

Deriving reconstruction asymmetries in Across The Board by means of asymmetric extraction + ellipsis*

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Zurich German is among the languages that can combine resumptive and gap derivations in Across The Board (ATB) contexts. There is clear evidence in Zurich German that gap and resumptive relatives involve different derivations: while gap relatives involve movement, resumptive relatives involve base-generation. I will argue that the combination of gaps and resumptives in ATB can be compared with well-established cases of asymmetric LF-movement in coordination and thus calls for a representational definition of the CSC. I will then extend asymmetric extraction to bona fide cases of ATB. Evidence for asymmetric extraction comes from reconstruction asymmetries between the two conjuncts: Reconstruction into the first conjunct is systematic while reconstruction into the second is only partial. This pattern is argued to follow from an ellipsis operation that deletes the extracted elements in the second conjunct under identity with those in the first. The reconstruction asymmetries are the result of mismatches between the two conjuncts that are independently known to be tolerated in ellipsis. By means of a derivational implementation based on Agree ellipsis is adequately restricted. The present analysis thus reduces ATB to independently available operations and offers a uniform perspective on seemingly diverse phenomena.

* Parts of the material discussed in this paper were also presented at the University of Tübingen (November 2009), at the University of Leipzig (March 2010), and at the KWIGG-workshop in Konstanz (April 2010). I am grateful to the audiences at these occasions for helpful discussion, especially to Klaus Abels, Jeroen van Craenenbroeck, Remus Gergl, Jutta Hartmann, Fabian Heck, Gerhard Jäger, Stefan Keine, Gereon Müller, Jairo Nunes, Marc Richards, Maribel Romero, Wolfgang Sternefeld, and Susanne Winkler. I would also like to thank two anonymous reviewers whose insightful comments have led to a substantial improvement of the paper.

1. Introduction

1.1 Resumptives in ATB-configurations

It has long been known that extraction from a coordination is illicit if only one conjunct is involved. The following examples from Zurich German (ZG) thus violate the Coordinate Structure Constraint (CSC):

- (1) a. **Wäär hät [de Hans __ gliebt] und [d Susi de
Who has the John loved and the Susi the
Peter ghasst]?*
Peter hated
lit.: ‘Who did John love and Susi hate Peter?’
- b. **Wäär hät [de Hans d Petra gliebt] und
Who has the John the Petra loved and
[d Susi __ ghasst]?*
the Susi hated
lit.: ‘Who did John love Petra and Susi hate?’

On the other hand, extraction from coordination is possible if it applies across the board (so-called ATB-movement):

- (2) *Wäär hät [de Hans __ gliebt] und [d Susi __ ghasst]?*
Who has the John loved and the Susi hated
‘Who did John love and Susi hate?’

The CSC was originally understood as a constraint on movement. Importantly, there are languages that tolerate resumptive pronouns in ATB contexts. Since it is not immediately obvious that resumptive structures involve movement, resumptives in ATB-contexts may require a reformulation of the CSC with respect to the movement property.

ZG is such a language. While wh-movement is incompatible with resumption, relativization requires resumptives in certain grammatical relations. Relativization of subjects and direct objects involves gaps, but oblique relations (including datives) require resumptives. There are no relative pronouns, relative clauses are introduced by the invariant complementizer *wo*, cf. van Riemsdijk (1989/2008), Salzmann (2006):¹

1. ZG is largely representative of relativization in Alemannic varieties of German. For more empirical details and accounts of the distribution of resumptives, including the ban on resumption under wh-movement, cf. Salzmann (2006, 2008, 2009a/b/c, 2011), Salzmann & Seiler (2010) and van Riemsdijk (1989, 2008).

- (3) a. *de Maa, wo (*er) taub isch*
 the man C (he) deaf is
 ‘the man who is deaf’
- b. *de Maa, wo (*en) käne gsee hät*
 the man C him no.one seen has
 ‘the man who no one saw’
- c. *de Maa, wo mer *(em) es Velo ggëë hät*
 the man C one he.DAT a bike given has
 ‘the man who one gave a bike to’
- d. *de Maa, won i mit *(em) gredt han*
 the man C I with he.DAT talked have.1SG
 ‘the man who I talked to’

Returning to coordination, we find that in relativization, the CSC also holds: Just one gap/resumptive is not sufficient (reversing the order of the conjuncts leads to the same result):

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

Importantly, ATB-configurations are fine as long as both conjuncts contain either a gap or a resumptive:

- (5) 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*
 the teacher C the John of him is.excited and
[d Susi __ hasst]
 the Susi hates
- c. *de Lehrer, wo [de Hans __ verehrt] und*
 the teacher C the John adores and
[d Susi über en fluecht]
 the Susi about him swears

- d. *de Lehrer, wo [de Hans von em schwärmt] und*
 the teacher C the John of him is.excited and
[d Susi über en fluecht]
 the Susi about him swears

The generalization seems to be that each conjunct has to contain an A'-bound variable that is bound by the same antecedent. To determine whether the CSC can still be formulated in terms of movement, we need to look at the syntax of resumption.

1.2 Gaps involve movement, resumption involves base-generation

While gap relatives can be straightforwardly analyzed as involving movement,² the syntax of resumption has been controversially discussed recently. While base-generation was the default until 1990, there have been several movement accounts of resumption since then, e.g. Pesetsky (1998), Aoun et al. (2001), Boeckx (2003), Bianchi (2004) etc. While a movement account, or one based on Agree, may be adequate for languages where resumption is sensitive to locality (cf. e.g. Alexopoulou 2006) I adopt a base-generation approach here. For reasons of space I cannot do full justice to the issue (but see Salzmann 2008: 105ff., 2009a: 33ff., to appear a for detailed argumentation). The major argument for base-generation comes from the insensitivity to islands: Resumptives can occur inside strong islands, i.e. in positions from where regular wh-extraction (which is incompatible with resumption) is ungrammatical, cf. e.g. Salzmann (2006: 331):

- (6) a. *de Autor, wo d Marie jedes Buech, won *(er) schriibt,*
 the author C the Mary every book C he writes
sofort chaufft
 immed. buys
 'the author such that Mary immediately buys every book he writes'
- b. **[Wele Autor]₁ chaufft d Marie jedes Buech,*
 Which author buys the Mary every book
wo ___₁/er₁ schriibt?
 C he writes
 lit.: 'Which author does Mary buy every book that writes?'

Movement accounts of resumption have to resort to rather unorthodox mechanisms to make movement out of islands possible which either do not work

2. Van Riemsdijk (1989) proposes that ZG gap relatives are based on resumptive relatives with the resumptives being deleted in the case of SU- and DO-relatives. See Salzmann (2009a: 41/b: 143ff./c: 66f.) for counterevidence.

or unnecessarily complicate the grammar (cf. the references above). Under base-generation, the distribution of resumptives is as expected since strong islands but also PPs cannot be crossed by a movement dependency in ZG. Resumption thus acts as a last resort where movement derivations fail (for the case of dative resumptives, cf. Salzmann 2009b: 139ff.). Reference to locality thus explains the complementary distribution of gaps and resumptives in ZG. Reconstruction under resumption, which is sometimes used to argue for a movement account (e.g. Aoun et al. 2001) and which also obtains in ZG, cannot be considered a reliable diagnostic for movement because the relation between movement and reconstruction has generally turned out to be non-isomorphic. There are instances of reconstruction without prior movement and there are instances of movement without reconstruction (cf. Salzmann 2008, 2009a, to appear a). For reconstruction under base-generation, alternative mechanisms have been proposed such as the NP-ellipsis theory of resumption, cf. Guillot & Malkawi (2006). I therefore conclude that gap and resumptive relatives involve different derivations.

While the syntax of movement is that familiar from regular A'-movement with the operator entertaining Agree relationships with v/T and matrix C, the syntax of base-generation is different. As in traditional analyses, an operator base-generated in Spec, CP binds a pronoun in an argument position. As a consequence, this operator must not have an unvalued case-feature. I thus propose, following McCloskey (2002: 203), that such an operator only has an *iOp*-feature. Due to base-generation, there is no Agree relationship between C and the operator; this implies that matrix C must not have an *uWh/uOp* feature. Rather, it only has an EPP-feature, which is checked by the base-generated operator. The resumptive is merged in the theta position and agrees with some case-assigning probe. The following representation illustrates DO-relativization into an island:³

$$(7) \quad \begin{array}{cccc} [_{CP} & Op_i & C & [_{island} [_{VP} [_{VP} \text{pron}_i V] v]]] \\ & iOp[x] & EPP & uCase[ACC] \\ & & & iPhi[z] \quad uPhi[z] \end{array}$$

We can thus conclude that ATB-contexts in ZG which involve gaps and resumptives combine radically different chains.⁴

3. Alternative implementations of base-generation are discussed in Salzmann (to appear, Footnote 13).

4. Gaps and resumptives in ATB-contexts are also e.g. found in Swedish (Zaenen et al. 1981:681) and Palauan (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; 1986:98, 122f., 125ff, 137ff.). In Palauan, gaps and resumptives do

2. Implications for the CSC and the analysis of ATB-extraction

2.1 The nature of the CSC

The Examples (4)–(5) show that resumptives behave like gaps with respect to the CSC even though they involve a very different chain: If there is a gap or a resumptive in one conjunct, the other conjunct has to contain a resumptive or a gap as well, the combination of gap and resumptive being free. Consequently, the CSC can no longer be understood as a constraint on movement. Descriptively, one can say that if one conjunct contains an A'-dependency, then the other one has to as well (cf. also Ruys 1992: 154). How the CSC has to be stated precisely depends on the analysis of ATB. If, as e.g. in multidimensional/sharing approaches (Goodall 1987; Moltmann 1992; Fox 2000; Citko 2005), in the sideward movement account (Nunes 2004), and Reich's (2007, 2009) and Ha's (2008) asymmetric extraction account there is one instance of the operator outside the coordination (which is related to both conjuncts) the CSC follows from the constraint on vacuous quantification: Consider the following CSC violation:

- (8) *What₁ has [John eaten ___₁] and [Mary baked a cake]?

If such ATB-constructions are separated into their component structures whose grammaticality is checked independently (Fox 2000: 50), the ungrammaticality of (8) results from vacuous quantification in the component structure involving the second conjunct, cf. (9b). The CSC is therefore to be interpreted as a representational LF-constraint:

- (9) a. What₁ has John eaten ___₁?
 b. *What₁ has Mary baked a cake?

If, on the other hand, ATB involves two independent chains as e.g. in the Parasitic Gap analysis of ATB (Munn 1993) or two full CPs as in George (1980), Wilder (1994), te Velde (2005) or An (2006), the CSC can be reduced to a parallelism constraint that requires conjuncts to be identical in semantic type (Munn 1993; Reich 2007, 2009). Since CPs involving extraction or resumptive binding have a different type than CPs without such dependencies, the facts in (1)–(8) follow:⁵

not seem to differ in their sensitivity to locality (Georgopoulos 1991: 115ff., 127ff.). However these phenomena will eventually be analyzed, what seems clear is that they instantiate a case quite different from ZG and do not necessarily provide evidence against the CSC as a constraint on movement.

5. The two views on the CSC are not incompatible. Semantic symmetry also works for the first type of approach. The point is rather that once two CPs are adopted with the operator being inside the first conjunct, vacuous quantification is no longer an option.

- (10) * $[\text{What}_1 \text{ has John eaten } ___1]$? and $[\text{Mary baked a cake}]$.

2.2 Unifying gap-resumptive combinations with asymmetric LF-movement

Ruys (1992: 36f.) and Fox (2000: 52ff.) discuss cases of asymmetric LF-movement in the context of the CSC. They first point out that covert movement is sensitive to the CSC as well. (11a) shows that the universal QP cannot scope out of the conjunct (even though in simple clauses it can get wide scope w.r.t. the existentially quantified subject). (11b) shows that asymmetric covert movement of *what* is prohibited (on LF movement in coordination cf. Boskovic & Franks 2000):

- (11) a. A student $[\text{likes every professor}]$ and $[\text{hates the dean}]$. $\exists > \forall$; * $\forall > \exists$
 b. *I wonder who $[\text{took what from Mary}]$ and $[\text{gave a book to Fred}]$.

If, on the other hand, the QP or the *wh*-phrase binds a pronoun in the second conjunct, asymmetric LF-movement is licensed:

- (12) a. A student $[\text{likes every professor}_1]$ and $[\text{wants him}_1 \text{ to be on his committee}]$. $\exists > \forall$; $\forall > \exists$
 b. I wonder who $[\text{took what}_1 \text{ from Mary}]$ and $[\text{gave it}_1 \text{ to Fred}]$.

This is because the QP/*wh*-phrase will bind a variable in both conjuncts, the bound pronoun thus functions like a resumptive pronoun. Consequently, there is no vacuous quantification and both component structures are well formed, as can be seen for (12a).^{6,7}

6. Ha (2008: 239, Footnote 5) points out that a resumptive is impossible in overt ATB *wh*-movement in English:

- (i) ?* $[\text{Who}_1 \text{ will John marry } ___1 \text{ and Bill fire her}_1 \text{ father?}]$

This also holds for (Zurich) German *wh*-movement/topicalization. For overt movement, the generalization seems to be that asymmetric extraction is only licensed to the extent that that resumptives are possible in these constructions. Why LF-movement is different is a question I have to leave for further research. Note incidentally that resumptives are possible in English ATB-relativization contexts, but have to occur in both conjuncts according to Chomsky (1982: 102f., Footnote 31):

- (ii) the man who₁ $[\text{a friend of his}_1 \text{ likes Bill}]$ and $[\text{one of his}_1 \text{ brothers hates Tom}]$

7. Under full CP-coordination the amnestying effect of pronoun binding cannot be captured because the QP/*wh*-phrase inside the first conjunct cannot c-command the pronoun in the second conjunct:

- (i) $[\text{Everyone}_1, \text{ a student likes } ___1]$ and $[\text{a-student wants him to be on his committee}]$

Consequently, (11) and (12) are predicted not to differ in grammaticality, contrary to fact. There are more arguments against a two CP-analysis, most of which are related to interpretation: Under a two-CP+deletion-analysis, it is difficult to obtain the single-identity reading, which

- (13) a. every professor₁, a student likes ___₁
 b. every professor₁, a student wants him₁ to be on his committee

The examples in (11)–(12) are parallel to the resumption facts in (4), (5b/c). Consequently, I submit that (5b/c) involve asymmetric extraction of a relative operator: It moves out of its conjunct (where we find the gap) to Spec, CP from where it c-commands and binds its trace as well as the resumptive in the other conjunct. As the component structures for (5c) show, no vacuous quantification obtains, and both component structures are well-formed:⁸

- (14) a. *de Lehrer, Op₁ wo [de Hans ___₁ verehrt]*
 the teacher C the John adores
 b. *de Lehrer, Op₁ wo [d Sus über en₁ fluecht]*
 the teacher C the Susi about him swears

In (5d) with a resumptive in each conjunct, there is one base-generated operator above the two conjuncts that binds both resumptives so that we obtain two well-formed component structures:

- (15) a. *de Lehrer, Op₁ wo [de Hans von em₁ schwärmt]*
 the teacher C the John of him is.excited
 b. *de Lehrer, Op₁ wo [d Susi über en₁ fluecht]*
 the teacher C the Susi about him swears

In the ungrammatical cases in (4), the operator in Spec, CP (either moved or base-generated), binds a variable only in one of the conjuncts. The component structure without a gap/resumptive involves vacuous quantification so that the

is salient in ATB-movement (Munn 1999; Reich 2009:38ff.). This becomes clear if both CPs are fully realized:

- (i) Who does nobody love and hate? ≠
 (ii) Who does nobody love and who does nobody hate?

Cf. Wilder (1994:325ff.) and te Velde (2005:274ff.) for possible though not fully convincing solutions. In what follows I will disregard full CP-approaches of that type.

8. The proposal that an operator binds two variables violates the Bijection Principle in its original form. Safir's (2004:65f.) 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, (i), cf. Ruys (1992:187) for discussion.

- (i) Someone in every city_i hates it_i.

entire coordination is ungrammatical, basically like (8). We can thus unify asymmetric LF-movement with the asymmetric resumptive facts.⁹ It is, however, not a priori clear how regular cases of ATB like (2) and (5a) are to be handled. In Section 4 I will argue in favor of extending the asymmetric extraction analysis to such cases.

3. A reconstruction paradox in symmetrical ATB

This section shows that regular ATB, i.e. ATB with gaps only, presents us with a reconstruction paradox. While there is systematic reconstruction into the first conjunct, reconstruction into the second conjunct is found only with certain phenomena.

3.1 Symmetrical reconstruction

First, Strong Crossover effects obtain in both conjuncts (Citko 2005: 492):

- (16) a. *[Whose_i mother] did [we talk to ___] and [he_i never visit ___]?
 b. *[Whose_i mother] did [he_i never visit ___] and [we talk to ___]?

Secondly, we find symmetrical reconstruction for variable binding (Nissenbaum 2000: 44):

- (17) a. [Which picture of his_i mother] did [you give ___ to every Italian_i] and [sell ___ to every Frenchman_i?]
 b. ??[Which picture of his_i mother] did [you give ___ to every Italian_i] and [sell ___ to Mary]?
 c. ??[Which picture of his_i mother] did [you give ___ to Mary] and [sell ___ to every Italian_i?]

Third, we find symmetrical reconstruction for idiom interpretation (Citko 2005: 492):

- (18) a. [Which picture] did [John *take* ___] and [Bill pose for ___]?
 b. [Which picture] did [John pose for ___] and [Bill *take* ___]?

9. There are cases of (apparent) asymmetric extraction from coordination that do not involve binding of a variable in the other conjunct:

- (i) How much can you drink ___ and still stay sober?

There is good evidence, though, that such examples involve a non-coordinate structure and require a very different analysis. Cf. Postal (1998) and Reich (2009) for discussion. They will be ignored here.

Finally (Moltmann 1992: 107f.), scope reconstruction also targets both conjuncts. It allows for both a wide-scope reading of the *wh*-quantifier (19a) and a narrow scope reading (19b), and additionally for a reading where it has narrow scope w.r.t. *and*, but wide scope with respect to *every* (19c). Crucially, the type of reading has to be the same in both conjuncts, combining wide and narrow scope is not possible, cf. (19d) (cf. also Fox 2000):

- (19) [How many books] did [every student like ___] and [every professor dislike ___]?
- Five books (*how many* > \mathcal{E} > *every*)
 - Student A liked 5 books, and Prof X. disliked 7 books, Student B liked 3 books and Prof. Y disliked 4 books (\mathcal{E} > *every* > *how many*)
 - Every student liked 7 books and every professor disliked 3 books (\mathcal{E} > *how many* > *every*)
 - #Student A liked 5 books, Student B liked 3 books and all professors disliked 4 books

3.2 Asymmetrical reconstruction

Asymmetrical reconstruction is found for Principles A, C and for Weak Crossover effects. While there is always reconstruction into the first conjunct, no effects obtain in the second conjunct:

- (20) a. [Which pictures of himself_i] did [John_i buy ___] and [Mary paint ___]?
Pr. A¹⁰
- b. *[Which pictures of herself_j] did [John_i buy ___] and [Mary_j paint ___]?
(Munn 1993: 52)
- (21) a. *[Which picture of John_i] did [he_i like ___] and [Mary dislike ___]?
Pr. C¹¹
- b. [Which picture of John_i] did [Mary like ___] and [he_i dislike ___]?
Citko (2005: 494)

10. Interestingly, Nissenbaum (2000: 30f.) judges an example parallel to (20a) grammatical (and agrees on the status of cases like 20b), but mentions in a footnote a personal communication from David Pesetsky that for many speakers there is a contrast between examples like (20a) and (20b), the former being judged more acceptable.

11. Nissenbaum (2000: 33) claims that reconstruction for Principle C is symmetrical on the basis of the following pair:

- *[Which picture of John_i] did [he_i buy ___] and [not let Mary look at ___]?
- *[Which picture of John_i] did Mary [buy ___] and [not let him_i look at ___]?

I do not know what causes the difference in judgment. (ii) involves *vP*-coordination and not *TP*-coordination, but this should not make a difference. It seems to me that the German equivalent of (ii) is grammatical.

- (22) a. [Which man]_i did [you hire ___] and [his_i boss fire ___]? WCO
 b. *[Which man]_i did [his_i boss fire ___] and [you hire ___]?
 Munn (2001: 374)

3.3 Implications

Interestingly, no one has addressed the paradox so far to my knowledge. Linguists have always focused on either symmetrical or asymmetrical reconstruction depending on which facts were compatible with their approach. Consequently, none of the available approaches to ATB manages to cover all the reconstruction facts. This holds both for approaches based on asymmetric extraction like the Parasitic Gap approach (Munn 1993, 2001; Franks 1995; Boskovic & Franks 2000) as well as for accounts based on identity (Nunes 2004; Citko 2005).

The PG-approach to ATB assumes that coordinations are Boolean phrases with the second conjunct being adjoined to the first. ATB-movement involves asymmetric extraction from the first conjunct with a parasitic gap in the second:

- (23) What₁ did [_{TP} [_{TP} John buy ___₁] [_{BP} Op₂ [_{B'} and [_{TP} Mary sell ___₂]]]]?

Since only the first conjunct contains a copy of the extracted constituent we expect only asymmetric reconstruction, contrary to fact. Munn (1993: 57f.; 2001: 376ff.) provides solutions to the Strong Crossover facts, but fails to address the other cases of reconstruction. The available evidence thus argues against the PG-approach to ATB.¹²

12. There are more arguments against the PG-approach to ATB. First, such an approach is unattractive for languages like German and its varieties where parasitic gaps of the English type are generally taken not to exist (Huybregts & van Riemsdijk 1985; Kathol 2001; Reich 2007, 2009). Second, many instances of ATB also involve ATB-verb movement, e.g. (23). I do not see how this could be assimilated to PGs. Third, a PG-approach predicts licensing by a subject to be impossible (anti c-command), but this restriction does not hold for all cases of ATB. While it seems to apply to *wh*-movement (Munn 2001: 372)

- (i) *Who [___ read the paper] but [John didn't reply to ___]?

one can find counterexamples with relativization (Franks 1995:76; Munn 2001:391, Footnote 4):

- (ii) the man who [___ saw John] and [Sue thinks ___ kissed Mary] SU – embedded SU
 (iii) the man who [___ read the paper] and [Bob said ___ understood it]
 SU – embedded SU

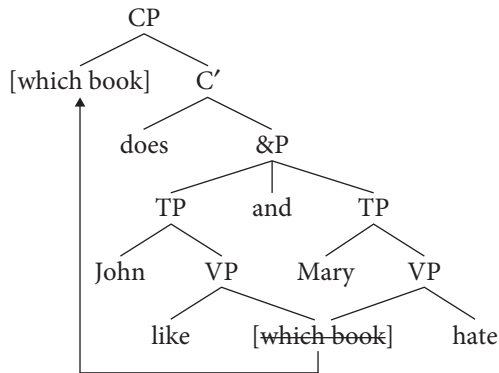
Munn (2001:291, Footnote 4) admits himself that relativization requires a different analysis. It is actually not so clear whether this constitutes a problem for the PG-approach because this depends on how the ban on subject licensing is captured. Anti c-command cannot be at stake if the examples in (i)–(iii) involve TP-coordination: both the base-position and the

Related to the PG-approach is Nunes' (2004) sideward movement account. He assumes that as a last resort a constituent can be copied from one constituent to a different, unconnected phrase marker. An ATB-derivation with sideward movement can be sketched as follows: The operator is merged in the second conjunct, then copied to the unconnected first conjunct. After merging the conjuncts under &P, the operator is asymmetrically extracted from the first conjunct to Spec, CP. Since it c-commands both lower copies of itself, they are PF-deleted by means of chain reduction:

- (24) Which book₁ did [_{&P}[John like ~~which book₁~~] and [Mary hate ~~which book₁~~]]?
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The approach suffers from the inverse problem of the PG-approach: Since copying is involved, it wrongly predicts symmetrical reconstruction in all cases. Unfortunately, Nunes (2004) does not address the reconstruction asymmetries.

As for sharing/multi-dimensional approaches to ATB (Goodall 1987; Moltmann 1992; Citko 2005), I will focus on Citko because it is the most recent contribution. Citko proposes that to derive ATB-movement a constituent can be merged with both conjuncts, a case of Parallel Merge. For reasons of linearization, the constituent has to move to a c-commanding position outside the two conjuncts, in the case at hand Spec, CP. There is thus one top copy and just one PF-deleted lower copy:



derived position of the subject are contained within the first conjunct and therefore do not c-command into the second conjunct. It therefore seems that the PG-approach would rather predict (i)–(iii) all to be grammatical.

Finally, any attempt to unify Parasitic Gaps and ATB (cf. also Nunes' sideward movement approach discussed below) is confronted with a number of systematic asymmetries, cf. Postal (1993b). Some of these are addressed in Munn (2001) and Hornstein & Nunes (2002).

Since there is only one copy inside the conjuncts, we expect only symmetrical reconstruction, contrary to fact. Citko (2005: 493ff.) admits that she does not have a solution.¹³ One can therefore conclude that approaches that are based on identity fail to account for the reconstruction facts.¹⁴

4. Asymmetric extraction + ellipsis

In this section the asymmetric extraction account from Section 2 will be extended to regular ATB. While the operator in the first conjunct extracts asymmetrically, the operator in the second conjunct undergoes ellipsis. This ellipsis operation will be responsible for the reconstruction asymmetries.

4.1 The derivation of ATB

4.1.1 *Structure building and locality*

The conjuncts are built independently until they are joined by &. This implies that depending on their size there will be successive-cyclic movement in both conjuncts. This correctly predicts there to be locality effects in both conjuncts (see Bachrach & Katzir 2009 for an exception in English). The following pair illustrates this for ZG *wh*-ATB-movement:

- (25) a. *[Weles Buech] hät [de Hans ___ mit Vergnüege gläse] aber
 which book has the John with pleasure read but
 [de Peter de Autor, wo ___ gschribe hät beschimpft]?
 the Peter the author C written has sworn.at
- b. *[Weles Buech] hät [de Hans de Autor wo ___ gschribe
 which book has the John the author C written
 hät beschimpft] aber [de Peter ___ mit Vergnüege gläse]?
 has sworn.at but the Peter with pleasure read

4.1.2 *The [E]-feature: Licensing by means of Agree*

Since Merchant (2001) it has become standard to assume that ellipsis is triggered by an [E]-feature. It is usually assumed that this E-feature is located on the licenser

13. Certain implementations of multidominance *can* lead to asymmetries, cf. van Riemsdijk (2005) on transparent free relatives.

14. The objections raised here also apply to Reich (2007, 2009). He assumes that ATB 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 relevant passage is not fully clear to me), the mismatches in 3.2 remain unaccounted for.

and triggers deletion of its complement. To give a concrete example, in sluicing, C bears an E-feature which instructs PF to leave the complement TP unpronounced (elided material henceforth appears in angled brackets):

- (26) I know that he bought something but I don't know [_{CP} what C_[E] ⟨ [_{TP} he bought] ⟩].

Aelbrecht (2009: 91ff.; 179ff.) has provided evidence that ellipsis is licensed by Agree: there are cases where deletion does not involve the complement of the licenser. Concretely, in the following example involving VP-ellipsis, it is the finite modal *should* that licenses ellipsis, but what is deleted is the complement of the voice head *been*:

- (27) I hadn't been thinking about that. You **should** have been ⟨ [thinking about that] ⟩!

Aelbrecht (2009: 189f.) implements this as follows: The modal *should* bearing some feature F (see Footnote 16 below) checks the E-feature on *been*, which leads to deletion of its vP-complement:

- (28) [_{TP} T_[E] [_{ASPP} [_{VOICEP} X_[E] ⟨ [_{VP} ...] ⟩]]]

I will follow previous work in assuming that ellipsis in ATB is also triggered by an [E]-feature. My approach is different in that I assume that this feature can be freely assigned in the numeration to and is located on the elements to be elided themselves, i.e. the operator, the subject, the aux etc. but not on some (functional) head whose complement is then elided. I will show presently why this is necessary. It is common to posit a specific uninterpretable [E]-feature for every elliptical construction. These [E]-features differ in their lexical entry, which includes at least the licensing requirement and the phonological effects. In line with this I posit an E-feature specific to ATB, viz. [E]_{ATB}. Since it has its own lexical entry, it can have different phonological effects than other [E]-features. While the [E]-feature used in sluicing invariably leads to the deletion of the complement (Merchant 2001: 55ff.), [E]_{ATB} instructs PF to leave unpronounced the constituent on which it is located. Following Aelbrecht (2009: 100f.), I assume that the [E]-feature is licensed by means of Agree by a c-commanding head which I take to be & in ATB. More precisely, the [E]_{ATB}-feature on some constituent bears a subfeature [uF] that can only be checked by a matching feature on the ellipsis licenser &. Agree applies once the second conjunct is merged with &. The operations for the second conjunct of *What did John like and Mary hate?* are as follows:

- (29) [_{&P} & [_{TP} Mary ⟨did⟩ [_{VP} ⟨what⟩ hate]]]
- | | | |
|-----|-----------|-------|
| | → E[[uF]] | Agree |
| [F] | → [E[uF]] | Agree |

Since & only c-commands elements in its complement but not elements in its specifier, deletion will always involve elements in the non-initial conjunct. Furthermore, given that in ATB contexts it is often the case that more than one element is deleted (as in (29)), one has to assume that a licenser can license the ellipsis of several constituents bearing an $[E]_{\text{ATB}}$ -feature. Aelbrecht (2009: 102ff) provides independent evidence for this.¹⁵ Ellipsis is local in that it can only target accessible elements, i.e. elements on the edge of the vP-phase: Modals/auxiliaries in T (English), verbs in v/T (German V2), and XPs that have undergone successive-cyclic movement to Spec, vP.¹⁶ In other words, by adopting Agree, which is constrained by the Phase Impenetrability Condition, the class of elements that can undergo ellipsis in ATB-contexts is adequately restricted. For one possible case of overgeneration, cf. 4.1.5 below. Elements with an unchecked $[E]$ -feature in the complement domain of v will lead to a crash of the derivation. Finally, I follow Aelbrecht (2009: 111ff.) in assuming that the elliptical element is shipped off to PF upon checking. Technically, this implies, that ellipsis freezes the ellipsis site for syntactic operations: Upon deletion, the formal features are no longer visible for the computational system so that the elliptical constituent is frozen and cannot be targeted by a probe. Inversely, ellipsis guarantees that features on these elements that fail to be checked (e.g. because the *wh*-phrase does not move to a scope position) will not cause a crash (see Lasnik 1999: 161 for a similar argument).

4.1.3 *Interpretation of the chains*

The derivation continues as follows: Once both conjuncts are merged, there is asymmetric extraction from the first conjunct to satisfy requirements of C, e.g. A' -movement to Spec, CP, and movement of a verb (e.g. German V2) or of an aux (English) to C. The question now arises how the resulting structure is interpreted at both PF and LF.

15. This raises two technical issues. Aelbrecht assumes that the feature on the ellipsis licenser is an interpretable categorial feature so that it can undergo Agree more than once. Since interpretable features normally cannot probe this implies for her that the directionality of Agree is reversed, i.e. applies bottom up instead of top-down. This would work for the data at hand as far as I can tell.

If one wants to adhere to the standard assumption that Agree applies top-down (as I have been assuming for ease of readability in (29)), additional assumptions are needed: in ATB-contexts, & must bear an additional uF agreeing with the $[E]$ -feature. This feature will have to be peculiar to & to guarantee that the $[E]_{\text{ATB}}$ -feature cannot be checked outside coordination. & then comes in two variants, one with and one without this [uF]. As opposed to the cases of multiple Agree in Aelbrecht (2009) there will be an intervention issue in (29). To avoid this, [uF] on & must be [+multiple] in the sense of Hiraiwa (2000).

16. I will have nothing to say about the possibility of ATB-A-movement in this paper.

The chains in the first conjunct (which link the extracted constituent with its copies) are unproblematic. Given a sentence like *Which book did Mary like and Peter dislike* we get the following PF- and LF-representations (regular PF-deletion is marked by means of strikethrough):

- (30) a. [Which book] did [Mary ~~did~~ [_{VP} [~~Which book~~] [_{V'} like [~~Which book~~]]]]
 ... PF
 b. Which_x [_{TP} Mary *did* like [x book]] &
 ... LF

At PF, only the top copy is realized while the lower copies are deleted. At LF, the operator is interpreted in the scope position while its restriction is interpreted in the bottom copy, in accordance with the preference principle. Furthermore, tense is interpreted in T.

The chains in the non-initial conjunct are more interesting since they are only partial and are not directly linked to the ATB-ed constituent. The PF-side is straightforward: The highest copy of the verb/aux and the operator are marked for deletion anyway (by means of the E-feature) so that they will not be realized. The lower copies of the *wh*-phrase (and possibly of the verb/aux) are regularly PF-deleted since bottom and intermediate copies are generally not phonetically realized. This means that no copy of the second conjunct is ever realized (ellipsis and regular PF-deletion of copies are notated differently here for ease of readability; the phonological effect is the same):

- (31) [_{TP2} Peter <did> [_{VP} <[which book]> [_{V'} dislike [~~which book~~]]]]?

This accounts for the ungrammaticality if only part of an XP (an operator) is deleted:

- (32) *Which book did [Mary like] and [Peter <did> <which> *book* dislike ~~which book~~]?

If the aux/V and/or the XP in the second conjunct lack an E-feature and thus fail to be deleted one might expect that they could potentially move on since they have features to be checked (against C). But such a derivation fails because C can only license one *wh*-phrase in its specifier (in languages like German) and only one element in C:

- (33) *Which book did [Mary like] and [Peter *did which book* dislike ~~which book~~]?

In such a configuration, at least one of the *wh*-phrases will fail to end up in a scope position (and one *did* will fail to end up in C), which leads to a crash due to unchecked features.

While in phonology the chains in the second conjunct do not interact at all with those in the first conjunct things are different at LF: Elements from the second

conjunct have to be interpreted as being identical to those in the first conjunct since the entire ATB-construction (normally) receives a single question interpretation. It seems as if the ATB-ed constituent binds an element in the second conjunct. We submit that this is possible because of the following: Only the lowest copy is retained at LF in the second conjunct and interpreted as a variable. Since the extracted operator is reduced according to the preference principle, it can bind both variables:

- (34) Which_x [Mary did like [x book]] & [Peter did dislike [x book]]

What additionally has to be respected is the recoverability requirement on ellipsis, i.e. ellipsis of an element in the second conjunct requires an identical antecedent in the first conjunct. In the case at hand, this means that ellipsis of an operator is only possible if the antecedent is an operator with the same index. This mechanism will be crucial to account for reconstruction into the second conjunct, cf. 4.3 below. The derivation is thus almost identical to the resumptive cases (5b/c) in 2. There is one important difference: Since only one element is to be extracted in those cases, no ellipsis is involved. As a consequence, asymmetric extraction can take place from either conjunct, i.e. from that which contains a gap: In (5b) the operator in the second conjunct will not be deactivated by means of deletion so that it can move on and extract asymmetrically. The (simplified) structure of (5b) then looks as follows (for ease of readability we do not indicate a possible decomposition of the silent relative operator into operator and restriction):¹⁷

- (35) a. *de* *Lehrer*, *wo* [*de* *Hans von em schwärmt*] *und*
 the teacher C the John of him is.excited and
 [*d* *Susi* ___ *hasst*]
 the Susi hates

17. Importantly, extraction from the second conjunct is not possible in the asymmetric LF-cases, as the following examples show:

- (i) *A student wants him_i to be on his committee and likes every professor_i.
 (ii) *Who took it_i from Mary and gave what_i to Fred?

Intuitively, these cases seem similar to instances of (Weak) Crossover (if linearity plays a role), but whatever definition rules out (i) and (ii) will also rule out the resumptive case in (35). At this point, I have no explanation for this asymmetry. One possibility is that there is no effect in (35) because resumptive structures (especially resumptive relatives) are “less quantificational” than wh-movement or QR in the sense of Lasnik & Stowell (1991). It would be interesting to test such a configuration with extraction of true quantifiers, but since wh-movement is incompatible with resumption in ZG this cannot be done. I thank one of the reviewers for raising this issue.

- b. the teacher [_{CP} [Op]₁ C [_{&P} [_{TP} John [of him] is.excited] & [_{TP} Susi ___₁ hates]]] PF¹⁸
- c. the teacher [_{CP} [Op]_x C [_{&P} [_{TP} John [of him]_x is.excited] & [_{TP} Susi x hates]]] LF

4.1.4 Why ellipsis has to target smaller constituents

As mentioned above, the assumption that PF-deletion triggered by [E]_{ATB} does not target the complement of a (functional) head but rather directly the constituent on which [E]_{ATB} is located is non-standard. In fact it amounts to non-constituent deletion (or iterative deletion of single constituents). There are two reasons why this is unavoidable given an ellipsis approach to ATB: First, if only deletion of the complement of some head were possible, ATB-extraction would be limited to objects. ATB-head-movement, however, would then be impossible because the heads involved in ATB-movement are never the only element of the complement of some higher head. Consequently, a much too large portion of the clause would be deleted. The same holds for cases of subject extraction as in the following instances of non-parallel ATB:

- (36) a. Who did [John support ___] and [Mary say ___ would win]?
Munn (1993: 43)
- b. I know the man who [John likes ___] and [we hope ___ will win]
Williams (1978: 34)

If the [E]-feature in the second conjunct were on *say* or *would/hope* or *will*, too much, i.e. more than just the subject, would be deleted.¹⁹ An approach based on iterative deletion of single constituents is admittedly very powerful, but here it is strongly, and as argued above, sufficiently, restricted by the derivational implementation, i.e. by the PIC.²⁰

18. One of the reviewer asks w.r.t. (35) what rules out leaving the operator in the second conjunct in Spec, vP while a base-generated operator would be inserted in Spec, CP binding the resumptive and the operator. I assume that an operator is not licensed in a non-scope position. Furthermore, there is ZG-internal evidence that movement is preferred over base-generation, cf. Salzmann (2008, 2009a/c).

19. What remains to be explained is to what extent mismatches in grammatical relation as in (36) are tolerated. The present account allows such mismatches since the operator in the second conjunct will have moved successive-cyclically up to the matrix Spec, vP and will thus be a possible target for deletion. But why some mismatches like those mentioned in Footnote 13 are impossible remains to be explained. See Franks (1995) for an interesting approach based on argument prominence.

20. Note that these cases of non-parallel extraction are problematic for symmetrical approaches like Nunes (2004) and Citko (2005) since this means that a single constituent receives conflicting case values. See Citko (2005: 480f.) for interesting discussion.

4.1.5 *The importance of contrast*

There is one interesting case of potential overgeneration brought to my attention by Jutta Hartmann (p.c.): Since the head of the vP-phase, *v*, is also accessible for operations from outside, we expect that it can be targeted by $\&$. This seems to lead to the wrong result as the following ungrammatical example from ZG shows:

- (37) **Was*₁ *mag*₂ [*de Urs* ___₁ ___₂] *und* [*d Eva* ___₁ ___₂]?
 what likes the Urs and the Eva
 intended: 'Which *x* is such that Urs and Eva like it?'

Suppose that the basis for this sentence is as follows with [E]-features on *Was* and *mag*:

- (38) [_{&P} [_{TP} Urs [_{VP} Was [_{VP} Was mag] mag]] & [_{TP} Eva [_{VP} <Was> [_{VP} Was mag] <mag>]]]

Both *Was* and *mag* are in principle accessible. Since they have identical antecedents, ellipsis is licensed, and further asymmetric verb movement from the first conjunct to C should enable the verb to form chains with its copies in both conjuncts, thereby deriving (37). Fortunately, (37) can arguably be ruled out by an independent pragmatic condition: ATB is usually employed to express a contrast between the conjuncts (e.g. John likes something while Mary dislikes something). This requirement is violated in (37) as well as in the following examples:

- (39) a. *Which book did John read and Mary read?
 b. *Which book did John read and John file? Citko (2006: 230)

Normally, this implies contrastive subject-verb pairs, but there are other possibilities like subject-object or subject-remnant of *wh*-phrase (the 'what for'-split; the facts are stunningly similar to Polish Left Branch cases, cf. Citko 2006: 228f.). These facts show that the finite verb in *v* can bear an ellipsis feature and can in principle be targeted by $\&$:²¹

21. The examples in (40) could also involve gapping (Johnson 1996/2004) in addition to ATB-movement. Additionally, as Jeroen van Craenenbroeck has pointed out to me, cases like (37) can be rescued by insertion of a polarity marker (*not*) or a focused adverb like *too* in the second conjunct (thereby establishing a contrast again), suggesting that in addition to ATB-movement one is dealing with *stripping*. I intend to evaluate this option in future work.

In ATB-subject extraction, we do not necessarily find a contrastive pair in each conjunct:

- (i) Which student came in and started to dance?

But it remains important that the verbs contrast:

- (ii) ??Which student read a book and read a magazine?

- (40) a. *Was schänkt [de Peter de Maria] und [de Hans
what gives the Peter the.DAT Mary and the John
de Susi]?*
the.DAT Susi
- b. *Was mag [de Hans für Auto] und [d Maria für Blueme]?*
what likes the John for cars and the Mary for flowers

4.2 Symmetrical reconstruction

The symmetrical reconstruction facts presented in 3.1 are expected under the present account: There is an instance of the ATB-ed constituent in each conjunct and because of the recoverability requirement on ellipsis, the operators, and thus the variables, will bear the same index.²² Schematically, the LF-structure will be as follows:

- (41) [_{CP} [OP_x] C [_{&P} [_{XP} [x NP]] & [_{xp} [x NP]]]]

For a case of symmetrical reconstruction like e.g. (18), the LFs will be the following:

- (42) a. [Which_x] [John did *take* [x picture]] and [Bill did pose for [x picture]]?
b. [Which_x] [John did pose for [x picture]] and [Bill did *take* [x picture]]?

The variable binding (17)²³ and scope case (19) work essentially the same, SCO will be addressed in 4.4. What is unexpected, though, given (41), is the lack of reconstruction into the second conjunct as in the asymmetrical reconstruction facts (3.2).

4.3 Asymmetrical reconstruction results from ellipsis

In this section, I will argue that the lack of reconstruction into the second conjunct with certain phenomena is the result of minimal asymmetries that are tolerated in ellipsis.

22. Symmetrical reconstruction in German is as in English, cf. Höhle (1991:177, 180f.) for data.

23. The variable binding example (17) 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. See Munn (1999) for discussion of such non-ATB-readings. Similar cases are found with topicalization of indefinites, cf. te Velde (2005:268f.). See also the “quantificational sloppy” readings discussed in Fiengo & May (1994:227ff.).

4.3.1 Principle C

The Principle C data in ZG are as in English: They do not obtain if the coreferential pronoun is in the second conjunct, but do obtain with a coreferential pronoun in the first conjunct:

- (43) a. [*Weles Fotti vom Hans_i*] *hät* [*s Susi __ uusgsuecht*] *und*
 which pict. of.the John has the Susi chosen and
 [*er_i __ verrisse*]?
 he torn.apart
- b. *[*Weles Fotti vom Hans_i*] *hät* [*er_i __ uusgsuecht*] *und*
 Which pict. of.the John has he chosen and
 [*s Susi __ verrisse*]?
 the Susi torn.apart

Interestingly, Principle C effects re-emerge (in the second conjunct) with idiomatic expressions:

- (44) *[*Weles Fotti vom Hans_i*] *hät* [*s Susi __ plant*] *und*
 which picture of.the John has the Susi planned and
 [*er_i __ gmacht*]?
 he taken

The partial absence of Condition C effects is surprising given that they normally obtain with *wh*-movement in (Swiss) German, cf. Salzmann (2006: 100ff.):

- (45) *[*Weles Fotti vom Peter_i*] *findt er_i __ am beschte*?
 which picture of.the Peter finds he the best
 lit.. ‘Which picture of Peter_i does he_i like best?’

The Principle C facts in the second conjunct are parallel to what we find in relativization (Salzmann 2006: 100ff. on Standard German): With non-idiomatic cases there are no Condition C effects:²⁴

24. There is a vast literature on reconstruction for Principle C in A'-movement. Even though there is some disagreement, especially concerning *wh*-movement, I will adhere to what seems to me to be the majority view according to which Condition C effects obtain with *wh*-movement but not with relativization; cf. Salzmann (2006) for an overview.

One of the reviewers has drawn my attention to the importance of the strength of the coreferential pronoun and the role of embedding. He argues that stress on the pronominal subject (which is independently necessary in ATB) strengthens the Condition C effect, at least in the b-example, but vanishes if a level of embedding is added in the first conjunct and the pronoun appears in the subordinate clause. I tend to disagree on the first point to the extent that there are some hints in the literature suggesting that on the contrary the effects tend to be mitigated under focus on the subject, cf. Bianchi (1995: 112–115) on Principle C and Postal

- (46) *s* [*Fotti vom Peter_i*], *won er_i — am beschte findt*
 the picture of.the Peter C he the best likes

With idiomatic cases, however, they do occur:

- (47) **s* [*Fotti vom Peter_i*], *won er_i — gmacht hät*
 the picture of.the Peter C he made has

In Salzmann (2006:371) I explained these facts on the basis of the Matching Analysis for relative clauses where the external head and the relative operator are related to each other via ellipsis. The operator phrase thus contains an instance of the external head:

- (48) *s* [*Buech*]_{*j*} [_{*CP*} [*Op* [*⟨Buech⟩*]_{*j*}]_{*I*} *wo de Peter —₁ am*
 the book book C the Peter the
beschte findt
 best likes
 ‘the book Peter likes best’

Despite the recoverability requirement, ellipsis operations have been shown to tolerate certain mismatches between antecedent and ellipsis site. Fiengo & May (1994:218ff.) have argued in favor of an operation vehicle change that makes minimal adjustments to nominals in the ellipsis site. For instance, an R-expression in the antecedent can correspond to a pronoun in the ellipsis site. Here is an example from VP-ellipsis where vehicle change prevents a violation of Principle C:

- (49) Mary loves John_{*i*}, and he_{*i*} thinks Sally does too ⟨love him_{*i*}⟩.

(1993a:549) on WCO. As for the second point, this may in fact hold independently of ATB, similar facts are discussed in Huang (1993:110, 113). To avoid such complications, I have constructed a pair where the coreferential pronoun is weak (because it is not the subject). Once this is controlled for, it seems to me that the same contrast as in (43) obtains:

- (i) [*Weles Fotti vom Hans_i*] *hät* [*d* *Petra — gmacht*] *und*
 which picture of.the John has the Petra taken and
 [*em_i s Susi — zäiget*?]
 he.DAT the Susi shown
 ‘Which picture of John did Petra take and Susi show to him?’
- (ii) *[*Weles Fotti vom Hans_i*] *hät* [*em_i s Susi — zäiget*] *und*
 Which picture of.the John has he.DAT the Susi shown and
 [*d* *Petra — verrisse*?]
 the Petra torn.apart

I should finally add that stress on the pronoun does not help for the idiomatic cases in (44).

I will not adopt an explicit operation “vehicle change”; instead, I will assume that these minimal mismatches are already present in syntax and are licensed by a semantic identity condition on ellipsis (cf. Merchant 2001, who points out several difficulties for structural isomorphism). The mismatch between the nominals is licensed as long as they refer to the same individual.^{25,26}

I will therefore refer to such asymmetries as “vehicle change effects”. Importantly, since ellipsis is involved in the formation of relatives, vehicle change effects obtain: The R-expression inside the external head corresponds to a pronoun in the copy in Spec, CP:

- (50) *s* [Fotti vom Peter_{i,j}]_j [_{CP} [Op [~~Fotti~~ ~~vo im~~_{i,j}]_i won er_i]
the picture of.the Peter picture of he.DAT C he
[x Fotti vo im_i]_i am beschte findt]
picture of he.DAT the best finds (strikethrough = LF-deletion)

25. Importantly, I thus differ from Safir (1999, 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.

26. One of the reviewers has pointed out that a semantic identity condition causes two important problems for the present account: First, it wrongly predicts the possibility of case mismatches on wh-operators:

- (i) *Wen hat [Peter —_{acc} unterstützt] aber [Hans noch
who.ACC has Peter supported but John still
nie —_{dat} geholfen]? Standard
never helped German

This may argue for a structural condition on identity, but at the same time mismatches in case values are tolerated if there are syncretic forms, cf. Citko (2005:487), te Velde (2005:229f.). Furthermore, one does find non-syncretic mismatches in ATB-verb movement, as pointed out in An (2006:8):

- (ii) Who *does* he like and they hate?

This might rather argue in favor of a semantic identity condition. Given this ambiguous situation, I have to leave this for future research. Second, the account incorrectly predicts that deletion of elements is possible whose antecedents do not undergo ATB. Example (iii) cannot have the interpretation in (iv) (example offered by reviewer):

- (iii) What did Mary’s sister like and hate?
(iv) What did Mary’s sister like and Mary hate?

Here, *Mary* would be deleted under identity with the possessor antecedent. Clearly, deletion without ATB has to be ruled out. All I can offer at this point is the following suggestion: One could restrict the assignment of the E-feature to elements bearing an A'-feature by means of a feature co-occurrence restriction. I intend to address this issue more thoroughly at some later point.

Since coreferential pronouns within picture NPs are possible in German, the relative in (50) is parallel to the following simple sentence:

- (51) *Er_i findet [das Fotti vo im_i] am besten.*
 he finds that picture of him the best
 ‘He_i likes this picture of him_i best.’

The mismatch in (50) thus prevents a Condition C violation. In the idiomatic cases the Principle C effect emerges because of a coreferential implicit PRO (Salzmann 2006: 134ff.):

- (52) **s* [*PRO_i Fotti vom Peter_i*]₁, [_{CP} [_{Op} [*PRO_i Fotti*
 the picture of.the Peter picture
*vo im_i]]₁ won er_i [*x* [*PRO_i Fotti vo im_i]]₁
 of him C he picture of him
gmacht hat]
 made has**

Vehicle change effects are not sufficient here because the Binding Theory violation obtains within the picture NP: Even if the external head can be LF-deleted (cf. Salzmann 2006: 126–139), there will still be a Principle B violation within the relative clause. Reconstruction is necessary to control the PRO (Salzmann 2006: 59f.) so that the violation really is due to the lower copy within the relative clause. As the following simple clause shows, coreferential pronouns inside idiomatic picture NPs are ungrammatical:

- (53) **Er_i hat es [PRO_i Fotti vo im_i] gemacht.*
 he has a picture of him taken
 lit.: ‘He_i took a picture of him_i.’

The ATB facts in (43)–(44) follow straightforwardly under the current analysis: 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:

- (54) a. [_{CP} [_{Op} NP] C [_{&P} [_{XP} [_{Op} NP]] & [_{xp} <[_{Op} NP]]]]
 b. [_{CP} [_{Op} picture of Peter] C
 [_{&P} [_{XP} [_{Op} picture of Peter]] & [_{xp} <[_{Op} picture of him]]]]

Since the first conjunct contains a full copy of the *wh*-phrase, reconstruction leads to a Principle C violation. The LF for (43b) looks as follows:

- (55) [_{CP} [*Weles Fotti vom Hans_i*]₁ hat er_i [*x* *Fotfi vom Hans_i*]₁
 Which picture of.the John has he picture of.the John
uusgsuecht] & ...
 chosen and

Ellipsis + vehicle change, however, void the Condition C effects in the second conjunct. This is the LF for (43a):²⁷

- (56) [_{CP} [~~Weles Fotti vom Hans~~]_i]₁ *hät*₂
 which pict. of John has
 [_{ϕP} [_{TP} *s Susi* [_{VP} [~~Weles Fotti vom Hans~~]_i]₁ *hät*₂ [_{VP} [_{x Fotti vom}
 the Susi which pict. of John has pict. of
~~Hans~~]_i]₁ *uusgsuecht*]]] *und* [_{TP} *er*_i [_{VP} [~~Weles Fotti vo im~~]_i]₃]
 John chosen and he which pict. of him
 ⟨*hät*₄⟩ [_{VP} [_{x Fotti vo im}]_i]₃ *verrisse*]]]]]?
 has pict. of him torn.apart

The mismatch between an R-expression and a pronoun is allowed because identity is determined semantically, i.e. *picture of John* counts as identical to *picture of him* (as long as *him* and *John* refer to the same individual). With idiomatic expressions the mismatch is insufficient because of the implicit PRO (note that PRO is only found in the second conjunct; I take this mismatch to be licensed under semantic identity):²⁸

- (57) * [_{CP} [~~Weles Fotti vom Hans~~]_i]₁ *hät*₂
 which picture of the John has
 [_{ϕP} [_{TP} *s Susi* [_{VP} [~~Weles Fotti vom Hans~~]_i]₁ *hät*₂ [_{VP} [_{x Fotti vom}
 the Susi which pict. of John has pict. of
~~Hans~~]_i]₁ *plant*]]] *ϕ* [_{TP} *er*_i [_{VP} [~~Weles PRO Fotti vo im~~]_i]₃]
 John planned he which pict. of him
 ⟨*hät*₄⟩ [_{VP} [_{x PRO Fotti vo im}]_i]₃ *gmacht*]]]]]?
 has pict. of him taken

27. For ease of representation, I have omitted the subject trace in Spec, vP. Furthermore, I have taken the auxiliary to head a vP that takes another vP as its complement. Consequently, there would have to be another copy of the moved wh-phrase in the specifier of the lower vP.

28. Interestingly, Aoun & Nunes (2007:529) report a different pattern from VP-ellipsis: Vehicle change effects within NP always obtain, with idiomatic and non-idiomatic cases:

- (i) Mary saw that picture of Bill_i, and he_i did, too.
 (Fiengo & May 1994:221, Footnote 24)
 (ii) I wonder if Mary took those pictures of John_i or if he_i did.
 (iii) Mary always tells stories/jokes about John_i, but he_i never does.

I do not know what causes this difference in judgment. On their account, vehicle change effects are possible since the entire DP *picture of Bill* can correspond to a pronoun, viz. *it*. This raises the question for the present account why it is not possible to relate *which picture of John* in the first conjunct to *which one* in the second one. I have to leave this for further research.

There is additional evidence for ellipsis: Condition C effects with idiomatic expressions vanish under embedding in relatives (Salzmann 2006:134; underline = reconstruction site):

- (58) *s* [*Fotti vom Peter_i*], *won er_i glaubt, dass es d Maria* ___
 The picture of.the Peter C he believes that it the Mary
gmacht hät
 taken has

Such cases do not involve implicit PROs (Salzmann 2006:88ff.) so that vehicle change effects can rescue the example (with *Peter* corresponding to *him*). Crucially, the same can be observed in ATB *wh*-movement. Consider the contrast with (44):

- (59) [*Weles Fotti vom Hans_i*] [*hät d Susi* ___ *plant*] *und*
 which picture of.the John has the Susi planned and
 [*tänkt er_i dass du* ___ *gmacht häsch*?]
 thinks he that you taken have.2s

The idiomatic facts are parallel to data discussed in Ha (2008:264ff.) where reconstruction for Principle C seems to be symmetrical (the ZG equivalents are also ungrammatical):

- (60) a. *President Bush_i, every Democrat criticizes __, but he_i admires __.
 b. *President Bush_i, he_i admires __, but every Democrat criticizes __.

Such examples unambiguously show that there is an instance of the ATB-ed constituent in the second conjunct. They rule out alternative explanations of the alleviation of Condition C effects in ATB based on different types of binding conditions (cf. Salzmann 2006:126ff.): While variable binding is a positive condition and thus would force reconstruction, Condition C as a negative condition does not. On the approach pursued here, the facts follow: Even if ellipsis licenses a mismatch between an R-expression in the antecedent and a pronoun in the second conjunct, there will still be a Principle B violation since the pronoun is locally c-commanded by *he*, i.e. the second conjunct will correspond to **he_i admires him_i*. Crucially, if we add a level of embedding, the example improves to full grammaticality:²⁹

29. Importantly, it must not be possible to substitute a reflexive for an R-expression/pronoun – neither for (60) nor for (57). Fiengo & May (1994:213, 224) discuss a few cases where this seems to be possible:

- (i) I shaved John_i because he wouldn't <shave himself_i>.

- (61) President Bush_i, every Democrat criticizes __, but he_i thinks that every member of congress should admire __.

The second conjunct now corresponds to *he_i thinks that every member of congress should admire him_i* and is correctly predicted to be grammatical. This concludes the discussion of the (absence of) Condition C effects in the second conjunct.

4.3.2 Principle A

Recall that reconstruction for Principle A only seems to target the first conjunct:

- (62) a. [Which pictures of himself_i] did [John_i buy __] and [Mary paint __]?
 b. *[Which pictures of herself_i] did [John buy __] and [Mary_i paint __]?

The reconstruction pattern in the first conjunct is unsurprising since we have been assuming that there is always a full perfect copy of the extracted constituent in the first conjunct. In (62a) *John* is a proper binder while in (62b), it is not, for obvious reasons. Consequently, (62b) does not show that there is no reconstruction into the second conjunct. What is more interesting is the pattern in the second conjunct. I would like to argue that vehicle change effects are again crucial. Consider the mismatch noticed by Fiengo & May (1994: 206ff.) in VP-ellipsis:

- (63) John_i believes himself_i to be heroic, and he_i said that Mary does, too
 (believe **him**_i to be heroic).

The possibility that *him* counts as identical to *himself* accounts for (62a), the second conjunct now contains the copy *picture of him*, and *Mary painted a picture of him* is, of course, well-formed. (62b) is unrescuable even if it contains a full copy of the ATB-ed constituent in the second conjunct since the reflexive remains unbound in the first conjunct where vehicle change is not available.

Anaphor binding in ZG provides additional evidence for ellipsis: In ZG, the anaphor is invariant *siich*. Crucially, reconstruction is possible into both conjuncts:

- (64) [Weles Grücht über siich_{ij}] hät [de Hans_i __ ghöört], aber [d
 which rumor about self has the John heard but the
 Susi_j __ignoriert]?
 Susi ignored

At the same time, Ha (2008:266) and Safir (2004:29) give the following as ungrammatical:

- (ii) *Louise is proud of Frank_i, but he isn't (proud of himself_i).
 (iii) *Malva aggravates him/Nigel, but Nigel doesn't (aggravate himself).

Safir (2004:29)

I do not know what causes this difference in judgment. Equivalent examples in ZG are ungrammatical. I therefore assume that this type of mismatch is not tolerated.

The sentence thus allows for both strict identity, i.e. Susi heard rumors about John, and sloppy identity, i.e. Susi heard rumors about herself. In the strict reading, the copy in the second conjunct contains a pronoun as in (62a), viz. *Grücht über in* ‘rumor about him’, another vehicle change effect. In the sloppy reading the reflexive has a different index. The fact that we get sloppy identity is another argument for ellipsis, which is famous for sloppy identity.^{30,31} In conclusion, the ellipsis approach to ATB provides an elegant account of both symmetrical and asymmetrical reconstruction.^{32,33}

30. Munn (1993:52) denies the possibility of the sloppy reading in an equivalent English example while (2009:36) takes it to be possible.

31. An account like the present one with copies in each conjunct seems ideally suited to handle sloppy identity. But there are alternative approaches like the functional analysis in Sharvit (1999) or the variable-free approach by Jacobson (1999) that derive similar results without two copies. Furthermore, sloppy identity effects also obtain outside of ellipsis, cf. Merchant (to appear) so that they have to be handled with care.

32. One of the reviewers reminded me of the similarities between the mismatches described here for ATB and those found in what at first sight look like parasitic gaps in German or Dutch, as e.g. the following:

- (i) *de Maa, Op_i wo de Chef [ohni —_i/en_i z prüefe] —_i*
 the man C the boss without him to test
aagstellt hät
 hired has (ZG)

He notes that reconstruction for Principle C only targets the matrix clause but not the adjunct clause:

- (ii) *Welke foto's va Jan_i heb je [zonder PRO hem/Evie — te laten*
 which pictures of John have you without him/Evie to let
*zien] *hem/Annie — verkocht?*
 see him/Annie sold

Such structures have been argued to instantiate a kind of left node raising (Huybregts & van Riemsdijk 1985; Kathol 2001) and might thus involve similar ingredients as the ATB-analysis proposed here. The asymmetries seem more fundamental to me, though, in that – unlike in English parasitic gaps – reconstruction apparently never targets the non-finite adjunct clause, neither for Principle A/C nor for SCO. Additionally, as pointed out by the reviewer, the distribution of gaps is also more asymmetrical: While the extraction site in the main clause behaves like that of a normal clause the variable in the adjunct does not: for instance, it allows pronouns for direct objects while a resumptive in the main clause in (i) would be strongly ungrammatical. This suggests to me that no ellipsis is involved here and perhaps no movement from/within the adjunct clause. I intend to address these issues in future work.

33. 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 of the present account and thus fails to account for the reconstruction pattern.

4.4 Why are there symmetrical Strong Crossover Effects?

Recall from (16), repeated here, that we find symmetrical SCO effects in ATB.³⁴

- (65) a. * $[\text{Whose}_i \text{ mother}]$ did $[\text{we talk to } __]$ and $[\text{he}_i \text{ never visit } __]$?
- b. * $[\text{Whose}_i \text{ mother}]$ did $[\text{he}_i \text{ never visit } __]$ and $[\text{we talk to } __]$?

This may seem surprising given that SCO is often subsumed under Principle C and Principle C effects were shown to be absent in the second conjunct. Furthermore, it has been shown that a variable can correspond to a pronoun in the ellipsis site (Merchant 2001: 206):

- (66) Which suspect_i did Abby call $__i$ and when $\langle \text{did she call him}_i \rangle$?

If the trace of the operator phrase *whose mother* could correspond to something like *his mother* we would expect an alleviation of the SCO effects in the second conjunct, contrary to fact. Given the derivational interpretation of ATB here, the difference w.r.t. sluicing finds an easy explanation: In ATB, it is the operator itself that undergoes ellipsis, not its trace. Schematically:

- (67) a. $\text{Op}_2 [\text{Op}_2 \dots __2]$ and $[\langle \text{Op}_1 \rangle \dots __1]$ ATB
- b. $\text{Op}_1 \dots __1$ and $\dots \langle \text{it}_i \rangle$ sluicing

Since in ATB vehicle change effects are tied to the ellipsis operation that targets elements on the edge of vP, they can only affect the operator in Spec, vP, but not its copy in the argument position, which is responsible for the SCO effects. To avoid an SCO effect, there would have to be a pronoun instead of an operator from the beginning; but an ellipsis operation between an operator and a pronoun would violate recoverability. Consequently, the only possibility is that there is an operator that moves to Spec, vP and leaves behind a full copy of itself, leading to an SCO effect:

- (68) $\text{Op}_1 \dots \text{he}_i \text{ visits } [\text{the mother of } \underline{x}_i]$

This distinction also explains the grammaticality of the following ATB-example with VP-ellipsis where at first sight it seems that the operator undergoes vehicle change (Fiengo & May 1994: 226):

- (69) Who_i did Mary see $__$, and does he_i think Sally did, too $\langle \text{see him}_i \rangle$

34. The literature on this is somewhat confusing. Munn (1993/2001) attributes the observation to Williams (1987) even though Williams (1987:271) only gives one example corresponding to (16a), but with a parasitic gap. Furthermore, Munn (2001:373ff.) argues that there is a difference between SCO and Secondary SCO, the latter appearing only in the first, but not in the second conjunct (thus like WCO). The status of German SSCO cases is not very clear, an issue I have to leave for further research.

Again, what is different here is that the trace position is part of the ellipsis so that vehicle change effects become possible. In ATB without VP-ellipsis, however, the trace, which triggers the SCO effect, is unaffected by ellipsis and therefore cannot show vehicle change effects. Consequently, the equivalent of (69) without VP-ellipsis is correctly predicted to be ungrammatical:^{35,36}

- (70) a. *Who_i [did Mary see ___] but [does he_i think that only Sally saw ___]?
 b. *Op_i [did Mary see [x_i]] but [does he_i think that only Sally saw [x_i]]?

5. Conclusion

In this paper I have argued in favor of a new approach to ATB that involves asymmetric extraction from the first conjunct and an ellipsis operation that links the operator in the second conjunct with that in the first. Evidence comes from an intricate reconstruction pattern that shows consistent reconstruction into the first but only partial reconstruction into the second conjunct. In the latter case,

35. Jairo Nunes suggested that the following example is grammatical:

- (i) Which picture of which man_i does Mary like but he_i dislike?

If indeed correct, this would imply that *which man* can correspond to *him* in the elided operator in the second conjunct. Since unlike in (16)/(65) there is another operator that licenses movement to Spec, vP, *which picture of him* may count as identical to *which picture of which man* under the present account. It should be pointed out, though, that vehicle change (effects) of (copies of) operators is contested. Fiengo & May (1994:227f.) take it to be possible while Safir (1999:605f., 2004:98) presents counterarguments. See also Aoun & Nunes (2007) for evidence that vehicle change effects with quantifiers are possible when they are embedded within an NP, as in the case at hand. Finally, see Salzmann (2006:131) for evidence that vehicle change effects with operators do not obtain in relatives.

36. I will have nothing to say about the Weak Crossover facts in (22). The situation in ZG is empirically unclear because WCO effects generally only obtain under long-distance movement with the coreferential pronoun in the matrix clause. Relevant ATB-examples involving such structures become very complex and the results are too unstable for firm conclusions.

Ha (2008:267) notes that similar WCO contrasts obtain in non-ATB context. If the pronoun occurs in the matrix clause, the effects are much stronger than when it occurs in the subordinate clause:

- (i) ?Which employee_i did Mary think that his_i boss would fire ___ next week?
 (ii) *Which man_i did his_i boss think that Mary would love ___ very much?

This may suggest that the WCO facts found in ATB-contexts require a different explanation altogether.

apparent non-reconstruction is the result of mismatches that are tolerated under a semantic approach to identity in ellipsis. Taking the CSC as a representational LF-constraint, the asymmetric extraction analysis can be extended to asymmetric LF-movement in coordination and to ATB-contexts where resumption and base-generation co-occur. We thus arrive at an analysis of ATB that does not require any assumptions particular to ATB (apart from E_{ATB}), but rather derives its properties from independently available principles and operations.

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