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

Data: Free relatives (FR) and parasitic gaps (PG) are two constructions known to exhibit case matching (CM) effects. In both these structures, one syntactic category (henceforth α) is shared between two different positions. In FRs, α is the wh-phrase, which seems to be the nominal head of the relative clause and the relative pronoun. In the case of PGs, α is the antecedent of the parasitic and the true gap that seems to move from both gap positions. Interestingly, CM in both constructions shows variation across languages: FRs, which allow certain case mismatches in German ((1-a); Vogel 2001), show strict matching in Polish ((1-b); Citko 2013), while PGs, which lack matching effects in Polish ((2-b); Citko 2013), show them in German ((2-a); Fanselow 1993).

(1)   a.   Jan mag_{acc} [*wen_{acc}/wem_{dat} (auch immer) er $vertraut_{dat}$].
                 Jan likes   who   ever   he trusts

         b.   Jan $lubi_{acc}$ [*$kogo_{acc}$/*$komu_{dat}$ (kolwiek) ufa_{dat}].
                 Jan likes   who   ever   trusts

(2)   a.   weil   Hans *der_{dat}/*die_{acc} Frau   [anstatt   zu $helfen_{dat}$] $behinderte_{acc}$
                 because Hans the   woman   instead.of to help   hampered

         b.   To jest dziewczyna, $którą_{acc}$/ *$której_{dat}$ Jan $lubił_{acc}$ [zanim zaczął $pomagać_{dat}$].
                 this is   girl   which   Jan liked   before started help

Claim: It is shown that this mirror image pattern can be derived derivationally by varying the order and directionality of Agree operations. CM in both constructions is modeled as Agree between the overt α and an additional covert category $\emptyset$. Assuming that derivations proceed bottom-up and cyclically, upward Agree between α and $\emptyset$ results in empty valuation, which counterbleeds the case matching condition. Downward Agree, on the other hand, enforces strict matching. Thus, the present study presents evidence for a two-step bidirectional Agree operation.
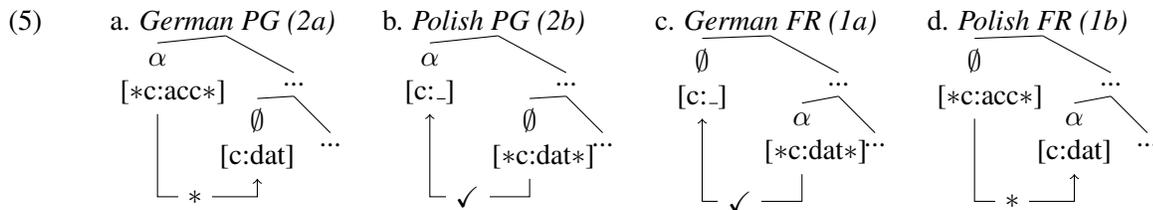
Analysis: The analysis is couched in a derivational minimalist framework combined with a derivational version of DM (Arregi & Nevins 2012). *1. Structure:* FR and PG structures both involve an overt item α and a covert item $\emptyset$ (a phonologically empty D head in FRs (Groos & Riemsdijk 1981), a covert operator in PGs (Chomsky 1986)). α and $\emptyset$ have to agree, among others, in case features (cf. Assmann 2012 for PGs, Grosu 2003 for FRs). This agreement is asymmetric: Only one of the two items is the probe. Case agreement as well as "normal" case assignment are modeled as Agree. Due to agreement between α and $\emptyset$ in PG and FR constructions, case features on α and $\emptyset$ probe twice (once for the case assigning verbal head and once for $\emptyset$ or α respectively). *2. Matching Condition:* Agree is only successful if the feature value of probe and goal do not conflict. A conflict does not arise if one of the two features is still unvalued. *3. Two-Step-Agree:* Following Arregi & Nevins (2012), Agree consists of two operations: a syntactic Agree-Link, which establishes a relation between probe and goal, and a post-syntactic Agree-Copy, which copies the case values from goal to probe. The assumption that at least part of CM ($\sim$Agree) must be post-syntactic is confirmed by the fact that syncretisms can rescue violations of CM (cf. (3)). Thus, what seems to count for matching are not abstract Case features but the morphological form. Therefore, the CM condition cannot be a principle solely of narrow syntax.

(3)   Jan $unika_{gen}$ [$kogokolwiek_{gen/acc}$ wczoraj $obraził_{acc}$].
          Jan avoids   whoever   yesterday offended

Evidence for syntactic Agree comes from the fact that CM($\sim$Agree) does not change if c-command between probe and goal is disrupted, e.g. by extraposition (4). If one doesn't want to give up the c-command condition of Agree, and if extraposition is a syntactic process, $\emptyset$ and *wem* have to Agree prior to extraposition in syntax.
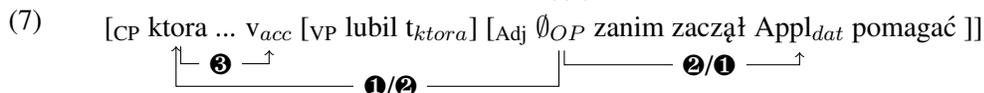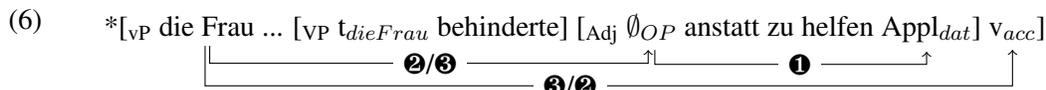
(4)   Jan hat [$_{DP}$ $\emptyset_D$ t_{CP}] $gemocht_{acc}$ [$_{CP}$ *wen_{acc}/wem_{dat} (auch immer) er $vertraute_{dat}$].
          Jan has liked   who ever   he trusted

4. Order: Both Agree-Link and Agree-Copy proceed bottom-up, meaning that lower case probes receive their values first. If a category probes twice, as in FR and PG constructions for case features, the order is free. *5. Directionality:* Agree-Link can apply upward (Zeijlstra 2012; Toosarvandani & van Urk 2014) as well as downward as long as there is a c-command relation between probe and goal. *5. Variation:* Polish and German differ in whether the overt element α or the covert element $\emptyset$ triggers case agreement in FRs and PGs: In German, case agreement is triggered by α. In Polish, case agreement is triggered by $\emptyset$. Furthermore, FRs and PGs differ in whether α or $\emptyset$ is higher in the structure. This leads to the four possible configurations shown in (6). (The configurations show the case features at the time when $\alpha/\emptyset$ probes a second time.)

(5) a. *German PG (2a)* b. *Polish PG (2b)* c. *German FR (1a)* d. *Polish FR (1b)*

α — $\ldots$ α — $\ldots$ $\emptyset$ — $\ldots$ $\emptyset$ — $\ldots$
$[*c{:}acc*]$ $[c{:}\_]$ $[c{:}\_]$ $[*c{:}acc*]$
$\emptyset$ $\emptyset$ α α
$[c{:}dat]$ $\ldots$ $[*c{:}dat*]\ldots$ $[*c{:}dat*]\ldots$ $[c{:}dat]$ $\ldots$
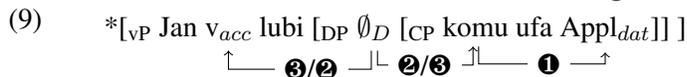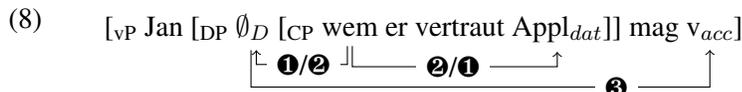$*$ $\checkmark$ $\checkmark$ $*$

6. Idea: Upward Agree results in empty valuation because the higher goal has not received a case value yet. Consequently, the case value of the goal doesn't count for matching and mismatches are allowed. In case of downward Agree, the lower goal has already received its case value and strict case matching is required.

Derivations: In PG configurations, $\emptyset$, being lower than α, receives its case value before α. In German (6), $\emptyset$ is a single probe and receives dative only from Appl. α (*die Frau*) probes twice, once for matrix v and once for $\emptyset$. But since $\emptyset$ and v bear different case values, the matching condition of Agree is violated. In Polish (7), on the other hand, $\emptyset$ is the double probe. When it probes for α, α has not received a case value yet. Thus, CM between α and $\emptyset$ is trivially fulfilled. α receives a case value after $\emptyset$ from matrix v, but this value comes too late to count for CM between α and $\emptyset$.

(6) *[$_{vP}$ die Frau ... [$_{VP}$ t$_{dieFrau}$ behinderte] [$_{Adj}$ $\emptyset_{OP}$ anstatt zu helfen Appl$_{dat}$] v$_{acc}$]
❷/❸ ———— ❸/❷ ———— ❶

(7) [$_{CP}$ ktora ... v$_{acc}$ [$_{VP}$ lubil t$_{ktora}$] [$_{Adj}$ $\emptyset_{OP}$ zanim zaczął Appl$_{dat}$ pomagać]]
❸ ———— ❶/❷ ———— ❷/❶

In FRs, $\emptyset$ is higher than α. In German (8), α is probing for $\emptyset$, just as in PG configurations. But due to the structural difference, this Agree relation is now upward Agree, resulting in empty valuation, just as PGs in Polish. In Polish (9), the Agree relation between α and $\emptyset$ is reversed. The resulting downward Agree enforces case matching between α and $\emptyset$ (cf. German PG structures).

(8) [$_{vP}$ Jan [$_{DP}$ $\emptyset_D$ [$_{CP}$ wem er vertraut Appl$_{dat}$]] mag v$_{acc}$]
❶/❷ ———— ❷/❶ ———— ❸

(9) *[$_{vP}$ Jan v$_{acc}$ lubi [$_{DP}$ $\emptyset_D$ [$_{CP}$ komu ufa Appl$_{dat}$]]]
❸/❷ ———— ❷/❸ ———— ❶

Discussion: ***More Variation:*** Not every speaker of Polish or German allows non-syncretic case mismatches with PGs (Bondaruk 1996) or FRs (Riemsdijk 2006). This follows, if in these varieties both α and $\emptyset$ are probes. Since this symmetric Agree includes downward Agree, CM must be obeyed. Put simply, these varieties have both the Polish and the German property. ***Syncretisms:*** Syncretic forms can remedy a violation of CM, as in (3). This follows assuming that syncretic forms result from special syncretism rules (e.g. impoverishment.) If these rules apply before post-syntactic Agree-Copy, the case values are identical for Agree. ***Case Hierarchy:*** Case mismatches in German FRs are not completely free, but are subject to a case hierarchy (Vogel 2001). This can be derived by decomposing case features in a way that mirrors the case hierarchy: Cases which consists of fewer features can be matched by a case consisting of more features but not vice versa.

Alternatives?: Considering the only two alternative approaches to CM effects, it becomes obvious that an analysis based on agreement is the only possible account. ***1. Identity:*** CM results from one element occuring in two positions either due to movement (e.g. Nunes 2004) or multidominance (e.g. Riemsdijk 2006). Even if these approaches can be extended to account for certain instances of case mismatches, the difference between PGs and FRs remain a mystery unless one wants to include downward movement. ***2. Reanalysis:*** PGs and FRs in Polish and German are simply different constructions. This is at odds with the fact that both structures show similar properties in both languages (e.g. island sensitivity, ban on A-movement licensing for PGs; form of relative pronoun, semantics for FRs).

Selected References: Assmann, Anke (2012): Deriving Parasitic Gaps by Fission and Fusion. *In:* E. Boone, K. Linke & M. Schulpen, eds, *Proceedings of ConSOLE XIX (2011, Groningen).* pp. 49–75. ● Bondaruk, Anna (1996): 'On parasitic gaps in Polish', *Papers and studies in contrastive linguistics* **31**, 111–125. ● Citko, Barbara (2013): Size Matters: Multidominance and DP Structure in Polish. Talk at the 44th Poznan Linguistic Meeting. ● Toosarvandani, Maziar & Coppe van Urk (2014): The syntax of nominal concord: What *ezafe* in Zazaki shows us. *In:* H.-L. Huang, E. Poole & A. Rysling, eds, *Proceedings of NELS 43.* The City University of New York, pp. 221–234.