On disjoint reference effects in short passives

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1. Introduction[1]

Q: How is the **Implicit External Argument** (*IEA*) of short passives represented?

   i)   **In the syntax**, as a covert pronominal element.[2]
   ii) **Only in the semantics**, as an existentially bound variable in argument structure.[3]

    ▪ We critically review an argument in favor of i) and develop it into an argument for ii).

- **Binding Theoretic Phenomena** have been argued to be decisive: If Binding Theory applies in syntax (cf. Chomsky 1981), and if the IEA is visible for Binding Theory, then the IEA is syntactically represented.

   We discuss **Disjoint Reference Effects (*DREs*) in short passives** and argue that they **should not be derived from Binding Principle B/C**.

   In an experiment, we compare IEAs with Impersonal Pronouns (*IMPs*) as both sometimes allow the DREs to be overcome: In sentential complementation structures, **IMPs and IEAs in the subject positions of matrix and embedded clause do not have to be disjoint from each other.**

   Despite these and many further **parallels between IEAs and IMPs**, we point out some **areas where IEAs and IMPs clearly differ: Only IMPs can bind and can be bound.**

   This suggests that **IEAs cannot be characterized as covert versions of IMPs** (pro_IMP) (cf. Legate et al. 2020; pace e.g. Borer 1998, 2013, 2020; Collins 2018; Roberts 2019).

   Different from (overt or covert) IMPs, IEAs are not syntactically represented (cf. Legate et al. 2020). **Co-valuation of an IEA with other instances of an IEA or with an IMP results from processes of pragmatic accommodation** (cf. Chierchia 1995, Koenig & Mauner 2000).

2. Two Disjoint Reference Effects (DREs) in short passives

- Short passives feature two disjoint reference effects (cf. Bhatt & Pancheva 2006, 2017).

DRE-1:   The IEA of passives cannot be bound from a matrix clause.
              (1a) cannot express what (1b) with co-indexed by-phrase means.

(1) a.   Every journalist$_1$/John$_1$ wants Kylie to be IEA$_{*1/2}$ interviewed.
     b.   Every journalist$_1$/John$_1$ wants Kylie to be interviewed by him$_1$.

DRE-1 is usually derived from the assumption that the IEA is existentially quantified over and, thus, subject to **Principle C** of Binding Theory (e.g. Williams 1987).

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[2] e.g. Baker et al. 1989, Borer 1998, 2003, 2013, Collins 2005, 2018, Landau 2010, Roberts 2019.
[3] e.g. Bruening 2013, Legate 2014, Alexiadou et al. 2015, Spathas et al. 2015, Schäfer 2017, Legate et al. 2020.

DRE-2:   The IEA cannot be co-indexed with an internal argument of the passivized verb: (2a) cannot have the reflexive interpretation of (2b).

(2) a.   The boy$_{*1/2}$ was being IEA$_1$ washed.
    b.   The boy$_1$ washed himself$_1$.
    c.   [$_{TP}$ ... was being [$_{vP}$ **IEA$_1$** [$_{VP}$ washed the **boy**$_{*1/2}$]]]

DRE-2 is also often subsumed under **Principle C** along the lines of (2c) (e.g. Landau 2010, Bruening 2013:fn. 8, Müller 2016, or some technical variant thereof, cf. Baker et al. 1989).

- While Bruening represents the IEA only semantically in v/Voice, Landau takes **disjointness as in (2a) as evidence for a syntactic representation of the IEA**; a covert pronoun in Spec,v/Voice locally c-commands the base position of the internal argument 'the boy'.

  " *... for Condition C, the offending relations are clearly not lexical, as they span indefinitely many argument structure domains. A nonsyntactic entity ... could not participate in such relations.*" (Landau 2010:377).[4]

3.   DRE-2 is not a canonical Principle B/C effect (locality and c-command)

- If a reflexive reading of (2a) (= 3a) is filtered out as a **Principle C** violation, then the absence of a reflexive reading in (3b) should be analyzed as a corresponding **Principle B** violation.

(3) a.   The boy$_{*1/2}$ was being IEA$_1$ washed.
    b.   He$_{*1/2}$ was being IEA$_1$ washed.

- This, in turn, predicts that the IEA can be coindexed with a pronoun in a complement clause. This is not correct:

(4) a.   He$_1$ decided that he$_{1/2}$ can do whatever he wants.
    b.   It was **IEA$_1$** decided that **he**$_{*1/2}$/**she**$_{*1/2}$/**I**$_{*1/2}$/**you**$_{*1/2}$/**they**$_{*1/2}$ can do whatever X wants.

- Impersonal passives of the type in (4b) are restricted in English but they are fully productive in German and other languages with genuine impersonal passives (Pitteroff & Schäfer 2019). For this reason, **we turn to German:**

(5)   Der Junge$_{*1/2}$/Er$_{*1/2}$ wurde IEA$_1$ gewaschen.
    'The boy/he was being washed.'

(6)   Es wurde IEA$_1$ behauptet [dass er$_{*1/2}$/sie$_{*1/2}$/du$_{*1/2}$/ich$_{*1/2}$ das Problem lösen wird/wirst/…]
    it was   claimed   that he / she / you/ I   the problem solve will$_{3P}$/will$_{2P}$…
    'It was claimed that he/she/you/I will solve the problem.'

- Further, an explanation via Principle B/C wrongly predicts coreference to be possible if the IEA does not c-command the R-expression or the pronoun:

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[4] This is a specific variant of a more general concern: "*We find the existence of elements that are syntactically active but not syntactically projected conceptually problematic*" (Bhatt & Pancheva 2006:581).

(7) [Dass dies IEA$_1$ behauptet worden war] hat Maria$_{*1/2}$ /ihm$_{*1/2}$ /dir$_{*1/2}$ /mir$_{*1/2}$ geschadet.
  that this   claimed been   was has Mary / him / you / me   harmed
  'That this had been claimed harmed Mary/him/you/me.'

=> **DRE-2 is not a canonical Binding-Theory effect.**
=> The IEA of passives does not behave like a (definite or indefinite) NP or a definite pronoun
  in that the **IEA cannot bind or co-refer with a definite pronoun or a full NP.**

3.1 Some similarities between IEAs and Impersonal Pronouns (IMPs)

Our observations reflect, sentence-internally, what has been observed before for cross-sentential anaphora (e.g. Grinder 1971 for English, Koenig 1999 for French, Zifonun 2000, Zobel 2017 for German):

- **The IEA cannot be taken up by an NP or a definite pronoun in a second clause**.

(8)   Der Präsident wurde IEA$_1$ ermordet.   #Der Mann$_{*1/2}$/#Er$_{*1/2}$ kam aus Franken.
   the president was   murdered   the man / he   came from Franconia
   'The president was murdered.   The man/He came from Franconia.'

- Thereby, the **IEA behaves exactly like impersonal pronouns (IMP) like German 'man', 'French 'on' or Italian 'si'** (e.g. Chierchia 1995, Koenig 1999, Zifonun 2000, Zobel 2017):

(9)   Man$_1$ hat den Präsidenten ermordet.   #Der Mann$_{*1/2}$/#Er$_{*1/2}$ kam aus Franken.
   IMP has the president   murdered   the man / he   came from Franconia
   'The president was murdered.   The man/He came from Franconia.'

- However, **the IEA can be taken up by an IMP in the following clause** (Koenig & Mauner 2000 for French and English (see the translation), Zobel 2017 for German).[5]

(10)   Der Rebellenpriester wurde **IEA$_1$** tagelang gefoltert.
    the rebel.priest   was   for.days tortured
    Man$_1$ wollte, dass er preisgibt, wo   sich   die Aufständischen verstecken.
    IMP wanted that he reveals   where REFL the insurgents   hide.out
    'The rebel priest **IEA$_1$** was tortured for days. **They$_1$** wanted him to reveal where the insurgents were hiding out.'

- Crucially, **this also seems to work sentence-internally**. **IEAs can <u>optionally</u> be taken up by an IMP in the complement clause (11a).**
- Under that co-indexation, (11a) basically conveys the same meaning as (11b), where the IEA controls the PRO subject of the infinitival complement.[6]

(11) a. Es wurde **IEA$_1$** behauptet [dass **man$_{1/2}$** den Prinzen ermordet habe].
     it was   claimed   that IMP   the prince murdered have.$_{CONJ}$
   b. Es wurde **IEA$_1$** behauptet [**PRO$_{1/*2}$** den Prinzen ermordet zu haben].
     it was   claimed   PRO   the prince murdered to have.$_{INF}$
     'It was claimed that X murdered the prince.'

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[5] This works in both directions: IMP can take up IEA and the other way around (Zobel 2017; pace Malamud 2013).
[6] That IEAs can obligatorily control has been taken as a strong argument for their syntactic projection (though semantic mechanisms of control are, in principle, conceivable and have been proposed). See van Urk 2013, Landau 2015, Pitteroff & Schäfer 2019 for empirical data suggesting that this is indeed obligatory control. See Reed 2020 for empirical data pointing to non-obligatory control.

=> **IEAs behave very similarly to IMPs. Both must be disjoint from definite NPs and definite pronouns within as well as across sentences.**
=> **DRE-2 is not correctly characterized by syntactic Principle B/C.**
=> Instead, **co-valuation between the IEA and a definite NP or a definite pronoun cannot be established to start with**.

- This raises two points:
  a) How do we analyze co-indexation in (11a)?
     Is this binding? Or is there an alternative option ?   (-> section 5)
  b) We should re-visit DRE-1.   (-> section 4)

4. DRE-1 is not a canonical Principle C effect

<- DRE-2 is not a genuine Principle C effect and IEAs can be taken up by IMPs.
-> We thus have to reconsider DRE-1 repeated with German examples in (12):

(12) a. Jeder Journalist$_1$ will, dass die Präsidentin   IEA$_{*1/2}$ interview   wird.
        every journalist wants that the president.fem   interviewed becomes
        'Every journalist wants the president to be interviewed.' (cannot mean „by him")
     b. Hans$_1$ will,   dass Maria IEA$_{*1/2}$ gesehen wird.
        Hans wants that Mary   seen   becomes
        'John wants Mary to be seen.' (cannot mean "John wants to see Mary.")

- If DRE-1 in (12) was a Principle C effect due to existential quantification over the IEA, **IMP should not be able to antecede the IEA in (13a).**
- But if DRE-1 in (12) is a version of DRE-2 (co-valuation cannot be established, to start with), then **IMP is predicted be able to antecede the IEA in (13a).**
- **The same is expected to hold for an IEA as the potential antecedent of an IEA in (13b).**

(13) a. **Man$_1$** behauptete   [dass der Prinz **IEA?** ermordet worden sei].
        IMP   claimed   that the prince   murdered been   is.$_{CONJ}$
     b. Es wurde **IEA$_1$** behauptet [dass der Prinz **IEA?** ermordet worden sei].
        it was   claimed   that the prince   murdered been   is.$_{CONJ}$
        'X$_1$ claimed that the prince was IEA$_?$ murdered'

Unlike (12a, b), **(13a, b) indeed do not seem to necessarily enforce disjoint reference**.

However, **this could be an illusion**:
It could be that **co-indexation cannot formally be established** (due to Principle C),
but that **the sets respectively picked up by IEA and IMP are so vaguely characterized** that **an overlap relation can be established via pragmatic reasoning**.

To show that the possibility to have co-valuation in (13a, b) is NOT illusory, we ran an experiment that uses a specific verb class that lexically determines that the agent of the two clauses MUST be identical.

4.1 Experiment
4.1.1 Materials

Stiebels (2010) discusses so-called ***inherent subject control verbs*** (iCs). In contrast to ordinary subject control verbs, **iCs enforce co-indexation of their external argument even with the subject of a finite complement clause**, i.e. they trigger "control" even into finite complements.

(14) **Ordinary control verbs:**
    a. John$_1$ decided [PRO$_{1/*2}$ to participate in the race].
    b. **John$_1$** decided [that **he$_{1/2}$/Mary** will participate in the race]

(15) **Inherent Control Verbs (iCs):**
    a. Marie$_1$ erklärte sich dazu bereit [PRO$_{1/*2}$ am Rennen teilzunehmen].
       Mary declared REFL there.to ready   at.the race participates
       lit: 'Mary declared herself ready to participate in the race.'
    b. **Marie$_1$** erklärte sich dazu bereit [dass **sie$_{1/*2}$** /***Peter** am Rennen teilnimmt].
       Mary declared REFL there.to ready that she / Peter at.the race participates
       lit: 'Mary declared herself ready that she/Peter will participate in the race.'

Some inherent control verbs allow for partial control (16a), others do not (16b):

(16) a. Ich erklärte mich dazu bereit [dass ich/wir am Rennen teilnehme/n].
     I declared me there.to ready that I we at.the race participate.$_{1SG/PL}$
     lit: 'I came forward that I/we would participate in the race.'
  b. Ich fing wieder damit an, [dass ich/*wir die Tickets im Internet verkaufte/n].
     I began again there.with PCL that I / we the tickets in.the internet sold.$_{1SG/PL}$
     lit.: 'I started again that I/we sold the tickets in the Internet'.

Based on four speakers' judgments, we identified

(17) **8 Inherent Control Verbs that enforce '<u>exhaustive</u> finite control'**[7/8]
    a. '... damit anfangen dass ...',   (start that)
    b. '... damit aufhören dass ...',   (stop that)
    c. '... es versäumen dass ...',   (miss that)
    d. '... sich dazu bereit erklären, dass ...',   (agree that)
    e. ' ... es sich angewöhnen dass ...',   (accustom oneself to that)
    f. '... sich vornehmen dass ...',   (undertake that)
    g. '... versuchen, dass ...',   (try that)
    h. '... es unterlassen, dass ...'   (refrain from that)

- These verbs select for a propositional complement (finite CP or non-finite CP).
- By their conceptual meaning, **these verbs enforce that their external argument is coindexed with the external argument of the complement clause**. In this sense, they are similar to 'inherently reflexive verbs' which enforce, by their conceptual meaning, that two of their argument positions are co-indexed (cf. Schäfer 2012).

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[7] 'damit' (there.with) and 'es' (it) are so-called 'propositional proforms' that relate the matrix-verb's internal argument position with the extraposed finite or non-finite complement clause (see the contributions in Schwabe et al. 2016). They are selected in a verb-specific, seemingly idiosyncratic fashion. Some verbs take these proforms optionally. The examples in (17) show the versions used in the experiment.

[8] (17d,e,f) are inherently reflexive in that they select for an accusative or dative reflexive pronoun 'sich'. Inherently reflexive as well as naturally reflexive predicates undergo passivization in German without problem (Schäfer 2012). If a predicate is not inherently or naturally reflexive, however, reflexivization involving the external argument and a reflexive pronoun in a second argument position is seriously degraded under passivization (ibid.).

=> **With these verbs we enforce strict identity of the external arguments of the matrix and the embedded clause**.

To test to what extent IEAs and IMPs can reciprocally be taken up by each other, each of the eight verbs was put into the following four conditions (see 19 for an example set):

(18) a. [IMP$_1$ verb-iC.ACTIVE [that IMP$_1$ verb.ACTIVE]]
    b. [IEA$_1$ verb-iC.PASSIVE [that IMP$_1$ verb.ACTIVE]]
    c. [IMP$_1$ verb-iC.ACTIVE [that IEA$_1$ verb.PASSIVE]]
    d. [IEA$_1$ verb-iC.PASSIVE [that IEA$_1$ verb.PASSIVE]]

(19) a. Damals gewöhnte **man** es sich an, dass **man** abends alle Fenster fest verschloss.
    b. Damals **wurde** es sich angewöhnt, dass **man** abends alle Fenster fest verschloss.
    c. Damals gewöhnte **man** es sich an, dass abends alle Fenster fest verschlossen **wurden**.
    d. Damals **wurde** es sich angewöhnt, dass abends alle Fenster fest verschlossen **wurden**
    lit:' Back then X accustomed Xself to it that X locked all windows tightly in the evening.'

In order to tease apart problems in establishing co-indexation from problems arising from combining passive and impersonal syntax, ICs were compared to the same paradigm involving so-called **Anti-Control Verbs (aCs)** (Brandt et al. 2016, Brandt & Bildhauer 2019).

Anti-Control Verbs disallow co-indexation of the two external arguments (with finite as well as with non-finite complements):

(20)   Ich begrüßte es ausdrücklich [dass *ich/*wir/ er die Gehwege täglich kehr(e/en/t)].
    I welcomed it explicitly that I / we / he the sidewalks daily sweep(s)
   'I explicitly appreciated it that I/we/he was sweeping the sidewalks every day.'

(21)   **8 Anti-Control Verbs (aCs)**
    a. '... es akzeptieren, dass ...' (accept that)
    b. '... anordnen, dass ...' (order that)
    c. '... beantragen, dass ...' (request that)
    d. '... es begrüßen, dass ...' (welcome that)
    e. '... es billigen, dass ...' (approve that)
    f. '... es kritisieren, dass ...' (critisize that)
    g. '... veranlassen, dass ...' (induce that)
    h. '... es würdigen, dass ...' (appreciate that)

4.1.2 Experimental design

- The **64 experimental test sentences** (8 iCs * 4) + (8 aCs * 4) were equally distributed in four groups (between-subjects design) and presented online, randomized with **48 fillers**.

- The 112 sentences were presented online (using PCIbex (Zehr & Schwarz 2018)).

- Participants rated the sentence **acceptability on a Likert scale** from 1 (unacceptable) to 7 (acceptable).

- There was no time restriction. Participants who made more than two clear mistakes in their acceptability judgments of the filler sentences were not considered for evaluation.

- We received complete data sets from **48 participants** (first semester undergraduate students of HU-Berlin).

4.1.3 Results
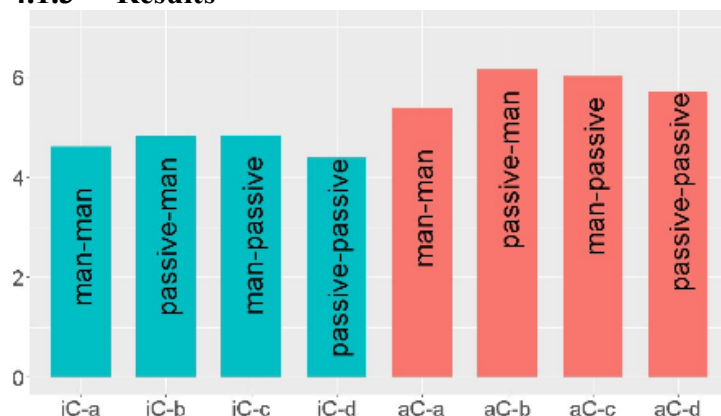
- The table show that **iCs are equally acceptable in all four conditions** (18a-d).
  A one-way ANOVA results in no statistically significant difference between conditions for the iCs ($F(3,380) = 1.13$, $p = 0.3$).

- This shows that **DRE-1 disappears if the IEA is anteceded by IMP or IEA**, which in turn suggests that the **DRE-1 in (12a, b) is not due to Principle C, but due to a failure to build up co-indexation**.

- There is a significant difference between all iCs and all aCs ($F(1,766) = 83.45$, $p < 0.001$), which is easy to account for: as Brandt et al. (2016, 2019) explicitly show, aCs preferably (and more frequently) construe with finite complements and iCs preferably construe with non-finite complements. Since our experiment always used finite complements, aCs are expected to be more acceptable than iCs in general.

- An analysis of variance (ANOVA) between all aC conditions yielded significant variation, ($F(3, 380) = 4.776$, $p < 0.01$). A post hoc Tukey test showed that the aC-a (IMP-IMP) condition differed significantly from aC-b (IEA-IMP) at $p < 0.01$ and the aC-c (IMP-IEA) at $p < 0.05$. Other pairs of conditions did not differ significantly.

→ **DRE-1 disappears if the IEA is anteceded by IMP or IEA**,
→ There is a slight effect of *IMP-IMP* enforcing co-indexation with *Anti-Control Verbs*. Anticipating our discussion in section 5, this could be taken as evidence that IMP prefers a to bind/be bound if formally possible.

5. On the representation of IMP and IEA

Q: How do we analyze well-formed co-indexation between IMPs and IEAs? Is this binding or is there an alternative option?

(22)a Es wurde **IEA$_1$** behauptet [dass **man$_{1/2}$** den Prinzen ermordet habe].
      it was   claimed   that IMP   the prince murdered have.$_{CONJ}$
   b. **Man$_1$** behauptete   [dass der Prinz **IEA$_{1/2}$** ermordet worden sei].
      IMP   claimed   that the prince   murdered been   is.$_{CONJ}$
   c. Es wurde **IEA$_1$** behauptet [dass der Prinz **IEA$_{1/2}$** ermordet worden sei].
      it was   claimed   that the prince   murdered been   is.$_{CONJ}$
   d. **Man$_1$** behauptete   [dass **man$_{1/2}$** den Prinzen ermordet habe].
      IMP   claimed   that IMP   the prince murdered have.$_{CONJ}$
      'X claimed that X killed the prince.'

Answer 1 – Co-indexation via Binding: Assume that IMP and IEA are both syntactically projected with a rather similar set of features which characterize their 'indefiniteness' (cf. e.g. Borer 1998, 2020, Collins 2018, Roberts 2019). They can bind each other. **The DREs between IEA and definite expressions could follow from a feature mismatch**.
(*We provide arguments against this view below*.)

Answer 2 – Co-indexation via pragmatic accommodation: While IMPs are syntactically projected, **IEAs are not projected**. Co-valuation of an IMP with an IEA (or of two IEAs) is not driven by syntactic means/binding.

Cross-sentential anaphora:
Chierchia (1995) as well as Koenig (1999), Koenig & Mauner (2000) propose **that instances of cross-sentential anaphora taking up IMP or IEA** are not instancing coreferences but **result from pragmatic inferences driving accommodation:**

> **Accommodation via "Bridging Definites":**
> (23)a. **Man₁** hat den Präsidenten ermordet. **Die Terroristen₁/#Die Männer*₁** waren gnadenlos.
>   IMP   has the president   killed   the terrorists / the men   were merciless
> b. Der Präsident **IEA₁** wurde ermordet. **Die Terroristen₁/#Die Männer*₁** waren gnadenlos.
>   the president   was   killed   the terrorists / the men   were merciless

> **Accommodation via "Factoring"/discourse coherence:**
> (24)   Der Rebellenpriester wurde **IEA₁** tagelang gefoltert.
>   the rebel.priest   was   for.days   tortured
>   **Man₁** wollte, dass er sagt, wo   sich   die Aufständischen versteckten.
>   IMP   wanted that he says where REFL the insurgents   hide.out
>   'The rebel priest **was tortured** for days.
>   **They** wanted him to reveal where the insurgents were hiding out.'

"*... the inference results from a hearer's drive to make the speaker's discourse coherent. ... satisfying this maxim of interpretation requires (at least) establishing coherence or rhetorical relations between the eventualities described by discourse segments and reducing the number of entities involved in the model for a stretch of discourse, what Hobbs et al. (1993) call 'factoring'*." (Koenig & Mauner 2000: 228f.)

Accomodation via 'Factoring' is not the same as co-reference!

Q: Is "accommodation via Factoring" possible sentence internally?

- If yes, the results of our experiment can be understood even if IEAs are not syntactically represented and, consequently, cannot bind.

Proposal: **The lexical conceptual meaning of the inherent control verbs** used in our experiment **is a perfect driving force pushing the interpreter to accommodate the inference that the two subjects are co-indexed**.

→ All four conditions involving iCs equally allow co-indexation (cf. section 4).

Evidence that factoring can apply sentence internally:

Empirical Snapshot 1:
(25)a. Es wurde **IEA₁** behauptet, dass **man₁/₂** alles richig   gemacht hat.
       It   was   claimed   that IMP   all   correctly done   has
   b. Es wurde **IEA₁** behauptet, dass alles richtig   **IEA₁/₂** gemacht wurde.
       It   was   claimed   that all   correctly   done   was
   c. Es wurde **IEA₁** behauptet, das **sie*₁/₂** alles richtig   gemacht haben.
       It   was   claimed   that they   all   correctly done   have
       'X claimed that Y did everything correctly.'

- At first sight, (25c) might support an analysis in terms of binding for (25a, b).
- However, additional context changes the judgment for (25c): The co-indexation in (26)[9] can hardly be analyzed as coreference or binding. It is a pragmatic inference as in (24).

Empirical Snapshot 2:
(26)   In der Regierung   wurde **IEA₁** natürlich   behauptet, dass **sie₁/₂** mal wieder
     In the government was   of.course claimed   that they once again
     alles richtig   gemacht haben.
     all   correctly made   have
     'In the government it was claimed of course that they once again did everything right.'

=> We conclude that **'factoring' can apply sentence internally**.
=> **We propose that 'factoring' is the only way how co-valuation with an IEA can be established.**

=> **IEAs cannot bind and cannot be bound**, <u>because they are not syntactically represented</u>. They are existentially bound argument-structure slots as executed for example in Bruening (2013) and Schäfer (2017) following him.
=> **IMPs can bind and can be bound**. <u>They start their life as (overt or covert) pronouns</u> (syntactic variables) that enter syntactic dependencies (e.g. Roberts 2019 and the many references to earlier work there).

5.1 To bind and to be bound: IMPs differ fundamentally from IEAs.[10]

First one further parallel: Both IMPs and IEAs have **a quasi-existential interpretation in episodic contexts** and **a quasi-universal interpretation in generic contexts** (Cinque 1988).[11]

(27)a. Gestern   hat man die Uni angezündet.   **(quasi-existential)**
      yesterday has IMP the uni set-on-fire
   b. Gestern   wurde IEA die Uni angezündet
      yesterday was   the uni   set-on-fire
      'Yesterday, someone set the university on fire.'

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[9] This context triggers the so-called 'corporate' variant of the quasi-existential reading (Creissels 2008). See Cabredo Hofherr (2003), Creissels (2008) or Sigurðsson & Egerland (2009) for further subtypes of the quasi-existential reading. Grammatically, the 'corporate' variant behaves like the vague or the specific reading of existentially interpreted IMPs, in particular with respect to binding discussed below. (26) would equally work if IEA and 'sie' (they) would be interchanged. Further, IMP can equally be made compatible with 'sie' (they).

[10] See appendix C for further differences.

[11] The two interpretations both show DRE-1 and DRE-2. Further similarities between IMPs and IEAs are listed in Appendix B.

(28)a. Man sollte   die Alten   respektieren.   (**quasi-universal**)[12]
        IMP   should the elderly respect
    b. Die Alten   sollten IEA respektiert werden.
        The elderlies should   respected   be
        'One should respect the elderly.'

- Despite such parallels (see also Appendix B), there are a number of grammatical differences (see also Appendix C), which show **that they are fundamentally different entities**:

A: Human effect
- **IMPs** are necessarily [+human]. By contrast, **IEAs** in passives can be [-human] (for more discussion, see Appendix C).

B: Local binding of possessive pronouns (see appendix C for binding of anaphors)
- **IMPs** (German *man*, French *on*) **can locally** (and only locally) **bind possessive pronouns in their quasi-universal construal** but not in their quasi-existential construal (Zifonun 2000, Creissels 2008, Cabredo Hofherr 2010).[13]
- By contrast, **IEAs cannot antecede possessive pronouns**, **whether the passivized verb is transitive (29b, 30b), unergative (31b) or unaccusative (32b).**

(29)a. Heute morgen hat   **man₁ (eine/seine*₁/₂)** Adresse für dich hinterlassen. (episodic)
        today morning has   IMP   a   his   address for you left
    b. Heute morgen wurde **IEA₁ (eine/seine*₁/₂)** Adresse für dich hinterlassen.
        today morning was   a   his   address for you left
        'This morning someone left an/his address for you.'

(30)a. In diesem Kasten kann **man₁ (eine/seine₁)** Adresse hinterlassen.   (generic)
        in this   box   can IMP   a   his   address leave

    b. In diesem Kasten kann **IEA₁   (eine/seine*₁/₂)** Adresse hinterlassen werden.
        in this   box   can   a   his   address left   become
        'In this box one can leave an/one's address.'

(31)a. An Silvester   darf **man₁** auf **seinem₁** Tisch tanzen.
        At New.Year's.Eve may IMP   at   his   table dance
    b. An Silvester   darf auf **seinem*₁/₂** Tisch **IEA₁** getanzt werden.
        At New.Year's.Eve may at   his   Table   danced be
        ' At New Year's Eve, one may dance on one's table.'

(32)a. In diesen Slapstikfilmen   fällt **man₁** dann immer in **seine₁** Mülltonne.
        in these slapstick.movies falls IMP   then always in his   trash.can
    b. In diesen Slapstickfilmen wird dann immer in **seine*₁/₂** Mülltonne **IEA₁** gefallen.
        in these slapstick.movies is   then always in his   trash.bin   fallen
        'In these slapstick movies, one always falls into one's trash can.'

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[12] We have nothing to say about how the passive can receive this interpretation. Chierchia (1995:123) suggests that the quasi-universal reading can be derived from an existentially bound agent slot in the scope of a generic operator binding the event (GN s[C(s)] [∃x verb (s, x)]).
[13] The possessive pronoun must have the features '3p., sg, masc.'; these are assumed to be default features. Note that IMP (*man*) behaves exactly as the IEA in examples like (6).

C: IMPs shows the "Lebeaux effect", IEAs do not (see Appendix A for French data)[14]

- Lebeaux (1984) shows that arbitrary PRO is subject to what became known as

(33) 'The Lebeaux effect': *Within an appropriately defined local domain, all occurrences of uncontrolled silent subject need to have a universal interpretation (=PRO-arb), and are hence identified (Lebeaux 1984).*

- This is exemplified in (34a, b) from Borer (2020). These examples were designed to *favor* a distinct construal for the silent subjects, and yet, such a distinct construal is not possible.

(34)   *(Distinct Subject construal excluded)*
   a.   [OP$_1$ [PRO$_1$ to organize the labour force] entails/is [PRO$_{1/*2}$ to fire workers]]
   b.   [OP$_1$ [PRO$_1$ to organize the labour force] entails/means [PRO$_{1/*2}$ firing workers]]

- Lebeaux proposes that the two arbitrary PROs are bound by a covert A'-operator adjoined at the top of the structure.[15] German PRO behaves the same:

(35)   **PRO$_1$** Babymilch zu kaufen bedeutet **PRO$_{1/*2}$** Babymilch zu trinken.
            baby.milk to buy   means   baby.milk to drink
         'To buy baby milk means to drink baby milk.'

-> Two instances of IMP (36a) behave like PRO in such and related contexts (Chierchia 1995 proposes that IMP can undergo existential disclosure in the scope of generic operators). **We interpret this such that IMP can be bound:**

(36)   Dass **man$_1$** Babymilch kauft, bedeutet dass **man$_{1/*2}$** Babymilch trinkt.
         that IMP baby.milk buys   means   that IMP   baby.milk drinks
         'That X buys baby milk means that Y drinks baby milk.'

-> Two instances of IEA in (37a) do NOT have to be identified (the same holds for combinations of IMP and IEA). **We interpret this such that IEA cannot be bound**:

(37)a.   Dass Babymilch **IEA$_1$** gekauft wird, bedeutet dass Babymilch **IEA$_{1/2}$** getrunken wird.
            that babymilk   bought is   means   that baby.milk   drunken   is
   b.   Dass **man$_1$** Babymilch kauft, bedeutet dass Babymilch **IEA$_{1/2}$** getrunken wird.
            that IMP baby.milk buys   means   that baby.milk   drunken   is
   c.   Dass Babymilch **IEA$_1$** gekauft wird, bedeutet dass **man$_{1/2}$** Babymilch trinkt.
            that baby.milk   bought is   means   that IMP baby-milk drinks
         'That X buys baby milk means that Y drinks baby milk.'

---

[14] We recently realized that this difference has explicitly been noticed already in Roberts 2019. Roberts assumes that the IEA is a pro$_{IMP}$ in Spec,vP which is bound by ASP and, thereby, shielded from being bound by any higher operator. Since a detailed discussion of this account is not possible here, we only mention some points that we find problematic: i) the (non-)human distinction is not implemented. ii) The proposal does not predict any differences between IMPs and IEAs with respect to binding of possessors (see above) and reflexives (see Appendix C). iii) Roberts wrongly predicts German impersonal passives and passives of unaccusatives to show the Lebeaux-effect because he analyzes them as disguised impersonals. iv) Roberts wrongly assumes that IEAs lack a speaker-inclusive reading (see Appendix C). v) It remained unclear to us why only the interpretation of IMP should vary depending on the properties of Asp while this should not be so for IEAs. vi) It is not clear how the quasi-universal reading of IMP comes about (but cf. our fn. 12).

[15] Landau (2013: 237) argues that these non-finite structures do not involve PRO at all but two open properties are equaled. This might be correct but it does not have any effect on the comparison of IMP and IEA.

- **The effect is the same with impersonal passives** (i.e. they are not 'impersonals in disguise' in German, pace Abraham & Leiss 2006); we change to conditional clauses just to illustrate a further way to apply the test; nothing hinges on this empirically):

(38)a. Wenn **man$_1$** lacht   schläft **man$_{1/*2}$**.
      when IMP laughs sleeps IMP
  b. Wenn **IEA$_1$** gelacht wird wird **IEA$_{1/2}$** geschlafen.
      when   laughed is   is   slept
      'If X laughs Y sleeps.'

(39)a. Wenn **man$_1$** tanzt   lacht   **man$_{1/*2}$**.
      when IMP dances sleeps IMP
  b. Wenn **IEA$_1$** getanzt wird wird **IEA$_{1/2}$** gelacht.
      when   danced is   is   laughed
      'If X dances Y laughs'

- **The effect is the same with passives of unaccusatives** (i.e. these are not 'impersonals in disguise' in German, pace Blevins 2002; Roberts 2019).

(40)a. Wenn **man$_1$** schießt stirbt **man$_{1/*2}$**.
      when IMP shoots dies IMP   also
  b. Wenn **IEA$_1$** geschossen wird wird **IEA$_{1/2}$** gestorben.
      when   shooted is   is   died
  c. Wenn von **einem$_1$** geschossen wird wird von **einem$_{1/*2}$** gestorben.[16]
      when by IMP shooted   is   is   by IMP   died
      'If X shoots Y dies.'

(41)a. Wenn **man$_1$** fällt stirbt **man$_{1/*2}$** auch.
      when IMP falls dies IMP   also
  b. Wenn **IEA$_1$** gefallen wird wird auch **IEA$_{1/2}$** gestorben.
      when   fallen is   is   also   died
  c. Wenn von **einem$_1$** gefallen wird wird von **einem$_{1/*2}$** auch gestorben.
      when by IMP   fallen is   is   by IMP   also died
      'If X falls Y dies.'

6. A remaining question

- We proposed that IMP and IEA cannot enter into a binding relation, but they can be co-valued via pragmatic accommodation.
- Why then is there no reflexive reading available in (42)? Since accommodation should, in principle, be available here, does this show that IEA is subject to Principle B, nevertheless?

(42)   Abends   wurde man$_{*1/2}$ IEA$_1$ gewaschen.
      in.the.evening was   IMP   washed

- The question goes actually beyond cases of potential accommodation. (43a, b) (from Williams 2015:283:fn. 7) are clearly not synonymous, but there are situations that verify

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[16] 'einem' is the dative version of 'man'. It only has the quasi-universal use.

both (i.e. existential binding of the IEA alone cannot formally prohibit a reflexive interpretation; see Spathas et al. 2015 for discussion):

(43) a. Mo was soundly criticized.
   b. Mo was soundly criticized by herself.

- Williams (ibid.) suggests that "the antireflexive message is just a common **pragmatic enrichment, signaled by choosing not to make the stronger reflexive statement"** in (43b).

- Similarly, McIntyre (2014:28) proposes that passives such as (44a) "trigger **an implicature that this *someone* is not *John*, since nothing fulfills the need of natural languages to signal the reflexive interpretation**". He goes on to observe that "Like other implicatures, disjoint reference implicatures can be cancelled, for instance by adding *namely himself* after *someone* [in (44b)] or by the explicitly reflexive by-phrase [in (44c)].

(44) a. John was being dressed up.
   b. John was dressing up someone. / Someone was dressing up John.
   c. Marmaduke was admired by every stamp club member, including himself.

- Similarly, Bruening (2014) points out that some verbal passive sentences allow continuations that disambiguate a reflexive construal.

(45) a. The children are being sorted. They're doing it themselves.
   b. The children are being divided into groups. They're doing it themselves.
   c. The children are being exposed to the disease. They're doing it themselves.

- We observe that this works much more naturally with IEAs than with IMPs.

(46) a. Natürlich wurde Peter gewaschen.   Er hat es selbst gemacht.
      of.course was   Peter washed   he has it self   done
   b. Natürlich hat   man Peter gewaschen.   #Er hat es selbst gemacht.
      of.course has   IMP Peter washed   he has it self   done

7. Conclusions

The two well-known **Disjoint Reference Effects** between the implicit external argument (IEA) of passives and NPs or definite pronouns **cannot be derived via Binding Principle B/C**. Consequently, **these effects do not show that IEAs are syntactically projected**.

Both **DREs disappear if the IEA is co-valued with an impersonal pronoun (IMP) or a second instance of an IEA**.

An **IEA can be co-valued with an IMP or a further IEA only due to pragmatic inferences/ accommodation**. Such processes are available not only **across independent sentences but also within complex clauses**.

A comparison of the Binding Behavior of IMPs and IEAs supported this claim: **While IMPs can act as binders and bindees, IEAs cannot. This follows within theories that assume that IMPs are syntactically active/projected, while IEAs are not**.

Appendix A: Lebeaux-effect in French[17]

Here we signal enforced co-indexation with the #-sign. The co-indexation enforced by the grammar makes the examples deviant because they conflict with our world knowledge.

(1) a. #Quand **on**   achète du lait en poudre, on   boit ce   lait en poudre.
        when IMP buy   powdered milk   IMP drink this powdered milk
   b. Quand du lait en poudre est acheté, ce lait en poudre   est bu.
        when powdered milk   is bought this powdered milk is   drunk
   c. Quand du lait en poudre s'achète,   ce lait en poudre se   boit.
        when   powdered milk   REFL'buys this powdered milk REFL drinks

(2) a. #Quand on   achète des langes, après on   porte ces   langes.
        when IMP buy   diapers   after IMP wear these diapers
   b. Quand des langes sont achetés,   après ces   langes sont portés.
        when diapers   are purchased after these diapers are   worn
   c. Quand des langes s'achètent,   après ces   langes se   portent.
        when diapers   REFL bought after these diapers REFL wear

=> French se-passives behave here like passives, despite the fact that they do not license by-phrases (e.g. Schäfer 2017).

Appendix B: Further similarities between IMP and IEAs.

Both necessarily take low scope:
(1) a. Man hat jedes Stück aufgegessen   (not ambiguous)
        IMP has every piece up-eaten
   b. Jedes Stück wurde IEA gegessen.   (not ambiguous)
        Every piece was   up-eaten
   c. Jedes Stück wurde von jemandem gegessen. (ambiguous)
        Every piece was   by someone   eaten

Both can, in principle, show the quantificational variability effects (QVE):
IMPs of the 'on'/'man' type (but not of the 3pl.-type) show the QVE in (2a) (Malamud 2012a, b). IEAs show the QVE in German passives (2b) but not in Greek medio-passives (Alexiadou & Müller 2018) and not in Russian *sja*-passives (Malamud 2013). Zobel (to appear) argues that the QVE in short passives can be captured compositionally without assuming that implicit agents are syntactically represented.

(2) a. Auf der Party   hat man größtenteils   getanzt.
        at   the party   has IMP for.the.most.part danced
   b. Auf der Party   wurde größtenteils   IEA getanzt.
        at   the party   was for.the.most.part   danced
        'The majority of X danced at the party.'

Both license control into complement clauses (cf. fn. 6.).

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[17] Many thanks to Fabienne Martin for her judgments and for her help in setting up these and related test sentences which avoid that co-indexation is pragmatically driven even if not grammatically enforced.

Both license, in principle, secondary depictive modification:
IMPs generally license depictives (as far as we know). Pitteroff & Schäfer 2019 show that IEAs license them, too, as long as pragmatic restrictions and language-particular morpho-syntactic restrictions do not intervene. Legate et al. (2020) report that depictives in Turkish passives are out even though no morpho-syntactic restrictions can be identified there.

Both lack a strictly quasi-existential reading if they express internal arguments/theta-roles (cf. Cinque 1988, Koenig 1999, Primus 2010, Roberts 2019).

Appendix C: Further differences between IMP and IEAs

Human effect:
IMPs are necessarily [+human]. By contrast, IEAs in personal passives can be [-human]. Their interpretation is only restricted by the thematic/conceptual meaning of the vP.
It is often claimed that the IEA in impersonal passives must be [+human]. This has been taken as evidence that impersonal passives are actually impersonal structures in disguise (e.g. Abraham & Leiss 2006, Blevins 2002, Roberts 2019). However, while there are clear restrictions on the IEA of impersonal passives, they neither have to be [+human] not do they have to be [+animate] (Primus 2010). Instead, Primus suggests a kind of 'control over the event' restriction.

Speaker-inclusive readings:
Passives allow a speaker-inclusive reading in their episodic use (e.g. Bianchi 2015, Collins 2018; pace Roberts 2019). IMPs of the 'man'-type can also show such uses (Malamud 2012) but they are harder to evoke if IMP is an external argument. In the following example adapted from Bianchi 2015, only IEA is acceptable as it allows an inclusive use.

(1)   [Introduction to a volume:]
  a. #Dieses Buch hat man geschrieben, um   den Leser zu überzeugen …
        this   book has IMP written   in.order.to the reader to convince
  b. Dieses Buch wurde IEA geschrieben, um   den Leser zu überzeugen …
        this   book was   written   in.order.to the reader to convince
        'This book was written, in order to convince the reader ….'

ACC-Case absorption:
It can be shown via depictives/case agreement structures that IEA does not carry any features related to morphological case (Fanselow 1991 for German, Jónsson 2007 for Icelandic). The fact that ACC shifts to NOM under passivization follows trivially if IEA is not syntactically projected. If IEA is a version of pro (licensed by Voice), its lack of case asks for further motivation. This relates to the fact that IMP intervenes for A-movement while IEA does not.

Binding of reflexive pronouns/anaphors:
IMPs (including phonologically zero-IMPs, Legate et al. 2020) can productively license local anaphors. It seems fair to say that the situation is far more restricted for IEAs (e.g. Schäfer 2012 on German and Icelandic, Bianchi 2015 on Italian, Legate et al. 2020 on Turkish and Lithuanian).
Given our results from section 3 (data in 4a, b) we should question that English examples as in (2) (Collins 2018) can be analysed as involving canonical local binding by an IEA in the sense of Principle A (though our results do not falsify such an analysis for similar data involving impersonal 'oneself').

(2) a. I cannot receive emails sent to **myself** from Outlook though they appear in Webmail.
  b. Some things are better kept to **yourself**.
  c. I would really appreciate it if any negative feelings you have toward teen mothers were kept to **yourselves**.
  d. In a blistering farewell e-mail sent to **himself**, Jones defended his stance against further cuts.

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