as part of a *by*-phrase, as in (7-b).

- (7) a. \*Kein Student<sub>1</sub> gibt zu [<sub>CP</sub> dass  $\overline{DP}_{ext_1}$  schlecht gearbeitet wurde ]  
 no student admits that badly worked was  
 “No student admits that he did not work well.”
- b. Kein Student<sub>1</sub> gibt zu [<sub>CP</sub> dass  $\overline{DP}_{ext_1}$  schlecht [<sub>PP</sub> von ihm<sub>1</sub> ] gearbeitet wurde ]  
 no student admits that badly by him well worked was  
 “No student admits that he did not work well.”

In the same way, personal passives disallow binding of  $DP_{ext}$  by a quantified item in a higher clause; cf. (8-a) vs. (8-b).

- (8) a. \*Er hat den meisten Lehrern<sub>1</sub> gesagt [<sub>CP</sub> dass  $\overline{DP}_{ext_1}$  der Maria Bücher geschenkt werden sollen ]  
 he has the most teachers<sub>dat</sub> said that the Maria<sub>dat</sub> books<sub>nom</sub> given are should  
 “He told most teachers that they should give books to Maria.”
- b. Er hat den meisten Lehrern<sub>1</sub> gesagt [<sub>CP</sub> dass  $\overline{DP}_{ext_1}$  der Maria [<sub>PP</sub> von ihnen<sub>1</sub> ] Bücher geschenkt werden sollen ]  
 he has the most teachers<sub>dat</sub> said that the Maria<sub>dat</sub> by themselves books<sub>nom</sub> given are should  
 “He told most teachers that they should give books to Maria.”

Third, as observed in Stechow & Sternefeld (1988, 447-451), Wunderlich (1989), Stechow (1989), and Haider (2010, 293), control infinitives must have an accessible subject argument.  $DP_{ext}$  in passive clauses can evidently not satisfy this condition; this is shown for control into impersonal passives in (9).

- (9) a. \*Er versucht [<sub>CP</sub>  $\overline{DP}_{ext}$  gearbeitet zu werden ]  
 he tries worked to be  
 “He tries to ensure that work is being done.”

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<sup>4</sup> Here and henceforth,  $\overline{DP}_{ext}$  in a syntactic representation signals that  $DP_{ext}$  seems to be inaccessible.

- b. \*weil [CP bald  $\overline{\text{DP}}_{ext}$  geschlafen zu werden ] gewünscht wird  
 because soon slept to be wished is  
 “because someone wishes that sleep comes over people.”

Fourth, non-overt material can in principle satisfy criterial movement constraints in German. This is standardly assumed for extraction from embedded verb-second clauses as in (10-a) (where the intermediate movement step to SpecC can satisfy a verb-second C projection’s specifier requirement), and it also holds for topic drop constructions as in (10-b).

- (10) a. Wer<sub>1</sub> glaubst du [CP – hat Recht ] ?  
 who<sub>nom</sub> think you is right  
 “Who do you think is right?”  
 b. – habe ich schon gesehen heute  
 (her) have I already seen today  
 “I have already seen her today.”

However,  $\text{DP}_{ext}$  can never satisfy a criterial movement constraint in passive constructions; cf. (11-a) vs. (11-bc) (with a *by*-phrase PP and an expletive in SpecC, respectively).

- (11) a. \*Ich denke [CP  $\overline{\text{DP}}_{ext_1}$  ist gut gearbeitet worden ]  
 I think is well worked been  
 “I think that people worked well.”  
 b. Ich denke [CP [PP von ihr<sub>1</sub> ] ist gut gearbeitet worden ]  
 I think by her is well worked been  
 “I think that she worked well.”  
 c. Ich denke [CP es ist  $\overline{\text{DP}}_{ext_1}$  gut gearbeitet worden ]  
 I think it is well worked been  
 “I think that people worked well.”

The fifth observation concerns the absence of minimality effects in passive constructions. As noted by Collins (2005), if  $\text{DP}_{ext}$  is structurally represented in passive constructions, it is a priori unclear why movement of the internal argument to subject position can take place, given that movement obeys minimality:  $\text{DP}_{ext}$  in Specv is invariably closer to SpecT than  $\text{DP}_{int}$  (i.e., an internal argument DP) in VP. The relevant derivation is given in (12).

- (12) [TP [T' T [vP  $\overline{\text{DP}}_{ext}$  [v' v [VP V  $\text{DP}_{int}$  ]]]]]
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A derivation as in (12) should be expected to be ill formed. However,  $\text{DP}_{int}$  moves to SpecT in English passive constructions, which suggests that  $\text{DP}_{ext}$  is in fact not syntactically accessible and can thus not intervene; see (13).

(13) [TP John<sub>2</sub> was [vP  $\overline{\text{DP}}_{\text{ext,T}}$  [v' v [vP killed t<sub>2</sub> ]]]]

$\text{DP}_{\text{int}}$  can also move to SpecT in German passive constructions, which then also indicates that that  $\text{DP}_{\text{ext}}$  is not syntactically accessible. However, German differs from English in that movement to subject position in general is optional (see footnote 3), and that much TP-internal word order variation can be traced back to scrambling. A test for optional movement to SpecT in German is devised in Müller (2001): First, only a nominative subject argument DP can precede unstressed pronouns and at the same time follow C elements (cf. (14-a) vs. (14-b)); object DPs cannot do so (cf. (14-cd)). This strongly suggests a designated position in which only a nominative  $\text{DP}_{\text{ext}}$  can show up: SpecT. On this view, unstressed pronouns move to a domain that *precedes* the landing sites for scrambling (viz., specifiers of vP or VP) but crucially *follows* SpecT. This rules out both (14-c) (where  $\text{DP}_{\text{dat}}$  is scrambled to a position preceding the unstressed pronoun) and (14-d) (where  $\text{DP}_{\text{dat}}$  is moved to a domain that cannot be reached by scrambling, viz. TP).

- (14) a. dass es<sub>3</sub> [vP der Fritz<sub>1</sub> dem Karl<sub>3</sub> t<sub>2</sub> gegeben ] hat  
 that it<sub>acc</sub> the Fritz<sub>nom</sub> the Karl<sub>dat</sub> given has  
 “that Fritz gave it to Karl.”
- b. dass der Fritz<sub>1</sub> es<sub>3</sub> [vP t<sub>1</sub> dem Karl<sub>3</sub> t<sub>2</sub> gegeben ] hat  
 that the Fritz<sub>nom</sub> it<sub>acc</sub> the Karl<sub>dat</sub> given has  
 “that Fritz gave it to Karl.”
- c. \*dass der Fritz<sub>1</sub> dem Karl<sub>3</sub> es<sub>2</sub> [vP t<sub>1</sub> t<sub>3</sub> t<sub>2</sub> gegeben ] hat  
 that the Fritz<sub>nom</sub> the Karl<sub>dat</sub> it<sub>acc</sub> given has  
 “that Fritz gave it to Karl.”
- d. \*dass dem Karl<sub>3</sub> der Fritz<sub>1</sub> es<sub>2</sub> [vP t<sub>1</sub> t<sub>3</sub> t<sub>2</sub> gegeben ] hat  
 that the Karl<sub>dat</sub> the Fritz<sub>nom</sub> it<sub>acc</sub> given has  
 “that Fritz gave it to Karl.”

Given this state of affairs, it is clear that optional movement of a nominative  $\text{DP}_{\text{int}}$  in German passive constructions has taken place in (15-a) (but not in (15-b)); and such movement is evidently not blocked by an intervening  $\text{DP}_{\text{ext}}$ .<sup>5</sup>

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<sup>5</sup> Note that this reasoning requires two further assumptions. First, movement operations like scrambling and unstressed pronoun fronting have some way to circumvent minimality effects, unlike classical A-movement to SpecT; this has long been known and holds true of these operations almost by definition. One possible explanation for this is that the landing sites of scrambling and pronoun fronting show evidence of being A-bar rather than A-positions (see Müller (1995)). Second, A-movement of  $\text{DP}_{\text{ext}}$  in (14-b) or of  $\text{DP}_{\text{int}}$  in (15-a) to SpecT across a fronted pronoun (or a scrambled DP) also can avoid minimality effects, again in contrast to A-movement that would cross a non-overt  $\text{DP}_{\text{ext}}$  in its base position. Again, it would seem reasonable to account for this by assuming that A-bar specifiers (scrambled DPs, fronted pronouns) can never induce minimality effects with A-movement, in contrast to items in their base positions.

- (15) a. dass der Karl<sub>2</sub> ihr<sub>3</sub> [<sub>VP</sub>  $\overline{\text{DP}}_{\text{ext},\text{I}}$  [<sub>V'</sub> [<sub>VP</sub> t<sub>3</sub> t<sub>2</sub> vorgestellt ] v ]] wurde  
 that the Karl<sub>nom</sub> her<sub>dat</sub> introduced was  
 “that Karl was introduced to her.”
- b. dass ihr<sub>3</sub> [<sub>VP</sub>  $\overline{\text{DP}}_{\text{ext},\text{I}}$  [<sub>V'</sub> [<sub>VP</sub> t<sub>3</sub> der Karl<sub>2</sub> vorgestellt ] v ]] wurde  
 that her<sub>dat</sub> the Karl<sub>nom</sub> introduced was  
 “that Karl was introduced to her.”

A sixth observation is that  $\text{DP}_{\text{ext}}$  does not block anaphoric binding from above in passive constructions, in contrast to other external arguments in German, which act as interveners (see Pitteroff (2014)). This is shown by the active/passive pair in an AcI construction with *lassen* (‘let’) in (16). In (16-a), the subject DP *die Diener* (‘the servants’) blocks a satisfaction of Principle A by *sich* with the matrix subject DP as antecedent; in contrast, in the *lassen*-passive construction in (16-b),  $\text{DP}_{\text{ext}}$  does not preclude *sich* from satisfying Principle A with the matrix subject DP as antecedent; in this derivation, the reflexive bears index 1.<sup>6</sup> Alternatively, the reflexive can also take the embedded subject as an antecedent, signalled here by index 2. Thus, the two possible readings of (16-b) show both inaccessibility of  $\text{DP}_{\text{ext}}$  (in the case of index 1) and accessibility of  $\text{DP}_{\text{ext}}$  (in the case of index 2, based on the same reasoning as in (4)) in one example.<sup>7</sup>

- (16) a. Der König<sub>1</sub> lässt [<sub>act</sub> die Diener<sub>2</sub> sich<sub>\*1/2</sub> rasieren ]}  
 the king<sub>nom</sub> lets the servants REFL shave  
 “The king lets the servants shave themselves.”
- b. Der König<sub>1</sub> lässt [<sub>pass</sub>  $\overline{\text{DP}}_{\text{ext},\text{I}}$  sich<sub>1/2</sub> rasieren ]  
 the king<sub>nom</sub> lets REFL shave  
 “The king lets people shave themselves.”/“The king lets someone shave him.”

Taken together, we end up with the generalization in (17).

(17) *Upward Accessibility Generalization:*

The external argument in passive constructions ( $\text{DP}_{\text{ext}}$ ) is not accessible for items

<sup>6</sup> Note that German AcI constructions sometimes permit long-distance reflexivization, but this effect only shows up with PPs; cf. Reis (1976), Grewendorf (1983), Gunkel (2003), Barnickel (2014). Also, binding by the matrix subject in (16-b) cannot be due to raising of the reflexive pronoun *sich* to the matrix clause because *sich* can participate in VP topicalization. Finally, *lassen*-passives are special insofar as passivization is not accompanied by any morphological reflex; however, the status of the construction as a regular passive is uncontroversial (among other things, a *by*-phrase is possible, and lexical restrictions on passivization are identical to those active in standard passives).

<sup>7</sup> As a matter of fact, there is a third reading of the string in (16-b), irrelevant in the present context, where *lassen* does not have a causative or permissive interpretation (as presupposed so far) and *sich* is not an object of the embedded verb *rasieren*; rather, *sich lassen* acts as a modal passive auxiliary. On this reading, (16-b) would mean “It is possible to shave the king”. See Höhle (1978) for a comprehensive description of this construction.



that it does not c-command.

Combining the two generalizations in (6) and (17), the Accessibility Generalization in (18) emerges.

(18) *Accessibility Generalization* (preliminary version):

DP<sub>ext</sub> in passive constructions is accessible for items that it c-commands and inaccessible for items that it does not c-command.

While I take (18) to be descriptively correct for the most part, the following subsection shows that there is a further empirical phenomenon that will lead to a slight modification.

### 2.3. *A Refinement: Quantificational Variability Effects*

Consider quantificational variability effects in English, as they arise with indefinites (see Heim (1982), Diesing (1992)) and embedded wh-clauses (see Berman (1991)); cf. (19-ab), respectively.

- (19) a. A cat is usually smart  $\cong$  Most cats are smart  
b. John partly remembers who cheated

A standard assumption that I will adopt here (though see Hinterwimmer (2005) for a qualification) is that an indefinite DP (which can also be a wh-phrase) denotes an open sentence with a free individual variable that can be *unselectively bound* by an adverb of quantification; in line with this, existential binding in general comes about as a default operation. As observed in Alexiadou & Müller (2015), the external argument in German passive constructions is also subject to quantificational variability effects. This is shown by the data in (20-ab), with the adverbs of quantification *größtenteils* ('for the most part') and *zum Teil* ('partly'), and the interpretations as specified by the free translations.

- (20) a. Es wurde größtenteils DP<sub>ext</sub> geschlafen beim Vortrag  
it was for the most part slept at the talk  
"Most people slept during the talk."  
b. Dann wurde der Sprecher zum Teil DP<sub>ext</sub> ausgebuht  
then was the speaker partly booed  
"Then a proper subset of people booed the speaker."

For binding by the adverb of quantification to be possible in (20-ab), DP<sub>ext</sub> needs to be c-commanded by it, and thus must be accessible for some item outside its c-command domain after all. This requires a modification of the Accessibility Generalization. As it turns out, there is evidence that the adverbs of quantification in question are properly included in the vP; thus, they can participate in vP topicalization, unlike, e.g., sentence

adverbials which are merged outside of vP; see (21-a) vs. (21-b).

- (21) a. [ Größtenteils DP<sub>ext</sub> geschlafen ] wurde beim Vortrag  
 for the most part slept was at the talk  
 “Most people slept during the talk.”
- b. \*[ Wahrscheinlich DP<sub>ext</sub> geschlafen ] wurde beim Vortrag  
 probably slept was at the talk  
 “People probably slept during the talk.”

Note also that DP<sub>ext</sub> cannot be bound by an adverb of quantification outside the minimal clause; see (22-ab) (where only a reading is available where the adverb quantifies over time spans).<sup>8</sup>

- (22) a. Es war größtenteils so [CP dass ~~DP<sub>ext</sub>~~ geschlafen wurde beim Vortrag ]  
 it was for the most part so that slept was at the talk  
 “\*Most people slept during the talk.”/“For most of the time people slept during the talk.”
- b. Es war zum Teil so [CP dass der Sprecher ~~DP<sub>ext</sub>~~ ausgebuht wurde ]  
 it was partly so that the speaker booted was  
 “\*A proper subset of people booted the speaker.”/“At some points the speaker was booted.”

The fact that DP<sub>ext</sub> in German passive constructions is subject to quantificational variability effects can then be accommodated by a minimal refinement of (18), with the concept of c-command replaced by the slightly more liberal notion of m-command.

(23) *Accessibility Generalization* (final version):

DP<sub>ext</sub> in passive constructions is accessible for items that it m-commands and inaccessible for items that it does not m-command.

If the Accessibility Generalization in (23) is correct, it implies that it is not possible to maintain either strict syntactic accessibility or strict syntactic inaccessibility of DP<sub>ext</sub> in German passive constructions. For the time being, I will abstract away from possible attempts to nevertheless maintain existing approaches where DP<sub>ext</sub> either is always, or is never, accessible in the syntax, in view of the empirical evidence presented so far; I will address this issue in the Appendix (and the conclusion will be negative). Beyond that, the Accessibility Generalization in (23) raises the question why it should hold. While there are several ways in which (23) might in principle be derived, the null hypothesis would clearly seem to be that accessibility is simply correlated with existence: Where DP<sub>ext</sub>

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<sup>8</sup> Things are different with overt indefinites, which can be non-locally bound by an adverb of quantification; cf. Heim (1982).



Operations that require  $DP_{ext}$  to be present (like Principle A satisfaction with the external argument of the embedded verb, which presupposes a c-commanding co-indexed DP) would then access the upper structure, whereas operations that require  $DP_{ext}$  to be absent (like Principle A satisfaction with the external argument of the matrix verb, which must be able to circumvent an intervention effect triggered by an embedded  $DP_{ext}$ ) would access the lower structure. However, there are severe problems with such a coanalysis approach. First, coanalysis is known to be extremely powerful and insufficiently restricted; in line with this, it is unclear how it could be integrated into a theory of incremental structure-building based on Merge operations. Second, and even more importantly, the coanalysis approach cannot derive the Accessibility Generalization in (23): There is nothing that would determine which processes access which of the two co-existing structures. Therefore, the empirical evidence presented in section 2 could only be accounted for by a number of independent stipulations, with the clear pattern determined by an m-command threshold resulting accidentally.

Against this background, I would like to advance a new, more principled approach to conflicting representations from which the Accessibility Generalization follows in a very direct way. The central claim is that syntactic derivations employ two elementary operations modifying the size of representations: In addition to an operation that *builds* structure – *Merge* (Chomsky (2001; 2008; 2013)) –, there is a complementary operation that *removes* structure: *Remove*.

If *Remove* exists as the mirror image of *Merge*, it is expected to show similar properties and obey identical constraints. I will make the following assumptions about the nature of *Merge*. First, *Merge* is feature-driven. It is triggered by designated [ $\bullet F \bullet$ ] features, which are ordered on lexical items (see Pesetsky & Torrego (2006), Heck & Müller (2007), Collins & Stabler (2011), Abels (2012), Georgi (2014a), Müller (2014), Stabler (2013), and references cited in these works). Once a feature has triggered an operation, it is discharged (and thereby deleted), and the next feature on the list becomes active. Second, *Merge* may apply to heads or phrases. The difference between heads and phrases needs to be formally expressed in some way; this can be done by attaching appropriate diacritics 0 (which stands for minimal projection) and 2 (which stands for maximal projection, but not necessarily for exactly two X-bar levels in a phrase) to the features triggering *Merge*: [ $\bullet F_0 \bullet$ ], [ $\bullet F_2 \bullet$ ]. Third, *Merge* may be external (by taking some item from the workspace) or internal (by taking some item from the current phrase marker, thereby producing movement). Finally, fourth, *Merge* obeys the Strict Cycle Condition, a core principle of derivational grammar. The version of the Strict Cycle Condition adopted here is given in (25) (see Chomsky (1973; 1995; 2001; 2008)).

(25) *Strict Cycle Condition* (SCC):

Within the current XP  $\alpha$ , a syntactic operation may not exclusively target some item  $\delta$  in the domain of another XP  $\beta$  if  $\beta$  is in the domain of  $\alpha$ .

The notion of *domain* in (25) is understood as in Chomsky (1995): The domain of a head X is the set of nodes dominated by XP that are distinct from and do not contain X. The Strict Cycle Condition ensures that properly embedded structures cannot be exclusively manipulated by syntactic operations; for Merge the restriction is derived that the operation can take place only with a member of the current root projection. Still, it can be noted that (25) is slightly less strict than Chomsky’s (1995) Extension Condition, in that it permits both Merge of a head Y to another head X (as in head movement) and Merge of a phrase YP to (a non-maximal projection of) X (i.e., tucking in in the sense of Richards (2001)), as long as X is the head of the current root.

I assume that Remove obeys identical restrictions. Thus, first, Remove is feature-driven. It is triggered by designated  $[-F-]$  features, which are ordered on lexical items;  $[-F-]$  features for structure removal are interspersed with  $[\bullet F \bullet]$  features for structure building on a head. Second, Remove may apply to heads or phrases; again, this is signalled by a diacritic that accompanies the feature triggering the operation:  $[-F_0-]$ ,  $[-F_2-]$ . Third, Remove can be external or internal. However, the cases I will focus on in what follows involve internal Remove, i.e., removal of items that are part of the syntactic structure that Remove applies to.<sup>9</sup> Fourth, Remove obeys the Strict Cycle Condition. By its very nature, it is impossible for a Remove operation to extend the phrase marker created so far; however, the Strict Cycle Condition in (25) ensures that Remove can only apply to heads or phrases in the domain of the head that bears the  $[-F-]$  feature, and not to more deeply embedded items.<sup>10</sup>

In what follows, I present abstract scenarios instantiating Remove, first with phrases, and then with heads.

### 3.2. *Remove and Phrases*

Remove applying to phrases is triggered by  $[-F_2-]$  features. In (26), a head X is taken from the workspace (more precisely, from the numeration that is part of the workspace) that is equipped with a feature  $[\bullet Y_2 \bullet]$  triggering Merge of some YP, and with a feature

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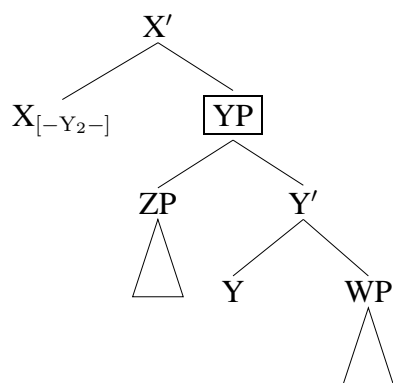
<sup>9</sup> External Remove affects material that is not actually present in syntactic structure. See Müller (2015a) on how this paradox can be resolved. I will briefly come back to external Remove in the appendix.

<sup>10</sup> Note that this presupposes that both with external Merge and with Remove, an operation that is triggered by the head of a projection  $\alpha$  and that applies to some item  $\delta$  (merging or removing it) does indeed “exclusively target”  $\delta$  (in the sense of (25)) in the domain of which  $\delta$  is a member. The case is different with internal Merge (i.e., movement), where the operation targets both the embedded domain (the pre-movement position of  $\delta$ ) and the domain of the head triggering the operation (the post-movement position of  $\delta$ ).

$[-Y_2-]$  triggering Remove for some YP. The former feature is higher-ranked (indicated by  $\succ$ ) and needs to be applied (and thereby discharged) first. The Merge operation is shown in (26-a), and the subsequent Remove operation in (26-b) (with the target for Remove indicated by a box around it, here and in the following derivations).

(26) *Remove and phrases: complements*

a. Merge( $X_{[\bullet Y_2 \bullet]} \succ [-Y_2-]$ , YP):



b. Remove( $X_{[-Y_2-]}$ , YP):

X

Three remarks are in order here. First, in (26-a), the structural configuration for Remove applying to either ZP or WP is not present, because of the the Strict Cycle Condition. Thus, if X were equipped with a  $[-Z_2-]$  or  $[-W_2-]$  feature, the derivation would crash: Only YP can be successfully removed, yielding (26-b). Second, the order of features for Merge and Remove is crucial. A head  $X_{[-Y_2-] \succ [\bullet Y_2 \bullet]}$  could not produce the derivation in (26).<sup>11</sup> And third, (26) qualifies as a Duke-of-York derivation (see Pullum (1976), McCarthy (2003), and Lechner (2010), among others). As is generally the case with this type of interaction of operations, it is far from vacuous – as we will see below, the intermediate representation can have an influence on the applicability of other processes before it is undone again.

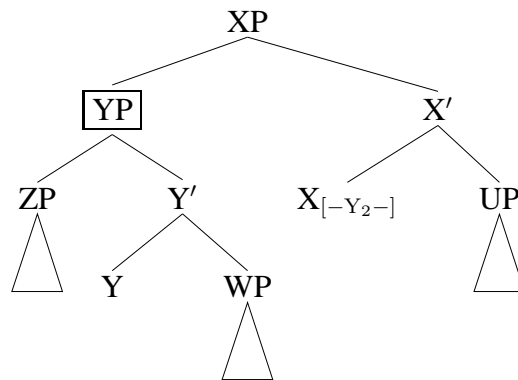
Consider next a scenario where some head selects its specifier for a Remove operation, as in (27). First, X merges with YP in (27-a); subsequently, YP is removed again in (27-b). As before, it is possible that some other operation intervenes between the two processes, and for such an operation the temporary presence of YP will make a difference, even if YP is not part of the final output representation after having undergone removal.

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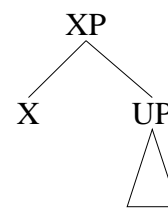
<sup>11</sup> Depending on further assumptions which are not relevant to the issues under consideration in this article, the output based on  $X_{[-Y_2-] \succ [\bullet Y_2 \bullet]}$  would either be external removal of some phrase of type Y from the workspace (cf. footnote 9) followed by Merge of some (other) phrase of type Y; or a crash of the derivation. Note that I do not assume that a frustrated  $[-F-]$  feature that cannot trigger structure removal can simply undergo deletion, in contrast to what has been argued for probe features (see footnote 15 below).

(27) *Remove and phrases: specifiers*

a. Merge( $X'_{[\bullet Y_2 \bullet]} > [-Y_2-]$ , YP):



b. Remove( $X'_{[-Y_2-]}$ , YP):



As with complement removal as in (26), phrases that are more deeply embedded in YP cannot be removed by X because of the Strict Cycle Condition. Thus, even if X in (27) were to be equipped with the appropriate categorial features for Remove (like  $[-Z_2-]$  or  $[-W_2-]$ ), ZP and WP could not be removed in (27). However, in principle (i.e., if it were equipped with an appropriate categorial feature  $[-U_2-]$ ), X might also remove UP in this configuration after YP has been merged (in analogy to tucking in scenarios with Merge); see Murphy & Müller (2016) (and literature cited there) on empirical motivation for such an operation (based on sluicing constructions).

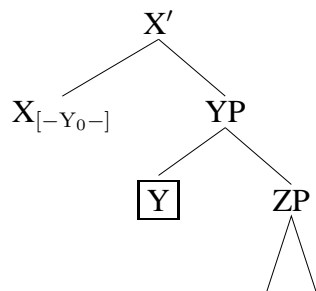
Remove applying to a phrase is what will be relevant for the analysis of the variable accessibility of external arguments in German passive derivations. Still, for the sake of completeness, let me also briefly consider the case of Remove applying to a head.

3.3. *Remove and Heads*

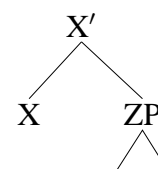
If Remove applies to a head rather than a phrase, this is due to the presence of  $[-F_0-]$  rather than  $[-F_2-]$  on a head. (28) illustrates a case where the head Y of a complement YP is removed.

(28) *Remove and heads: complements*

a. Merge( $X_{[\bullet Y_2 \bullet]} > [-Y_0-]$ , YP):



b. Remove( $X_{[-Y_0-]}$ , Y):



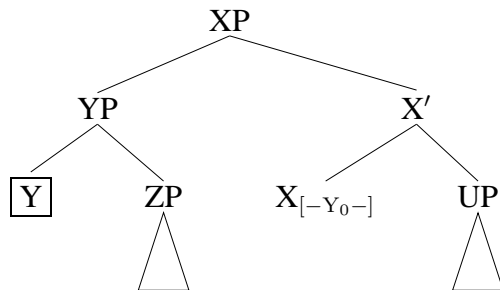
Since  $[-F_0-]$  removes the head, it takes away the highest projection (given a bare phrase structure approach, a head's projection does not exist independently of the head), but only

this. More deeply embedded material (like ZP in (28)) is not affected by structure removal in this case. The question then is what happens with the material that was originally included in the removed projection, and that is temporarily split off from the current tree after removal of the head and its projection. The obvious assumption would seem to be that it is reassociated with the main projection, i.e., with the projection of the head responsible for structure removal, thereby effectively replacing the original item (YP). Basically, this process works like Tree Pruning; see Ross (1967, ch. 3).<sup>12</sup>

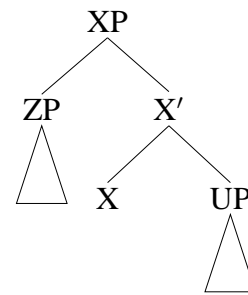
In the same way, Remove applying to heads can also affect a specifier. The operation is shown in (29), where X has first merged with a UP complement; again, an XP included in the specifier (here: ZP) cannot be targeted by the operation, due to the Strict Cycle Condition. ZP reassociates with the X projection as a specifier, in a maximally order-preserving way.

(29) *Remove and heads: specifiers*

a. Merge( $X'_{[\bullet Y_2 \bullet] > [-Y_0 -]}$ , YP):



b. Remove( $X'_{[-Y_0 -]}$ , Y):



In the cases discussed so far, the head Y that is subject to Remove takes a complement but is not accompanied by a specifier. If there are two or more items in YP (e.g., ZP and WP, as in (26) and (27)), the null hypothesis is that they reassemble in their original linear and hierarchical order in the XP domain, preserving the original c-command relations of items in the YP domain, so that structural changes induced by the operation are minimized; see Müller (2016) for a much more comprehensive discussion of Remove applying to heads, and evidence for order preservation with reassociation.

To sum up, Remove applying to YP removes the whole YP constituent, including all other material included in it, whereas Remove applying to Y only takes out the YP shell, leaving all other material included in it intact and attaching it to the triggering head's projection in an order-preserving way.

### 3.4. Short Life Cycle Effects

The Remove-based approach to conflicting structure assignments in syntax has been applied to a number of recalcitrant phenomena exhibiting evidence for conflicting repre-

<sup>12</sup> Also, cf. Stepanov's (2012) approach to head movement and, in particular, Pesetsky's (2016) Exfoliation operation for embedded clauses for related concepts.



sentations.<sup>13</sup> A characteristic property of Remove operations is that removed material is expected to what can be called *short life cycle* effects; i.e., once some item is merged that is subject to removal, it can only survive in the structure for as long as it takes the derivation to finish the phrase in which the item was merged. Suppose that some item  $\alpha$  (YP or Y) has undergone Merge with X, triggered by an appropriate feature [ $\bullet Y_{0/2} \bullet$ ] on X. Some other operation  $\Gamma$  (e.g., Agree) can then take place that requires the presence of  $\alpha$ . After that,  $\text{Remove}(X, \alpha)$  applies, so that  $\alpha$  is not part of the structure anymore. Thus, due to the Strict Cycle Condition in (25), an  $\alpha$  merged with X cannot be removed by [ $-F_{0/2}-$ ] on another head Z merged later in the derivation. Therefore,  $\alpha$  is predicted to have a short life cycle: It is only accessible for other operations for a small part of the derivation. Given incremental, bottom-up derivations, this implies that an  $\alpha$  merged with X is accessible from within XP (downward accessibility) and inaccessible from positions outside of XP (upward inaccessibility), as stated in the Accessibility Generalization in (23). Thus, Remove interacts with other operations in such a way that it counter-bleeds  $\Gamma$  operations applying in XP (because Remove comes too late to block application of  $\Gamma$ ) but bleeds subsequent operations requiring  $\alpha$  to be present (because it removes  $\alpha$  from the structure); see Chomsky (1951), Kiparsky (1973).

There is empirical evidence for short life cycle effects in various domains, which can thus be viewed as confirmations of a Remove-based approach (see the references given above). As we will see in the next section, there is also evidence for short life cycle effects with  $\text{DP}_{ext}$  arguments that are subject to Remove in passive clauses in German.<sup>14</sup>

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<sup>13</sup> For instance, removal of phrases is argued to underlie variable accessibility of theme arguments in applicative constructions in German in Müller (2015b), and variable syntactic accessibility of deleted material in sluicing constructions in English, German and Serbo-Croatian in Murphy & Müller (2016). In contrast, the approach to restructuring in German sketched in Müller (2015b) relies on removal of heads, with restructuring verbs embedding a CP throughout that can then be reduced (recursively) to a TP, or even to a vP (so as to permit operations like scrambling, pronoun fronting, and negation scope assignment to target the matrix domain), or, most radically and with only a subset of basic restructuring verbs, to a bare VP (so as to permit long-distance passives). In Müller (2016), the complex prefield construction in German, which exhibits conflicting evidence as to whether it involves a single topicalized VP with an empty V head or separate XPs occupying multiple specifiers of C in what is otherwise a strict verb-second language, is analyzed in terms of Remove applying to the VP shell.

<sup>14</sup> In principle, there is one potential loophole that makes it possible to extend the life cycle of an item that is subject to removal, viz., movement. If an item is moved to a higher domain, it can be targeted there by a head with a [ $-F_{0/2}-$ ] feature, in accordance with the Strict Cycle Condition in (25). See Murphy (2016), Müller (2016) for evidence and discussion.

## 4. Life, Death, and Resurrection

### 4.1. Proposal

I would like to suggest that the core operation in passive constructions is the removal of a  $DP_{ext}$  merged in  $Specv$ . More specifically, suppose that passive is triggered by the optional addition of a  $[-D_2-]$  feature to  $v$  in the numeration (i.e., to the very same head that introduces the  $DP_{ext}$ ).  $[-D_2-]$  on  $v$  will remove an existing DP specifier of  $v$ . The generation of a passive  $v$  head is illustrated in (30). First, a standard (“active”)  $v$  head is selected from the lexicon, equipped with two structure-building features that induce Merge operations with a VP and  $DP_{ext}$ , in that order; see (30-a). Second, a feature for DP removal is added to such a  $v$  below the Merge-inducing features of the list in the numeration; see (30-b).

(30) *Passive v*:

- a. Lexicon:  $v_{[\bullet V_2 \bullet] \succ [\bullet D_2 \bullet]}$
- b. Numeration:  $v_{[\bullet V_2 \bullet] \succ [\bullet D_2 \bullet] \succ [-D_2 -]}$

In languages like German, passivization goes hand in hand with structural case absorption. This is a consequence of whatever derives Burzio’s generalization. There are various ways to implement the effect in the present approach. Let me briefly consider three options. The first two possibilities rely on the assumption that structural accusative case is assigned by  $v$  under Agree, triggered by a probe feature  $[*acc*]$  on  $v$  (where  $[*F*]$  designates a probe feature for Agree);  $[*acc*]$  must be low on the list of features that induce syntactic operations. It can then simply be stipulated as a pre-syntactic restriction on  $v$  heads that  $[*acc*]$  cannot occur on  $v$  in the numeration if  $[-D_2-]$  shows up. A version of this approach relocates feature deletion from the numeration to the syntax. On this view, the presence of  $[-D_2-]$  on  $v$  in the syntax leads to deletion of a  $[*case*]$  feature on  $v$ .<sup>15</sup> Case feature deletion in both of these analyses can be given a rationale based on count invariants (see Stabler (1996)), in the sense that  $v$  assumes that the number of DPs and case features is balanced; undoing the effect of a  $[\bullet D_2 \bullet]$  feature by discharging a  $[-D_2-]$  feature may therefore be taken to imply the automatic deletion of a case feature as a repair operation re-establishing an equal number of DPs and case features for them. A third, slightly different option relies on a dependent case approach to argument encoding (see Marantz (1991), Bittner & Hale (1996), Wunderlich (1997), Stiebels (2000), McFadden (2004), Schäfer (2012a), Preminger (2014), Baker (2015), and Bobaljik (2015), among

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<sup>15</sup> This implies that probes can be deleted locally when the need arises; see Béjar & Řezáč (2009), Preminger (2014), and Georgi (2014a), among others. Depending on what one assumes about active  $v$  with unergative intransitive verbs, such an option might be independently required.

others). On this view, accusative case is assigned not by *v*, but by a higher DP in the same phase, and if there is no such higher DP (as a consequence of Remove), accusative assignment will not be possible. Like the first two approaches, this approach requires case assignment to follow argument removal. A choice among these different approaches to case absorption, while ultimately far from trivial, is not required for present purposes; these issues are strictly speaking orthogonal to the main issues addressed in the present article, and all three versions are equally compatible with the overall analysis. For the sake of concreteness, I will adopt the second kind of approach in the following derivations; i.e., passive *v* is equipped with an [\*acc\*] case feature in the numeration which is deleted in the syntax after [-D<sub>2</sub>-] is discharged.

On the basis of these assumptions, consider a simple German passive construction based on a transitive verb, as in (31).

- (31) dass DP<sub>ext1</sub> das Buch<sub>2</sub> gelesen wurde  
 that the book<sub>nom</sub> read was  
 “that the book was read.”

According to present assumptions, the Remove-based derivation of (31) looks as in (32).

- (32) a. *Selection of v and VP*  
 $V[\bullet V \bullet] \succ [\bullet D \bullet] \succ [-D_2 -] \succ [*acc*], [VP \text{ das Buch gelesen}]$
- b. *Merge(v, VP)*  
 $[v' V[\bullet D \bullet] \succ [-D_2 -] \succ [*acc*] [VP \text{ das Buch gelesen}]]$
- c. *Merge(DP<sub>ext</sub>, v')*  
 $[v_P DP_{ext} V[-D_2 -] \succ [*acc*] [VP \text{ das Buch gelesen}]]$
- d. *Syntactic activity of DP<sub>ext</sub>*  
 [...]
- e. *Remove(DP<sub>ext</sub>, v')*  
 $[v_P V[*acc*] [VP \text{ das Buch gelesen}]]$
- f. *Case feature deletion*  
 $[v_P v [VP \text{ das Buch gelesen}]]$

The output in (32-f) has a DP with an unvalued case feature. This DP will be assigned nominative by T later in the derivation. Crucially, between Merge(DP<sub>ext</sub>, v') in (32-c) and Remove(DP<sub>ext</sub>, v') in (32-e), there is an option of carrying out other operations, including in particular those that require the presence of DP<sub>ext</sub>. This narrow window, defined by the m-command domain of DP<sub>ext</sub> (i.e., vP) determines the short life cycle of external arguments in passive derivations – once the derivation has moved on beyond the vP domain, there is no DP<sub>ext</sub> anymore that could be accessed by syntactic operations.

Thus, all the pieces of evidence discussed in section 2, and the Accessibility Generalization in (23) that captures them, can be accounted for in a very direct, simple way. In the next two subsections, I will first illustrate the accessibility of  $DP_{ext}$  for vP-internal material, and then turn to the inaccessibility of  $DP_{ext}$  for vP-external material.

#### 4.2. *Life*

Recall that  $DP_{ext}$  can carry out control into adjunct clauses (cf. (1)), control into secondary predicates (cf. (2)), control into complement clauses (cf. (3)), binding of anaphors (cf. (4)), and binding of proper names (cf. (5)). Suppose that control and reflexivization both instantiate Agree operations (cf., e.g., Landau (2013) and Reuland (2011), respectively), such that non-overt PRO arguments and overt anaphors derive a binding index from an antecedent that they undergo Agree with.<sup>16</sup> These Agree operations can then successfully be carried out, establishing control and binding relations with items c-commanded by  $DP_{ext}$  in Specv, in the part of the derivation in (32-d) that lies between Merge( $DP_{ext}, v'$ ) and Remove( $DP_{ext}, v'$ ).

As a first illustration of  $DP_{ext}$  accessibility, consider the case of control into non-complements (adjuncts or secondary predicates); relevant examples are repeated in (33) (see (1-a), (2-a)).

- (33) a. Das Schiff wurde  $DP_{ext_1}$  versenkt [<sub>CP</sub> PRO<sub>1</sub> um die Versicherung zu  
the ship was sunk in order the insurance to  
kassieren ] ]  
collect  
“The ship was sunk in order to collect the insurance.”
- b. Die Daten wurden  $DP_{ext_1}$  [<sub>AP</sub> PRO<sub>1</sub> nackt ] analysiert  
the data were naked analyzed  
“The data were analyzed by someone who was naked.”

In (34-a),  $v$  has undergone Merge with a VP that contains an adjunct (a purpose clause or a secondary predicate, in the cases discussed above), which in turn has a PRO subject that needs to get its binding index valued (signalled here by an empty box  $\square$ ). Next, in (34-b),  $DP_{ext}$  is merged with  $v'$ , triggered by  $[\bullet D_2 \bullet]$  on  $v$ , which is discharged as a consequence of the operation. In (34-c),  $DP_{ext}$  undergoes Agree with the embedded PRO subject, and

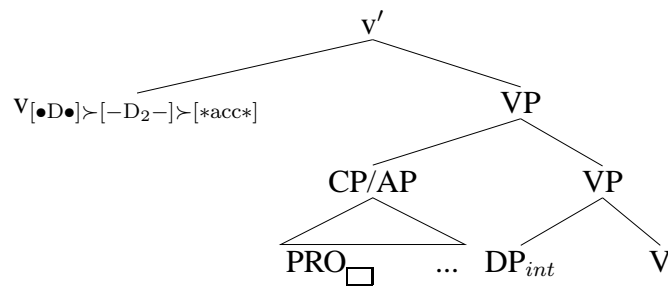
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<sup>16</sup> It should be noted, though, that these assumptions are not crucial. If control involves movement (cf., e.g., Boeckx, Hornstein & Nunes (2010)), or if reflexivization involves movement (cf., e.g., Fischer (2006)), the consequences will not be radically different from the present perspective. – That said, it has to be assumed that if the Agree relations are mediated by functional heads rather than established directly between two DPs, it has to be  $v$  rather than T (or some other vP-external head) that is involved – when T is merged,  $DP_{ext}$  has already been removed from Specv. (For reasons of simplicity and overall coherence, I will assume that Agree is possible directly between two XPs in what follows.)

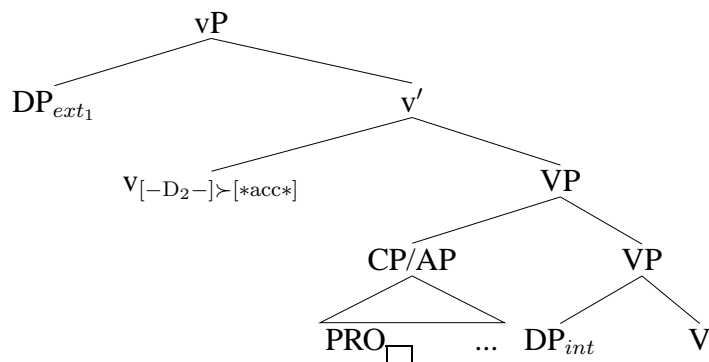
thereby establishes its index on it; i.e., control takes place. Possibly, other operations that are not triggered by  $v$ 's features may then also take place, but it is clear that the next operation induced by  $v$  will have to take place soon; and given  $v$ 's features, this is Remove. The precise DP target of Remove does not have to be stipulated. As shown in (34-d), Remove targets  $DP_{ext}$  in  $Specv$  rather than, say,  $DP_{int}$  in VP (or some other DP in a more deeply embedded position, like PRO in the adjunct). This is so because of the Strict Cycle Condition (cf. (25)): In (34-c),  $DP_{ext}$  is the only DP that can be affected by  $v$ 's  $[-D_2-]$  feature. Finally, in (34-e), case probe deletion takes place. As a consequence,  $DP_{int}$  cannot be assigned accusative case; it is assigned nominative case via Agree with T later in the derivation. The representations in (34-de) illustrate counter-bleeding of control of PRO by  $DP_{ext}$ : Remove would bleed control (because it removes the context in which control can apply) but comes too late to actually do so because control has already applied, and has instantiated an index on PRO (viz., the index of  $DP_{ext}$ ). More generally, in the present approach, instances of accessibility of  $DP_{ext}$  for other operations always involve cases of opacity, in Kiparsky's (1973) sense: The output representation is opaque because it is not clear how control could have applied successfully – there is no controller left at this point.

(34) *Control into non-complements in passive derivations*

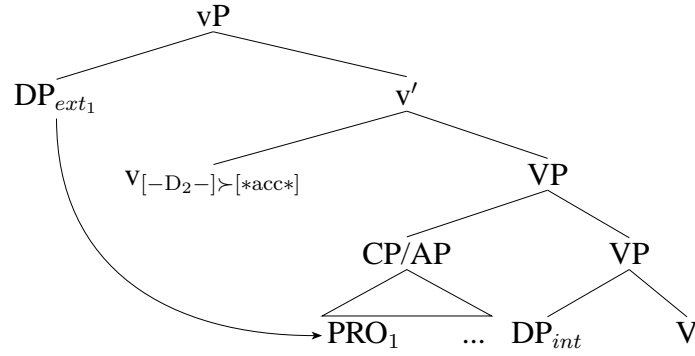
a. *Merge( $v, VP$ )*



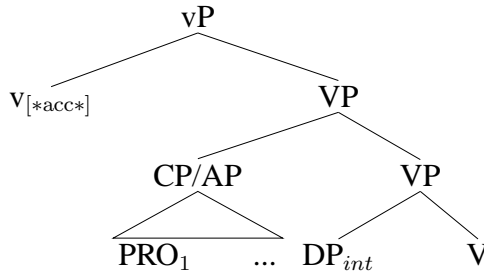
b. *Merge( $DP_{ext}, v'$ )*



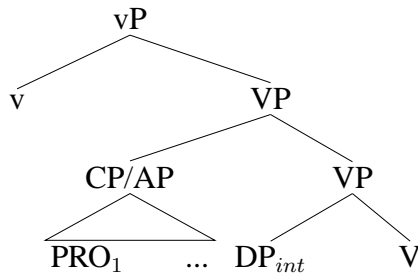
c. *Agree*( $DP_{ext}, PRO_{\square}$ )



d. *Remove*( $DP_{ext}, v'$ )



e. *Case probe deletion*



As a second illustration of temporal accessibility of  $DP_{ext}$ , consider binding. Relevant examples (licensing of anaphors and Principle C effects) are repeated in (35) (see (4-a), (5-a)).

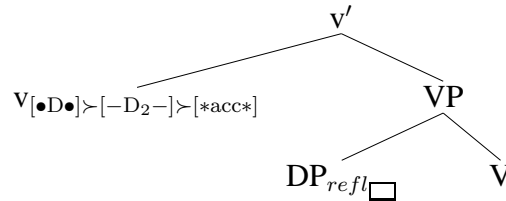
- (35) a. Hier wurde  $DP_{ext1}$  sich<sub>1</sub> nicht geprügelt  
 here was REFL not hit  
 “There were no rows here.”
- b. \*Gestern wurde  $DP_{ext1}$  Fritz<sub>1</sub> eingeladen  
 yesterday was Fritz invited  
 “Yesterday, Fritz invited himself.”

Consider the abstract derivation in (36). In (36-a), a passive  $v$  (i.e., a  $v$  that has a  $[-D_2-]$  added below its structure-building features) has combined with a VP that contains a reflexive pronoun; the latter does not have a binding index yet. In (36-b),  $DP_{ext}$  is merged with  $v'$ . Next,  $DP_{ext}$  can undergo Agree with the object reflexive, instantiating its index on it and thereby triggering reflexivization; see (36-c). After that,  $[-D_2-]$  on  $v$  induces Remove

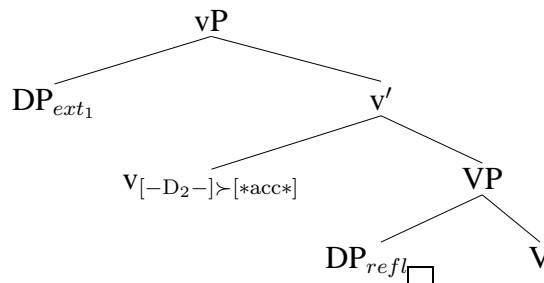
of a DP in (36-d); the Strict Cycle Condition ensures that it is  $DP_{ext}$  (rather than  $DP_{refl}$ ) that undergoes removal. Finally, the accusative case probe on  $v$  is deleted in (36-e). As before, the output representations after  $DP_{ext}$  removal involve counter-bleeding: Remove of  $DP_{ext}$  would bleed reflexivization but comes too late to have this effect.<sup>17</sup>

(36) *Binding in passive derivations*

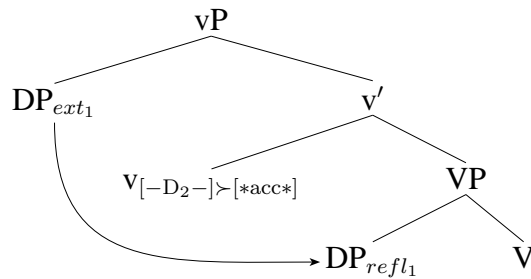
a. *Merge(v,VP)*



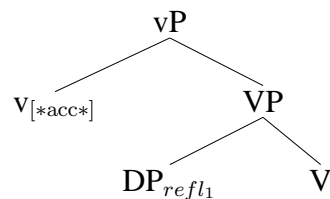
b. *Merge(DP\_ext, v')*



c. *Agree(DP\_ext, DP\_refl)*

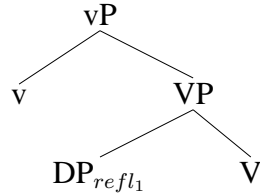


d. *Remove(DP\_ext, v')*



<sup>17</sup> This presupposes that Principle A (or, under current assumptions, the requirement for reflexives to derive a binding index via Agree with another DP in the same phase) is not a representational constraint (a ‘filter’) that is checked on output representations. Indeed, there is general consensus that Principle A is an Anywhere Principle that can be satisfied at any step of the derivation (see Belletti & Rizzi (1988), Epstein et al. (1998), among many others).

e. *Case probe deletion*



The other cases of control and binding by  $DP_{ext}$  discussed above are derived in essentially the same way. Similarly, quantificational variability effects that indicate unselective binding of  $DP_{ext}$  by an adverb of quantification (see (20)) can be accounted for: Given that the adverb of quantification is merged in an outer specifier of  $v$ , it can successfully bind  $DP_{ext}$  in an inner specifier of  $v$  before the latter is removed from the syntactic representation. Finally, note that the counter-bleeding effect with  $Remove(DP_{ext}, v')$  as it arises both with index valuation via Agree (as in control and binding configurations) and with unselective binding presupposes that effects established by binding/control relations persist for semantic interpretation after  $DP_{ext}$  has been removed from the structure (I will come back to this issue in the final section of the paper).

### 4.3. *Death*

Recall next the evidence illustrating inaccessibility of  $DP_{ext}$ :  $DP_{ext}$  cannot be bound by a quantified DP from a position outside of  $vP$ , e.g., by an argument in a matrix clause (cf. (7), (8));  $DP_{ext}$  does not license a control infinitive by providing a target for a controller in a matrix clause (cf. (9));  $DP_{ext}$  cannot undergo criterial movement to the SpecC position of verb-second clauses (cf. (11)); and  $DP_{ext}$  does not act as an intervener for A-movement to SpecT (cf. (13), (15)). All these operations involve items outside of  $vP$ , and when they have a chance to take place,  $DP_{ext}$  has long been removed from the structure.

A first example illustrating this effect is the impossibility of binding of  $DP_{ext}$  by a DP in the matrix clause, as in (37) (cf. (7-a), (8-a)).

(37) *Binding from above:*

- a. \*Kein Student<sub>1</sub> gibt zu [<sub>CP</sub> dass ~~DP<sub>ext1</sub>~~ schlecht gearbeitet wurde ]  
 no student admits that badly worked was  
 “No student admits that he did not work well.”
- b. \*Er hat den meisten Lehrern<sub>1</sub> gesagt [<sub>CP</sub> dass ~~DP<sub>ext1</sub>~~ der Maria Bücher  
 he has the most teachers<sub>dat</sub> said that the Maria<sub>dat</sub> books<sub>nom</sub>  
 geschenkt werden sollen ]  
 given are should  
 “He told most teachers that they should give books to Maria.”

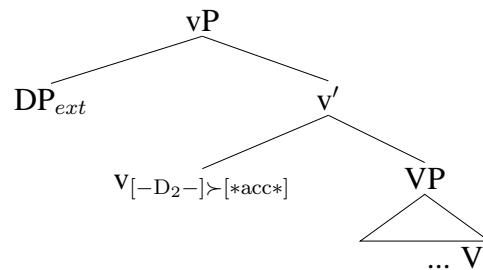
The abstract derivation in (38) (underlying (37-a)) shows why  $DP_{ext}$  cannot be interpreted as a variable bound by a quantified DP in the matrix clause. In (38-a),  $DP_{ext}$  is merged



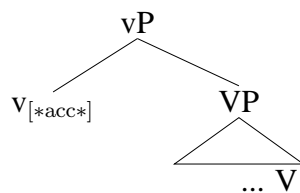
with  $v'$  headed by a passive  $v$ . In the next step in (38-b), *Remove* applies; this concludes the short life cycle of  $DP_{ext}$ . After this (in (38-c)), there is case probe deletion. The derivation then finishes the basic  $vP$  projection and moves on to the TP, CP, and matrix VP cycles (these steps are left out here; see (38-d)). Finally, a quantified DP is merged in the matrix Spec $v$  position; see (38-e). However, as shown here, this DP cannot bind the embedded  $DP_{ext}$  for the simple reason that there is no  $DP_{ext}$  present anymore at this point. Consequently, in this case, the interaction of operations is transparent rather than opaque: *Remove* in the embedded clause applies before *Merge* in the matrix clause and therefore bleeds binding of the embedded  $DP_{ext}$  by a matrix DP.

(38) *Bound variable interpretation in passive derivations*

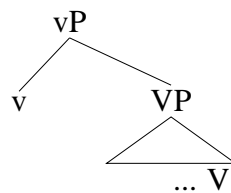
a. *Merge*( $DP_{ext}, v'$ )



b. *Remove*( $DP_{ext}, v'$ )

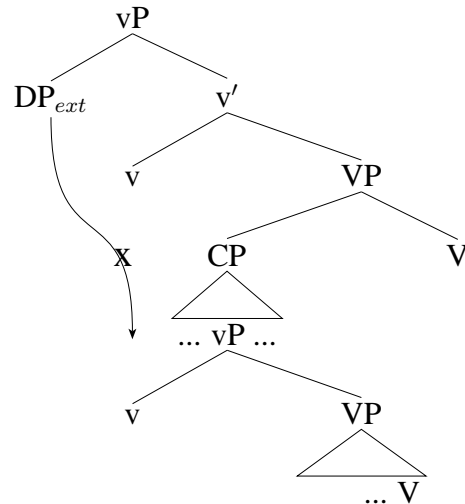


c. *Case probe deletion*



d. ...

e. *Merge*( $DP_{ext}, v'$ ) in the matrix clause



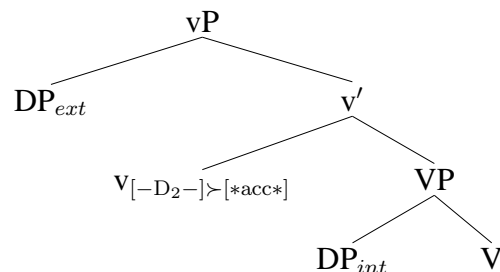
As a second and final illustration of how inaccessibility of  $DP_{ext}$  is derived, consider the lack of minimality effects with local movement of an object DP to subject position (i.e., to SpecT); see (39) (= (13)).

(39)  $[_{TP} \text{John}_2 \text{ was } [_{VP} \overline{DP}_{ext,T} [_{v'} v [_{VP} \text{killed } t_2 ]]]]$

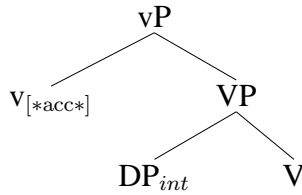
In (40-a),  $DP_{ext}$  has been merged with  $v'$ ; in (40-b),  $DP_{ext}$  is subject to Remove, and leaves the structure again. After this, in (40-c), the structural case probe is deleted. No more operations take place within  $vP$ , and  $vP$  is next merged with T; see (40-d). English T has a  $[\bullet D_2 \bullet]$  (i.e., EPP) feature that requires  $DP_{int}$  to raise to its specifier; by doing so, it now does not have to move across an intervening  $DP_{ext}$  in Spec $v$  anymore; see (40-e). This accounts for the absence of a minimality effect: There is no intervention because there is no potential intervener at the stage of the derivation where the movement step takes place.

(40) *Minimality in passive derivations*

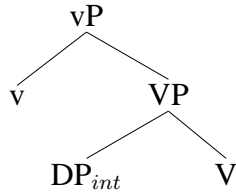
a. *Merge*( $DP_{ext}, v'$ )



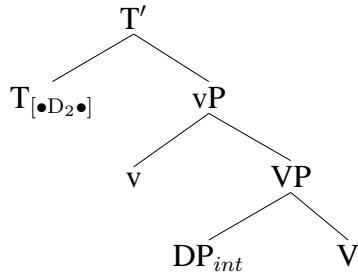
b. *Remove*( $DP_{ext}, v'$ )



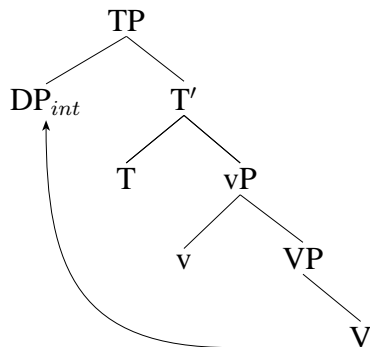
c. *Case probe deletion*



d. *Merge*( $T, vP$ )



e. *Move*( $DP_{int}, T'$ ): *Minimality respected*



Other cases exhibiting inaccessibility of  $DP_{ext}$  can be derived in the same way.

#### 4.4. *Intransitive Constructions and Strict Cyclicity*

The analysis makes a clear prediction concerning unaccusative verbs. As noted above, structure removal exhibits short life cycle effects: Because of the Strict Cycle Condition, an item can only be targeted by *Remove* on the same XP cycle on which it has been merged; in addition, the XP needs to be the current root projection. Given that passive is identified with the addition of  $[-D_2-]$  to  $v$  in the numeration,  $DP_{int}$  arguments of unaccusative intransitive verbs, which are merged within VP, are expected not to give rise to impersonal passives, in contrast to  $DP_{ext}$  arguments of unergative intransitive verbs, which are merged within  $vP$ . This is so for the very same reason that  $[-D_2-]$  on  $v$  does not intrinsically have to be associated with information as to which DP in a transitive clause it is that is affected by *Remove* ( $DP_{ext}$  or  $DP_{int}$ ; see above). As first observed by

Perlmutter (1978) (for Dutch), this prediction is correct; compare the well-formed cases of passivization with unergative verbs in (41) with the ill-formed cases of passivization with unaccusative verbs in (42).<sup>18</sup>

- (41) a. Hier wird jetzt gearbeitet  
 here is now worked  
 “People are working here now.”  
 b. Getanzt wurde nicht  
 danced was not  
 “There was no dancing.”
- (42) a. \*Hier wird jetzt gefallen  
 here is now fallen  
 “People fall here now.”  
 b. \*Es wurde angekommen  
 it was arrived  
 “People arrived.”

As noted in footnote 14, there is a potential loophole for circumventing short life cycle effects: Movement of some item can extend its accessibility, with subsequent removal in a derived specifier position. To close this loophole for passivization in German, it must be ensured that  $DP_{int}$  cannot move to Specv and be subject to removal in this position after all. There are various possibilities that can be pursued here. For present purposes, it may suffice to assume that a  $v$  that does not introduce a  $DP_{ext}$  is a defective phase head (see Chomsky (2001) vs. Legate (2003)), in the sense that it cannot be equipped with *any* structure-building feature (i.e., it cannot bear features that might trigger intermediate or criterial movement to Specv).<sup>19</sup>

<sup>18</sup> Primus (2010; 2011) and Kiparsky (2013) claim that there are well-formed cases of passivization of unaccusative verbs in German, but, to the extent that the relevant grammaticality judgements can be substantiated, it would seem that they involve a meta-grammatical use of an otherwise illegitimate construction or a re-interpretation of unaccusative verbs as unergative (by assigning an agent-like interpretation to the sole DP argument).

<sup>19</sup> See Heck & Müller (2016) for independent evidence for the defective nature of unaccusative  $v$  in German, based on extraction options in ECM environments. However, ultimately a bit more will have to be said since the same scenario (with movement feeding removal) will also have to be excluded in the case of a transitive construction, where it must be ensured that  $[-D_2-]$  removes  $DP_{ext}$ , not  $DP_{int}$  (cf. subsection 4.2.), which would give rise to an antipassive-like structure. The relevant configuration after movement of  $DP_{int}$  to Specv would look as in (i).

- (i) [<sub>VP</sub>  $DP_{int}$  [<sub>v'</sub>  $DP_{ext}$  [<sub>v'</sub> [<sub>VP</sub> ...]  $v$  ]]]

A removal of  $DP_{int}$  by  $v$  in (i) is excluded if Remove is subject to a minimality requirement, in the same way that Merge is subject to minimality in tucking-in contexts. On this view, the inability of internal Merge

#### 4.5. *Voice and v*

The present approach postulates a dual role for *v*: This functional head is responsible both for manipulation of  $DP_{ext}$  and for accusative case assignment. There does indeed seem to be quite a bit of evidence for this clustering of features on a single functional head cross-linguistically; see, e.g., Coon & Preminger (2011) on Chol. However, it has also sometimes been argued that  $DP_{ext}$  and case manipulation should be distributed across two separate heads, *Voice* and *v*. Let us see what consequences would arise under the present approach. Suppose first that  $DP_{ext}$  is introduced and removed by *Voice*, whereas *v* is the locus of accusative case assignment. This would leave the gist of the Remove-based approach to passivization in German intact; however, the resulting analysis would cease to be compatible with two of the three approaches to case absorption discussed as options above: An  $[*acc*]$  feature on *v* could not be deleted pre-syntactically as the relevant information (viz.,  $[-D_2-]$ ) would be located on a different head (viz., *Voice*); and  $[*acc*]$  could also not be deleted in the syntax because this would require either look-ahead capacity (when case feature deletion needs to be decided on, *Voice* is not yet part of the structure) or a massive violation of strict cyclicity (by going back to an embedded domain and deleting the case feature both on *v* and on  $DP_{int}$  that has already undergone Agree with it). So, this would leave the dependent case approach as the sole remaining option.

Suppose next that  $DP_{ext}$  is introduced by *v*, and *v* is also the locus of accusative case, but argument removal is handled by *Voice* (i.e., *Voice* would basically be a designated Passive head); cf., e.g., Collins (2005), Merchant (2013). On this view,  $DP_{ext}$  would always have to move from *Specv* to *SpecVoice* to be accessible to the  $[-D_2-]$  feature on *Voice* (because of the Strict Cycle Condition); and whereas this might technically work (and be compatible with the ban on such movement of  $DP_{int}$  in regular transitive and unaccusative contexts discussed at the end of the previous subject), it seems clear that the obligatory movement step preceding removal would not be independently motivated.

In the absence of strong arguments for separate *Voice* and *v* heads in German, I would therefore like to conclude that there is every reason to maintain *v* as the sole locus of  $DP_{ext}$  introduction,  $DP_{ext}$  removal, accusative case assignment, and accusative case deletion. Given that the approach to passivization developed here can be taken to make cross-linguistic predictions, this implies that arguments for a simultaneous presence of *VoiceP* and *vP* in passive constructions as they have been advanced for some languages need to be

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to feed Remove of  $DP_{int}$  has two slightly different sources in unaccusative and transitive environments. However, both accounts are compatible with the assumption that Remove *can* be fed by movement in the different syntactic environments identified in Murphy (2016) for double passivization in Turkish and in Müller (2016) for complex prefields in German.

re-evaluated. For reasons of space and coherence, I cannot attempt to do this here in any detail; I will confine myself to pointing out two relevant cases that will eventually have to be looked at in detail. First, there is morphological evidence based on affix order (and the Mirror Principle) in Hiaki that suggests separating Voice and *v*; see Harley (2013). Sundaresan & McFadden (2014) develop a similar argument on the basis of Tamil. Second, Merchant (2013) presents syntactic evidence based on ellipsis of verbal categories under identity in English.<sup>20</sup> Assuming that these (and other) arguments for separating Voice and *v* can be successfully addressed on the basis of the present approach, I will next turn to the question of what happens with a removed  $DP_{ext}$ .

#### 4.6. Resurrection

There are three basic issues that still need to be clarified in the Remove-based approach to passive constructions: What is the nature of  $DP_{ext}$ , where does  $DP_{ext}$  go once it is removed from a structure, and where do *by*-phrases come from? Let me address the second question first. Merge takes a (possibly complex) item from the workspace of the derivation (with the original numeration as a subpart containing only non-complex linguistic expressions taken from the lexicon), and combines it with the current tree. By complete analogy, Remove can be expected to put a (possibly complex) item back into the workspace. I assume (also based on evidence from Remove operations outside of passivization) that removed material can in principle remain in the workspace for the

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<sup>20</sup> To wit, with VP ellipsis constructions in English, the elided constituent looks as though it can have a different voice value than its antecedent; see, e.g., (i). Merchant observes that there is no actual voice mismatch between antecedent and elided constituent here if active/passive information is located on a separate head Voice, and deletion affects the lower constituent *vP*. This analysis also correctly predicts voice mismatches to be impossible if the elided constituent must include VoiceP (as with sluicing, which affects TP).

- (i) This problem was to have been looked into, but obviously nobody did ~~look into this problem~~

However, as noted by Merchant (2013, 89-90), an alternative analysis where *v* contains voice information, and VP is in fact deleted, would work just as well for the core data. Furthermore, as also noted by Merchant, while the analysis in terms of Voice and *v* does without a voice feature clash between antecedent and elided constituent, it cannot actually postulate complete identity of the deleted item – in (i), e.g., *Specv* in the antecedent is filled by the external argument that Merchant takes to be syntactically represented in passives, whereas *Specv* in the deleted constituent is filled by a trace of *nobody*. This problem disappears if it is VP rather than *vP* that undergoes deletion. The core argument for postulating both Voice and *v* comes from the behaviour of anticausative and middle alternations. In (ii), e.g., there is no active/passive voice contrast, but *v* is different (transitive vs. middle) according to Merchant's assumptions, so deletion is not licensed.

rest of the derivation without giving rise to ungrammaticality.<sup>21</sup> However, it is clear that material that was once part of the syntactic structure of a sentence and is now contained in the abstract workspace of the derivation can in principle give rise to *recoverability* problems; this leads directly to the first question, concerning the nature of  $DP_{ext}$ .

So far, nothing has been said about what  $DP_{ext}$  looks like in passive constructions. Indeed, I would like to contend that  $DP_{ext}$  can be virtually anything – a pronoun, a proper name, a full DP of any type; and it can contain any amount of structure (relative clauses, argument clauses, etc.). However, in all cases but one, leaving a removed  $DP_{ext}$  in the workspace for the remainder of the derivation will give rise to a fatal recoverability problem. The sole exception to this is the maximally uninformative, unmarked DP type, viz., an indefinite pronoun, given that bare indefinites are interpreted as variables (plus, possibly, contextually enriched restrictions); see Heim (1982). These  $DP_{ext}$  arguments, and only these, can stay in the workspace, and trigger default existential quantification – unless, that is, they have already been bound by an adverb of quantification in the syntax; see subsection 2.3. above (and recall that quantificational variability effects cannot occur in the passive with an adverb outside the minimal clause, which follows directly under the present approach). All other kinds of  $DP_{ext}$  cannot permanently stay in the workspace without generating a recoverability violation; so they are remerged into the structure in the only way that is available in the absence of structure-building features, viz., as an adjunct. This answers the third question posed at the outset: *By*-phrases are resurrected  $DP_{ext}$  arguments that re-enter the syntactic tree from the workspace of the derivation; the accompanying preposition is selected via a last-resort access to the lexicon. It follows that the *by*-phrase is accessible for subsequent syntactic operations.

Three further remarks are due here. First, consider again the issue of non-intervention of  $DP_{ext}$  in passive clauses.  $DP_{ext}$  does not block object movement to SpecT via minimality because it is not present anymore in the structure when object movement takes place; but what about the *by*-phrase? One possibility is that the *by*-phrase does not intervene because it is a PP (not a DP) after all. Alternatively, the reason for non-intervention might

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(ii) \*They sell Hyundais in Greece because Hondas don't sell

Still, this evidence can in principle also be accommodated in the approach advocated here if it is assumed that the difference between transitive verbs and their middle or anticausative versions is not syntactic, but lexical. On this view, V (rather than  $v$ ) is featurally different in (ii), and this accounts for the impossibility of VP deletion.

<sup>21</sup> Thus, this approach presupposes that a workspace is not necessarily reduced to a single tree by the end of the derivation. In order to distinguish between “active” material in the workspace that must be subject to a syntactic operation and “inactive” material in the workspace that arises as a consequence of structure removal and does not have to re-enter the tree, it can be postulated that there are two separate domains of the workspace reserved for the two different types of linguistic expressions.

be that the *by*-phrase is merged *after* movement of  $DP_{int}$  to either an intermediate or a final position has taken place (cf. Epstein et al. (1998); note that this latter option would presuppose counter-cyclic Merge of adjuncts; possibly this would account for why the target position can be quite low, next to the verb).

Second, the morphological realization of  $DP_{ext}$  depends on the properties of the prepositional head. In German, *von* ('by') assigns dative case to  $DP_{ext}$ , which the latter would not otherwise have (but note that the case feature of  $DP_{ext}$  has not yet been valued syntactically prior to Remove).

And third, there is the issue of locality and timing of  $DP_{ext}$  resurrection via *by*-phrase integration. I suggest that a  $DP_{ext}$  that is removed from  $Specv$  and then subsequently remerged into the structure as an adjunct must do so before the derivation moves on to the next phase. This excludes cases as in (43-a), where  $DP_{ext}$  is remerged as an adjunct in the matrix clause (or, in fact, where it is remerged in the embedded CP phase, and then moved to the matrix domain), and in (43-b)) (or (7-a)), where  $DP_{ext}$  is not base-generated in the matrix clause, but subject to removal in the embedded clause and then remerged as an argument in the matrix domain (however, this latter option is independently ruled out if a DP cannot receive two different  $\theta$ -roles – i.e., if it cannot be merged twice as a result of two separate [ $\bullet D_2 \bullet$ ] features based on  $\theta$ -roles).

- (43) a. \*Karl gibt [ $_{PP}$  von keinem Studenten $_1$ ] zu [ $_{CP}$  dass gut gearbeitet wurde ]  
 Karl admits of no student to that well worked was  
 "Karl admits that no student worked well."  
 b. \* $[_{DP}$  Die zwei Leute $_1$ ] glauben [ $_{CP}$  dass einander $_1$  gedankt wurde ]  
 the two people believe that each other thanked was  
 "The two people believe that each one of them thanked the other."

## 5. Remarks on Variation

Under present assumptions, the core property of passivization in German is the presence of [ $-D_2-$ ] on *v* in the numeration. Other properties of passive constructions are either secondary (structural case absorption is a consequence of argument removal); or they do not show a uniform behaviour and permit exceptions (there are different morphological reflexes with different types of passivization in German, and in the case of the *lassen* passive, there is no morphological reflex at all; cf. (16)); or they are orthogonal (obligatory object promotion to subject position shows up in languages where T always has an EPP feature, which is not the case in German). In line with this, I would like to suggest that [ $-D_2-$ ]-driven removal of  $DP_{ext}$  is the sole cross-linguistically invariant property of passivization. On this view, a main locus of variation in passive constructions concerns the interaction of argument removal via [ $-D_2-$ ] with case absorption: If case is determined after removal of  $DP_{ext}$ , structural case cannot be assigned anymore by *v*; but if the or-



der is reversed, passive will not be accompanied by case absorption (as an instance of counter-bleeding).

For concreteness, suppose, as before, that case absorption is handled in terms of case feature deletion on *v*. Then, a language without obligatory case absorption (like Ukrainian, Northern Russian varieties, and Czech, among many others) will result if  $[-D_2-]$  can show up below  $[*case*]$  on *v*. Further variation in this area arises in double object constructions. Focussing just on Germanic languages, the following picture emerges: If, in a double object construction, *v* has two structural case probes,  $[-D_2-]$  may rank above both  $[*case*]$  features, as in Danish and English, where the higher object case is absorbed; see Vikner (1990). Alternatively,  $[-D_2-]$  may show up between the two case probes, as in Dutch, where only the lower case is absorbed; see Zwart (1993) (but also cf. Haegeman (2016) on qualifications based on varieties of Dutch). Finally, it may use either option, as in Norwegian, with a single passive auxiliary *å bli*; see again Vikner (1990). German is like Norwegian, but with the two options accompanied by a different choice of passive auxiliary: There are two verbal passives in German, one with the passive auxiliary *werden* and one with the passive auxiliary *bekommen* (*kriegen*); the second type of passive is sometimes called “recipient passive”, and it mainly shows up in double object constructions (see Höhle (1978), Reis (1985), Müller (1995, ch. 4), Fanselow (2001), Haider (2010), and Alexiadou, Anagnostopoulou & Sevdali (2014), among others). The standard passive with *werden* absorbs accusative case and leaves dative case intact; cf. (44-ab). In contrast, the recipient passive absorbs dative case and leaves accusative case intact; cf. (44-cd).

- (44) a. dass der Maria das Buch geschenkt wird.  
           that the Maria<sub>dat</sub> the book<sub>nom</sub> given is
- b. \*dass die Maria das Buch geschenkt wird.  
           that the Maria<sub>nom</sub> the book<sub>acc</sub> given is
- c. dass die Maria das Buch geschenkt bekommt (kriegt).  
           that the Maria<sub>nom</sub> the book<sub>acc</sub> given gets
- d. \*dass der Maria das Buch geschenkt bekommt (kriegt).  
           that the Maria<sub>dat</sub> the book<sub>nom</sub> given gets  
           “that Mary is given the book.”

In typical double object constructions, *v* has *two* structural cases to assign to VP-internal DPs: dative and accusative. Thus, the features for Merge and Agree that *v* needs to bear in double object constructions in German look as in (45).

- (45)  $v_{[•V_2•]} > [•D_2•] > [*dat*] > [*acc*]$

The data in (44) can then be accounted for by assuming that in German,  $[-D_2-]$  may either

be inserted directly above [*\*dat\**], or it may be inserted directly above [*\*acc\**]. In the first case, a recipient passive construction results – dative cannot be assigned anymore, and the DP that would bear dative in an active clause gets nominative case from T; cf. (46-a). In the second case, a standard passive construction results – accusative case cannot be assigned anymore, and the DP that would bear accusative in an active clause gets nominative case from T; cf. (46-b).

- (46) a.  $V_{[\bullet V_2 \bullet]} \succ [\bullet D_2 \bullet] \succ [-D_2 -] \succ [*dat*] \succ [*acc*]$   
 b.  $V_{[\bullet V_2 \bullet]} \succ [\bullet D_2 \bullet] \succ ([*dat*]) \succ [-D_2 -] \succ [*acc*]$

Finally, as far as the morphological realization of passivization is concerned, the present approach suggests that this issue is also tied to the presence of  $[-D_2 -]$  on *v*. Depending on the presence or absence of this feature and its position on the feature stack, *v* itself may receive a different realization. In principle, *v* may also receive the same realization in active and passive environments, as is the case in Achenese (cf. Perlmutter & Postal (1983)), or in German *lassen*-passives. Alternatively, different kinds of passive *v* heads may be selected by different kinds of passive auxiliaries. In German, the passive auxiliary *bekommen* selects a *vP* headed by (46-a); and the passive auxiliary *werden* selects a *vP* headed by (46-b).<sup>22</sup>

## 6. Conclusion and Outlook

To sum up, I have argued that modelling passive by Remove operations in a local derivational approach accounts for the variable syntactic accessibility of external arguments in passive derivations: Removal of the external argument  $DP_{ext}$  triggered by  $[-D_2 -]$  gives rise to counter-bleeding with operations confined to the *m*-command domain of *v*; but removal of  $DP_{ext}$  triggered by  $[-D_2 -]$  gives rise to bleeding with operations involving positions outside the *m*-command domain of *v*. On this approach, external arguments are indeed present in German passive constructions, but they have a short life cycle in which

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<sup>22</sup> There is a technical issue here related to the interaction of morphological realization and feature discharge which shows up more generally in derivational approaches to syntax; see, e.g., Adger (2003). The problem is that strictly speaking, the features on *v* in (46) that need to be accessed by an embedding auxiliary *V* should be discharged and deleted by the time when *V* combines with the *vP*. There are two standard ways to make the relevant information available after all: One possibility is to postulate diacritics for the different kinds of *v* heads that morphological realization can then be sensitive to; another one (that is arguably preferable under present assumptions) is to assume that discharged features become inactive, but are still visible from outside (also cf. Chomsky (1995) on the difference between deletion and erasure). – Note incidentally that basically the same situation shows up with the approach to case absorption developed in section 4.2: Case feature deletion needs information (viz.,  $[-D_2 -]$  on *v*) that is not available anymore when the issue becomes relevant.

they can be syntactically active: the period between discharge of [ $\bullet D_2 \bullet$ ] and discharge of [ $-D_2-$ ] on one and the same head. As far as I am aware, no alternative approach to the passive exists that derives the Accessibility Generalization in (23) in a simple, non-conspiratorial way; so, to the extent that this generalization is correct, I take the Remove-based approach to be corroborated by the empirical evidence. In addition, I have argued that an operation like Remove, as the complete mirror image of Merge, is to be expected from a minimalist perspective (see Müller (2015b) for further evidence and discussion of this point); and Remove can be shown to be independently motivated on the basis of a number of other constructions (among them applicatives, antipassive, sluicing, restructuring, DP/NP oscillation in Slavic languages, and complex prefields; see Müller (2015a) for an overview)).

Still, it goes without saying that the postulation of an operation Remove raises a number of non-trivial issues, and will ultimately require a rethinking of several core assumptions that are often taken for granted in Principles and Parameters approaches to syntax. Here I will only briefly mention one issue that would seem particularly obvious, viz., semantic interpretation. Structure removal in general, and the removal of  $DP_{ext}$  in particular, may indeed lead to incompatibilities with the standard concept of transparent logical forms as laid out, e.g., in Heim & Kratzer (1998). However, the questions that this raises are not qualitatively different from questions raised by cyclic spell-out to LF (and PF) as it is standardly adopted in minimalist work (see Chomsky (2001; 2013)). For concreteness, let me name two requirements that an approach to semantic interpretation must meet in order to accommodate the assumptions made in the present paper. First, referential indices exist, and they are invariantly assigned during the syntactic derivation; variable binding relations established in the derivation persist throughout the derivation. And second, if an argument remains in the workspace after the phase from which it has been removed is completed (i.e., if it is an indefinite  $DP_{ext}$ , as discussed above, or if it is some other item that does not give rise to recoverability problems, as is the case with bare XP shells with restructuring and complex prefields as discussed in Müller (2015b; 2016)), and has not found a binder in that phase, it is interpreted in the clause in which it does not structurally show up anymore as being bound via default existential quantification. These two requirements can be met if the object of semantic interpretation is not a complex syntactic representation at the level of logical form (as in Heim & Kratzer (1998)) but the *derivation tree* that records all operations that have applied throughout the derivation; see Kobele (2015).

## Appendix: Denying the Accessibility Generalization in Standard Approaches

As noted at the end of section 2, the Accessibility Generalization in (23) poses problems both for approaches to the passive that envisage an unqualified syntactic accessibility of  $DP_{ext}$  (see references on page 1), and for approaches in which  $DP_{ext}$  is systematically inaccessible in the syntax (see references in footnote 1). In this appendix, I look at possible strategies to maintain either strict syntactic accessibility or strict syntactic inaccessibility in the light of the evidence discussed in the present article. The conclusion will be that neither strategy is successful.

### *Maintaining Accessibility*

The first option is to strictly maintain an approach where  $DP_{ext}$  is generally accessible in German passive constructions, and account for the instances of inaccessibility (which the generalization in (23) captures in a uniform way) separately, on a case-by-case basis. Thus, Collins (2005) derives the absence of minimality effects as in (13), (15-a) by postulating a *smuggling* operation: A constituent including  $DP_{int}$  and V (the PartP, alternatively: VP) moves to a higher position (SpecVoice), across  $DP_{ext}$ , and  $DP_{int}$  then undergoes extraction from the moved VP (PartP). However, this analysis is far from unproblematic. For instance, a smuggling derivation would normally be expected to incur a freezing effect: Extraction from a moved VP (or PartP) otherwise leads to ungrammaticality in German (cf. Müller (2014, ch. 3) and references cited there). Furthermore, as noted by Collins, smuggling is in fact incompatible with several constituency tests (given that a *by*-phrase is assumed to have *by* in Voice, and  $DP_{ext}$  in Specv, such that it is not a proper phrase after all); e.g., it requires movement of non-constituents in cases like *By whom was the book given to Mary?*.

Next, Pitteroff (2014) accounts for non-intervention of  $DP_{ext}$  in (16-b) by assuming that *lassen*-passive constructions differ from other passive constructions in German in that  $DP_{ext}$  does not in fact show up here, the reason being that passive and active complements of *lassen* differ in size. However, on the one hand, there is no independent evidence for this alleged difference in complement size (verbal morphology is identical, sentential adverbs have identical distributions, etc.); and on the other hand, all the tests that point to accessibility of  $DP_{ext}$  from below in German carry over to *lassen*-passives: Thus, as noted above, the very option of Principle A satisfaction with binding by the *embedded* subject in (16-b) strongly suggests that  $DP_{ext}$  is structurally present in (16-b) as it is in (16-a). Similarly,  $DP_{ext}$  can control PRO in purpose clauses and secondary predicates in these contexts; cf. (47-ab).<sup>23</sup>

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<sup>23</sup> Höhle (1978, 71-72) and Gunkel (2003, 188) observe that  $DP_{ext}$  in a *lassen*-passive cannot control a PRO subject in an *ohne zu* adjunct infinitive; see (i-a). However, as shown by (i-b), control by  $DP_{ext}$  in a

- (47) a. Der König<sub>1</sub> lässt [<sub>vP</sub> DP<sub>ext2</sub> die Schule besuchen [<sub>CP</sub> um PRO<sub>1/2</sub>  
the king<sub>nom</sub> lets the school<sub>acc</sub> attend in order  
mehr zu lernen ]]  
more to learn
- b. Der König<sub>1</sub> lässt [<sub>vP</sub> DP<sub>ext2</sub> das Handout [<sub>AP</sub> PRO<sub>2</sub> übermüdet ]  
the king<sub>nom</sub> lets the handout<sub>acc</sub> tired  
verfassen ]  
write

As for the evidence showing that DP<sub>ext</sub> in a passive construction cannot be bound by items in a higher clause (see (7), (8)), a possible approach might be to assume that DP<sub>ext</sub> is always locally bound by default existential quantification. However, to the extent that this is empirically correct (recall the quantificational variability effects discussed above), locality of default existential closure for DP<sub>ext</sub> variables should be derived rather than stipulated: Since other locally unbound variables (including pronouns in *by*-phrases) can easily pick up a binder in a matrix clause, assuming obligatory clause-bound existential quantification for DP<sub>ext</sub> amounts to nothing more than a restatement of the facts.

Thus, I would like to conclude that none of the existing analyses of upward inaccessibility of DP<sub>ext</sub> in approaches that maintain a basic accessibility is unproblematic. Even more importantly, all the individual accounts fail to recognize the systematic pattern expressed in (17): The individual cases of inaccessibility must be traced back to diverse sources, and the emergence of a uniform behaviour can only be addressed in terms of a conspiracy of independent factors.

### *Maintaining Inaccessibility*

The second basic option is to assume that DP<sub>ext</sub> is always inaccessible in German passive constructions – either because passive is not syntactic and DP<sub>ext</sub> is never syntactically represented, or because DP<sub>ext</sub> is syntactically represented somehow but inaccessible for syntactic operations throughout, for principled reasons; see the references given in footnote 1. On this view, cases where it looks as though DP<sub>ext</sub> is in fact accessible – viz., for operations in its m-command domain, as expressed in (23) – are only apparent.

Thus, Schäfer (2012b) and Alexiadou et al. (2015) claim that examples like those in (4), which I have taken to show that Principle A can be satisfied with reflexives and

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standard passive sentence is also impossible in this environment, so there clearly is an independent factor at work.

- (i) a. Ich<sub>1</sub> ließ DP<sub>ext2</sub> ihn auspeitschen [<sub>CP</sub> ohne PRO<sub>1/\*2</sub> einen Laut zu machen ]  
I let him<sub>acc</sub> whip without a noise to make
- b. Er<sub>1</sub> wurde DP<sub>ext2</sub> ausgepeitscht [<sub>CP</sub> ohne PRO<sub>1/\*2</sub> einen Laut zu machen ]  
He was whipped without a noise to make

reciprocals by  $DP_{ext}$ , are cross-linguistically rare, and show unexpected restrictions and properties. More specifically, among the Germanic languages such examples would seem to be confined to German and Icelandic; and it can be observed that that there seems to be a verb type restriction: Reflexive passives can be found much more often with inherently reflexive and naturally reflexive predicates than with naturally disjoint predicates in corpora. However, independently of whether or not these two claims can ultimately be substantiated by further typological and corpus studies, it seems clear that they do not call into question the existence of the phenomenon as such, which then needs to be accounted for.<sup>24</sup>

Next, one strategy to maintain inaccessibility of  $DP_{ext}$  with control into adjunct clauses and secondary predicates (cf. (1) and (2), respectively) is to simply deny the reality of the phenomenon. Thus, Williams (2015, ch. 12) concludes for English analogues of examples as in (1) that the syntactic presence of a controller  $DP_{ext}$  does not have to be postulated. A core argument is that instances of remote, inter-sentential control as in (48-a) cannot possibly be accounted for by postulating a local  $DP_{ext}$  as a controller; on this view, whatever accounts for remote control might the perhaps be extended to local control as in (analogues of) (1).

- (48) a. Two outfielders were traded away. The goal was to find a better pitcher.  
 b. Zwei Innenverteidiger wurden verkauft. Das Ziel war, dafür einen besseren  
 two centre-backs were sold the goal was for it a better  
 Linksaußen zu bekommen.  
 left winger to get

As shown in (48-b), remote control also works in German. However, the experimental study reported in McCourt et al. (2015) suggests that there might be two distinct mechanisms involved in local vs. remote control in passive contexts after all. In addition, it does

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<sup>24</sup> Also note that the examples in (4) do indeed involve naturally disjoint predicates; also see Schäfer (2012b, 220) on well-formed examples with the verb *schneiden* ('cut'), which also belongs in this class. Furthermore, the example *weil sich gehasst wird* ('because REFL hated is'), which is starred in Alexiadou et al. (2015, 130) becomes well formed for most speakers if additional (linguistic and non-linguistic) context is provided.

Another example presented in Schäfer (2012b) and Alexiadou et al. (2015) as a challenge for analyses that postulate regular reflexivization via Principle A in (4) takes the form *dass \*uns/sich von uns gewaschen wird* ('that us/REFL by us washed is'). Here the reflexive  $DP_{int}$  does not take the first-person form (as it does in active contexts), but rather the third-person form. Assuming for the sake of the argument that such sentences are acceptable in principle (many speakers would seem to reject them), I do not take this to pose a particular problem for an approach envisaging syntactic accessibility of  $DP_{ext}$ ; the only thing that it might show is that  $\phi$ -agreement is a relatively late process, taking place after reflexivization but before eventual PF realization of the reflexive (on which see, e.g., Fischer (2006)).

not seem to be a priori clear that there could not be a DP-internal non-overt controller in the second clause in (48-ab). In the same vein, Landau (2013, ch. 6) argues, based on data from English, that control into purpose clauses as in (1) does not require the presence of a controller. The main observations are the following. First, purpose clause infinitives are possible in contexts where the matrix clause looks like it cannot include a  $DP_{ext}$  controller to begin with since the matrix predicate is an adjective; second,  $DP_{int}$  (theme) arguments of unaccusative verbs can sometimes license control into purpose clauses; and third, sometimes a matrix  $DP_{int}$  argument can effect control whereas a matrix  $DP_{ext}$  argument cannot. However, notwithstanding the issue of whether the evidence from English does in fact justify such far-reaching conclusions, it is worth pointing out that pertinent constructions from German reveal a somewhat different picture. First,  $DP_{int}$  of an adjective cannot bring about control into a purpose clause; see (49-a). The pattern is identical to that with adjectival passives (i.e., *Zustandspassiv* constructions), for which there is ample evidence that there is no  $DP_{ext}$  present syntactically (and what may at first sight look like marginal cases of optional *by*-phrases behaves very differently from regular *by*-phrases; cf. Maienborn (2007; 2011)); see (49-b) (vs. (1-b)).<sup>25</sup> This suggests that German purpose clause infinitives of the type in (49-ab) do indeed require a syntactically present  $DP_{ext}$  argument.<sup>26</sup>

- (49) a. ?\*Reifen sind rund [CP um PRO<sub>1</sub> auf die Felge zu passen ]  
           tires are round in order on the rim to fit
- b. ?\*Der Reifen ist aufgepumpt [CP PRO<sub>1</sub> um die Fahrt fortzusetzen ]  
           the tire is inflated in order the journey to continue

Second, in contrast to what may be the case in English, it is impossible to render examples with  $DP_{int}$  as the sole possible controller for a purpose clause of the type in (1) felicitous by an appropriate choice of context; thus, (50) (a translation of Landau’s English example) is still not acceptable.

<sup>25</sup> Incidentally, *Zustandspassiv* constructions might lend themselves to an analysis in terms of external Remove (see footnote 9 above). External Remove directly targets XPs in the workspace before they have a chance to enter syntactic structures. An externally removed XPc will therefore never be accessible for operations that are properly syntactic, but it will be accessible for semantic interpretation (by default existential closure, like  $DP_{ext}$  arguments in passive derivations that enter the workspace – and stay there permanently – as a consequence of internal Remove). External Remove of  $DP_{ext}$  in *Zustandspassiv* derivations would also imply moving material from the active part of the workspace into the inactive part; see footnote 21. An independent argument for treating *Zustandspassiv* by external Remove might be that the set of contexts in which it is possible seems to be a proper subset of the contexts in which regular verbal passives are possible, indicating that *Zustandspassiv* does not have an independent source.

<sup>26</sup> Note also that both examples in (49) become well formed if the infinitival purpose clause is replaced with a finite purpose clause introduced by the complementizer *damit* (“so that”).

- (50) ?\*Das Schiff sank [CP um PRO<sub>1</sub> die Königin im zweiten Akt zum Mord  
the ship sank in order the queen in the second act to the murder  
zu bewegen ] ]  
to persuade

Finally, as in English, there are cases where DP<sub>int</sub> obligatorily controls into an adjunct clause and control by DP<sub>ext</sub> is in fact ungrammatical; see (51-a). As shown in (51-b), this effect is contingent on the form of the purpose clause infinitive, subject to a thematic identity requirement. Also, as indicated by (51-c) vs. (51-d), thematic identity of controller and controllee can only override DP<sub>ext</sub> control if passivization takes place in the matrix, and there is a choice between a deep-structure “subject” (DP<sub>ext</sub> base-generated in Specv) and a surface-structure “subject” (DP<sub>int</sub> bearing nominative); see Ružička (1983), Stechow & Sternefeld (1988).<sup>27</sup>

- (51) a. Das Haus<sub>2</sub> wurde DP<sub>ext1</sub> geleert [CP um PRO<sub>\*1/2</sub> abgerissen zu  
the house<sub>nom</sub> was emptied in order demolished to  
werden ]  
be
- b. Das Haus<sub>2</sub> wurde DP<sub>ext1</sub> geleert [CP um PRO<sub>1/\*2</sub> die Prämie zu  
the house<sub>nom</sub> was emptied in order the bonus to  
kassieren ]  
collect
- c. Die Vermieter<sub>1</sub> leerten das Haus<sub>2</sub> [CP um PRO<sub>1/\*2</sub> die Prämie zu  
the landlords<sub>nom</sub> emptied the house<sub>acc</sub> in order the bonus to  
kassieren ]  
collect
- d. Die Vermieter<sub>1</sub> leerten das Haus<sub>2</sub> [CP um PRO<sub>1/\*2</sub> abgerissen zu  
the landlords<sub>nom</sub> emptied the house<sub>acc</sub> in order demolish to  
werden ]  
be

More generally, then, not only is the assumption that examples as in (1) involve control by DP<sub>ext</sub> not called into question; in fact, the ill-formed examples in (49), (50) and (51) provide further evidence for the presence of a syntactically encoded control relation: It is subject to general structure-dependent constraints – control into adjuncts is licensed only by deep or surface subjects, and thematic identity is known to play a role in the latter case.

Given this state of affairs, the remaining strategy to accommodate control into adjunct clauses and into secondary predicates as in (1) and (2) under an approach that maintains strict syntactic inaccessibility of DP<sub>ext</sub> consists in postulating that control can be brought about in some other way that does not require accessibility of DP<sub>ext</sub>. To evaluate the

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<sup>27</sup> Of course, the grammatically legitimate reading in (51-d) is possible only to the extent that landlords can be demolished.



mechanics and consequences of such an approach, it needs to be clarified first what approaches to passivization look like that envisage strict inaccessibility of the  $DP_{ext}$ . There are two general options, a lexical one and a syntactic one (cf. the references in footnote 1), but they share a common core: An abstract operator PASS is postulated that applies to a predicate and reduces its arity by one, by existentially binding the highest argument of the predicate; a simple version of PASS is given in (52) (where P is a predicate).

(52) PASS:  $\lambda P \exists x P(x)$

PASS can either be viewed as an operator triggering passivization in the lexicon, or as a functional morpheme triggering passivization in the syntax; see, e.g., Bach (1980, 314) and Bruening (2013, 23). According to the latter view, the external argument is represented in the syntax, via PASS (see Alexiadou & Doron (2013)). However, since the working of PASS presupposes that the predicate P has not yet been merged with a regular  $DP_{ext}$ , and since the external argument variable is existentially bound throughout, it can never be syntactically accessible for operations like c-command. This kind of approach, while well established, is not without inherent problems. One problem that arises under at least the lexical version of the approach is that P in (52) can in principle be an intransitive V, a transitive V, a ditransitive V, a V taking a DP and a PP, and so on. For each of these contexts, a separate entry must then be specified for PASS.<sup>28</sup> Second, it is unclear how quantificational variability effects can be accounted for. A third problem that arises throughout concerns *by*-phrases; in this case the external argument must not be existentially quantified over (the *by*-phrase can of course itself contain a different quantifier). The standard solution here is to postulate another version of PASS that does not involve existential quantification but essentially amounts to an identity function. However, this raises the question why the two PASS morphemes, with their radically different semantic contributions, never seem to be realized differently in the world's languages (e.g., by two separate passive morphemes, or two separate passive auxiliaries); it also requires an additional stipulation to ensure that the *by*-phrase PASS (i.e., the identity function) can never be combined with an active predicate.<sup>29</sup>

These inherent problems notwithstanding, consider now the options for the evidence

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<sup>28</sup> See Buring (2005, 44) for the same problem with lexical operators for reflexivization. Note also that the propagation of separate entries for PASS is not reduced by the purely notational conventions introduced in work like Bruening (2014) or Wunderlich (2015).

<sup>29</sup> Stechow (1987; 1992) shows that it is in principle technically possible to maintain a single PASS operator along the lines of (52) if the head of the *by*-phrase is itself a higher-level operator that combines first with an individual and then a predicate, and that states the identity of the external argument variable that is eventually existentially quantified over via PASS (z in (i)), and the new variable introduced by the preposition that can be quantified over (y in (i)):

suggesting control of  $DP_{ext}$  into adjunct clauses and secondary predicates (as in (1), (2)) under such an approach. What is required is an approach to control that does not involve empty categories (like PRO) but rather relies on an identification of two variables. For control into complements, this kind of approach is quite standard.<sup>30</sup> The two variables that need to be identified are (i) an argument of the control verb (typically the object if the verb takes two DP arguments, otherwise the subject), and (ii) the subject of the control verb's complement. This can be accomplished by postulating a lexical entry for a control verb like *versuchen* ('try') as in (53-a); here P stands for a property. If the dependent verb is intransitive, like *zu schlafen* ('to sleep') in (53-b), the two verbs can be combined directly into one complex predicate, where functional application ensures that the sole argument slot of the embedded verb is identified with the external argument of the control verb; see (53-c). If, however, the embedded verb is transitive or ditransitive, an additional operation of function composition must take place, which requires long-distance  $\lambda$ -abstraction over the remaining argument slot(s) of the embedded predicate (so as to turn it into a property); cf. (53-de), based on transitive *zu lesen* ('to read').

- (53) a. *versuchen*:  $\lambda P \lambda x \text{TRY}(x, P(x))$   
 b. *zu schlafen*:  $\lambda y \text{SLEEP}(y)$   
 c. *zu schlafen versuchen*:  $\lambda P \lambda x \text{TRY}(x, P(x)) (\lambda y \text{SLEEP}(y)) \Rightarrow$   
 $\lambda x \text{TRY}(x, \text{SLEEP}(x))$   
 d. *zu lesen*:  $\lambda v \lambda u \text{READ}(u, v)$   
 e. *zu lesen versuchen*:  $\lambda z [ \lambda P \lambda x \text{TRY}(x, P(x)) [ (\lambda v \lambda u (\text{READ}(u, v))) ] (z) ] \Rightarrow$   
 $\lambda z [ \lambda x \text{TRY}(x, [\text{READ}(x, z)]) ]$

An account of control along these lines can in principle either take place in the lexicon or in the syntax; see Müller, St. (2002), Wurmbrand (2002), Haider (2010), Stiebels (2010) for various proposals for German. In both versions, it can feed passivization, triggered by a PASS operator as in (52). This way, control by a  $DP_{ext}$  of a passivized control verb into an infinitival complement of the control verb can be derived in approaches where the external argument of the matrix verb is not syntactically accessible; cf. (3).

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(i)  $von_{pass}$ :  $\lambda y \lambda Q_{<et>} \lambda z . Q(z) \ \& \ z = y$

This approach has a brute force quality; it stipulates the upward accessibility of the external argument in *by*-phrase environments which should ideally be derivable from the analysis, and it requires construction-specific assumptions (there has to be a special passive *von* that is different from other occurrences of the preposition).

<sup>30</sup> By now, there is substantial evidence in support of the existence of a structurally encoded non-overt subject (like PRO) in control constructions; see, e.g., Landau (2013). However, at least for the sake of the argument, I will assume that this evidence is not decisive.

Crucially, things are not so straightforward with control into non-complements, as in (1) and (2). In both environments, a lexical approach is excluded: On the one hand, adjunct clauses of the type in (1) clearly do not form complex predicates with a verb; and on the other hand, depictive secondary predicates of the type in (2) cannot be assumed to be combined with the main predicate pre-syntactically either: As shown in some detail in Müller, St. (2002), such secondary predicates can be separated from the main predicate in German in ways that parts of complex predicates formed in the lexicon cannot be (see Haider (2010)). This leaves, as the only remaining possibility, a syntactic approach to both passivization and control, where the argument identification must take place in a lower position than passivization via PASS in (52). However, at this point the problem arises that it is not quite clear how the effect of argument identification that is locally encoded on the control predicate in a lexical entry such as (53-a) can be brought about if the two items (the main predicate, and the adjunct clause or secondary predicate) are separate in the syntax. As far as I am aware, all existing solutions to the problem require additional mechanisms without independent justification in order to bring about an identification of the two variables involved (for secondary predicates, cf., e.g., the lexical rule stipulating identity of the argument of the secondary predicate with some member of the argument list of the main predicate in Müller, St. (2002), or the complex semantics of the abstract DEP operator identifying argument slots of the main and secondary predicates in Bruening (2014)).

More generally, I conclude that maintaining strict inaccessibility of  $DP_{ext}$  in German passive constructions is not a convincing option in view of the evidence in (1)–(5).

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