

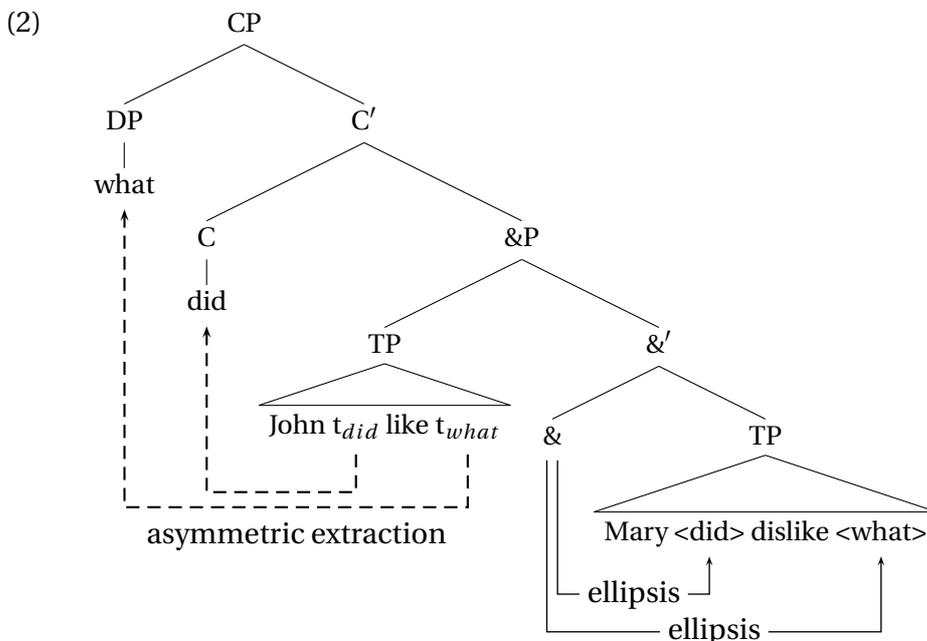
# Deriving mismatches in ATB-movement: Asymmetric extraction + ellipsis

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- how to move out of two conjuncts simultaneously and derive the single-identity reading?

(1) [Which book] did [John like \_\_\_] and [Mary dislike \_\_\_]?

- asymmetric extraction:
  - ATB-configurations that combine movement and binding:
    - i. resumption and movement in Swiss German ATB-relativization
    - ii. LF-movement in coordination
  - regular ATB-movement: only the first CJ contains a perfect copy of the extractee
- deletion under identity in regular ATB-mvt: extractee need not meet requirements of 2nd CJ:
  - non-syncretic morphological mismatches
  - reconstruction asymmetries:
    - i. CJ1: systematic reconstruction
    - ii. CJ2: no reconstruction for Principle A/C
- proposal (see Salzmann 2012*a,b*):
  - asymmetric extraction from the first conjunct + deletion in the 2nd CJ
  - CJ1: contains perfect copy → no mismatches, full reconstruction
  - CJ2: deletion of ATB-ed constituents → mismatches (vehicle change)



- LF: Asymmetrically extracted operator binds into both conjuncts → satisfies the CSC and derives the single-identity reading:

(3) [CP [Which<sub>x</sub>] [&P [TP John did [VP like [x book]]] & [TP Mary did [VP dislike [x book]]]]]?

# 1 In favor of asymmetric extraction

## 1.1 Mixed chains in ATB-contexts

- Zurich German (like other languages) is subject to the Coordinate Structure Constraint:
- Extraction from a coordination is only licit if it takes place from all conjuncts (ATB-mvt):

- (4) a. \*Wëer<sub>1</sub> hät [de Hans \_\_<sub>1</sub> gliebt] und [d Susi de Peter ghasst]?  
 Whom has the John loved and the Susi the Peter hated  
 lit.: 'Who did John love and Mary hate Peter?'  
 b. \*Wëer<sub>1</sub> hät [de Hans d Eva gliebt] und [d Susi \_\_<sub>1</sub> ghasst]?  
 Whom has the John the Eve loved and the Susi hated  
 lit.: 'Who did John love Eve and Mary hate?'  
 c. Wëer<sub>1</sub> hät [de Hans \_\_<sub>1</sub> gliebt] und [d Susi \_\_<sub>1</sub> ghasst]?  
 Who has the John loved and the Susi hated  
 'Who did John love and Susi hate?'

- in relativization, where resumption obtains in oblique positions (and islands), the CSC also holds: 1 gap/resumptive is not sufficient:

- (5) a. \*de Lehrer, wo [de Hans \_\_ verehrt] und [d Susi de Peter hasst]  
 the teacher C the John adores and the Susi the Peter hates  
 lit.: 'the teacher who John adores and Susie hates Peter'  
 b. \*de Lehrer, wo [de Hans von **em** schwärmt] und [d Susi de Peter hasst]  
 the teacher C the John of him is.excited and the Susi the Peter hates  
 lit.: 'the teacher who John is excited about and Susi hates Peter'

- "ATB-"extraction" is fine as long as both conjuncts contain either a gap or a resumptive:

- (6) a. de Lehrer, wo [de Hans \_\_ verehrt] und [d Susi \_\_ hasst]  
 the teacher C the John adores and the Susi hates  
 b. de Lehrer, wo [de Hans von **em** schwärmt] und [d Susi \_\_ hasst]  
 the teacher C the John of him is.excited and the Susi hates  
 c. de Lehrer, wo [de Hans \_\_ verehrt] und [d Susi über **en** fluecht]  
 the teacher C the John adores and the Susi about him swears  
 d. de Lehrer, wo [de Hans von **em** schwärmt] und [d Susi über **en** fluecht]  
 the teacher C the John of him is.excited and the Susi about him swears

- combination of gap/resumptive also possible if the resumptive is within an island:

- (7) de Autor, wo [de Hans \_\_ verehrt] und [d Susi <jedes Buech list won **er** schriibt>]  
 the author C the John adores and the Susi every book reads C he writes  
 lit.: 'the author that John adores and Susi reads every book that writes'

- assumption: resumption involves *base-generation*, cf. Salzmann (2009, 2013)
- Different kinds of chains are thus combined: movement- vs. binding chain
- generalization: each conjunct must contain an A'-bound variable bound by the same antecedent; the type of chain is irrelevant<sup>1</sup>

<sup>1</sup>Gaps and resumptives in ATB-contexts are also e.g. found in Swedish, cf. Zaenen et al. (1981: 681) and Palauan, cf. Georgopoulos (1991: 107ff.). However, in those languages it is not so clear whether this implies the combination of two different types of chains: For Swedish it has been argued that resumptives are the spell-out of a trace because they otherwise behave like gaps, cf. Engdahl (1985: 7,10),(1986: 122f., 125ff., 137ff.). Similarly, in Palauan, gaps and resumptives do not seem to differ in their sensitivity to locality, cf. Georgopoulos (1991: 115ff.,127ff.).

## 1.2 Asymmetric LF-movement in coordination

- Ruys (1992: 36f.) and Fox (2000: 52ff.): covert movement is subject to the CSC (no QR/LF-wh-movement out of the first conjunct):
    - (8) a. A student [likes *every professor*] and [hates the dean].  $\exists > \forall; * \forall > \exists$
    - b. \*I wonder who [took *what* from Mary] and [gave a book to Fred].
  
  - If the QP or the wh-phrase binds a pronoun in the second conjunct, asymmetric LF-movement is licensed (Fox 2000: 52, Ruys 1992: 36):
    - (9) a. A student [likes *every professor*<sub>1</sub>] and [wants *him*<sub>1</sub> to be on his committee].  $\exists > \forall; \forall > \exists$
    - b. I wonder who [took *what*<sub>1</sub> from Mary] and [gave *it*<sub>1</sub> to Fred].
    - the bound pronoun functions like a resumptive
    - the QP/wh-phrase binds a variable in both conjuncts<sup>2</sup>
  
  - (10) *every professor*<sub>1</sub> a student [likes \_\_\_<sub>1</sub>] and [wants *him*<sub>1</sub> to be on his committee].
- generalization: each conjunct must contain an A'-bound variable bound by the same antecedent; again, the type of chain is irrelevant
  - proposal for resumption: asymmetric overt A'-movement:
    - asymmetric extraction from the position of the gap + binding of the resumptive in the other conjunct in (6-b)/(6-c)
    - a base-generated operator binds a resumptive in each conjunct, cf. (6-d)
- (11) a. de Lehrer, Op<sub>1</sub> wo [de Hans \_\_\_<sub>1</sub> verehrt] und [d Susi über **en**<sub>1</sub> fluecht]  
           the teacher    C   the John    adores   and the Susi about him swears
  - b. de Lehrer, Op<sub>1</sub> wo [de H von **em**<sub>1</sub> schwärmt] und [d S über **en**<sub>1</sub> fluecht]  
           the teacher    C   the J of   him is.excited   and the S about him swears
- For similar facts in the domain of A-mvt, cf. Lin (2002: 73ff.)

- implications of mixed chains in ATB-contexts for the CSC:
  - the CSC cannot be a constraint on movement
  - rather, the CSC is an LF-constraint that requires conjuncts to be identical in semantic type, cf. Munn (1993), Reich (2007): conjuncts with extraction (or an A'-bound variable) differ from conjuncts without extraction (e.g. property vs. proposition)
  - or: violations of the CSC follow from vacuous quantification: Goodall (1987), Fox (2000)
  - correctly rules out (5), (8) and predicts (6-b), (6-c), (6-d) and (9) to be grammatical

proposal:  
 regular ATB-movement as in (6-a) also involves asymmetric extraction + binding into the second conjunct

<sup>2</sup>The proposal that an operator binds two variables violates the Bijection Principle in its original form. Safir (2004: 65f.)'s Parallelism Condition on Operator Binding can handle cases where the variables are either both resumptives or both gaps but fails to cover the asymmetric cases discussed in the text. For discussion of alternative conditions on pronoun binding that are not in conflict with the data discussed here, cf. Ruys (1992: 187, 194) and Ha (2008: 246f.). The problem is more general, though, as it also obtains with inverse linking, cf. Ruys (1992: 187):  
 i. Someone in every city<sub>i</sub> hates it<sub>i</sub>.

## 2 In favor of deletion under identity

- Arguments against approaches predicting identity of the representation of the extractee inside the conjuncts (multi-dominance, sideward-movement)
- Arguments against approaches with no representation of the extractee in the 2nd conjunct (parasitic gap-approach, pro-NP-approach)

### 2.1 Non-syncretic morphological mismatches

- It has been argued that syncretic (= underspecified) forms can resolve case-mismatches in ATB-movement, cf. Citko (2005: 487):

(12) Kogo<sub>acc/gen</sub> [Jan nienawidzi \_\_\_<sub>acc</sub>] i [Maria lubi \_\_\_<sub>gen</sub>]?  
 who John hates and Mary likes  
 'Who does John like and Mary hate?' (Polish)

→ identity in morphological features is sufficient

- but: there are also non-syncretic mismatches in ATB-mvt:

#### 2.1.1 Asymmetric verb movement

- Asymmetric T-to-C-movement, cf. An (2006: 8):

(13) a. Who does he like and they hate?  
 b. \*Who do he like(s) and they hate?

- Asymmetric verb movement in German: 2sg = *hast*; 3g = *hat*:

(14) a. Was<sub>1</sub> hast<sub>2</sub> [du \_\_\_<sub>1</sub> gekauft \_\_\_<sub>2</sub>] und [der Peter \_\_\_<sub>1</sub> verkauft \_\_\_<sub>2</sub> ]?  
 what have.2SG you bought 2SG and the Peter sold 3SG  
 b. Was<sub>1</sub> hat<sub>2</sub> [der Peter \_\_\_<sub>1</sub> gekauft \_\_\_<sub>2</sub>] und [du \_\_\_<sub>1</sub> verkauft \_\_\_<sub>2</sub>]?  
 what have.3SG the Peter bought 3SG and you sold 2SG

→ generalization: extractee must satisfy requirements of CJ1

#### 2.1.2 Mismatches in ATB vP-topicalization

- V1 requires Inf, V2 requires Part: Inf = *verbrennen*, Part = *verbrannt*:

(15) [Ein Buch verbrennen]<sub>1</sub> [würde Maria nie \_\_\_<sub>1</sub>], aber [hat Hans schon oft \_\_\_<sub>1</sub>].  
 a book burn.INF would Mary never INF but has John already often PRT

- V1 requires Part, V2 requires Inf: Inf = *verbrennen*, Part = *verbrannt*:

(16) [Ein Buch verbrannt]<sub>1</sub> [hat Maria noch nie \_\_\_<sub>1</sub>], aber [würde Hans schon \_\_\_<sub>1</sub>].  
 a book burn.PRT has Mary still never PRT but would John indeed INF

→ generalization: the extractee must satisfy the requirements of CJ1:

(17) \*[Ein Buch verbrennen]<sub>1</sub> [hat Maria noch nie \_\_\_<sub>1</sub>], aber [würde Hans schon \_\_\_<sub>1</sub>].  
 a book burn.INF has Mary still never PRT but would John indeed INF

→ the mismatch cannot be resolved by underspecification: the extractee is not always in the unmarked infinitive

## 2.2 Theta-role mismatches

- The ATB-ed constituent need not bear the same  $\theta$ -role in each CJ, e.g. Theme vs. Agent
- (18) a. Who did [John support  $\text{---}_{acc}$ ] and [M. say  $\text{---}_{nom}$  would win]? Munn (1993: 43)  
 b. I know the man who [John likes  $\text{---}_{acc}$ ] and [we hope  $\text{---}_{nom}$  will win] Williams (1978: 34)

## 2.3 A reconstruction paradox

### 2.3.1 Symmetrical reconstruction

- Strong Crossover effects obtain in both conjuncts (Citko 2005: 492):
- (19) a. \*[Whose<sub>i</sub> mother] did [he<sub>i</sub> never visit \_\_\_] and [we talk to \_\_\_]?  
 b. \*[Whose<sub>i</sub> mother] did [we talk to \_\_\_] and [he<sub>i</sub> never visit \_\_\_]?
- symmetrical reconstruction for variable binding (Citko 2005: 492):<sup>3</sup>
- (20) a. [Which picture of his mother] did [every Italian like \_\_\_] and [every Frenchmen dislike \_\_\_]?  
 b. #?[Which picture of his mother] did [every Italian like \_\_\_] and [Mary dislike \_\_\_]?  
 c. #?[Which picture of his mother] did [Mary dislike \_\_\_] and [every Italian like \_\_\_]?
- symmetrical reconstruction for idiom interpretation (Citko 2005: 492):
- (21) a. [Which picture] did [John *take* \_\_\_] and [Bill pose for \_\_\_]?  
 b. [Which picture] did [John pose for \_\_\_] and [Bill *take* \_\_\_]?
- scope reconstruction also targets both conjuncts, cf. Moltmann (1992: 109ff.):
- (22) [How many books] did [every student like \_\_\_] and [every professor dislike \_\_\_]?  
 a. Five books (how many > & > every)  
 b. Student A liked 5 books, and Prof X. disliked 7 books, Student B liked 3 books and Prof. Y disliked 4 books (& > every > how many)  
 c. Every student liked 7 books and every professor disliked 3 b. (& > how many > every)  
 d. #Student A liked 5 books, Student B liked 3 books and all professors disliked 4 books (& > every > how many vs. & > how many > every)

### 2.3.2 Asymmetrical reconstruction

- Asymmetrical reconstruction is found for Principle A, C and for Weak Crossover Effects<sup>4</sup>
- (23) a. [Which pictures of himself<sub>i</sub>] did [John<sub>i</sub> buy \_\_\_] and [Mary paint \_\_\_]? Principle A  
 b. \*[Which pictures of herself<sub>j</sub>] did [John<sub>i</sub> buy \_\_\_] and [Mary<sub>j</sub> paint \_\_\_]? Munn (1993: 52)
- (24) a. \*[Which picture of John<sub>i</sub>] did [he<sub>i</sub> like \_\_\_] and [Mary dislike \_\_\_]? Principle C  
 b. [Which picture of John<sub>i</sub>] did [Mary like \_\_\_] and [he<sub>i</sub> dislike \_\_\_]? Citko (2005: 494)
- (25) a. \*[Which man]<sub>i</sub> did [his<sub>i</sub> boss fire \_\_\_] and [you hire \_\_\_]? WCO  
 b. [Which man]<sub>i</sub> did [you hire \_\_\_] and [his<sub>i</sub> boss fire \_\_\_]? Munn (2001: 374)

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<sup>3</sup>Variable binding data are also discussed in Nissenbaum (2000: 34f.). However, his examples additionally seem to involve QR of the QP (so that it can c-command the variable):

i. [Which picture of his mother] did [you give \_\_\_ to every Italian] and [sell \_\_\_ to every Frenchman]?

<sup>4</sup>There are conflicting judgments concerning reconstruction for Principle A:

i. I wonder which picture of himself<sub>i/j</sub> Peter<sub>i</sub> likes and John<sub>j</sub> hates. Haik (1985: 285), Haik (2009: 36)

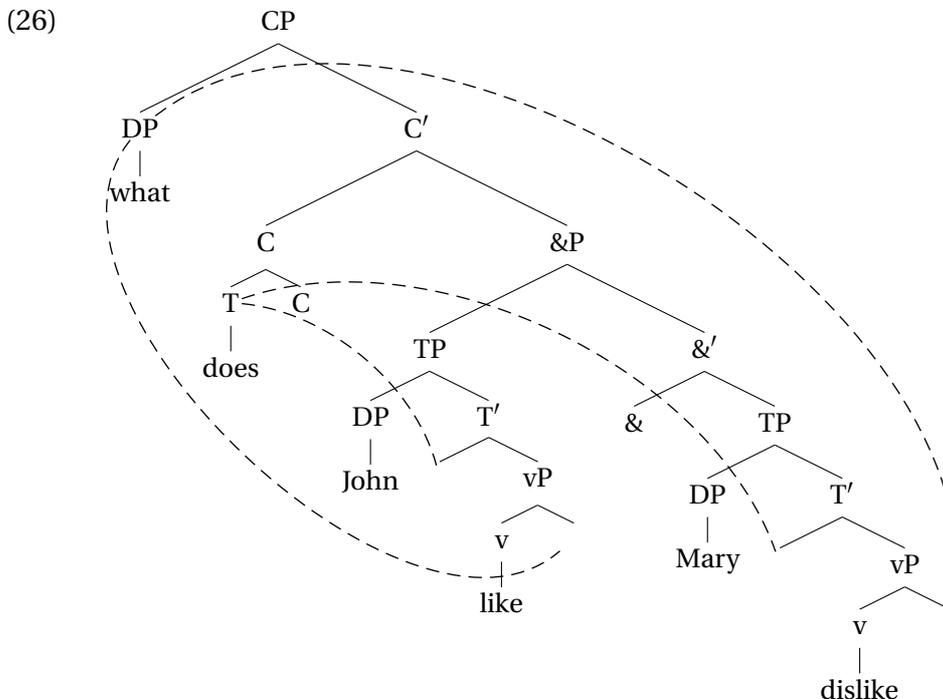
ii. Which pictures of himself<sub>i/\*j</sub> did John<sub>i</sub> buy and Bill<sub>j</sub> paint? Munn (1993: 52)

Nissenbaum (2000: 30-33) argues that there is no reconstruction for Principle A at all while reconstruction for Principle C is symmetric.

## 2.4 Consequences for previous analyses

### 2.4.1 Multi-dominance/sharing approaches

- Goodall (1987), Moltmann (1992), Citko (2005); more generally HPSG-approaches, cf. Pollard and Sag (1994), Levine et al. (2001): the extractee is present only once in the structure



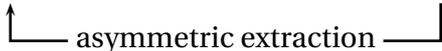
- Morphological mismatches
  - according to Citko, it is in principle possible to assign conflicting features to a constituent as long as there is an underspecified form that is compatible with all of them (as in (12) above: a form that can be used in both accusative and genitive)
  - since T is involved with different subjects in each conjunct, potentially incompatible features are copied onto T: [2nd: -1+2; 3rd: -1-2]
  - In vP-movement, the two finite verbs will impose conflicting subcategorization requirements on the non-finite V ([+non-fin, +perf] vs. [+non-fin])
  - problem: in both cases, the form on the extractee does not always carry a subset of the features required by C1 and C2; rather, it always appears in the form required by CJ1
  - underspecification insufficient → the mismatches remain unaccounted for
  - quite apart from that, Citko's approach to syncretism does not work (or at the very least would have to be worked out) because once you have 2 feature sets on a constituent, it is unclear why one cannot choose an exponent that is compatible with just one of the feature sets (e.g. just gen or acc). It seems that she has to stipulate that the VI realizes features of both feature sets (Doreen Georgi, p.c), but that is an addition that does not follow from sharing
- Theta-role mismatches
  - unclear if a constituent can receive conflicting theta-role specifications
- Reconstruction paradox
  - Since there is just one occurrence of the extractee, one expects symmetrical reconstruction only
  - Moltmann (1992: 106ff.), however, does address (partly) asymmetrical reconstruction

### 2.4.2 Sideward movement: Nunes (2004)

- ATB-constituent merged in second conjunct, copied to independent first conjunct
- then merger of the two conjuncts
- asymmetric extraction from the first conjunct

(27) a. [Mary dislike [which book]]                      b. like [which book]  

sideward movement

(28) [<sub>CP</sub> Which book<sub>1</sub> did [<sub>&P</sub> [<sub>TP</sub> John like ~~which book~~<sub>T</sub>] and [<sub>TP</sub> Mary dislike ~~which book~~<sub>T</sub>]]]?  

asymmetric extraction

→ chain reduction (= deletion of lower copies) derives the illusion of simultaneous extraction  
 → at LF, the operator binds a variable in both conjuncts and derives the single-identity reading

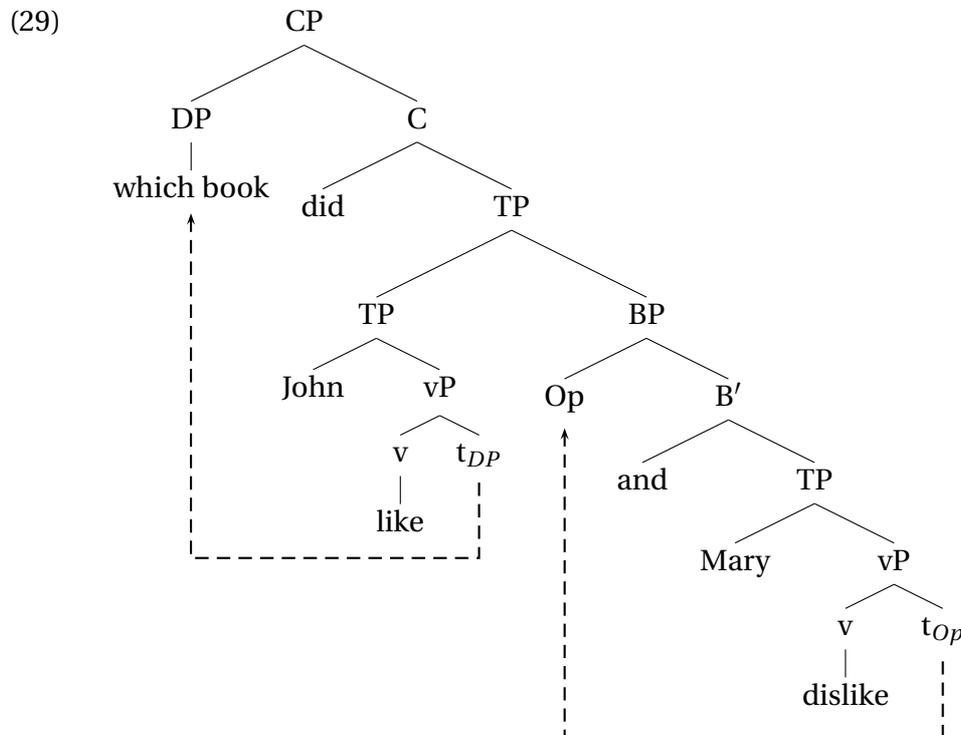
- Mismatches in T-to-C-movement
  - T is affected by two different subjects (goals) in each conjunct so that it should be possible to have different values
  - the activity problem: since the same element cannot enter two Agree relationships, sideward mvt of T to the first conjunct has to apply *before* valuation by SU in the 2nd conjunct so T remains an active probe in the 1st conjunct
  - licensing sideward movement: According to Hornstein and Nunes (2002: 404), sideward movement of auxiliaries is triggered by Parallelism, which is enforced by & → copying cannot take place until &P is formed, but this will be too late, Agree (SU, T), will have already taken place → T is deactivated
  - only solution: feature inheritance from C to T when C is merged with &P: the two Ts then Agree with the copy of the SU in spec, vP/specTP → counter-cyclic
- mismatches in VP-ATB-movement:
  - if subcategorization is checked derivationally, it is unclear how the mismatch can be resolved:
  - one would expect the form required by CJ2 to be copied, but that would clash with the requirements of CJ1
  - only possibility: non-finite form is determined via Agree with the governing verbal element (modal, auxiliary). But crucially, this would have to take place *after* sideward movement; however, if sideward movement is triggered by parallelism, this will not be possible: the finite modal/aux is merged before &
- theta-role mismatches
  - mismatches are not possible if theta-roles are features which are assigned to a DP once it merges with its predicate (which will invariably precede sideward movement)
- reconstruction pattern
  - Since copying is involved, symmetrical reconstruction is wrongly predicted for all cases<sup>5</sup>

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<sup>5</sup>The objections also apply to Reich (2007). He assumes that ATB-movement involves coordination of two CPs with a special implementation of asymmetric extraction of the first operator (traceless movement). This extraction is followed by deletion of all copies inside the conjuncts. Since deletion appears to depend on syntactic identity (the passage is not fully clear), non-identity effects are unexpected.

### 2.4.3 PG-approach to ATB-movement

- Munn (1993, 2001), Franks (1995), Bošković and Franks (2000): ATB-movement reduced to Parasitic Gaps
- conjunctions = functional heads, project to XP of category Boolean; BP is adjoined to 1st CJ
- asymmetric extraction from the first conjunct + PG in the second CJ + chain composition



- Morphological asymmetries:
  - That the extractee matches the requirements of CJ1 is expected
  - mismatches would have to be handled/licensed by chain composition, but how remains unclear
  - it is unclear how ATB-verb-movement/ATB-vP-movement is to be handled in the first place since these categories do not license PGs → there is no PG-basis for these ATB-constituents
- theta-role asymmetries
  - since different chains are involved, no restrictions are expected a priori
- reconstruction asymmetries:
  - Since only the first conjunct contains a copy of the extracted constituent, we expect asymmetrical reconstruction only, cf. Munn (1993: 57f.), (2001: 376ff.) for discussion<sup>6,7</sup>

<sup>6</sup>More arguments against the PG-approach: 1. Unattractive for languages like German where PGs are taken not to exist, cf. Kathol (2001), Reich (2007: 22). 2. Unification of PGs with ATB (cf. also sideward movement) is confronted with systematic asymmetries, cf. Postal (1993). Some of these are addressed in Munn (2001) and Hornstein and Nunes (2002).

<sup>7</sup>The same problems obtain for the *pro*-NP approach by Zhang (2010): She assumes that the gap in the second conjunct is actually a silent pronominal. This is implausible for ATB-verb-movement and does not seem to offer any insights for the asymmetries.

### 3 The proposal in a nutshell

- In an ATB-sentence like (30), the ATB-ed elements are present twice in the numeration → each conjunct has 1 Aux, 1 wh-phrase
- conjuncts are built up independently – aux + wh-phrase undergo mvt in both conjuncts:

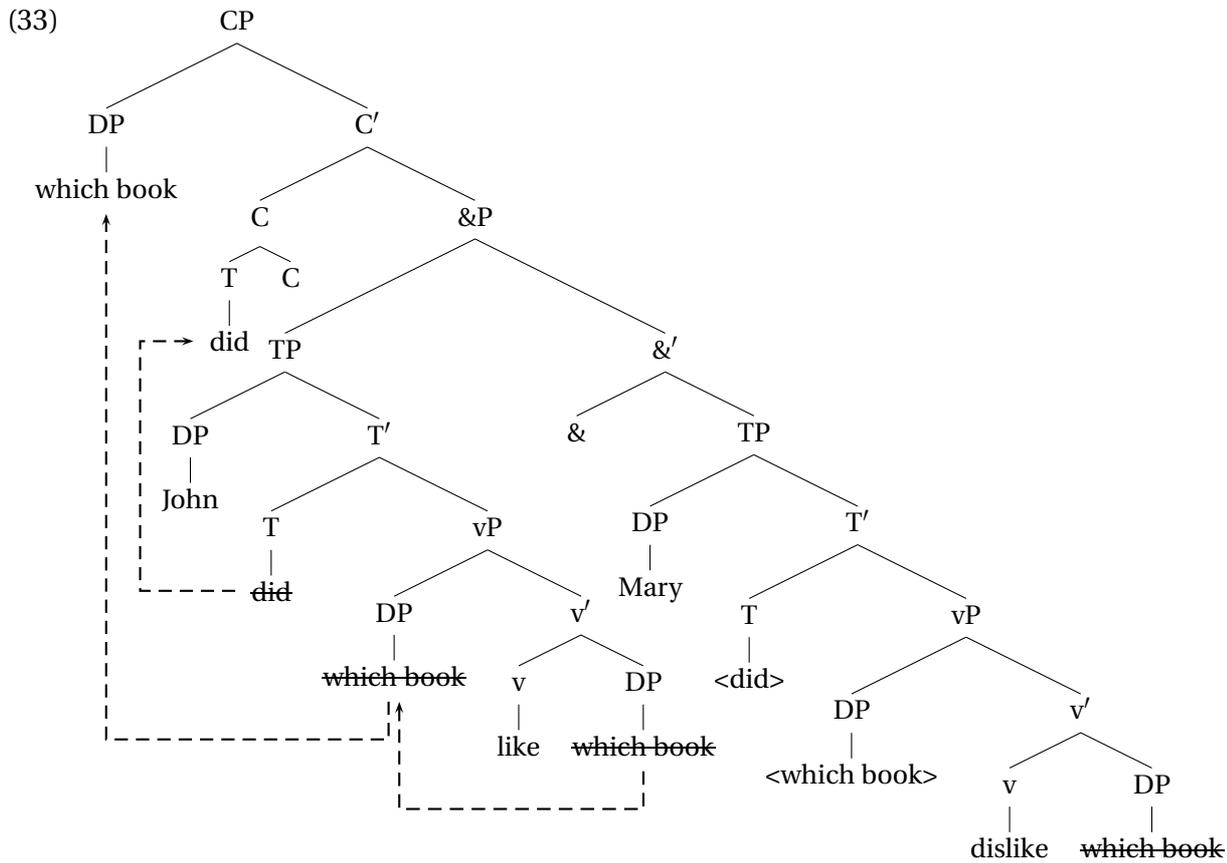
(30) [Which book] did [John like \_\_] and [Mary dislike \_\_]?

(31) a. [TP John did [VP [which book]<sub>1</sub> like [which book]<sub>1</sub>]]  
 b. [TP Mary did [VP [which book]<sub>2</sub> dislike [which book]<sub>2</sub>]]

- when the non-initial CJ is merged with &, ATB-ed constituents are elided (“<>” = ellipsis):

(32) [<sub>&P</sub> & [TP Mary <did> [VP <[which book]<sub>2</sub>> dislike [which book]<sub>2</sub>]]]

- second CJ is merged in Spec&P, then asymmetric extraction from the first CJ



- PF: only the top copy remains: all other copies are either elided (2nd CJ) or undergo regular chain reduction (strikethrough = regular chain reduction):
- LF: Preference Principle → extracted operator in Spec, CP binds both its own trace and that of the wh-phrase in the 2nd CJ → satisfies the CSC and correctly derives the ATB reading:

(34) [CP [Which<sub>x</sub>] [<sub>&P</sub> [TP John did [VP like [x book]]] & [TP Mary did [VP dislike [x book]]]]]?

- Ellipsis = recoverable: each elidee has ident. antecedent in CJ1 (operators bear same index)

## 4 The derivation of regular ATB-movement in detail

### 4.1 Locality

- ATB-constituents undergo successive-cyclic movement in both conjuncts → locality effects emerge in both, pace Zhang (2010):

- (35) a. \*[Which book] did [John read \_\_ with pleasure] and [Mary adore the author <who wrote \_\_>]?  
 b. \*[Which book] did [John adore the author <who wrote \_\_>] and [Mary read \_\_ with pleasure]?

### 4.2 How deletion works

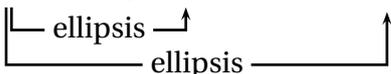
- standard assumption: E-features are assigned to certain heads, triggering the PF-deletion of their complement, e.g.  $E_S$  to  $C_{[+wh]}$  to trigger sluicing (= TP-deletion):

- (36) I know he bought something, but I don't know [<sub>CP</sub> what<sub>1</sub> C<sub>[E]</sub> < [<sub>TP</sub> he bought \_\_<sub>1</sub>] >].

- Aelbrecht (2010: 91-94): ellipsis is licensed by Agree, because deletion does not always affect the complement of the licenser (*should* = licenser, E-feature on *been*):

- (37) I hadn't been thinking about that. Well, you **should** have been<sub>[E]</sub> <[thinking about that]>!

- licenser in ATB-mvt: & optionally bears an [F] that can be valued by constituents with an  $uF$ ; & must be able to enter several Agree operations, cf. Hiraiwa (2000), Salzmann (2012a):

- (38) [<sub>&P</sub> & [<sub>TP</sub> Mary <did> [<sub>VP</sub> <[which book]<sub>2</sub>> dislike [which book]<sub>2</sub>]]]  


- alternatively, as in Aelbrecht (2010), Agree can be taken to be upward with the E-feature having a subfeature that can only be checked by the licenser e.g. [ $uT$ ] or [ $u\&$ ]. No extra feature on the licenser is needed (given that the categorial feature is interpretable, it can be involved in several deletion operations as is needed for ATB-mvt)
- $E_{ATB}$  instructs PF not to pronounce the goal of the agree relation (non-standard: normally, the complement)
- given c-command, deletion can only affect constituents in non-initial conjuncts
- deletion applies derivationally (cf. also Aelbrecht 2010: 101-111):
  - the elided material is immediately sent to the interfaces and becomes inaccessible for further syntactic operations
  - only constituents of CJ1 can satisfy requirements of matrix probes above &P → asymmetric extraction from CJ1
- ellipsis functions as a repair, cf. Lasnik (1999: 161), Merchant (2001), Craenenbroeck and den Dikken (2006):  $uF$ s on the elided constituents are deleted (i.e. become non-offensive for both PF *and* LF; non-standard, but cf. also Aelbrecht (2010: 136, fn. 51)

→ 2 mechanisms that prevent illegibility at the interfaces: valuation/checking + ellipsis

- deletion only targets syntactically active elements that still need to undergo movement → presupposes a greed-perspective on movement, cf. Bošković (2007)
    - correctly singles out the ATB-constituents, i.e. wh-phrases, subjects that move to TP, aux/V/T that undergo head movement
    - assumption required to rule out deletion without ATB-movement: otherwise, the following a-examples could be derived from c and should have the meaning in b, contrary to fact:
      - (39) a. Nothing is round and square.
      - b. Nothing is round and nothing is square.
      - c. [TP Nothing is round] and [TP <Nothing> <is> square]
    - (40) a. What did Peter read and Mary write?
    - b. What did Peter read and what did Mary write?
    - c. [CP What did Peter read] and [CP <What> <did> Mary write]?
  - Given that all  $uFs$  of SU, wh-phrase, T are valued in the c-derivations, they are not visible to the ellipsis feature on & →  $E_{[ATB]}$  cannot be checked, derivation crashes
- deletion targets the maximal projection that is movable (XP for XP-mvt,  $X^\circ$  for head-mvt), which follows from the location of  $uFs$ :  $uFs$  normally percolate to XP, except in head-mvt, (cf. e.g. Georgi and Müller (2010) on reprojective head movement).
  - this avoids deletion of single constituents
- No ATB-movement without deletion:
  - (41) \*Which book did [John like \_\_\_] and [Mary did *which book* dislike ~~which book~~]?
    - wh-phrase in CJ2 still has an unchecked  $uwh$  feature → since this is a single question, movement to SpecCP is not possible (C can license only 1 wh-phrase)
- multiple ATB-wh-fronting in multiple wh-fronting languages is impossible, cf. Citko (2005: 492)
  - (42) \*Kogo<sub>i</sub> kogo<sub>j</sub> Jan lubi \_\_\_<sub>i</sub> a Maria kocha \_\_\_<sub>j</sub>?  
       whom whom Jan likes and Maria loves  
       ‘Whom does Jan like and Maria love?’
    - Since ATB involves a single, not a multiple question, C can license only one  $wh$ -phrase, if the second  $wh$ -phrase is not deleted, its  $uF$  remains unchecked → crash
- impossibility of covert ATB-movement: the following example only has a double question interpretation, cf. Citko (2005: 488ff.):
  - (43) [Zhangsan xihuan **shenme ren**] [Lisi taoyan **shenmo ren**]?  
       Zhangsan like which person Lisi hate which person  
       ‘Which person does Zhangsan like and which person does Lisi hate?’
    - If wh-in-situ involves covert mvt, one of the wh-phrases fails to have its features checked because C can license only one wh-phrase given that a single question is intended
    - “ATB” with non-moving D-linked wh-phrases in-situ is fine, cf. Bošković and Franks (2000: 111f.), but lacks a single-identity reading (which is expected given that none of them has scope over the coordination):
      - (44) Which man said that John bought *which house* and that Peter sold *which house*?

### 4.3 Asymmetric extraction

- After ellipsis CJ1 is merged in the spec of &, the structure above TP is merged and there is asymmetric extraction from CJ1 to the final landing site(s):

(45) [CP [Which book]<sub>1</sub> did<sub>3</sub> [&P [TP John did<sub>3</sub> [VP [which book]<sub>1</sub> like [which book]<sub>1</sub>]] & [TP Mary <did> [VP <[which book]<sub>2</sub>> dislike [which book]<sub>2</sub>]]]]?]

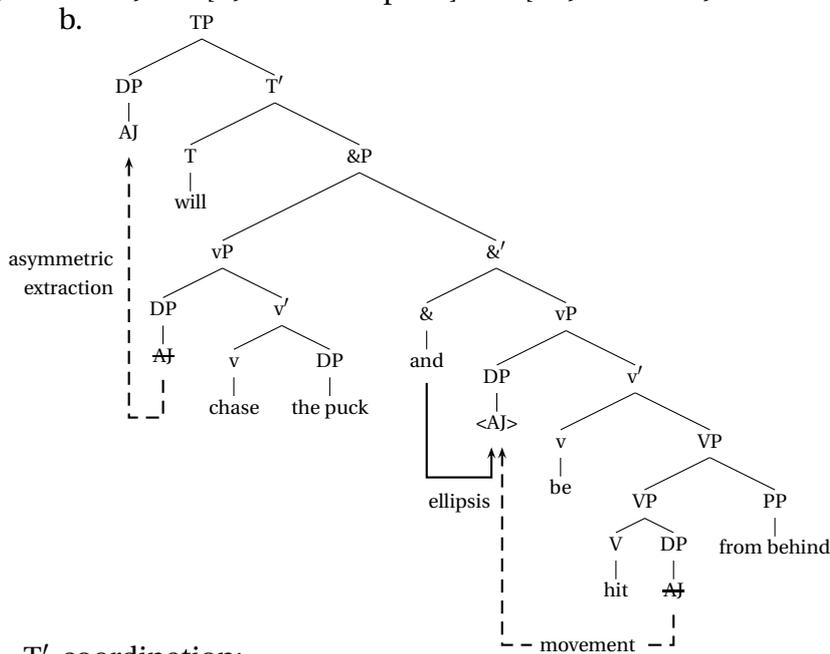
- Other types of coordination:

– C'-coordination:

(46) What [has ~~what~~ John bought ~~what~~] and [will <what> Mary sell ~~what~~]?

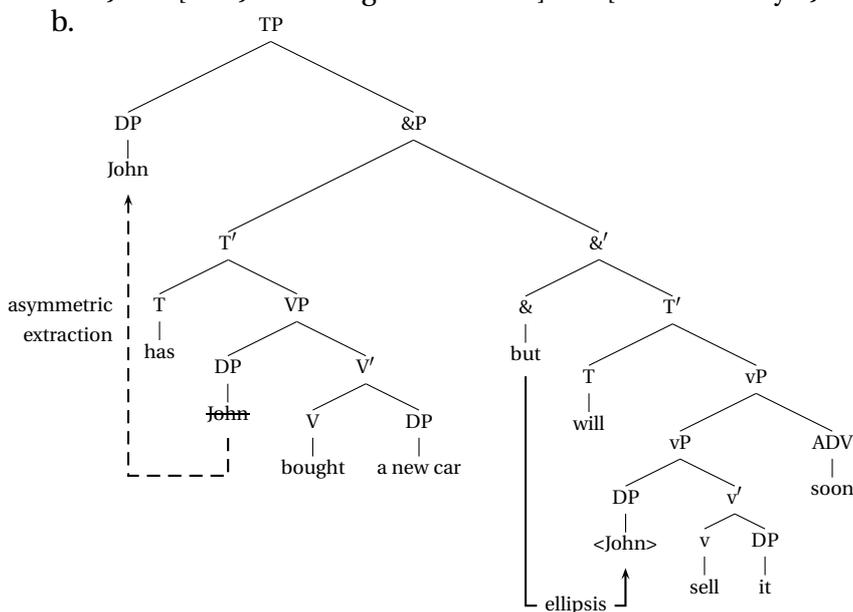
– vP-coordination: ATB A-movement, cf. Lin (2002: 63):

(47) a. AJ will [~~AJ~~ chase the puck] and [<AJ> be hit ~~AJ~~ from behind].



– T'-coordination:

(48) a. John [has ~~John~~ bought a new car] but [will certainly <John> sell it soon].



## 4.4 Interpretation of the chains and the CSC

### 4.4.1 The chains in conjunct 1

- PF: only the highest copy is retained
- LF: Preference Principle

- (49) a. [CP [Which book]<sub>1</sub> did<sub>3</sub> [<sub>&P</sub> [TP John ~~did~~<sub>3</sub> [<sub>VP</sub> [~~which book~~]<sub>1</sub> like [~~which book~~]<sub>1</sub>]]] & ... PF  
 b. [CP [Which<sub>x</sub>] [<sub>&P</sub> [TP John did [<sub>VP</sub> like [x book]]]]] & ... LF

### 4.4.2 The chains in the non-initial conjunct

- PF:
    - the highest copy of verb/aux and the wh-phrase undergoes deletion/ellipsis
    - the lower copies of the wh-phrase (and V/aux) are regularly PF-deleted
    - no copy of the ATB-ed constituent in the second conjunct is realized:
- (50) [CP [Which book]<sub>1</sub> did<sub>3</sub> [<sub>&P</sub> [TP John ~~did~~<sub>3</sub> [<sub>VP</sub> [~~which book~~]<sub>T</sub> like [~~which book~~]<sub>T</sub>]]] & [TP Mary <did> [<sub>VP</sub> <[which book]<sub>2</sub>> dislike [~~which book~~]<sub>2</sub>]]]]?
- LF:
    - operator in the 2nd conjunct does not reach a scope position → chain not interpretable
    - ATB receives a single-identity interpretation – how is this possible if chains aren't linked?

- (51) a. Who does nobody love and hate? ≠  
 b. Who does nobody love and who does nobody hate?

- solution: the Preference Principle:
  - only the lowest copy is retained in the second conjunct and interpreted as a variable
  - the extracted operator is reduced and can bind both variables:

- (52) [CP [Which<sub>x</sub>] [<sub>&P</sub> [TP John did [<sub>VP</sub> like [x book]]] & [TP Mary did [<sub>VP</sub> dislike [x book]]]]]]?

→ CSC is satisfied: conjuncts are of the same semantic type, no vacuous quantification

- recoverability: the deleted operator must have an identical antecedent, i.e. an operator with the same index, cf. 5.1 below (otherwise deletion is irrecoverable)

### 4.4.3 ATB-verb-movement

- What rules out the following examples where a. *did* fails to be deleted/b. there is no element in T (only affix hopping)?

- (53) a. \*What did John like and Mary **did** dislike?  
 b. \*Which book did John like and Mary *disliked*?

- a. if *did* bears no *uF*, shouldn't it be licensed without deletion?  
 b. if there is no T-to-C-mvt, why should this be ruled out?

- both can be ruled out as a violation of the CSC if the verb in C binds into CJ2: there is nothing to bind (nothing that could leave a variable)  
 → bearing an *uF* indicates that a given occurrence will be interpreted as a variable at LF even if it is not a copy left behind by movement but an occurrence deleted in its base-position (cf. *did* in *What did John like and Mary <did> dislike?*)

#### 4.4.4 ATB-A-movement

- to derive the single-identity interpretation, there has to be binding into the second CJ.

(54) AJ will [<sub>VP</sub> A<sub>J</sub> chase the puck] and [<sub>VP</sub> <A<sub>J</sub>> be hit A<sub>J</sub> from behind]

#### 4.4.5 The CSC and total reconstruction

- total reconstruction in ATB-mvt is compatible with the CSC → no single-identity reading
- total reconstruction in ATB-A'-mvt only seems to be attested with topicalization of indefinites (but not with universally quantified DPs), cf. Moltmann (1992: 113-116), Höhle (1991: 177f.), te Velde (2002: 310), te Velde (2005: 268f.):

(55) a. [Ein Mann] hat [\_\_ den Hund gefüttert] und [\_\_ den Kater gestreichelt]  
 a.NOM man has the dog fed and the tomcat petted  
 b. [Einen Mann] haben [die Christdemokraten \_\_ zum Kandidaten gewählt]  
 a man have the Christian.democrates to.the candidate chosen  
 und [wollen viele in den USA \_\_ zum Präsidenten wählen]  
 and want many in the USA to.the president have

- For non-identity readings with wh-ATB-mvt, cf. also Munn (1999)
- It seems that ATB-A-movement does not reconstruct, i.e. even indefinites receive a single-identity interpretation, cf. Moltmann (1992: 113)

(56) A man [\_\_ walked down the street] and [was \_\_ killed]

- Similar observations are made by Höhle (1991: 197) w.r.t. German A-moved subjects; the same seems to hold for scrambling, cf. Moltmann (1992: 114)
- things are different in asymmetric A-movement with an overt subject in the second conjunct as discussed in Lin (2002: 72) where reconstruction is forced by the CSC:

(57) Many drummers [\_\_ can't leave on Friday] and [many guitarists arrive on Sunday]  
 (¬ > many)

- total reconstruction of verb movement in ATB also seems to be blocked (cf. 4.4.3)
- prediction: under total reconstruction, deletion in the second CJ should be optional – at least as long as the element doesn't have any movement-triggering features like *uwh* / *uCase*

### 4.5 Recoverability

- ellipsis requires an identical antecedent – semantically or syntactically?
  - It is well-established that full syntactic isomorphism is not always required, cf. Merchant (2001), but there are also cases where syntactic identity must hold
  - for present purposes, it suffices to note that any theory of ellipsis should be able to capture the mismatches observed in ATB-mvt
  - for morphological mismatches, compare VP-ellipsis, cf. Rouveret (2012: 902):

(58) Mary will leave and John already has <left>.

- for vehicle change, see section 5.2 below
- Recoverability is not always enough: Why can't (a) have the meaning/derivation (b)?  
*Mary* has an identical antecedent?

(59) a. Mary's sister [<sub>VP</sub> loves John] and [<sub>VP</sub> hates Peter]  
 b. \*Mary's sister [<sub>VP</sub> ~~Mary's sister~~ loves John] and [<sub>VP</sub> <Mary> hates Peter]

→ ruled out by the CSC: no binding into the second conjunct (different variables)

## 5 Accounting for the reconstruction facts

### 5.1 Symmetrical reconstruction

- expected given that there is an instance of the ATB-ed constituent in each conjunct
- operators and variables bear the same index because of recoverability<sup>8</sup>

(60) [CP [Op<sub>x</sub>] C [&P [XP [x NP] ] & [XP [x NP] ] ] schematic LF

- For *symmetrical* reconstruction like (19)–(22) the LFs will be like the following:<sup>9</sup>

(61) a. [Which<sub>x</sub>] [John did *take* [x picture]] and [Bill did pose for [x picture]]?  
 b. [Which<sub>x</sub>] [John did pose for [x picture]] and [Bill did *take* [x picture]]?

- What is unexpected given (60) are the cases of *asymmetrical* reconstruction:

### 5.2 Asymmetrical reconstruction results from vehicle change

#### 5.2.1 Principle C

- recall that reconstruction for Principle C does not seem to target CJ2:

(62) a. \*[Which picture of John<sub>i</sub>] did [he<sub>i</sub> like \_\_\_] and [Mary dislike \_\_\_]? Principle C  
 b. [Which picture of John<sub>i</sub>] did [Mary like \_\_\_] and [he<sub>i</sub> dislike \_\_\_]? Citko (2005: 494)

- unexpected: Condition C effects normally occur with wh-movement (cf. Salzmann 2006):

(63) \*[Which picture of John<sub>i</sub>]<sub>1</sub> does he<sub>i</sub> like \_\_\_<sub>1</sub> best?

- The Principle C facts in CJ2 of ATB are parallel to relativization where – according to the majority view – there are no Condition C effects, cf. Munn (1994), Cecchetto (2005):

(64) the picture of John<sub>i</sub> which<sub>1</sub> he<sub>i</sub> likes \_\_\_<sub>1</sub> best

- Sauerland (1998), Salzmann (2006: 371): Matching Analysis for relative clauses:
  - external head and the relative operator are related to each other via ellipsis
  - The operator phrase thus contains an instance of the external head:

(65) the [picture]<sub>j</sub> [CP [which <picture><sub>j</sub>]<sub>1</sub> I like \_\_\_<sub>1</sub> best]

- Fiengo and May (1994: 220): ellipsis tolerates certain mismatches: vehicle change:
- R-expression in the antecedent can correspond to a pronoun in the ellipsis site:

(66) Mary loves **John**<sub>i</sub>, and he<sub>i</sub> thinks Sally does, too <love **him**<sub>i</sub>>.

- since ellipsis is involved in relatives, vehicle change effects obtain:<sup>10</sup>

- R-expression inside the external head corresponds to a pronoun in SpecCP:

<sup>8</sup>The variable binding example in (20) most naturally receives a functional interpretation. This shows that even if the two operators in ATB bear the same index they need not necessarily refer to the same object even though this is normally the case. Note also that the unacceptable versions in (20) above improve if *Mary* is replaced by *John*, suggesting that one is dealing with sloppy identity in this case:

i. Which picture of his mother did every Italian like \_\_\_ and John dislike \_\_\_?

The ATB-example would then be parallel to VP-ellipsis where strict and sloppy identity are possible with quantified antecedents, but a referential interpretation of the pronoun (e.g. *his* = ‘Peter’s’) is ruled out:

ii. Everyone saw his mother and Oscar did too cf. Fiengo and May (1994: 101)

<sup>9</sup>Whether the present account derives all the scope facts in (22) is not fully clear. The crucial (22-d) can perhaps be ruled out if at LF the variables differ w.r.t. their restriction so that the sentence cannot be interpreted.

<sup>10</sup>Importantly, I differ from Safir (2004) in assuming that vehicle change effects are only found if an ellipsis operation takes place; I take modification of copies of a movement chain to be impossible.

- (67) the [picture of John<sub>i</sub>]<sub>j</sub>, [<sub>CP</sub> [which ~~picture of him<sub>7</sub>~~]<sub>j</sub>]<sub>1</sub> he<sub>i</sub> dislikes [x picture of **him**]<sub>i</sub>]<sub>1</sub>
- (67) is parallel to the following simple sentence → VC prevents Condition C violation
- (68) John<sub>i</sub> likes the picture of him<sub>i</sub>.
- The ATB facts in (62) follow straightforwardly under the current analysis:
    - CJ1: full reconstruction → Condition C
    - CJ2: vehicle change: An R-expression in the first conjunct, i.e. the antecedent, can correspond to a coreferential pronoun in the second conjunct, i.e. in the ellipsis site: → no Condition C
- (69) [<sub>CP</sub> [Op<sub>x</sub> ~~picture of Peter~~] C [<sub>&P</sub> [<sub>TP</sub> [x picture of **Peter**]]] & [<sub>TP</sub> <[x picture of **him**]> ]]]
- CJ1 contains a full copy of the wh-phrase → reconstruction leads to Condition C in (62-a):
- (70) \* [<sub>CP</sub> [Which ~~picture of John<sub>7</sub>~~]<sub>1</sub> did he<sub>i</sub> like [x picture of John<sub>i</sub>]<sub>1</sub> and ...
- Ellipsis + vehicle change void the Condition C effects in the second conjunct. LF for (62-b):
- (71) [<sub>CP</sub> [Which ~~picture of John<sub>7</sub>~~]<sub>1</sub> did<sub>2</sub> [<sub>&P</sub> [<sub>TP</sub> Mary ~~did<sub>2</sub>~~ [<sub>VP</sub> [which ~~picture of John<sub>7</sub>~~]<sub>1</sub> like [x picture of John<sub>i</sub>]<sub>1</sub> ]]]] and [<sub>TP</sub> **he**<sub>i</sub> <did<sub>4</sub>> [<sub>VP</sub> <[which picture of him<sub>i</sub>]<sub>3</sub>> dislike [x picture of **him**]<sub>i</sub>]<sub>3</sub> ]]]]?
- mismatch between an R-expression and a pronoun is allowed since identity is determined via mutual entailment of the F-closures (modulo ∃-type shifting; cf. Merchant 2001: 28):
- (72) ∃x, (picture of John (x)) ⇔ ∃x, (picture of him (x))
- more evidence for vehicle change comes from embedding effects:
    - If the R-expression is a clausemate of the coreferential pronoun, Condition C effects suddenly obtain, cf. Ha (2008: 264ff.):
- (73) a. \*President Bush<sub>i</sub>, [every Democrat criticizes \_\_], but [he<sub>i</sub> admires \_\_].  
 b. \*President Bush<sub>i</sub>, [he<sub>i</sub> admires \_\_], but [every Democrat criticizes \_\_].
- note that such examples show that there is an instance of the ATB-ed constituent in CJ2
  - Even if ellipsis licenses a mismatch between an R-expression in the antecedent (CJ1) and a pronoun in CJ2, there will still be a Principle B violation:
- (74) \*He<sub>i</sub> admires him<sub>i</sub>.
- Crucially, if we add a level of embedding, the example improves to full grammaticality:<sup>11</sup>
- (75) President Bush<sub>i</sub>, [every Democrat criticizes \_\_], but [he<sub>i</sub> thinks that every member of congress should admire \_\_].
- Given vehicle change, the example is parallel to the following:
- (76) He<sub>i</sub> thinks that every member of congress should admire him<sub>i</sub>.

<sup>11</sup>Importantly, it must not be possible to substitute a reflexive for an R-expression in (73). Fiengo and May (1994: 213, 224) discuss a few cases where this seems to be possible:  
 i. I shaved John<sub>i</sub> because he wouldn't <shave himself<sub>i</sub>>.  
 However, Ha (2008: 266) and Safir (2004: 29) give the following as ungrammatical:  
 ii. \*Louise is proud of Frank<sub>i</sub>, but he isn't <proud of himself<sub>i</sub>>.  
 iii. \*Malva aggravates him/Nigel, but Nigel doesn't <aggravate himself>.  
 Equivalent German examples are ungrammatical. (i) is probably grammatical because *shave* is used intransitively. I will assume that this type of mismatch is not tolerated.

### 5.2.2 Principle A

- reconstruction for Principle A only seems to target the first conjunct, but not the second:
 

(77) a. [Which pictures of himself<sub>i</sub>] did [John<sub>i</sub> buy \_\_\_] and [Mary paint \_\_\_]?  
 b. \*[Which pictures of herself<sub>i</sub>] did [John buy \_\_\_] and [Mary<sub>i</sub> paint \_\_\_]?
- the pattern in the first conjunct is unsurprising:
  - a full copy in the first conjunct makes binding possible in (77-a), but not in (77-b)
  - (77-b) therefore does not show that there is no reconstruction into the second conjunct
- the pattern in the second conjunct
  - again the result of vehicle change, cf. Fiengo and May (1994: 206ff.): *himself* → *him*

(78) Ed<sub>i</sub> believes himself<sub>i</sub> to be heroic, and he<sub>i</sub> said that Ann does, too <believe him<sub>i</sub> to be heroic>.

  - (77-a): *him* counts as identical to *himself*, the second CJ now contains *picture of him*.
  - (77-b) is unrescuable because *John* fails to bind the reconstructed *herself* in CJ1; the second conjunct does not help here
- Sloppy identity in anaphor binding in ZG (cf. also Höhle 1991: 180f.):<sup>12,13</sup>
  - the anaphor is invariant *siich*. Crucially, reconstruction is possible into both conjuncts:

(79) [Weles Grücht über siich<sub>i/j</sub>] hät [de Hans<sub>i</sub> \_\_\_ ghöört], aber [d Susi<sub>j</sub> \_\_\_ ignoriert]?  
 which rumor about self has the John heard but the Susi ignored
- strict identity: Susi heard rumors about John: vehicle Change: *rumor about him*
- sloppy identity: Susi heard rumors about herself: reflexive has a different index

### 5.3 Why there are symmetrical Strong Crossover effects

- Recall from (19) that SCO effects are symmetrical:
 

(80) a. \*[Whose<sub>i</sub> mother] did [he<sub>i</sub> never visit \_\_\_] and [we talk to \_\_\_]?  
 b. \*[Whose<sub>i</sub> mother] did [we talk to \_\_\_] and [he<sub>i</sub> never visit \_\_\_]?

  - this seems surprising given that SCO effects are normally subsumed under Principle C
  - but Principle C effects were argued to be absent in CJ2 ...
  - furthermore (cf. Merchant 2001: 206), a variable can correspond to a pronoun in the ellipsis site (in sluicing):

(81) Which suspect<sub>i</sub> did Abby call \_\_\_<sub>i</sub> and when <did she call **him**<sub>i</sub>>?

→ if the trace of *whose mother* could correspond to *his mother* in CJ2, we would not expect any SCO effects in the second conjunct in in (80-b): *he<sub>i</sub> never visits his<sub>i</sub> mother*
- What is different in ATB is that the operator itself is elided:
 

(82) a. Op<sub>2</sub> [~~Op<sub>2</sub>~~ ... \_\_\_<sub>2</sub>] and [<Op<sub>1</sub>> ... \_\_\_<sub>1</sub>] ATB  
 b. Op<sub>i</sub> ... \_\_\_<sub>i</sub> and when<sub>j</sub> ... <him<sub>i</sub> \_\_\_<sub>j</sub>> sluicing

---

<sup>12</sup>Munn (1993: 52) denies the possibility of the sloppy reading in an equivalent English example while Haik (2009: 36) takes it to be possible.

<sup>13</sup>The RNR-based account in Ha (2008), which assumes asymmetric extraction from the non-initial conjunct and ellipsis of the operator in the first makes the opposite predictions as the present account and thus fails to account for the reconstruction pattern.



## 6 Open issues

### 6.1 Failed mismatches

#### 6.1.1 Gender mismatches

- While VP-ellipsis tolerates gender mismatches, ATB-mvt does not seem to: the b-example can only mean *picture of him* – not: *picture of herself* (but see Fiengo and May 1994: 218)

- (87) a. John<sub>i</sub> likes himself<sub>i</sub>. Mary<sub>j</sub> does, too <like herself<sub>j</sub>>.  
 b. [Which pictures of himself<sub>i</sub>] did [John<sub>i</sub> buy \_\_\_] and [Mary paint \_\_\_]?

#### 6.1.2 Case mismatches

- while ATB-mvt tolerates non-syncretic mismatches w.r.t verbal morphology, non-syncretic case mismatches do not seem to occur:

- (88) \*Wen hat [Peter \_\_\_<sub>acc</sub> unterstützt] aber [Hans noch nie \_\_\_<sub>dat</sub> geholfen]?  
 who.ACC has Peter supported but John still never helped

- Hartmann et al. to appear present empirical evidence that in German ATB-movement is subject to strict case-matching: even abstract case values have to be identical
- The limits of syncretic mismatches are unclear: Some are acceptable in English:<sup>16</sup>

- (89) a. Who did [John support \_\_\_<sub>acc</sub>] and [M. say \_\_\_<sub>nom</sub> would win]? Munn (1993: 43)  
 b. I know the man who [John likes \_\_\_<sub>acc</sub>] and [we hope \_\_\_<sub>nom</sub> will win]  
 Williams (1978: 34)

→ the case matching requirement is a priori unexpected under ellipsis

### 6.2 Subject mismatches

- With vP-ATB-movement, a problem arises if the subjects of the two conjuncts are different :

- (90) [<sub>vP</sub> (SU) talked to Mary] [<sub>TP</sub> I have \_\_\_] but [<sub>TP</sub> Bill hasn't \_\_\_] (see also Grosz 2015: 28f.)

- The trace in SpecvP cannot be both identical to *I* and *Bill*
- A similar problem obtains with ATB-moved control infinitives:

- (91) [PRO Maria zu kennen] hat [Hans \_\_ bedauert] und [Peter \_\_ geleugnet]  
 Mary.ACC to know.INF has John regretted and Peter denied  
 'To know Mary, John regretted and Peter denied.'

- PRO would have to be identical to both *John* and *Peter*
- if Control involves movement, the same problem as with vP-internal subjects obtains (but problems also obtain if PRO receives features via Agree).

→ while the Control-facts are a case of sloppy-identity (if it is analyzed as a pronoun), the vP-movement case seems to present a problem for all theories of ATB-movement

<sup>16</sup>The present account allows such mismatches since the operator in the second conjunct will have moved successive-cyclically up to the matrix Spec, vP und will thus be a possible target for deletion. However, there are mismatches that are not tolerated, mostly involving subject extraction from the first conjunct:

i. \*Who [\_\_\_ read the paper] but [John didn't reply to \_\_\_]? Munn (2001: 372)

Conversely, some of those are possible with relativization (Franks 1995: 76, Munn 2001: 391, fn. 4):

ii. a. the man who [\_\_\_ saw John] and [Sue thinks \_\_\_ kissed Mary] SU – embedded SU

ii. b. the man who [\_\_\_ read the paper] and [Bob said \_\_\_ understood it] SU – embedded SU

See Franks (1995) for an interesting approach based on argument prominence.

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