Heck & Himmelreich 2017: Opaque Intervention

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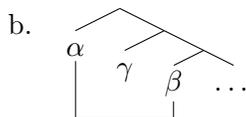
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1 Introduction

(1) *Surface Intervention*

    a. An antecendent α cannot associate with β if there is another potential antecedent γ that intervenes between α and β.

    b.

- This surface restriction is not enough: sometimes, there is a surface intervener, but no intervention effect, other times, there is an intervention effect, but no intervener.

  ▶ These cases are analyzed as *opacity* (counterbleeding, counterfeeding).

(2) *Feeding*
Rule A **feeds** rule B, if the application of A creates the context in which B can apply.

(3) *Bleeding*
Rule A **bleeds** rule B, if the application of A creates a context in which B can no longer apply.

(4) *Counterfeeding*
If two rules A and B, which would have a feeding relationship in one order, actually apply in the *opposite* order, the latter is called a **counterfeeding** order. B applies too late to feed A.

(5) *Counterbleeding*
If two rules A and B, which would have a bleeding relationship in one order, actually apply in the *opposite* order, the latter is called a **counterbleeding** order. B applies too late to bleed A.

⟶ Investigation of opaque intervention in Parasitic Gap and Floating Quantifier constructions in German

———————————— **Main claims** ————————————

- For opaque intervention cases, (1) must have been true **at some stage of the derivation**. Opaque relations are an argument for derivational frameworks.
- Opacity effects are an argument for movement-based analyses of scrambling.
- Analysis: associations are established early in the derivation, when order of arguments is still preserved.

2 Data

Terminology:

- *associate* = the argument with a category in need of an antecedent (= floating quantifiers, parasitic gaps)
- *antecedent* = the argument that binds something in the associate

⇒ The association between antecedent and associate can sometimes be inhibited by the presence of a co-argument, even if that co-argument does not surface-intervene in the sense of (1).

The intervention asymmetries can be described by the generalization in (6).

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

2.1 Floating Quantifiers

(7) *Floating quantifier alles 'all'*

    a.   Wer$_2$ hat euch alles$_2$ geholfen?
         who.NOM has you   all   helped
         "Who all helped you?"   NOM ANTECEDENT

    b.   Wen$_2$ habt ihr alles$_2$ kennengelernt?
         who.ACC have you all   met
         "Who all did you meet?"   ACC ANTECEDENT

    c.   Wem$_2$ habt ihr alles$_2$ geholfen?
         who.DAT have you all   helped
         "Who all did you help?"   DAT ANTECEDENT

<u>Intervention effect</u>

- subject wh-phrase antecedent for *alles* + indefinite object (DO or IO) intervener: ϟ (see 8a–b)
- IO wh-phrase antecedent + (indefinite) direct object intervener: ϟ (see 8c)

(8)   a.   *Wer$_1$ hat einem Professor   alles$_1$ gratuliert?
           who.NOM has a   professor.DAT all   congratulated
           intended: *"Who all congratulated a professor?"*

     b.   *Wer$_1$ hat einen Professor   alles$_1$ vergöttert?
           who.NOM has a   professor.ACC all   idolized
           intended: *"Who all idolized a professor?"*

     c.   *Wem$_1$ hat sie einen Professor   alles$_1$ vorgestellt?
           who.DAT has she a   professor.ACC all   introduced
           intended: *"Who all did she introduce a professor to?"*

⇒ An indefinite NP that intervenes at the surface between a wh-phrase and an associated FQ disrupts the association.

<u>No intervention effect</u>

- IO or DO wh-phrase + indefinite subject NP intervener: ✓(see 9a–b)
- DO-wh-phrase + IO-indefinite NP intervener: ✓(see 9c)

(9) a. Wem$_1$ hat ein Professor   alles$_1$ geholfen?
        who.DAT has a   professor.NOM all   helped
        "Who all did a professor help?"
     b. Wen$_1$ hat ein Professor   alles$_1$ beleidigt?
        who.ACC has a   professor.NOM all   insulted
        "Who all did a professor insult?"
     c. Wen$_1$ hat sie einem Professor   alles$_1$ vorgestellt?
        who.ACC has she a   professor.DAT all   introduced
        "Who all did she introduce a professor to?"

⇒(9) is an instance of **counterbleeding**: surface intervention of the indefinite comes too late to bleed association of wh-phrase with *alles*.
Note that the intervener in (9) is lower on the case hierarchy of (6) than the wh-phrase.

2.2   Parasitic Gaps

- parasitic gaps = gaps that are dependent (=parasitic) on the presence of another gap
- DO-wh-phrase + IO intervener: ✓(see 10a), **counterbleeding**
- IO-wh-phrase + DO intervener: ↯ (see 10b), **bleeding**

(10) a. Was$_2$ hat der Fritz der Maria   [anstatt PG$_2$ wegzuwerfen] zu essen
        what.ACC has the Firtz the Maria.DAT instead   away.to.throw to eat
        angeboten?
        offered
        "What did Fritz offer Maria to eat instead of throwing it away?"
     b. *Wem$_2$ hat der Fritz das Buch   [anstatt PG$_2$ zu helfen] weggenommen?
        who.DAT has the Fritz the book.ACC instead   to help   away.taken
        intended: *"Who did Fritz take the book from instead of helping him?"*

- scrambling can also feed PGs in German, see (11)
- scrambled IO binds PG + DO intervenes: ↯, see (12a), **bleeding**
- scrambled IO + no surface-intervener: ↯, see (12b), **counterfeeding**: association is expected to happen in the surface order, but doesn't

(11) Hans hat Maria$_2$ [ohne   PG$_2$ anzuschauen] t_2 geküsst.
     Hans has Maria.ACC without   at.to.look   kissed
     "Hans kissed Maria without looking at her."

(12) a. *wenn jemand der Anette$_2$ das Buch   [ohne   PG$_2$ zu vertrauen] ausleiht
        when someone the Anette.DAT the book.ACC without   to trust   lends
        intended: *"if someone lends Anette the book without trusting her"*
     b. *wenn jemand das Buch   der Anette$_2$ [ohne   PG$_2$ zu vertrauen] ausleiht
        if   someone the book.ACC the Anette.DAT without   to trust   lends

- DO can bind a PG when IO scrambles left of the DO (no surface intervention), but also, when IO scrambles in between the DO and the PG (surface intervention, see (13))

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- subjects never disrupt the binding chain

(13) dass Hans das Buch$_2$ der Maria   [ohne   PG$_2$ durchzulesen] zurückgibt
      that Hans the book.ACC the Maria.DAT without   through.to.read back.gives
      "that Hans returns the book to Maria without reading it through"

⇒ The intervention pattern in parasitic gaps also follows the generalization in (6).

Categories that don't act as interveners for PG-binding:

- subjects
- intervening elements that bind a PG themselves, see (14)

  (14) wenn jemand der Anette$_2$ das Buch$_3$ [anstatt PG$_2$ PG$_3$ zu schenken]
        when someone the Anette.DAT the book.ACC instead   to give.as.present
        ausleiht
        lends
        "when someone lends Anette the book instead of giving it to her as a present"

3   Theoretical Background

- Agree: probe ([uF]) agrees with goal ([F]) under c-command
- Move/ internal Merge: subject to PIC (15), feature-driven

  (15) *Phase Impenetrability Condition* (adapted from Chomsky 2000:108)
        The domain of a head H of a phase HP is not accessible to operations outside HP.
        Only H and its edge domain are accessible.

- edge = Spec,HP and elements adjoined to HP
- phases: CP and vP

3.1   Edge Features

- features that drive intermediate movement to phase edges
- EFs are optionally inserted on phase heads and attract an XP to the specifier of the phase head
- constraint on EF insertion (16) leads to (17)

  (16) *Edge Feature Condition* (EFC, Müller 2010,2011)
        An Edge Feature can be inserted on a head H only if H is still active, i.e. if H bears at least one other feature that needs to be discharged by Merge or Agree.

  (17) *Intermediate Step Corollary* (adapted from Müller 2011)
        Intermediate movement steps to specifiers of X (triggered by EFs) must take place before the final specifier is merged within XP.

▶ illustration:
  - VP contains a wh-phrase
  - final landing site of wh-phrase: Spec,CP
  - in order to be accessible for C, the wh-phrase must move to the edge of vP
  - this intermediate movement is triggered by EFs
  - EFs can only be inserted on active v
  - if v bears a subcategorization feature that is checked by an external argument, then EFs can be inserted *as long as the external argument has not been merged*

- Müller (2010,2011) assumes that features are organized in a stack (last-in-first-out). If EFs are inserted on the top, they are the first to be checked.
- ⇒ (given the SCC in (18)) the *wh-phrase will end up in a inner specifier* of vP, the external argument in an outer Spec (because the EF motivating the wh-phrase's movement is checked before the Merge feature for the external argument)

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

3.2 Scrambling and Edge Features

- scrambling triggered by EFs
  - motivation: scrambling behaves like successive-cyclic wh-movement in that is preserves the relative order of multiply moved items
- EFs don't delete once they triggered edge-movement, they remain active (in contrast to other movement inducing features)
  - ▶ they can attract an arbitrary number of items
  - ⇒ Multiple scrambling in German
- a head can receive at most 1 EF
- EF-scrambling in German does not seem to obey MLC (19)

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

- ⇒ The MLC should be abandoned.

    (20)   *Earliness Requirement for Feature Checking*
            Probe features enter into Agree as early as possible.

3.3 Order Preservation

- movement of co-arguments is often order preserving, if they are attracted by one (type of) feature on the same head

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

- derivation of (21): if both SCC and MLC are obeyed, this results in the ungrammatical structure (21-b)/ (22)

(22) $[_{vP}$ den$_3$ hende$_2$ $\ldots [_{VP} \ldots t_2$ $t_3 \ldots]$ $]$

- instead: when EF scans tree for goals and encounters a weak pronoun, that pronoun is placed in a workspace-like buffer, the *m(ovement)-stack*
- when another goal G is encountered, it is placed in the stack on top of the other G

⇒ order of Gs in stack mirrors order in tree
- when re-merging the pronouns from the stack into SpecvP, the pronoun put in last is taken out first, ends up in lower specifier
- pronoun put in stack first is taken out last, ends up in higher specifier
⇒ order preserved

4 Analysis

4.1 Floating quantifiers and opacity

- FQ intervention is *defective intervention*: the indefinite NP can inhibit binding, but not act as a binder itself
- features of relevant elements:

(23) Indefinites
$[u\text{WH} : \pm]$

(24) wh-phrase
$[u\text{WH} : +]$
$[u\text{WH-IND} : i]$, where $i =$ index

(25) Non-wh-indefinites
$[u\text{WH} : -]$
no [WH-IND] feature

(26) Definite NPs
no $[u\text{WH}]$-feature

(27) Quantifier *alles*
$[\text{WH} : \square]$
$[\text{WH-IND} : \square]$

Complication:

- Assumptions about probing (Chomsky 2001):
  - semantically uninterpretable features must be deleted in the syntax before proceeding to the semantic interface by Agreeing with a matching goal
  ⇒ [uFs] act as probes that look for matching goals
  - probes c-command goals
  - Syntax doesn't know about semantic interpretability ⇒ in the syntax, probes are characterized by being unvalued.
- Consider the relation between wh-phrases and FQs.

  - They enter into an Agree relation with each other.
  - FQ is dependent on wh-phrase in the sense that it cannot appear without it and receives its interpretation from wh-phrase
  - wh-phrase is not dependent on FQ
  ⇒ FQs are the probes (if probes *need* a goal, but not vice versa)
  - but Agree doesn't happen unless the wh-phrase c-commands the FQ ⇒ wh-phrase is the probe

⇒ 2 ways to resolve that contradiction:
  1. Upward Agree
  2. Disassociating being valued from being a probe: some elements can bear unvalued features, but lack the ability to actively search for a valuer; other elements can bear valued features *and* act as probes.

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$\Rightarrow$ This system allows for probes with valued features.

- *valued* uninterpretable features don't need to be discharged in syntax, but can be eliminated at the interfaces (Bošković 2009)
- probes that bear a value do not need to Agree in syntax (if they do, they value a goal and lose their probeyness, if they don't, the derivation doesn't crash)

(28)   *Full Match Requirement* (Anagnostopoulou 2003)
       A probe on H does not value a goal on H′ unless there is a full match between H and H′.

= if H and H′ have a common valued feature F, then values on F on H and H′ must be identical in order to establish an Agree relation

4.1.1   Bleeding cases

(29)   *Wer$_1$ hat einem Professor   alles$_1$ gedankt?
       who.NOM has a   professor.DAT all   thanked
       intended: *"Who all thanked a professor?"*

derivation of (29):

- v merges with VP containing the object
- FQ *alles* is adverbial adjoined to innermost Spec,vP
- object moves out of VP to outer Spec of v triggered by EF on v (it precedes the FQ in (29) and it has to move as long as v is active i.e. as long as external argument hasn't been merged)
- Earliness requires that $[u\text{WH}:-]$ on the object and $[\text{WH}:\square]$ on FQ immediately Agree

  (30)   *Current stage of the derivation*

  $[_{vP}$ einem Professor$_2$ $[_{v'}$ FQ $[_{v'}$ ... t$_2$ ...]]]$

- when subject is merged, its $[u\text{WH}:+]$ doesn't match $[\text{WH}:-] \Rightarrow$ no Agree wrt $[u\text{WH-IND}]$

  (31)   *Current stage of the derivation*

  $[_{vP}$ wer$_1$ einem Professor$_2$ $[_{v'}$ FQ$_2$ $[_{v'}$ … t$_2$ …]]]$

- the valued probe is deleted at the interfaces, but $[\text{WH-IND}:\square]$ on FQ cannot be valued $\Rightarrow$ derivation crashes

(32)   *Wem$_1$ hat sie einen Professor   alles$_1$ vorgestellt?
       who.DAT has she a   professor.ACC all   introduced
       intended: *"Who all did she introduce to a professor?"*

derivation of (32):

- both objects scramble to the left of FQ i.e undergo order-preserving EF-movement to intermediate specifiers of v
- DO is merged first and remerged first, immediately Agrees with the FQ, valuing it as $[\text{WH}:-]$
- when IO is remerged as Spec,vP, its probe $[u\text{WH}:+]$ does not match the goal $[\text{WH}:-]$, preventing $[u\text{WH-IND}:i]$ from valuing $[\text{WH-IND}:\square]$
- $\Rightarrow$ crash

4.1.2 Counterbleeding case

(33) Wen$_1$ hat ein Professor   alles$_1$ beleidigt?
      who.ACC has a   professor.NOM all   insulted
      "Who all did a professor insult?"

derivation of (33):

- wh-phrase is DO, moves to intermediate Spec,vP first, Agrees with and values FQ

  (34)   [$_{vP}$ wen$_1$ [$_{v'}$ FQ [$_{v'}$ ... t$_1$ ...]]

- subject *ein Professor* is merged **after** that: when wh-phrase moves to CP it gives the impression that subject intervenes, when in reality, it came too late to bleed ⇒ counterbleeding
- Note that the wh-object can't move in one fell swoop because of the PIC. Thus, opacity effects can be a novel argument for the idea of Spec,vP as an intermediate landing site in successive-cyclic movement.

4.2 Parasitic gaps and opacity

- nonovert operator moves from PG to edge of adjunct clause
- Agree between the associate and Op in Spec,CP transfers an index marking from probe to goal
- relevant features:

(35)   Operator   (36)   Every DP argument
        [IND : □]   [uIND : i]
        [OP : +] (triggers movement)

- once Op has been valued with an index, it cannot Agree with anything that bears a different index
- an antecedent does not have to Agree with anything, its valued probe feature can be deleted

4.2.1 Bleeding

Scrambled DO intervenes in binding IO – PG

(37)   *wenn jemand der Anette$_2$ das Buch   [anstatt PG$_2$ zu helfen] wegnimmt
        if   someone the Anette.DAT the book.ACC instead   to help   away.take
        intended: *"if someone takes the book from Anette instead of helping her"*

- adjunct clause in innermost Spec,vP
- DO and IO must scramble to outer specifiers of v in order to precede it
- scrambling triggered by EF on v which attracts both objects in an order-preserving way
- DO is re-merged first ⇒ immediately Agrees with Op and values the goal
- IO comes too late to value the Op
- but: PG is not bound by DO 'book' either

  - this is ruled out on independent grounds (case on DO doesn't match case on PG, DO is inanimate)

→ derivation crashes

4.2.2 Counterfeeding

- in (38) IO is unable to bind PG even though nothing intervenes on the surface

  (38)   *wenn jemand   das Buch   der Anette$_2$ [ohne   PG$_2$ zu vertrauen] ausleiht
         if   someone the book.ACC the Anette.DAT without   to trust   lends
         intended: *"if someone lends the book to Anette without trusting her"*

- EF on v attracts both objects to intermediate specifiers of v
- just as above, the DO is remerged first, agrees with the goal and values it. IO comes too late. DO can't be interpreted as binder of PG because of independent reasons (case, animacy).
- in a subsequent step, DO and subject are scrambled to T (triggered possibly by [SCR])
- ⇒ even though on the surface, the conditions for the IO binding the PG are met, derivationally, the DO reaches the binding position first ⇒ counterfeeding
- Note that this binding relation is enforced by PIC and assumptions about EFs.
- Note as well that a DO can in principle always bind the PG, even when IO/ subject intervenes, as in (39).

  (39)   dass Hans   das Buch$_2$ der Maria   [ohne   PG$_2$ durchzulesen]
         that Hans.NOM the Maria.DAT the book.ACC without   through.to.read
         zurückgibt
         back.give
         "that Hans gives Maria back the book without reading it through"

5   Scrambling as a Transformation

- opacity effects pose a problem for base-generation approaches to scrambling
- consider again cases of bleeding like (40):

  (40)   a.   *Wem$_2$ hat sie einen Professor   alles$_2$ vorgestellt?
              who.DAT has she a   professor.ACC all   introduced
              intended: "Who all did she introduce a professor to?"
         b.   Wem$_2$ hat sie alles$_2$ einen Professor   vorgestellt?
              who.DAT has she all   a   professor.ACC introduced
              "Who all did she introduce a professor to?"

- in a base-generation approach, the indefinite is merged to the left of FQ and the wh-phrase left of the indefinite

- ▶ *First Hypothesis*: An indefinite base-generated between a wh-phrase and a FQ disrupts the association between the two.
- in (40b), the wh-phrase and FQ must have been base generated adjacent to each other before wh-movement applies, see (41)

  (41) ... wh-DO FQ ... indefinite IO...

- since DO and IO can appear in either order, a base-generation like (42) should also be possible
- if wh-movement applies here, the result is again (40a)

  (42) wh-DO ... indefinite IO ... *<wh-DO>* FQ ...

- ▶ *Second Hypothesis*: The movement path of a wh-phrase associated with an FQ must not cross an indefinite.
- Now consider a case of counterbleeding like (43).

  (43) Wen$_2$ hat ein Professor   alles beleidigt?
        who.acc has a   professor.nom all   insulted
        "Who all did a professor insult?"

1. The wh-phrase was generated adjacent to FQ and then moved across indefinite (violating Second Hypothesis).
2. The wh-phrase was base generated in the surface position and associates with FQ across an indefinite (violating First Hypothesis).
⇒ There is no way for a base generation approach to account for (40) and (43) at the same time.

6 Conclusion

- Syntactic relations between an antecedent and an associate can be opaque.
- The properties of opaque intervention can be analysed in a derivational probe-goal framework if
  - (a) vP is a phase,
  - (b) both the associate and potential antecedents are merged in fixed positions,
  - (c) multiple attraction of the potential antecedents preserves their relative order,
  - (d) Agree relations are established as early as possible.

- Order preservation is the result of collecting multiply attracted elements in a buffer.
- Opaque relations are an argument for a movement theory of scrambling.