# Variation in Case Matching Effects: Evidence for Two-Step Bidirectional Agree*

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## 1. Introduction

The main goal of this paper is to develop an analysis of case matching effects as they occur with free relatives and parasitic gaps. An example for a free relative clause is given in (1a), an example for a parasitic gap structure is given in (1b).

(1) a. I'll buy *what* you are selling.
b. *Which article* did you file without reading?

In both constructions, there is one overt element that is shared between two verbs. In the parasitic gap construction in (1b), the wh-phrase *which article* is the object of *file* and *read*. In (1a), wh-phrase *what* is the object of *sell*, but it also has to match certain requirements of the matrix verb *buy* (Bresnan & Grimshaw 1978).

In both configurations, the shared category has to satisfy the case requirements of the matrix verb and the embedded verb. The aim of this paper is to explore this case matching property in more detail.

The paper is structured as follows: In section 2, the case matching patterns of German and Polish are introduced. In section 3, an analysis is developed that captures the variation observed in the case matching patterns. The main assumptions of the account are that case matching is modeled as Agree, that Agree is bidirectional, and that the direction of Agree depends on the language and the construction. In case of downward Agree, strict matching is required, while mismatches are possible in case of upward Agree. In section 4, some extensions to the basic pattern concerning speaker variation and syncretisms are discussed. Finally, in section 5, I review possible alternatives to the bidirectional Agree approach, concluding that this approach is superior with respect to the data. Section 6 concludes.

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## 2. Data

This section shows that Polish is the mirror image of German with respect to case matching. Note that whenever the two cases assigned to the shared category are identical, the sentences are grammatical. Corresponding examples are omitted for reasons of space.

### 2.1 German

(2) shows that the shared category in Gernan parasitic gap constructions has to match the cases of the matrix and the embedded verb (Fanselow (1993), Kathol (2001)). In (2a-b), differing cases lead to ungrammaticality. In (2c), a syncretic form resolves the mismatch.

(2) a. weil Hans *$der_{dat}$/*$die_{acc}$ *Frau* [ anstatt zu helfen$_{dat}$ ] behinderte$_{acc}$
because Hans the woman instead.of to help hampered
'because Hans hampered the woman instead of helping her'

b. ... *$der_{dat}$/*$die_{acc}$ *Frau* [ anstatt zu behindern$_{acc}$ ] half$_{dat}$
the woman instead.of to hamper helped

c. ... $der_{gen/dat}$ *Frau* [ anstatt laut zu danken$_{dat}$ ] still gedachte$_{gen}$
the woman instead.of loudly to thank silently commemorate
'... silently commemorated the woman instead of thanking her loudly'

In contrast to (2a), the case mismatch in the free relative in (3a) can be resolved if the wh-phrase bears the case assigned to it by the embedded verb (Pittner (1995), Vogel (2001)).[1]

(3) a. Hans mag$_{acc}$ [ *$wen_{acc}$/$wem_{dat}$ (auch immer) Maria vertraut$_{dat}$ ].
Hans likes who ever Maria trusts
'Hans likes whoever Maria trusts.'

b. ... vertraut$_{dat}$ [ *$wen_{acc}$/*$wem_{dat}$ (auch immer) Maria mag$_{acc}$].
trusts who ever Maria likes

### 2.2 Polish

The pattern in Polish is different from the one in German. (4a-b) show that the case mismatches that are not allowed in German (2) are acceptable in Polish (Citko (2013)).

(4) a. ..., *którą$_{acc}$*/ *której$_{dat}$* Jan lubił$_{acc}$ [ zanim zaczął pomagać$_{dat}$ ].
which Jan liked before started help
'... Jan liked before he started to help.'

[1] The only mismatch that is not allowed is a configuration where the case in the embedded clause is accusative while the case of the matrix clause is dative. This is due to case hierarchy effects active in German free relatives (see Pittner (1991, 1995), Vogel (2001), Grosu (2003) for details). I will not discuss case hierarchy effects in this paper.

b. ..., *której*$_{dat}$/**którą*$_{acc}$ Jan ufał$_{dat}$ [ zanim polubił$_{acc}$ ].
which Jan trusted before liked
'... Jan trusted before he got to like.'

Finally, the data in (5) show the case matching pattern of free relatives in Polish. As can be seen in (5a-b), a case mismatch leads to ungrammaticality (Citko (2013)). As in German parasitic gap constructions, a case syncretism (5c) resolves a case mismatch.

(5) a. ... lubi$_{acc}$ [ **kogokolwiek*$_{acc}$/**komukolwiek*$_{dat}$ dokucza$_{dat}$ ].
likes whoever teases
'... likes whoever he teases.'

b. ... ufa$_{dat}$ [ **komukolwiek*$_{dat}$/**kogokolwiek*$_{acc}$ wpuścil$_{acc}$ do domu ].
trusts whoever let to home
'... trusts whoever he let into the house.'

c. ... unika$_{gen}$ [ *kogokolwiek*$_{gen/acc}$ wczoraj obraził$_{acc}$ ].
avoids whoever yesterday offended
'... avoided whoever he offended yesterday.'

## 2.3 Patterns

The patterns we have seen in sections 2.1 and 2.2 are summarized in the tables in (6). The cells show whether a certain combination of cases is grammatical. The columns correspond to the cases assigned in the embedded clauses. The rows show the cases of the matrix clause. The remarks in brackets indicate how a case conflict can be resolved.

(6)

*PG in German: strict matching*

| M/PG | Acc | Dat | Gen |
|---|---|---|---|
| Acc | ✓ | * | * |
| Dat | * | ✓ | ✓(syn) |
| Gen | * | ✓(syn) | ✓ |

*FR in German: no strict matching*

| M/FR | Acc | Dat | Gen |
|---|---|---|---|
| Acc | ✓ | ✓(dat) | ✓(gen) |
| Dat | * | ✓ | ✓(gen) |
| Gen | ✓(acc) | ✓(dat) | ✓ |

*PG in Polish: no strict matching*

| M/PG | Acc | Dat | Gen |
|---|---|---|---|
| Acc | ✓ | ✓(acc) | ✓(acc) |
| Dat | ✓(dat) | ✓ | ✓(syn) |
| Gen | ✓(gen) | ✓(syn) | ✓ |

*FR in Polish: strict matching*

| M/FR | Acc | Dat | Gen |
|---|---|---|---|
| Acc | ✓ | * | ✓(syn) |
| Dat | * | ✓ | * |
| Gen | ✓(syn) | * | ✓ |

The patterns allow for the following observations: First, free relatives that lack case matching effects in German, show them in Polish, while parasitic gaps that allow case mismatches in Polish show strict matching in German. Second, if one of the two construction shows case matching effects, the other does not. Finally, in both languages, syncretic forms can repair violations of the case matching condition. Thus, what seems to count for matching are not the abstract Case features but the morphological form.

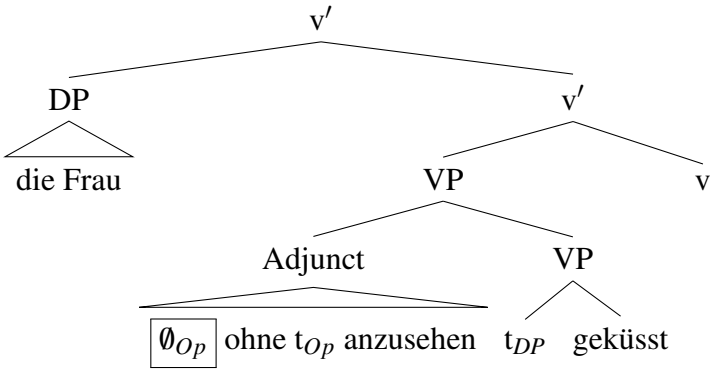
## 3. Analysis

The analysis of the data presented in section 2 will be carried out in a derivational minimalist framework (Chomsky (1995) et seq.) combined with a derivational modular version of Distributed Morphology (Arregi & Nevins (2012), Halle & Marantz (1993)). In order to derive the patterns, three points will play an important role: the position of the shared category, the directionality of Agree and the order of Agree operations.

### 3.1 The position of the shared category

I assume that there are actually two categories in parasitic gap and free relative structures that each receive a case and have to agree in case. Since only one category appears in the surface structure, one of the two categories has to be phonologically empty (see e.g. Chomsky (1986) for parasitic gaps and Groos & Riemsdijk (1981) for free relatives). Following this assumption, the structure for a German parasitic gap structure looks as depicted in (7).

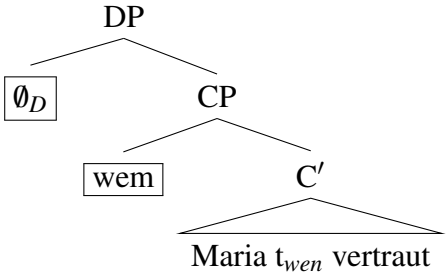
(7)




In this analysis, the empty operator is generated inside the embedded clause, where it receives case. From this position, it moves up to the embedded Spec-CP position and enters into a syntactic relation with the c-commanding antecedent in the matrix clause that has moved to the matrix Spec-vP position.

The structure of a free relative is given in (8). Here, the covert category is an empty D head, which has a special syntactic relation with the overt wh-phrase.

(8)



To sum up, in parasitic gap structures, the overt category is higher than the covert one while in free relatives, the positions are reversed.

### 3.2 Case assignment and Case agreement

Assuming that the covert and the overt category in parasitic gap and free relative structures receive case independently, there must be some sort of case agreement between the two categories in order to derive matching. I would like to suggest that the case agreement is part of a more general agreement relation between the two elements (cf. Grosu (2003), Assmann (2013), Grewendorf & Groat (2013), Assmann (2012)).

Both case assignment between an argument and a functional head as well as case agreement in sharing constructions is modeled as Agree. Due to the additional Agree relation in parasitic gap and free relative constructions, case features can in principle probe twice. Crucially, Agree is asymmetric: Only one of the two categories is the probe.

Following Arregi & Nevins (2012), Agree consists of two operations: syntactic Agree-Link establishes a syntactic relation between the probe and the goal. Post-syntactic Agree-Copy copies feature values from the probe onto the goal. Note that the syncretism effects strongly suggest that at least part of the dependency must be post-syntactic (cf. Trommer (2002), Riemsdijk (2006)). Evidence for the assumption that Agree cannot be entirely post-syntactic comes from the fact that case matching does not require a surface c-command relation between the overt and the covert category. This is illustrated for extraposed free relatives in German in (9). Assuming that case matching is the result of Agree and that Agree requires c-command, it follows that Agree must take place before CP-extraposition changes the c-command relations.

(9) Hans hat gemocht$_{acc}$ [$_{DP}$ D$_{\emptyset}$ t$_{CP}$ ] [$_{CP}$ *wem$_{dat}$* (auch immer) Maria vertraute$_{dat}$].
Hans has liked who ever Maria trusted
'Hans has liked whoever Maria trusted.'

There are two conditions that govern successful Agree. The first condition is the c-command condition that applies to the syntactic Agree-Link operation. The crucial assumption I would like to make is that the directionality of Agree does not play a role: hence, either the probe c-commands the goal or the goal c-commands the probe. Consequently, there is upward as well as downward agreement for case features (see Zeijlstra (2012) for upward Agree).

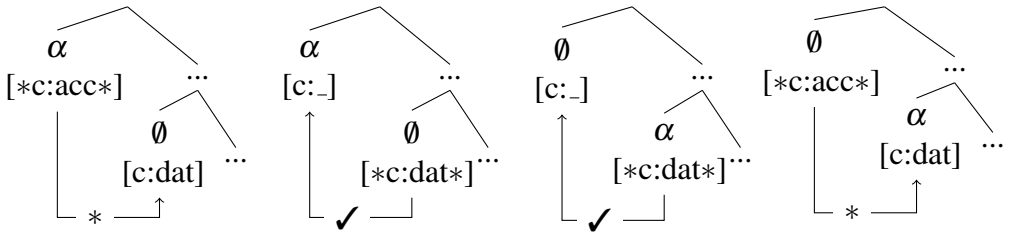
The second condition is a matching condition that concerns Agree-Copy. Concretely, Agree-Copy is only successful if the case feature values of the probe and the goal do not conflict. Obviously, a conflict cannot arise if one of the two features is still unvalued. However, if both feaures are valued but bear different values, Agree fails.

The final point about Agree concerns the order of Agree operations. As Agree-Link applies in syntax, the order of Agree-Link operations is governed by Earliness (Pesetsky (1989), Řezáč (2004)). As for post-syntactic Agree-Copy, I would like to propose that it proceeds bottom-up. If a category probes twice, the order is free.

### 3.3 Variation

The constraints on Agree discussed above hold cross-linguistically. What can vary, however, is the direction of the additional Agree relation in sharing constructions. I would like to propose that, in German, case agreement is triggered by the overt element, that is, the antecedent of a parasitic gap or the wh-phrase in free relatives. In Polish, on the other hand, the additional case probe (henceforth depicted as [∗case:_∗]) sits on the covert item. This leads to the four possible configurations shown in (10). The structures show the case features at the time when the overt category $\alpha$ and the covert category $\emptyset$ undergo Agree-Copy.

(10) a. *German PG* b. *Polish PG* c. *German FR* d. *Polish FR*




The main idea of the analysis is that if the lower of the two elements is the probe, upward Agree between $\alpha$ and $\emptyset$ applies, resulting in empty valuation because the higher goal has not received its case value at this point. Consequently, the case feature value of the higher goal will not count for the matching condition on Agree and mismatches are allowed. If, on the other hand, the higher of the two elements is the probe, the lower element has already received its case feature value. In this case, both the case feature value of the higher probe and the lower goal count for matching and strict case matching is required.

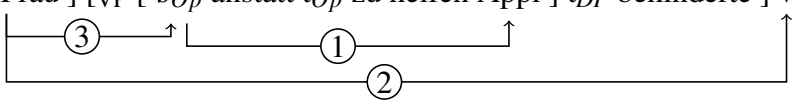
### 3.4 Derivations

In order to show why downward Agree leads to strict case matching while upward Agree makes mismatching possible, the rest of this section describes the most important derivations in detail. Since identical case values will always lead to derivations where the matching condition is fulfilled, the following only discusses configurations where the relevant cases in the embedded and the matrix clause differ.

#### 3.4.1 German parasitic gaps

The structure in (11) shows the syntactic Agree-Link relations in the derivation of example (2a). For concreteness, dative case is assigned by an empty applicative head Appl.

(11) [$_{vP}$ [$_{DP}$ die Frau ] [$_{VP}$ [ $\emptyset_{Op}$ anstatt $t_{Op}$ zu helfen Appl ] $t_{DP}$ behinderte ] v ]



In the post-syntactic component, Agree-Copy applies and the case features of the antecedent and the empty operator are valued. This is shown in (12).

(12)

| | | |
|---|---|---|
| I: | $\emptyset$[c:_] $\longrightarrow$ Appl[c:dat]: $\emptyset$[c:dat] | |
| II: | $\alpha$[$*$c:_$*$] $\longrightarrow$ v[c:acc]: $\alpha$[$*$c:acc$*$] | or $\alpha$[$*$c:_$*$] $\longrightarrow$ $\emptyset$[c:dat]: $\alpha$[$*$c:dat$*$] |
| III: | $\alpha$[$*$c:acc$*$] $\longrightarrow$ $\emptyset$[c:dat]: $\lightning$ | or $\alpha$[$*$c:dat$*$] $\longrightarrow$ v[c:acc]: $\lightning$ |

The valuation proceeds bottom-up with the lower probe, the empty operator, receiving dative case first. Next, the case feature of the antecedent is valued. Since its case feature probes twice, there are two possible orders for valuation. In the first option, the antecedent receives accusative case from matrix v and checks it against the dative case value of the empty operator. This leads to a violation of the matching condition and the derivation crashes. Reversing the order as in the right column does not help because after receiving dative case from the empty operator, the antecedent can no longer Agree with the accusative bearing v due to a violation of the matching condition.

### 3.4.2 Polish parasitic gaps

The crucial difference between Polish and German is that $\emptyset$ probes for $\alpha$. Thus, we have upward Agree in contrast to the downward Agree relation in (11). This leads to the two possible orders for post-syntactic Agree-Copy given in (13).

(13)

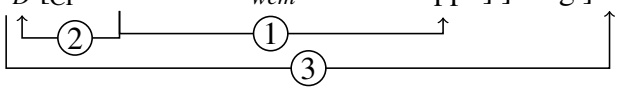
| | | |
|---|---|---|
| I: | $\emptyset$[$*$c:_$*$] $\longrightarrow$ Appl[c:dat]: $\emptyset$[$*$c:dat$*$] | or $\emptyset$[$*$c:_$*$] $\longrightarrow$ $\alpha$[c:_]: $\emptyset$[c:_] |
| II: | $\emptyset$[$*$c:dat$*$] $\longrightarrow$ $\alpha$[c:_]: $\emptyset$[c:dat] | or $\emptyset$[c:_] $\longrightarrow$ Appl[c:dat]: $\emptyset$[c:dat] |
| III: | $\alpha$[c:_] $\longrightarrow$ v[c:acc]: $\alpha$[c:acc] | |

At first, the empty operator receives case. Independent of the order of the two operations, the empty operator ends up with dative case because *która* does not bear a value at this point. In the final step, *która* receives accusative case from matrix v. In this derivation the matching condition is not violated because upward Agree results in empty valuation.

### 3.4.3 German free relatives

The structure in (14) shows the Agree-Link relations for example (3a). The crucial difference to parasitic gaps is, that this time, the probing overt item is lower in the structure.

(14) [$_{vP}$ [$_{VP}$ [$_{DP}$ $\emptyset_D$ [$_{CP}$ wem Maria $t_{wem}$ vertraut Appl ] ] mag ] v ]




Turning to Agree-Copy, (15) resembles the derivation in (13): The lower of the two categories – this time the overt one – probes for the higher category. Thus, we have upward Agree, which results in empty valuation and counter-bleeds the matching condition.

(15) I: $\alpha$[∗c:_∗] ⟶ Appl[c:dat]: $\alpha$[∗c:dat∗] or $\alpha$[∗c:_∗] ⟶ ∅[c:_]: $\alpha$[c:_]
II: $\alpha$[∗c:dat∗] ⟶ ∅[c:_]: $\alpha$[c:dat] or $\alpha$[c:_] ⟶ Appl[c:dat]: $\alpha$[c:dat]
III: ∅[c:_] ⟶ v[c:acc]: ∅[c:acc]

### 3.4.4 Polish free relatives

Finally, the derivation of Polish free relatives is almost identical to the derivation of German free relatives, the only difference being downward Agree between the empty D head and the wh-phrase. The results of the Agree-Copy operations are shown in (16). As in parasitic gap constructions in German, downward Agree leads to a violation of the matching condition.

(16) I: $\alpha$[c:_] ⟶ Appl[c:dat]: $\alpha$[c:dat]
II: ∅[∗c:_∗] ⟶ $\alpha$[c:dat]: ∅[∗c:dat∗] or ∅[∗c:_∗] ⟶ v[c:acc]: ∅[∗c:acc∗]
III: ∅[∗c:dat∗] ⟶ v[c:acc]: ↯ or ∅[∗c:acc∗] ⟶ $\alpha$[c:dat]: ↯

## 3.5 Bidirectional Agree and Opacity

As shown above, in some structures, conflicting case values do not cause a violation of the matching condition. Such structures are therefore opaque. In the present approach, this opacity is resolved by ordering the three relevant Agree-Copy operations: (i) the relation between the lower element Y and a case assigning head $C_1$, (ii) the relation between the higher element X and another case assigning head $C_2$ and (iii) the relation between X and Y. If the first two Agree-Copy relations result in feature valuation, the third relation is only successful if the two case values are identical. Otherwise, the matching condition on Agree would be violated. That is, Agree between X/Y and $C_1$/$C_2$ can bleed late Agree between X and Y. On the other hand, Agree between X and Y that applies early results in empty valuation and trivially fulfills the matching condition. Thus, upward Agree leads to counter-bleeding (cf. Georgi (2014)).

# 4. Complicating the pattern

## 4.1 More patterns

Not every speaker of Polish or German allows non-syncretic case mismatches in parasitic gap constructions (Bondaruk (1996)) or free relatives (Riemsdijk (2006)). For these speakers, mismatching forms are ungrammatical in general. Such varieties can be derived under the assumption that, for these speakers, Agree between the overt and the covert and ∅ is symmetric in the sense that both $\alpha$ and ∅ are probes in different Agree operations. Importantly, Agree being symmetric means that these varieties always have downward Agree between $\alpha$ and ∅. Consequently, strict matching is required. A derivation that captures strict case matching in German free relatives is shown in (17).[2]

[2]Strict matching in Polish parasitic gaps is derived analogously to the derivation in (17).

(17)

| | | |
|---|---|---|
| I: | $\alpha$[∗c:_∗] ⟶ Appl[c:dat]: $\alpha$[∗c:dat∗] | or $\alpha$[∗c:_∗] ⟶ ∅[∗c:_∗]: $\alpha$[c:_] |
| II: | $\alpha$[∗c:dat∗] ⟶ ∅[∗c:_∗]: $\alpha$[c:dat] | or $\alpha$[c:_] ⟶ Appl[c:dat]: $\alpha$[c:dat] |
| III: | ∅[∗c:_∗] ⟶ v[c:acc]: ∅[∗c:acc∗] | or ∅[∗c:_∗] ⟶ $\alpha$[c:dat]: ∅[∗c:dat∗] |
| IV: | ∅[∗c:acc∗] ⟶ $\alpha$[c:dat]: ↯ | or ∅[∗c:dat∗] ⟶ v[c:acc]: ↯ |

Finally, assuming that agreement between $\alpha$ and ∅ is an essential property of the two constructions, no language can be derived in which both constructions allow case mismatches. To my knowledge, such a case has not been reported in the literature.

### 4.2 Syncretisms

In all four configurations discussed above, syncretic forms can remedy a violation of case matching. The syncretism effect can be captured, if the morphological rules responsible for syncretisms apply before Agree-Copy. For the sake of concreteness, I assume that syncretisms are due to language-specific feature changing syncretism rules (cf. Noyer (1992, 129)). (18a) specifies such a rule in Polish that is relevant for the example in (5c).

Furthermore the matching condition must be refined: Agree-Copy always adds a value to a probe feature. Syncretism rules apply to the feature values as soon as their contexts are given. If a mismatch between two values cannot be repaired by a syncretism rule, the matching condition is violated. The derivation in (18b) shows the interaction of Agree-Copy and the syncretism rule (18a).

(18) a. [c:acc] → [c:gen]/[anim:+]

b.

| | |
|---|---|
| I: | $\alpha$[c:_][anim:+] ⟶ Appl[c:gen]: $\alpha$[c:gen][anim:+] |
| II: | ∅[∗c:_∗][anim:_] ⟶ $\alpha$[c:gen][anim:+]: ∅[∗c:gen∗][anim:+] |
| | or ∅[∗c:_∗][anim:_] ⟶ v[c:acc]: ∅[∗c:acc∗][anim:_] |
| III: | ∅[∗c:gen∗][anim:+] ⟶ v[c:acc]: ∅[c:gen,acc][anim:+] |
| | *[c:acc] → [c:gen]/[anim:+]: ∅[c:gen,gen] = ∅[c:gen]* |
| | or ∅[∗c:acc∗][anim:_] ⟶ $\alpha$[c:gen][anim:+]: ∅[c:acc,gen][anim:+] |
| | *[c:acc] → [c:gen]/[anim:+]: ∅[c:gen,gen] = ∅[c:gen]* |

When ∅ receives its second case value, the context for the syncretism rule is given and the accusative value is changed into genitive, which prevents a conflict on the case feature.

In sum, the syncretism effects of case matching can be derived because there is a morphological component of Agree. A purely syntactic approach to Agree would have to invoke an additional mechanism to capture these effects.

## 5. Alternatives

Finally, I want to discuss potential alternatives to the present account. The number of possibilities to analyze sharing constructions is limited to three basic strategies: First, there are agreement approaches like the present account. The main idea is to postulate an additional covert category and let the covert and the overt category communicate in some way

(Chomsky (1982), Engdahl (1983), Chomsky (1986), Cinque (1990), Nissenbaum (2000), Kuroda (1968), Bresnan & Grimshaw (1978), Groos & Riemsdijk (1981), Hirschbühler & Rivero (1981), Harbert (1983), Suñer (1984), Grosu & Landman (1998), Grosu (2003), Caponigro (2002), Gračanin-Yuksek (2008)). The second type is an identity approach: Here, the overt category is the only category and the additional syntactic dependendency is modeled differently, for example by multidominance (Riemsdijk (2006), Kasai (2008), Citko (2005, 2013)) or movement (Huybregts & van Riemsdijk (1985), Bennis & Hoekstra (1985), Williams (1990), Nunes (2004), Rooryck (1994), Caponigro (2003), Donati & Cecchetto (2011), Ott (2011))). Finally, reanalyses are possible. The core idea in this type of approach is to treat sharing constructions differently in different languages.

In the rest of this section, I will discuss whether the alternative types of approaches could handle the data introduced in section 2.

### 5.1 Reanalysis

Reanalysis accounts in general require additional evidence that justifies the language-specific treatment of sharing constructions. As for Polish and German, there are no major differences concerning parasitic gaps (Bondaruk (1996), Assmann (2012) and references cited therein) and free relatives (Citko (2005), Riemsdijk (2006) among others). Parasitic gaps in German and Polish are both island sensitive, show categorial restrictions, cannot be licensed by in-situ antecedents or A-moved antecedents. Free relatives in both languages lack an overt nominal head, have a wh-phrase instead of a relative pronoun, are clauses with a gap and can be replaced by a truth-conditionally equivalent DP or PP. Based on these similarities, there seems to be no motivation for analyzing the two constructions differently.

This counter-argument also applies to the approach presented in Citko (2013) for Polish sharing constructions. This account builds on multidominance: Strict matching in Polish free relative structures occurs because a DP is subject to multidominance while mismatching in Polish parasitic gaps occurs because an NP is dominated by two DPs with one case feature each.

A further issue with this analysis concerns case concord inside the DP. Morphologically, case is also realized on nouns. Thus, the violation of matching is expected to occur on the NP level.

### 5.2 Identity

There are two kinds of identity approaches: multidominance approaches and movement approaches. In a multidominance approach, the shared category is simultaneously in two case position. Such approaches have a problem explaining variation. The cross-linguistic variation can be handled by assuming that in one language a matching condition holds while in the other language, there is no matching condition. However, since abstractly, free relatives and parasitic gaps have the same derivation, both constructions in one language are predicted to either show case matching effects or not. The only way out would be that the matching condition is construction-specific which predicts that there should be languages

which do not show matching effects in any of the two constructions, contrary to what is reported in the literature.

In movement approaches, the overt category is also present in two case positions but at different points in the derivation. These accounts face the same problems as the multidominance accounts when it comes to matching effects because the abstract derivation of the two constructions is the same.

### 5.3 Unidirectional Agree

A final alternative would be an analysis that is based on a unidirectional Agree operation, that is, an analysis where only upward or only downward Agree is possible.

In an upward Agree approach, case assignment is analyzed as Agree between a probing argument and a case assigning head (Pesetsky & Torrego (2007)). But then, the additional agreement relation in sharing constructions must be a genuinely different syntactic process. Having excluded movement and multidominance since these processes are to rigid to account for variation, it is unclear which syntactic process is responsible.

Furthermore, case matching shows some of the core properties of the Agree operation. First, Agree relations and case assignment are subject to certain locality restrictions. For example, they do not cross a finite clause boundary (cf. Vainikka & Brattico (2014)). This also applies to parasitic gap configurations in German. Examples where the empty operator and the antecedent are separated by a finite clause boundary are ungrammatical despite case matching (19). This follows if Agree cannot apply across finite clause boundaries.[3]

(19) because Hans ...

a. *... *die*$_{acc}$ *Frau* [ anstatt einen Freund zu treffen [ Op$_{acc}$ der
... the woman instead.of a friend to meet who
unterstützen$_{acc}$ könnte ]] behinderte$_{acc}$
support could hampered
'... hampered the woman instead of meeting a friend who could support her'

The second property that points to Agree being responsible for case matching is intervention. Such intervention effects can also be observed in parasitic gap configurations. See Heck & Himmelreich (to appear) for details.

In contrast, if Agree can only apply downwards, case assignment must be a process different from Agree (see e.g. Chomsky (2001)). Under this assumption, the variation in matching effects could be derived if all cases of upward Agree in the present account are simply missing and if unchecked Agree features do not lead to a crash of the derivation (Bošković (2009), Preminger (2010)). But if unchecked features can be deleted without successful Agree, the explanation for the ungrammaticality of mismatches is lost. Consequently, such an analysis is not suited for deriving strict case matching.

[3]Note that locality is also a property of other syntactic operations such as movement. Still the data are captured in the present agreement analysis.

## 6. Conclusion

In summary, we have seen that Polish and German are mirror images of each other when it comes to case matching: Polish free relatives and German parasitic gaps require strict matching, while German free relatives and Polish parasitic gaps allow case mismatches.

The analysis developed above builds on the bidirectionality and the order of Agree operations. In both constructions, there is an overt and a covert item which agree in case. If this relation is downward Agree, it applies late and is potentially bled by other case Agree relations. If it is upward Agree, it applies early, creating a counter-bleeding interaction.

I have argued that an analysis based on a two-step bidirectional Agree operation can capture a kind of variation that other types of approaches face difficulties with. Furthermore, the analysis is an argument for a derivational view on post-syntactic operations since the opacity observed in the output representations can be resolved by rule ordering.

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