Asymmetric Coordination

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1   Coordinate structures and asymmetric coordination

The term *coordinate structure* (CS) is often used in reference to a vaguely delimited cluster of features, involving structural, morphosyntactic, semantic, and what one may call transformational properties. The intuitive characterization of a CS, however, seems to be based on the co-occurrence of three properties in a given expression.

1.1   Three properties of symmetric CSs

The first property, which we call *substitutability*, is complex. A CS involves two or more syntactic units – the coordinates – which are (or may be) adjacent, modulo coordinating morphology. The category of these units is usually quite unconstrained: many (typologically diverse) languages display CS cross-categorically (or at least for the major syntactic categories).[1] (1) gives a small sample from English.

(1)   a.   [$_{TP}$ John talked to Peter] and/or [$_{TP}$ Mary danced with Jim].
      b.   [$_{VP}$ John talked to Peter] and/or [$_{VP}$ danced with Jim].
      c.   I will bring [$_{DP}$ my cat] and/or [$_{DP}$ my dog].

What may be coordinated in a given syntactic context S, however, is subject to restrictions. If a CS occurs in S, each of its coordinates must be individually syntactically licensed in S; that is, each of the CS's coordinates, when substituted for the CS, must lead to a grammatical structure (Goodall 1987). (2b) shows that the coordinates of the CS in (2a) are each individually licensed in the position of the CS and (2a) is grammatical. This is not the case for the ungrammatical example (3a): (3b) shows that only one of the coordinates is licensed in the position of the CS.[2]

(2)   a.   A well-known [[poet] and [actor]] was awarded the medal.
      b.   A well-known [poet/actor] was awarded the medal.

(3)   a.   *A [[man] and [from Boston]] arrived.
      b.   A [man/*from Boston] arrived.

The second property, which we name *syntactic symmetry*, is that none of the coordinates is in any obvious way syntactically subordinate to any of the others – that is, none of the coordinates (or material within it) may asymmetrically c-command any of the other coordinates.[3] For instance, negation in either of the coordinates in (4) cannot license the negative polarity item *ever* in the other coordinate.

(4)   a.   *John hasn't ever talked to Peter or Mary has ever danced with Jim.
      b.   *John has ever talked to Peter or Mary hasn't ever danced with Jim.

The third property, henceforth *semantic symmetry*, is that the linear order of the coordinates has no truth-conditional impact on the interpretation of the sentence (i.e., none of the coordinate-denotations serves as an argument for the denotation of

any of the other coordinates).[4] The two sentences in (5) have identical truth-conditions, as do the two sentences in (6).

(5) a. John talked to Peter, and Mary danced with Jim.
 b. Mary danced with Jim, and John talked to Peter.

(6) a. John talked to Peter, or Mary danced with Jim.
 b. Mary danced with Jim, or John talked to Peter.

This of course also suggests that any instance of coordinating morphology (which does not have to be overt in all languages) denotes a commutative operation. The elements that occur in structures that exhibit *substitutability* and *syntactic symmetry* in English – *and*, *or*, and *but* – do so irrespective of which meaning we actually assign to them (see in particular Partee and Rooth 1983; Keenan and Faltz 1984; Krifka 1990). And the same seems to hold for coordinating material in other languages.

 If this is our basic notion of a CS – co-occurrence of *substitutability*, *syntactic symmetry*, and *semantic symmetry* – a structure may be said to involve *asymmetric coordination* (AC) for a number of reasons. Any construction that exhibits some, but not all of these properties would qualify as an AC. In addition also constructions involving morphology that is homophonous to coordinating morphology but, in fact, exhibits none of the aforementioned properties would qualify. In order to prevent confusion, we henceforth refer to CSs that exhibit all the three properties as *symmetric CS*.

1.2 "Transformational" properties of symmetric CSs

Before turning to the discussion of AC proper, we point out one particular phenomenon that correlates with symmetric CSs: The *Coordinate Structure Constraint* (CSC) in (7) (see Ross 1967; Williams 1978), which states that if an element moves from a CS, it must move *across-the-board* (ATB) (it also states that no coordinate may be moved as a whole from the CS, which will not be discussed in this chapter).

(7) *Coordinate Structure Constraint*
 In a coordinate structure, no coordinate may be moved, nor may any element contained in a coordinate be moved out of that coordinate unless it moves from all coordinates.

Its application is illustrated in (8): the object cannot move only from the first coordinate, (8a), or only from the second, (8b), but may move from both coordinates simultaneously.

(8) a. *Who did John talk to ____ and (did) Mary dance with Jim?
 b. *Who did John talk to Peter and (did) Mary dance with____?
 c. Who did John talk to ____ and (did) Mary dance with ____?

The CSC is not limited to sentential coordination or extraction of arguments, as witnessed by the minimal pairs in (9a) and (9b), respectively. Furthermore it holds of all

coordinates – if a coordinate structure has more than two coordinates, movement must be from all of them, as shown by (9c).

(9)   a.   Who does John [[$_{vP}$ love t_1/*Bob] and [$_{vP}$ adore t_1]]?
      b.   When did John [[$_{vP}$ dance with Sue t_1] and [$_{vP}$ play with Mary t_1/*on Monday]]?
      c.   Who does John [[$_{vP}$ love t_1], [$_{vP}$ adore t_1] and [$_{vP}$ admire t_1/*Mary]?

A crucial question (already raised by Ross 1967, but also discussed by Williams 1978; Gazdar 1981; Goldsmith 1985; Goodall 1987; among others) is what property of symmetric CS the CSC is due to – and whether the CSC can be reduced to any of the features of CS discussed above.

   What makes AC interesting for this question is that they frequently do not seem to be subject to the CSC – that is, they do allow for extraction from one coordinate only. We henceforth call this phenomenon *asymmetric extraction*. Ideally, we should correlate the absence of a single defining property of CS with the possibility of asymmetric extraction. This in turn would allow for a better understanding of what the CSC is actually due to.

1.3   The range of AC

In order to allow for more substantial discussion of what AC tell us about how CSC and the properties of CS interact, we must get a clearer picture of the wide range of phenomena which have been called AC. In this section, we discuss two classes of AC: the first lack semantic symmetry, whereas the second lack substitutability.

1.3.1   *AC lacking semantic symmetry*
Most cases of AC discussed in the literature differ from the examples above in that the order of the coordinates has a truth-conditional impact, which means that one coordinate is semantically (and potentially also syntactically) subordinate to the other one.

   Consider first the string in (10). Apart from a symmetric construal, paraphrased in (10a), it also has a conditional construal, paraphrased in (10b), where the first coordinate seems to be interpreted as the antecedent and the second one as the consequent.[5] Accordingly, reversing the order of the coordinates, as in (11), will not preserve the truth-conditions found for the conditional construal in (10b).[6]

(10)   Big Louie sees you with the loot and he puts a contract on you.
                                         (Culicover and Jackendoff 1997, 198)
       a.   *It is both the case that Big Louie sees you with the loot and that Big Louie puts a contract on you.*
       b.   *If Big Louie sees you with the loot, he will put a contract on you.*

(11)   Big Louie puts a contract on you and he sees you with the loot.

Another instance of a lack of semantic symmetry are cases like (12) discussed by Lakoff (1971) and Culicover (1972). Apart from the symmetric construal paraphrased in (12a), the string in (12) has the construal paraphrased in (12b) where

the meanings of the two coordinates are in a causal relationship. Again, if we reverse the coordinates, as in (13), the truth-conditions of the causal construal are not preserved.

(12)   The police came into the room and everyone swallowed their cigarettes.
                                                        (Lakoff 1971, 127)
   a.   *It is both the case that the police came into the room and that everyone swallowed their cigarettes.*
   b.   *Everyone swallowed their cigarettes because the police came into the room.*

(13)   Everyone swallowed their cigarettes and the police came into the room.

Finally, there is a class of constructions often referred to as *pseudo-coordinations* (see Schmerling 1975; Carden and Pesetsky 1977; Lakoff 1986; De Vos 2005; among others) which typically have an unaccusative verb in the second coordinate. The string in (14) has two construals – the symmetric one in (14a) and one where the first coordinate expresses a state of affairs that is necessary for the second coordinate to be able to be true. Again, the meaning of the second construal is not preserved once the order of the coordinates is reversed as in (15).

(14)   John went to the store and bought a beer.
   a.   *It is both the case that John went to the store and that John bought a beer.*
   b.   *John went to the store, and when he was there, he bought a beer.*

(15)   John bought a beer and went to the store.

The example in (16) also has two construals. The non-symmetric one in (16b) is probably best described as one where the verb in the first coordinate is semantically bleached and only provides aspectual information (De Vos 2005).[7]

(16)   John will go and read a book.
   a.   *It is both the case that John will go and that John will read a book.*
   b.   *John is going to read a book.*

None of the cases lacking semantic symmetry appear to obey the CSC: the examples in (17) show that we find asymmetric extraction for all of them.[8]

(17)   a.   [This is the loot]$_1$ that Big Louie sees you with t$_1$ and puts a contract on you.
                                    (see Culicover 1997 for analogous examples)
       b.   [Which room]$_1$ did the police enter t$_1$ and everyone swallowed their cigarettes?
                                    (see Culicover 1972 for analogous examples)
       c.   What$_1$ did John go to the store and buy t$_1$?
                                                        (Lakoff 1986)
       d.   What$_1$ will John go and read t$_1$?
                                    (see DeVos 2005 for analogous examples)

Crucially the only construal remaining with asymmetric extraction is the non-symmetric one. In other words, in all of the cases in (17) asymmetric extraction is tied to semantic non-symmetry.

But are these data relevant for our investigation of the CSC? Couldn't we assume that these structures are not CS at all but simply involve subordination – that is, they lack syntactic symmetry in addition to semantic symmetry? The non-symmetric construals above are all contingent on the presence of *and*. Analogous constructions with *or* lack a non-symmetrical construal (or, in the case of conditionals, give rise to a different non-symmetric construal, see in particular Kaufmann 2012). Couldn't we assume that *and* is multiply ambiguous and may also occur as a subordinating morpheme? Some accounts such as Postal's 1998 one have gone in this direction, whereas others, such as Culicover and Jackendoff's 1997 one for the conditional interpretation and De Vos' 2005 one for pseudo-coordination, have refuted such an approach.[9] Goldsmith (1985) and Culicover and Jackendoff (1997) argue for a reformulation of the CSC instead, arguing that it only applies to semantically symmetrical structures.

We cannot decide this issue here.[10] It should, however, be clear that from the three properties of symmetric CS – *substitutability*, *syntactic symmetry*, and *semantic symmetry* – the latter two are the ones that really set a symmetric CS apart from subordinate structures. This is already suggested by their names: material can be subordinated to other material whereby it somehow becomes dependent on it, or it can be coordinated with other material which means that neither is dependent on the other. Only in the latter case would one pre-theoretically expect symmetry. As already mentioned, this means that the constructions discussed in this section under their non-symmetric construals might actually be cases of subordination, an intuition going back to at least Ross (1967). This, however, makes them ill-suited for the discussion of ACs. Moreover, it means that we should ask whether there are cases of CSs showing both syntactic and semantic symmetry yet lacking substitutability, as such constructions could not involve subordination.

1.3.2   AC lacking substitutability

In the following, we will consider a case of AC that retains the symmetry properties and therefore cannot be a subordinate structure, yet lacks substitutability. Crucially, this particular construction allows for asymmetric extraction and hence appears to violate the CSC.

This construction has the properties of the one first discussed by Höhle (1983; 1990) for German under the name SLF (*subject lacking in finite clauses*). It is also found in the V2 languages Dutch (Larson 2005) and Yiddish (Sadock 1998); variants of it have also been argued to be found in the Scandinavian languages (Vikner 2003) and even in the non-V2 language English (Heycock and Kroch 1994; Wilder 1994). Here, we will concentrate on the German cases. Its distinctive features are summed up below. For ease of exposition, the term AC will from now on exclusively refer to this type of construction.

(18)   *Properties of AC*
     a.   All coordinates except one display a gap.
     b.   The gap is not the result of ellipsis.

(19) and (20) differ only, but crucially, in that (20) is missing an overt subject in the second coordinate. We refer to this fact as *subject gap*. (20) is an instance of AC restricted in the way discussed above. (Throughout, we indicate the position of the empty subject with underline and its corresponding overt material in boldface.)

(19) German
Gestern [[_{C′} musste der Hans morgens mit der Anna
yesterday must.FIN the Hans in.morning with the Anna
frühstücken] und [_{C′} sollte der Anton abends mit der Maria
have.breakfast and should.FIN the Anton in.evening with the Maria
ausgehen]].
go.out
'Yesterday, Hans had to have breakfast with Anna in the morning, and
Anton was supposed to go out with Maria in the evening.'

(20) German
Gestern [[_{C′} musste **der Hans** morgens mit der Anna
yesterday must.FIN the Hans in.morning with the Anna
frühstücken] und [_{C′} sollte ____ abends mit der Maria
have.breakfast and should.FIN in.evening with the Maria
ausgehen]].
go.out
'Yesterday, Hans had to have breakfast with Anna in the morning, and was
supposed to go out with Maria in the evening.'

Cases like (20) exhibit syntactic symmetry and semantic symmetry. First, none of the coordinates appears to be syntactically subordinate to the other. Indeed, they seem to be contrasted with each other. The most natural intonation is one where there is contrastive stress on at least *Anna* and *Maria*.[11]

Semantic symmetry is demonstrated in (21): (21) has a meaning that is preserved in the reversed order in (22).

(21) German
Leider [[_{C′} haben **viele Kinder** Probleme mit dem Gewicht]
unfortunately have many children problems with the weight
und [_{C′} können ____ nicht lesen]].
and can not read
'Unfortunately, many children have weight problems and are unable to read.'

(22) German
Leider [[_{C′} können **viele Kinder** nicht lesen] und [_{C′} haben ____
Unfortunately can many children not read and have
Probleme mit dem Gewicht]].
problems with the weight
'Unfortunately, many children are unable to read and have weight problems.'

Note also that we may replace *and* with *or*, as shown in (23).

(23) German
Leider [[$_{C'}$ können **viele Kinder** nicht lesen] oder [$_{C'}$ haben ____
unfortunately can   many children not read] or   have
Probleme mit   dem   Gewicht]].
problems with the   weight
'Unfortunately, many children are unable to read or have weight problems.'

Since AC were just shown to exhibit both syntactic and semantic symmetry, it seems
hard to maintain that they involve subordination, as proposed by Büring and Hart-
mann (1998), since the notion of subordination involved would only be trivially dis-
tinct from that of coordination. We return to this issue in the next section.

The point where ACs differ from symmetric CSs is substitutability: Not both
coordinates are licensed when occurring on their own instead of the whole CS. In par-
ticular, the second coordinate of (20) cannot appear on its own given that it does not
have an overt subject and German is not a pro-drop language: (24) is ungrammatical.

(24) German
*Gestern [$_{C'}$ sollte ____ abends   mit   Maria ausgehen].
yesterday   should in.evening with Maria go.out

What seems to be setting these grammatical examples of AC apart from the other
cases violating substitutability above is that the latter did not have a clear instance
of a gap similar to the subject gap observed here: A gap in the second coordinate
appears to be a necessary condition for something to constitute an AC in the sense
we are interested in here. Moreover, all coordinates except for the first must exhibit
a subject gap, as shown by the contrast between (25) and ungrammatical (26), where
only one of three coordinates has a subject gap.

(25) German
Gestern [[$_{C'}$ hat **Hans** morgens   mit   Anna getanzt], [$_{C'}$ hat ____
yesterday   has Hans in.morning with Anna danced   has
mittags   mit   Maria gespielt] und [$_{C'}$ hat ____ abends   mit   Klara
at.noon   with Maria played   and   has   in.evening with Klara
gegessen]].
eaten
'Yesterday, Hans danced with Anna in the morning, played with Maria at noon,
and ate with Klara in the evening.'

(26) German
*Gestern [[$_{C'}$ hat **Hans** morgens   mit   Anna getanzt], [$_{C'}$ hat ____
Yesterday   has Hans in.morning with Anna danced   has
mittags   mit   Maria gespielt] und [$_{C'}$ hat Anton abends   mit   Klara
at.noon   with Maria played   and   has Anton in.evening with Klara
gegessen]].
eaten

Our central interest for the remainder of this chapter can be described as follows.
Symmetry properties appear to be fundamental for CS, hence the CSC requiring

parallel movement from all coordinates does not seem too surprising – one might view the CSC as just another property related to the symmetry of CSs. Therefore, ACs constitute an extremely puzzling phenomenon: on the one hand, they show syntactic and semantic symmetry; on the other hand, they appear to not be subject to the CSC, which intuitively is related to symmetry. We will now discuss ACs in more detail, which will enable us to learn more about coordination in general and the CSC in particular, to which we return in section 3.

## 2   Properties of asymmetric coordination

2.1   Subject gaps

As German has the so-called V2 property (Den Besten 1983) – the finite verb is placed in C in assertions and exactly one constituent precedes it in Spec,CP:

(27)   a.   Karl   hat   gestern   geweint.
            Karl   has   yesterday   cried
            'Karl cried yesterday.'
       b.   *Karl   gestern   hat   geweint.
            Karl   yesterday   has   cried.

This strongly suggests that in the AC in (20) repeated in (28), coordination must occur at least as high as at the C'-level.

(28)   Gestern [[$_{C'}$ musste **der Hans** morgens mit der Anna frühstücken] und
       [$_{C'}$ sollte _____ abends mit der Maria ausgehen]].

However, both Büring and Hartmann (1998) and Johnson (2002), aiming to explain the subject gap in the second coordinate, propose alternatives where the site of attachment of the second coordinate is much lower, namely, below the overt subject *der Hans*. Their claims are schematized in (29), which ignores T-to-C movement.

(29)
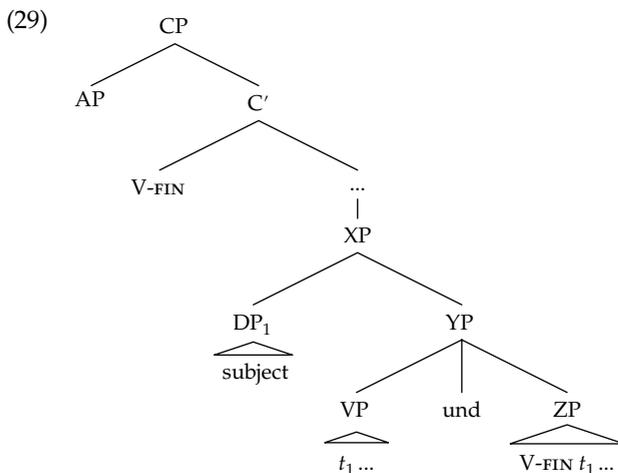
We consider this hypothesis untenable: (29) falsely predicts that since the second coordinate occurs low in the structure of the first one, it should not have an impact on processes above the coordination site. Therefore, additional coordination at a point higher than VP should be possible.[12] For instance, we should find coordination at the XP-level, as schematized by (30). (30) corresponds to the sentence in (31), which is ungrammatical. Accordingly, coordination can be no lower than C′.

(30)

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                          CP
                  ┌───────┴────────┐
                 AP                C′
                          ┌────────┴────────┐
                       V-FIN               ...
                                            │
                                            XP
                              ┌─────────────┼─────────────┐
                             XP            und            XP
                        ┌─────┴─────┐                     ╱‾╲
                       DP₁         YP                     ...
                       ╱‾╲     ┌────┴────┐
                     subject  VP   und   ZP
                              ╱‾╲        ╱‾╲
                             t₁...    V-FIN t₁...
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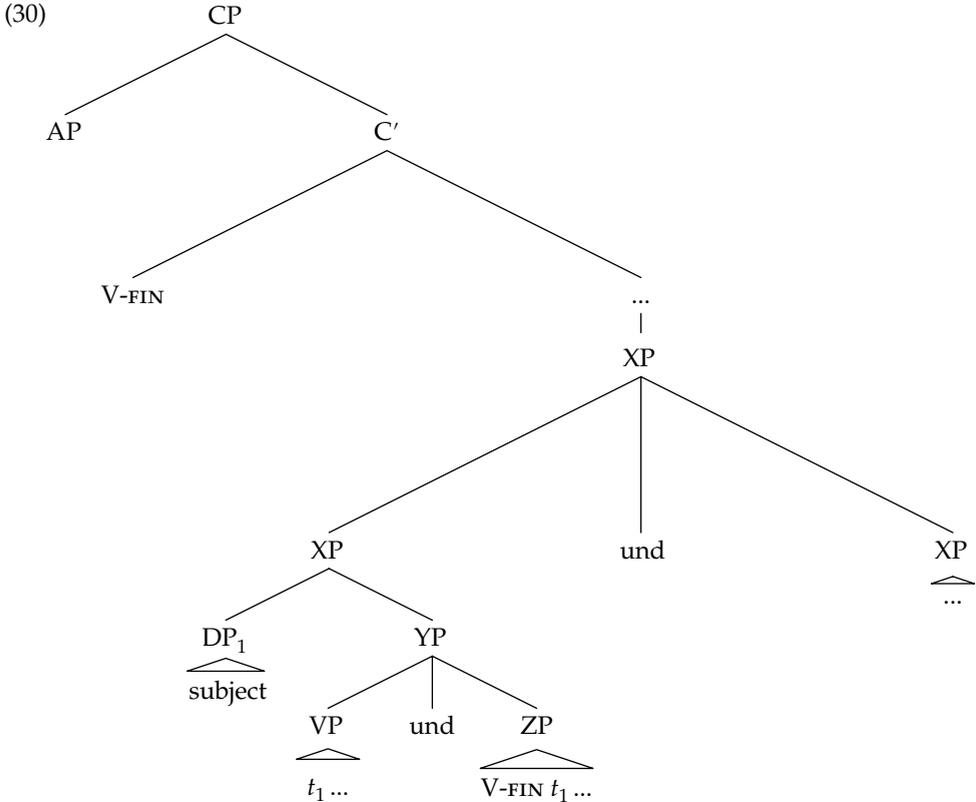
(31) German
*Gestern musste [[**der Hans** morgens mit der Anna frühstücken
yesterday must.FIN the Hans in.morning with the Anna have.breakfast
und sollte ____ abends mit der Maria ausgehen] und [der Peter die
and should.FIN in.evening with the Maria go.out and the Peter the
Susi treffen]].
Susi meet
intended meaning: 'Yesterday, Hans had to have breakfast with Anna in the
morning, and was supposed to go out with Maria in the evening and Peter had to
meet Susi.'

Coordination cannot be higher than C′ either, that is at the CP-level. In (28), Spec,CP is filled by the adverb *gestern* preceding both finite verbs. (32) shows that no other element can precede the finite verb in the second coordinate.

(32) German
    *[[Gestern musste **der Hans** morgens mit der Anna frühstücken]
    yesterday must.FIN the Hans in.morning with the Anna have.breakfast
    und [heute sollte ____ abends mit der Maria ausgehen]].
    and today should.FIN in.evening with the Maria go.out

We conclude that (28) and similar cases of AC are instances of C'-coordination and that therefore the overt subject *der Hans* from the first coordinate has no chance of being related to the subject position of the second coordinate by overt movement, since coordination takes place above *der Hans*.

Wunderlich (1988), however, points out that SLFs are possible when the first coordinate is a verb-final clause, as in (33) (also see Höhle 1990; Reich 2009).[13] At first blush, such cases appear to contradict the C'-coordination analysis and to support the subordination account. As the latter does not involve coordination, it need not worry about the apparent asymmetry.

(33) German
    Wenn du nach Hause kommst, und siehst den Gerichtsvollzieher
    if you to home come and see the bailiff
    vor der Tür, dann …
    in front the door, then
    'If you come home and you see the bailiff in front of the door, then …'

But in fact such examples are no obstacle for the coordination analysis. A verb-final clause can also be coordinated with a non-SLF V2-clause as in (34). We take it that the V2-clause is not subordinated at a lower position but coordinated at the CP-level, yet below *wenn*. If this is the case, then coordination of C's in (33) should not be a problem, either.

(34) German
    Wenn du nach Hause kommst, und du siehst den Gerichtsvollzieher
    if you to home come and you see the bailiff
    vor der Tür, dann …
    in front the door, then
    'If you come home and you see the bailiff in front of the door, then …'

More precisely, the antecedent in (33) has the structure in (35), where the subject is ATB-moved to Spec,CP. This makes it evident that (33) is not an instance of AC at all as two C's each with a trace of the subject are coordinated.

(35) wenn [$_{CP}$ du$_1$ [$_{C'}$ t$_1$ nach Hause kommst] und [$_{C'}$ t$_1$ siehst den Gerichtsvollzieher vor der Tür]]

The conclusion that (33) is not a case of AC is supported by the fact that once the subject follows the PP as in (36), the structure becomes ungrammatical.

(36) German
      *Wenn   uns keiner   willkommen heißt und schließt uns in die Arme, …
      if   us   nobody welcomes   and takes   us   in the arms
      'If nobody welcomes us and gives us a hug, …

                                                              (Reich 2009, ex. 8)

We submit that the reason for the ungrammaticality of (36) is that the subject gap in the second coordinate cannot be related to the overt subject. We will return to this issue in section 2.3.3 below.

2.2   Other gaps

But how is AC different from other cases that are missing some material in one of the coordinates – such as gapping, (37a), VP-ellipsis, (37c), or even (reversing the directionality of the positions of the overt material and the gap) *Right Node Raising*, as in (37b)?

(37)   a.   [TP James **will explain how he stole a car** to the police detectives] and [TP Peter _____ to the federal prosecutors].
                                                    (adapted from Johnson 2006, ex. 12)
       b.   What a co-incidence! [TP Last night, Mary bought _____] and [TP Peter broke **an expensive Chinese vase**].
                                                     (adapted from Abels 2004, ex. 1)
       c.   I **bought a house** and John did _____, too.

The difference lies in the interpretation of the gap. The phenomena in (37) often exhibit a construal of the gaps in all coordinates independent of the antecedent, which suggests that the missing material is elided under semantic (and syntactic) identity with the antecedent (see Hartmann 2000, among others). (37a) has a "sloppy-identity" reading of the indefinite: the sentence can convey that James will explain how James stole a car to the police detectives, while Peter will explain how Peter stole a, potentially different, car to the federal prosecutors. (37b) has a construal where the vase that Mary bought is different from the one Peter broke. (37c), finally, has a construal where John and I bought different houses.

   The subject gap in AC, on the other hand, lacks an independent construal and accordingly cannot be analyzed as involving ellipsis (contra Zwart 1991; Wilder 1997; Schwarz 1998). If it did have such a construal, (38) should be able to express (39a), but it cannot do so. Let's say I have three admirers: John, Bill, and Peter. John and Bill are illiterate but have perfect skin, whereas Peter suffers from psoriasis but is literate. If (39a) were available, the sentence should be true in this scenario, but it is not. The only construal for (38) is (39b).

(38)   German
       Leider [[C′   kann **mindestens einer meiner Verehrer** nicht lesen]
       unfortunately can   at-least   one   of-my   admirers   not   read
       und [C′ hat _____ eine schwere Hautkrankheit]].
       and   has   a   severe   skin disease

(39) a. $\exists x[|x| \geq 1 \wedge x\ cannot\ \ read] \wedge \exists x[|x| \geq 1 \wedge x\ has\ a\ skin\ disease]$
      b. $\exists x[|x| \geq 1 \wedge x\ cannot\ \ read \wedge x\ has\ a\ skin\ disease]$

Descriptively, therefore, the subject gap is interpreted as a variable co-varying with the subject in the first coordinate. The data furthermore suggest that in AC the subject in the first coordinate is interpreted *above* the coordinate structure, even though it occurs in the first coordinate. We return to this point below.

(40) $[_{C1} \ldots \text{Subject}_x \ldots] [_{C2} \ldots x \ldots]$

All we state for the moment is that the lack of an independent construal sets AC apart from other constructions exhibiting gaps. This still doesn't limit the set of potential cases to subject gaps, though. The prominent construal for (41), for instance, which exhibits an object gap, is one where the same two rings that Hans shows to his daughter are being bought for the mother.

(41) German
      Gestern   hat der Hans [seiner Tochter   **zwei schöne   Ringe** gezeigt],
      Yesterday has the Hans to.his   daughter two   beautiful rings   shown
      und   [ihrer   Mutter   gekauft].
      and   for.her   mother   bought
      'Yesterday, Hans showed two beautiful rings to his daughter and bought them for her mother.'

Accordingly, we find two properties distinctive of AC – albeit wether the object gap (41) in should really fall into the same class awaits further discussion.

(42) *Properties of AC*
      a.   Each coordinate of the CS except for the first one exhibits a gap.
      b.   The overt element and its corresponding gaps cannot be construed independently.

2.3   Syntactic restrictions on where the gap may occur

Our next step is to show that subject gaps and object gaps as in (41) occur only in a particular syntactic environment. We first discuss syntactic restrictions on subject gaps. We will then be able to show that parallel restrictions apply to other kinds of gaps, suggesting that the class of ACs indeed is not limited to cases with subject gaps.

2.3.1   *Locality restrictions on subject gaps*

If the overt subject in the first coordinate is in the matrix clause, the corresponding gap in the second coordinate cannot be in the embedded clause, as witnessed by the fact that (43), where the second coordinate contains an embedded clause, is ungrammatical whereas the minimally different (44), where the gap is in the matrix clause, is acceptable.

(43) German
      *Leider   [hat **er** das Buch gelesen], und [hat sie gesagt [hatte ____
      unfortunately has he the book read   and has she said   had
      Mühe damit]].
      trouble with-it

(44) German
      Leider   [hat **er** das Buch gelesen], und [hat ____ gesagt [dass er
      unfortunately has he the book read   and has   said   that he
      Mühe   damit   hatte]].
      trouble   with-it   had
      'Unfortunately, he read the book and said that he had trouble reading it.'

However, the generalization is not that if the overt subject is in the matrix, the gap must be in the matrix, and that if the overt subject is embedded, the gap must be embedded, too. Otherwise (45) would be falsely predicted to be grammatical. Here both the overt subject and the gap occur in embedded clauses.

(45) German
      *Leider   [hat sie behauptet, [habe **er** das Buch gelesen]], [hast
      unfortunately has she claimed   have he the book read   have
      du   gesagt [habe ____   Mühe   damit   gehabt]].
      you   said   have   trouble with-it had

The correct generalization is that neither the overt subject nor the gap must be separated from the coordinating element by a clause boundary.[14] If the overt subject is embedded as in (46), the gap must be embedded too and the immediate clauses in which the overt subject and the gap are contained must be coordinated.

(46) German
      Leider   hat sie behauptet, [habe **er** das Buch gelesen], und [habe
      Unfortunately has she claimed   have he the book read   and have
      ____ Mühe   damit   gehabt].
           trouble   with-it   had
      'Unfortunately, she claimed that he read the book, but that he had problems with it.'

2.3.2   Locality restrictions on object gaps

Do other potential gaps show similar locality restrictions? Recall (41) from above. We observed that the object *zwei schöne Ringe* lacks an independent construal in the second coordinate: The ring shown to Hans' daughter must be the same ring that was given to her mother. This is precisely the restriction that we found for subject gaps. We therefore asked whether (41) could involve an object gap – that is, whether there should there be a gap after *ihrer Mutter*.

   The construction in (41), however, is not quite parallel to the ones we have seen with AC with subject gaps. The reason is that no finite verb is present in the second coordinate. Is this a necessary ingredient for object gaps to arise? Object gaps as in

(47), where the structural conditions have otherwise been kept parallel to the examples with subject gaps, are ungrammatical (Wilder 1997).

(47) German
*Leider   [hat er **das Buch** angeschaut], und [hat sie ____ gelesen].
Unfortunately has he the book looked.at   and has she   read

If, however, coordination occurs at some lower level in the structure – at least below C′ as in (41) above and in (48) below – the object gap becomes acceptable.

(48) German
Leider   hat er [**das Buch** angeschaut] und [____ gelesen].
Unfortunately has he the   book looked.at   and   read
'He unfortunately looked at the book and read it.'

We cannot tell from the surface structure where exactly coordination takes place. The subject might be outside of the coordinate structure, as indicated in (48), or in the first coordinate with a corresponding subject gap in the second coordinate, as in (49). In other words, two gaps might be involved.[15]

(49) German
Leider   hat [**er das Buch** angeschaut] und [____ ____ gelesen].
Unfortunately has he the book looked.at   and   read

That the second coordinate exhibiting an object gap can indeed contain a subject position is shown by (50), where each coordinate has its own overt subject. Crucially, no finite verb is present in the second coordinate. We already know that this would make the structure unacceptable.

(50) German
Leider   [hat er **das Buch** angeschaut], und [sie ____ gelesen].
Unfortunately has he the book looked.at   and she   read

We conclude that object gaps exist and that the grammatical sentences discussed in this subsection constitute AC in the sense discussed above. Accordingly, the distinctive properties of AC can be listed as follows:

(51) *Properties of AC*
a.   Each coordinate of the CS except for the first one has a gap.
b.   The overt element and its corresponding gap(s) cannot be construed independently.
c.   The overt element and its corresponding gap(s) are not separated from the coordination by a phase boundary.

Following Chomsky (2001) we assume phases to be locality domains. vP and CP are phases and thus phase boundaries, and v and C the respective phase heads. If this is the case, both ACs with subject gaps and those with object gaps are covered by (51).

First, in all of the AC examples with object gaps discussed so far, both the overt object and its corresponding gap are inside the vP. Thus the maximal constituent at which coordination can take place according to (51) is v′. Otherwise, both the object and its gaps would each be separated from the coordination by at least one phase boundary, that is, their local vPs. Abstractly, the highest point at which coordination can take place with an object gap in the vP-phase is as in (52).[16, 17]

(52) $[_{v'} [_{v'} \dots$ **object** $\dots]$ and $[_{v'} \dots$ ____ $\dots]]$

For subject gaps, however, a number of options exist. If the subject stays in the vP-phase, coordination must not be higher than at the v′-level, shown in (53a), as with object gaps. In this case no finite verb can occur in the second coordinate. If the subject is located in Spec,TP, on the other hand, it finds itself in the next higher CP-phase. In that case coordination must not be higher than at the C′-level according to (51).[18]

(53)   a. $[_{v'} [_{v'} \dots$ **subject** $\dots]$ and $[_{v'} \dots$ __ $\dots]]$
       b. $[_{C'} [_{C'} \dots [_{TP} \dots$ **subject** $\dots]]$ and $[_{C'} \dots [_{TP} \dots$ ____ $\dots]]]$

Let us now turn to one final interpretive property of gaps, which is crucially connected to the locality restrictions just discussed.

2.3.3   Further interpretive properties of gaps

We have seen that the overt material and its corresponding gaps in AC lack an independent construal. Here, we argue that the gap results from covert ATB-movement of the material that is overtly realized in the first coordinate to a position *above* the coordinate structure.

   Let us first show that covert movement takes place at all. The subject in SLF-constructions outscopes the con/disjunction – that is, it must be interpreted above the CS. Consider first (54). If the subject *weniger als drei meiner Bekannten* were not interpreted above conjunction, the sentence should be true in a scenario where two of my acquaintances have a dog and two others know how to deal with cats. However, it isn't. The meaning paraphrased below is the only meaning available.

(54)   German
       Leider $[[_{C'}$ haben **weniger als   drei   meiner Bekannten**   einen
       Unfortunately have fewer   than three of-my acquaintances a
       Hund] und $[_{C'}$ können ____ mit   Katzen umgehen]].
       dog   and   can   with cats   deal
       'Unfortunately, fewer than three acquaintances of mine are such that they have a dog and know how to deal with cats.'

(55) with a disjunction is analogous, its only meaning being the one paraphrased below. Negation scoping over disjunction by De Morgan's law is equivalent to conjunction with negation in each conjunct.

(55) German
Leider [[$_{C'}$ hat **keiner meiner Bekannten** einen Hund] oder
Unfortunately has none of-my acquaintances a dog or
[$_{C'}$ kann ____ mit Katzen umgehen]].
can with cats deal
'Unfortunately, no acquaintance of mine has a dog and no acquaintance of mine
knows how to deal with cats.'

How do we know that the subject actually moves to this position?

Generally, existential subjects in German cannot scope over a c-commanding universal adverbial, as shown by the unambiguity of (56).

(56) German
Leider backt immer einer der Köche einen Kuchen
unfortunately bakes always one of-the cooks a cake
'Unfortunately, it is always the case that one of the cooks bakes a cake.'
(always < ∃), *(∃ < always)

In such a configuration, AC with a subject is blocked: The subject *einer der Köche* in (57) cannot be related to the subject gap in the second coordinate – the example is ungrammatical.

(57) German
*Leider [backt immer **einer der Köche** einen Kuchen] und
unfortunately bakes always one of-the cooks a cake and
[muss ____ dann abwaschen].
must then do-the-dishes

We submit that the impossibility of inverse scope observed in (57) is the reason for the ungrammaticality of (58).[19] Accordingly, the overt subject cannot be construed as being related to the subject gap position in the second coordinate if covert movement is blocked for independent reasons; that is, in order to establish the required relation the overt subject must undergo covert movement.

An anonymous reviewer points us to potential further support for this view. As noted in (36) above and repeated in (58), an overt subject cannot be related to a subject gap out of the antecedent of a conditional.[20]

(58) *Wenn uns keiner willkommen heißt und schließt uns in die Arme, …

If the base-structure of the antecedent of the conditional in (58) is (59), we predict its ungrammaticality, no matter where the subject gap is located. According to our view the overt subject must undergo quantifier raising (QR) in order to be able to bind the subject gap in the second coordinate. *If*-clauses, however, are islands for extraction (Reinhart 1997). Therefore the subject is trapped, and cannot be related to the gap.[21]

(59) [$_{CP}$ wenn uns **keiner** willkommen heißt] und [$_{CP}$ (____) schließt (____) uns in die Arme]

Whether we also find covert movement from the position of the gap cannot be decided on the basis of AC with subject gaps, as we cannot determine the exact position of adverbs that block inverse scope readings like *immer* in relation to the gap.

   AC with object gaps are more informative. Beck (1996) shows that negative quantifiers act as interveners for covert movement in German. *kein Hund* in (60) acts as an intervener for QR of *jeden Briefträger* – the object cannot move covertly across the subject.

(60)   German
       Gestern   hat   kein Hund jeden Briefträger gebissen.
       yesterday has   no   dog   every mailman   bitten
       'Yesterday, no dog bit every mailman.'
       $(\neg\exists < \forall)$, $^*(\neg < \forall < \exists)$, $^*(\forall < \neg\exists)$

If gaps in AC must undergo covert movement, as must their corresponding overt parts, the occurrence of an intervener like *kein Hund* in either coordinate should cause ungrammaticality. (61) and (62) are object gap configurations. The object *jeden Briefträger* must move covertly in order to be construed with the gap in the second coordinate, as was established above. The intervener blocks this covert movement, and as a result the example is ungrammatical. (62) in addition shows that the invisible subject *jeden Briefträger* must also move covertly – it has to meet the same requirement as the overt subject. Since the intervener now occurs in the second coordinate, however, this movement is blocked, and (62) is also ungrammatical.

(61)   German
       *Gestern   hat [kein Hund **jeden Briefträger** gebissen] und [Peter ____
       yesterday has no   dog   every mailman   bitten   and Peter
       geschlagen].
       beaten

(62)   German
       *Gestern   hat [Peter **jeden Briefträger** geschlagen] und [kein Hund ____
       Yesterday has Peter   every mailman   beaten   and no   dog
       gebissen].
       bitten

Summing up, we have so far observed the following distinctive properties for AC.

(63)   *Properties of AC*
       a.   Each coordinate of *S* except for the first one has a gap.
       b.   The overt element and its corresponding gap(s) cannot be construed independently.
       c.   The overt element and its corresponding gap(s) are not separated from the coordination by a phase boundary.
       d.   The overt element and its corresponding gap(s) undergo covert movement.

3 Extraction from symmetric coordinate structures and asymmetric coordinations

In the following, we show why the individuating AC in the sense above is relevant for our view of grammar in general: symmetric CS and AC form a minimal pair concerning the way in which movement from these structures takes place.

3.1 Overt movement from symmetric coordinate structures

In section 1, we characterized symmetric CS as constructions which exhibit *substitutability*, *syntactic symmetry*, and *semantic symmetry*. We furthermore showed that one of the robust properties of symmetric CS is the requirement that movement be ATB – if overt movement out of one of the coordinates takes place, it must take place from all of the coordinates – which was captured by the traditional formulation of the CSC, based on Ross (1967), given in section 1. Thus, if a coordination is symmetric, overt movement from it is symmetric as well, that is, parallel in the sense of the ATB requirement. In fact there is an even stricter parallelism requirement on movement from coordinates. Williams (1978) observes that the moved element cannot serve as subject in one coordinate and as object in another, as shown in (64).

(64) *I know a man [who$_1$ [Bill saw t$_1$] and [t$_1$ likes Mary]].

(Williams 1978, 34)

A revised version of the CSC, which includes Williams' 1978 observation, is given in (65). The notion of parallel grammatical role is left at an intuitive level. Suffice it to say that the object and the subject in (64) might not serve parallel grammatical roles for at least two reasons: first, the extracted element bears object case in one coordinate and subject case in the other. Second, the extracted element is an internal argument in one coordinate and an external one in the other. Both facts could in principle mean that the extracted element does not serve parallel grammatical roles in both coordinates and thus block ATB-movement.[22]

(65) *Coordinate Structure Constraint*
      In a coordinate structure, no coordinate may be moved, nor may any element contained in a coordinate be moved out of that coordinate unless it moves from all coordinates and it serves parallel grammatical roles in all coordinates.

Accordingly, we can tie movement and symmetric coordination together as in (66).

(66) *Overt movement from symmetric coordinations*
      If a CS *C* is symmetric, then, if α is to move from within *C* to a position outside of *C*, α can only move if it serves parallel grammatical roles in all coordinates. If it does, α must move from all coordinates.

Let us now turn to discussion of movement from AC.

3.2 Movement from AC

3.2.1 *Overt movement from AC*

Since ACs resist a subordination treatment and therefore are CSs, we should ask whether they, just as symmetric CSs, are subject to the ATB requirement. (67) shows that ACs with subject gaps are not. The constituent *mit Anna* is asymmetrically extracted from the first coordinate.[23]

(67) German
    Mit   Anna$_1$ [[$_{C'}$ hat **Hans** morgens t$_1$ getanzt] und [$_{C'}$ wird ____
    with   Anna   has Hans   in.morning danced   and   will
    abends   mit   Maria   spielen].
    in.evening   with Maria   play
    'Hans danced with Anna in the morning and will play with Maria in the evening.'

In fact, ACs only allow for asymmetric extraction and do not ever allow for ATB-movement, as the ungrammaticality of (68) shows.

(68) German
    *Mit   Anna$_1$ [[$_{C'}$ hat **Hans** morgens t$_1$ getanzt] und [$_{C'}$ wird ____
    with   Anna   has Hans   in.morning danced   and   will
    abends t$_1$ spielen].
    in.evening   play

Furthermore, asymmetric extraction is possible only in the first coordinate, that is, the one without any subject gap, as shown by the ungrammaticality of (69), where asymmetric extraction has taken place from the second coordinate.[24]

(69) German
    *Mit   Maria$_1$ [[$_{C'}$ hat **Hans** morgens   mit   Anna getanzt] und [$_{C'}$
    with   Maria   has Hans in.morning with Anna danced   and
    wird ____   abends t$_1$ spielen].
    will   in.evening   play

The first observation just made extends to AC with object gaps. As (70) shows, asymmetric extraction of an indirect object is possible when there is a gap of a direct object.

(70) German
    Der   Maria$_1$ hat Hans [$_{v'}$ t$_1$ **einen Hund** nur   gezeigt] aber [$_{v'}$ der
    the   Maria has Hans   a   dog   only shown   but   the
    Anna ____   sogar   geschenkt].
    Anna   even   given
    'Hans only showed a dog to Maria, but to Anna he even gave that dog.'

There is, however, no full complementarity between the types of movement, as there is with subject gaps. That is, ACs with object gaps *do* allow for ATB-movement in addition to asymmetric extraction, as shown by (71).

(71) Der MARIA$_1$ hat [$_{v'}$ Hans t$_1$ **einen Hund** nur gezeigt] aber [$_{v'}$
      the Maria has Hans a dog only shown but
      Fritz t$_1$ _____ sogar geschenkt].
      Fritz even given
      'Hans only showed a dog to Maria, but Fritz even gave her that dog.'

We return to the issue raised by (71) below. For now we conclude that the observed asymmetry between coordinates in AC with respect to the presence of overt material correlates with the ability to asymmetrically extract from the first coordinate. ATB-movement should not generally be blocked, given (71). Hence ACs are asymmetric both with respect to the overt presence of a subject or object and the ability to move from the coordinates. We can thus tie asymmetric coordination and overt movement together as in (72).

(72) *Overt movement from AC*
      If a CS *C* is asymmetric, then, if α is to move from within *C* to a position outside of *C*, it is possible for α to move from the first coordinate only.

3.2.2 *Covert movement from AC*

We observed above that overt subjects and their gaps cannot be construed independently, as witnessed by (54) above, and that this restriction also holds of other gaps. We also observed that both the overt subject and the gap undergo covert movement. Again, this is a property shared by AC with object gaps. It is natural to connect these two properties along the following lines. Subject gaps arise because of covert ATB-movement – that is, the structure underlying (54) above should be as in (73). This assumption captures the two observations: the moved subject (or rather its index) binds a variable in both coordinates. An independent construal is therefore ruled out. Further, both the subject in the first coordinate and the one in the second coordinate undergo movement.

(73) [[Weniger als drei meiner Bekannten]$_1$ leider [[$_{C'}$ haben t$_1$ einen Hund]
      und [$_{C'}$ können t$_1$ mit Katzen umgehen]]].

Recall furthermore that we claimed in section 2.3 that the overt material and its corresponding gaps must not be separated from the coordination by a phase boundary. We suggest that this locality restriction is tied to covert ATB-movement itself, as stated in (74). While we must leave the explanation of (74) for future research, it should be noted that there is ample evidence regarding differing locality restrictions for overt and covert movement.

(74) *Locality restriction on covert ATB-movement*
      Covert ATB-movement cannot cross a phase boundary.

Accordingly, we can simplify the list of distinctive properties of AC as below.

(75)   *Properties of AC*
   a.   Each coordinate of the CS except for the first one has a gap.
   b.   The overt element and its corresponding gap(s) undergo covert ATB-
        movement.
   c.   Movement from the first coordinate alone is possible.

3.3   Which distinctive property of AC is the CSC sensitive to?

As argued above, both symmetric CS and AC are CSs. Further, both exhibit symp-
toms of the CSC applying: in the case of symmetric CSs, we find overt ATB-
movement and in the case of AC, we witness covert ATB-movement. This suggests
that ACs are not exempt from the CSC. But why do they allow for asymmetric
extraction in the case of overt movement?

   We can view the problem also in the following way. The CSC can apparently
yield different outputs – ATB-movement and asymmetric extraction – for different
inputs. In which sense do symmetric CS and AC form a different input for the CSC
that will yield different outputs?

   We already isolated the one factor that distinguishes symmetric CS from AC: the
latter, but not the former, exhibits covert ATB-movement. The descriptive traits dis-
cussed in the previous section thus boil down to (76).

(76)   Overt asymmetric extraction can occur only if covert ATB-movement takes place.

Accordingly, covert ATB-movement must somehow be responsible for changing
the CSC-output. But which aspect of covert ATB-movement could matter? It cannot
be its status as ATB-movement as such: overt ATB-movement does not license overt
asymmetric extraction, as witnessed in (77).

(77)   German
       *[Das   Haus]$_1$ hat   [dem   Hans]$_2$ gestern   [der Makler t_1 t_2
       The   house   has   to.the Hans   yesterday   the real.estate.agent
       gezeigt]   und   [die Frau des   Maklers t_2 ein   Auto   verkauft]
       shown   and   the wife of.the   real.estate.agent   a   car   sold
       intended meaning: 'Yesterday, the real estate agent showed Hans the house and
       the agent's wife sold Hans a car.'

The one property of covert ATB-movement that sets it apart from overt ATB-
movement is that it creates an asymmetry at surface structure: Because the moved
material is linearized in only one of the coordinates, structures fail the substitutability
tests discussed in section 1.1. Take (54) from above: the first, but not the second coor-
dinate is licensed in the position of the coordinate structure, as illustrated in (78).

(78)   a.   Leider   [haben **weniger als drei meiner Bekannten** einen Hund]
       b.   *Leider   [können ____ mit Katzen umgehen]

As we saw above, extraction in asymmetric coordination always occurs from the
first coordinate – which happens to be the one coordinate which meets the *substi-
tutability* requirement.

Accordingly, we suggest modifying the CSC along the lines of (79). It differs from the traditional one in two respects. First, the CSC is relativized to levels of syntactic representation – that is, SS and LF. Second, it only requires movement from specific coordinates: (79) appeals to the substitutability requirement formulated above, but crucially relativizes it to levels of representation. That is, when inspecting whether movement must take place from a given coordinate, we check the structure where that coordinate is substituted for the CS and movement has been performed from that coordinate. Only if grammaticality results at the representational level in question is movement allowed from that coordinate.[25]

(79)   *Novel Coordinate Structure Constraint*
       A structure S with X moved from CS C with coordinates $C_1, \ldots C_n$, $[_S X_i [_C \ldots]]$, is grammatical at a level of representation L iff X has a trace t_i in each coordinate C_i such that S with C replaced by C, $[_S \ldots X_i [_{C_i} \ldots t_i \ldots]]$, is grammatical at L, and only in such coordinates.

In cases like (80), the novel CSC requires ATB-movement. The movement in question is overt, hence the CSC applies at SS. Both coordinates with traces bound by the extracted element are individually licensed at SS, as (81) shows. As a result there must be traces in each coordinate, which means nothing more than that movement must be ATB. Asymmetric extraction is blocked.

(80)   With who$_1$ did John [[$_{VP}$ dance t$_1$] and [$_{VP}$ play darts t$_1$]]?

(81)   a.   With who$_1$ did John [$_{vP}$ dance t$_1$]?
       b.   With who$_1$ did John [$_{vP}$ play darts t$_1$]?

Now consider the example of asymmetric extraction from a subject-gap coordination in (82), repeated from above once more. The novel CSC requires asymmetric extraction rather than ATB-movement. Given that the movement in question is overt, it must take place at SS. As a result, the level at which the CSC applies is SS. While the first coordinate is individually licensed with a trace bound by the extracted element, as (83a) shows, this is not the case for the second coordinate, as (83b) shows. The reason for the latter is, of course, that a sentence without overt subject is ungrammatical. As a consequence the moved element cannot have a trace in the second coordinate according to the novel CSC – that is, movement must be asymmetric and not ATB.

(82)   Mit Anna$_1$ [[$_{C'}$ hat **Hans** morgens t$_1$ getanzt] und [$_{C'}$ wird ____ abends mit Maria spielen]].

(83)   a.   Mit Anna$_1$ [$_{C'}$ hat **Hans** morgens t$_1$ getanzt].
       b.   *Mit Anna$_1$ [$_{C'}$ wird ____ abends t$_1$ spielen].

But what about covert ATB-movement? Recall that the subject in (83) undergoes covert ATB-movement out of the CS so that the relevant structure looks as in (84). Since the movement in question is covert, the CSC applies once more at LF. The CSC

determines that movement must be from each coordinate where the movement results in LF-well-formedness when we replace the whole CS with that coordinate containing a trace of the moved element. LF-well-formedness is understood to be encoded by the absence of type-mismatches. Each of the LFs with individual coordinates substituting for the whole coordination in (84) is well-formed. It follows that covert movement must in fact leave a trace in both coordinates, that is, be ATB in contrast to overt movement. Note moreover that overt asymmetric coordination does not cause any problems for the CSC at LF with regard to well-formedness. In particular, (84b) – albeit it involves vacuous λ-conversion – is syntactically well-formed.

(84) **Hans**$_2$ [mit Anna$_1$ [[$_{C'}$ hat t$_2$ morgens t$_1$ getanzt] und [$_{C'}$ wird t$_2$ abends mit Maria spielen]]].
    a.   Hans [$_{\langle et \rangle}$ λx_e [$_t$ Anna [$_{\langle et \rangle}$ λy_e [$_t$ x hat morgens mit y getanzt]]]].
    b.   Hans [$_{\langle et \rangle}$ λx_e [$_t$ Anna [$_{\langle et \rangle}$ λy_e [$_t$ x hat abends mit Maria getanzt]]]].

Consider now the object-gap construction in (85), also repeated from above. What has just been said about the subject-gap construction immediately extends to this case.

(85) Der Maria hat Hans [$_{v'}$ t$_1$ **einen Hund** nur gezeigt] aber [$_{v'}$ der Anna _____ sogar geschenkt].

We have, however, also seen that overt ATB-movement is possible in object-gap constructions, as (86), repeated from above, shows. This case is not covered therefore by the novel CSC. We tentatively suggest that this, again, might be tied to the locality restrictions on covert ATB-movement discussed in section 2.3 above. In particular, it is conceivable that the novel CSC is read off at different stages of the derivation, possibly conforming to phase-levels. If so, the structures subject to the CSC in (85) and (86) could potentially differ. Whereas the CSC could be read off with respect to the CP-level in (85) as basically suggested in the discussion above, it could be checked at the vP-level in (86). But if the CSC is checked at the vP-level, higher material will not be taken into account – only the v'-constituents in (86) would be subject to the CSC. And since higher material is ignored, they might well conform to grammatical bits of structure. As a consequence ATB-movement would be allowed. Needless to say, this speculation needs substantial further research.

(86) Der MARIA$_1$ hat [$_{v'}$ Hans t$_1$ **einen Hund** nur gezeigt] aber [$_{v'}$ Fritz t$_1$ _____ sogar geschenkt].

4   Conclusion and outlook

This chapter discussed asymmetric coordination, focusing in particular on the phenomenon of asymmetric extraction in constructions where all coordinates but the first exhibit a gap. We argued that these constructions indeed involve coordination and that the gap is not a result of ellipsis, but the consequence of covert ATB-movement, suggesting that material undergoing such movement is linearized in only one of its trace positions, namely in the one in the first coordinate. Furthermore, we

showed that covert ATB-movement correlates with the possibility of asymmetric extraction from all but the first coordinate. This was taken to suggest that the CSC needs modification: We argued that movement from a coordinate structure is only allowed if it is from all those coordinates that would be individually licensed with a trace in them bound to the moved element.

Clearly, more research is required. For instance, we need to investigate further the locality restrictions on covert ATB-movement. Standard covert movement appears to be clause-bounded, but our discussion suggested that covert ATB-movement is more restricted. Since covert movement is subject to an economy condition requiring that each step must be semantically motivated (see Fox 2000; Cecchetto 2004 for discussion and references), it is conceivable that a number of factors requiring covert movement to be local conspire in making covert ATB-movement even more local. If the constraints imposed by economy conditions on such movement were to undergo further investigation, it might well turn out that it is not as strictly local as claimed above.

We also require a better understanding of why covert movement is linearized in the trace position of the first coordinate. One interesting hypothesis is that the coordinate in which covert ATB-moved material gets linearized correlates with the position in which it would get linearized in each individual coordinate. Subjects in German are linearized to the left of the verb and subjects in AC are linearized in the leftmost coordinate. One might take this to suggest that what counts for linearization of ATB-movement is overall consistency of ordering – the subject is not linearized in, say, the rightmost coordinate because this would lead to a conflict in ordering with coordinates to the left. This might then suggest that the subject is literally the same element in all the coordinates.

This directly relates to the question of Right Node Raising. Some instances thereof, such as (87), seem to lack an independent construal – which we took to be one of the distinctive features of AC. Crucially, Right Node Raising has been argued to be due to overall linearization requirements similar to the one suggested for subjects in the preceding paragraph (Wilder 1999; Bachrach and Katzir 2009), albeit in the other direction. It would then be interesting to see whether Right Node Raising allows for asymmetric extraction. In this relation, one would also like to understand the relation of object-gap constructions and gapping constructions better.

(87) [$_{TP}$ All girls admired ____] and [$_{TP}$ most boys detested **one of the saxophonists**].
(adapted from Geach 1970, ex. 8)

SEE ALSO: Across-the-Board Phenomena; Bound Variable Anaphora; Gapping; Quantifier Scope Ambiguities; Reconstruction, Binding, and Scope; Right Node Raising; VP-Ellipsis

Notes

1. See Dryer and Haspelmath (2013) for a coarse survey and Payne (1985), Drellishak (2004), and Haspelmath (2007) for discussion.
2. Goodall's generalization is superior to Ross' (1967) requirement that all coordinates in a CS must be of the same syntactic category (known as Williams' (1978) Law of the

Coordination of Likes). While the former captures the fact that (ia) is grammatical – (ib) shows that both coordinates are individually licensed in the context the CS occurs in – the latter does not.

(i) a. John is [[$_{DP}$ a doctor] and [$_{PP}$ from Boston]].
     b. John is [a doctor/from Boston].

Goodall's generalization also fares better than Geach's (1970) requirement that all the coordinates in a CS be of the same *semantic* category (and arguably contains it, if syntactic licensing must hold at all levels of representation, including logical form). Geach correctly predicts (ia) to be grammatical (assuming with Partee (1986) that *a doctor* and *from Boston* in (ia) are both of type $\langle e, t\rangle$), but either fails to rule out (3a) or (ii): The NP *man* is of type $\langle e, t\rangle$. If attributive PPs are of type $\langle e, t\rangle$, as proposed by Heim and Kratzer (1998), then (3a) is incorrectly predicted to be grammatical by Geach. If, on the other hand, attributive PPs (and APs) are modifiers, i.e. of type $\langle\langle e, t\rangle, \langle e, t\rangle\rangle$ (see Montague 1970, 9-vii for discussion), he incorrectly predicts (ii) to be grammatical.

(ii) *A [[poor] and [from Boston] man] arrived.

3. For more discussion of this property, see Progovac (1998a; 1998b).
4. In other words, in a structure C with coordinates $C_1, \ldots, C_n$, the linear order of $C_1, \ldots C_n$, excluding the connectives, is permutation-invariant with regard to truth-conditional meaning of C: For any model M, and any two permutations $P1$, $P2$ of $\{C_1, \ldots C_n\}$, $[[C1]]^M = [[C2]]^M$, where C1 is the LF derived on the structure corresponding to the linear order P1, and C2 the LF derived on the structure corresponding to the linear order P2. As this property makes reference to *truth-conditions* only, it does not exclude cases of adversative *but*, which, truth-conditionally, is equivalent to conjunction (Frege 1918–1919, but also see Grice's discussion in *Further Notes on Logic and Conversation* of *but* as a "model case for a word which carries a conventional implicature" (Grice 1989, 46)).

(i) John talked to Peter but Mary danced with Jim.

5. We cannot do justice here to the semantic discussion of this phenomenon, concerning both the exact meaning of such cases as well as the question whether this meaning is in any sense connected to the the standard Boolean meaning of *and*. See Kaufmann (2012), Keshet (2013) for more discussion.
6. A possibly related case is (a), which apart from the symmetric construal also exhibits the asymmetric construal paraphrased in (ib). Like examples discussed in the text above, it allows for asymmetric extraction under the asymmetric construal, (ic). We thank an anonymous reviewer for pointing out the relevance of the examples to us.

(i) a. We can expect our students to teach six courses and finish their dissertation on time.

                        (adapted from Goldsmith 1985, ex. 2a)

     b. *We can expect that if our students teach six courses, they will finish their dissertation on time.*
     c. [How many courses]$_1$ can we expect our students to teach and still finish their dissertation on time?

                        (Goldsmith 1985, ex. 2b)

7. There are also cases with *try* which lack a symmetrical construal (see Carden and Pesetsky 1977; Johannessen 1998; Lødrup 2002; De Vos 2005; among others). (ia) is best paraphrased as in (ib). De Vos (2005) argues that they differ from other cases of pseudo-coordination. We here omit any further discussion for reasons of space.

    (i) a. John will try and read a book.
         b. *John will try to read a book.*

8. (17a) is apparently quite marginal for many speakers.
9. Culicover and Jackendoff (1997) argue that the conditional construal cannot involve subordination because standard subordinate clauses allow for topicalization, (ib), but in (ia) we cannot topicalize the second coordinate (together with *and*). This argument is not very strong, however, as (iib) shows that not all subordinate clauses in English can be topicalized to begin with.

    (i) a. *And he puts a contract on you, Big Louie sees you with the loot.
         b. That John would vote Republican, no one believed.

    (ii) a. John was surprised how fat Peter had become.
         b. *How fat Peter had become, John was surprised.

10. We note, however, that with ATB-movement the causal relation interpretation becomes quite difficult for many examples, as shown by (i), which forms a minimal pair with (17b). One might take this to support the view that asymmetric extraction in (some of) the cases discussed above is actually due to the fact that they involve subordination rather than coordination.
11. A more exact description of the facts might be in terms of contrastive topic and focus in the sense of Büring (1997; 2003). While such an intonation might not be necessary, there appears to be a strong tendency to put contrastive topic stress on the adverbs *morgens* and *abends*.
12. This argument evolved from an original observation due to Dominique Sportiche (p.c.) and criticism by Kyle Johnson (p.c.).
13. We thank an anonymous reviewer for pointing out such constructions. Example (33) is theirs.
14. See below for important qualifications.
15. In addition, it might also be possible that the object itself is overtly ATB-moved. In that case we would not be dealing with an AC at all. The impossibility of an independent construal for (i), which is parallel to (48) except for the fact that the object is indefinite, however argues against this possibility. We thank an anonymous reviewer for urging us to clarify this.

    (i) German
         Leider   hat er [**ein Buch** angeschaut] und [____ gelesen]
         unfortunately has he a   book looked.at   and   read
         'He unfortunately looked at a book and read it.'

    (50) below, however, does not lend itself to an overt ATB-movement analysis and must be considered an object gap at any rate.
16. An anonymous reviewer points out that object gaps also appear in coordinations of V-final clauses, as the interpretation of the gap in (i) is dependent on the object in the first coordinate (our underlining and boldface). Given what we just said in the text, this

forces us to conclude that the finite verb in V-final clauses in German resides inside vP. Wilder (1997) already notices that V2-coordinations are impossible with object gaps (also see Kathol 2000).

(i) German
… dass Hans mir **ein Buch** gekauft hat und ihr ____ geben wird.
that Hans me a book bought has and her a book give will
'… that Hans has bought me a book and will give it to her.'

(Wilder 1997, ex. 55)

17. The Scandinavian VO and V2 languages Old Norse, Norwegian, Icelandic, and Danish do not seem to adhere to the same locality as German or Dutch (see Vikner 2003 for an overview). (i)

(i) Kivinden tog en gås frem og lagde (den) på bordet
the-woman took a goose out and put (it) on-the table
'The woman took a goose out and put (it) on the table.'

(Vikner 2003, exs 26a, 26b)

One might consider appealing to the fact that all of these languages exhibit (different versions of) object shift (see Vikner 2007): the object moves out of the VP, but may only do so if the main verb moves as well (Holmberg 1986). Accordingly, a hypothesis (in need of testing) could be that object gaps in configurations such as (i) involve object shift prior to covert movement of the object. If so, we should not find such configurations whenever the main verb remains in situ.

18. If subjects are born in VP, both the overt subject and its corresponding gap in (53b) would be moved from the VP. The definition of AC must therefore be blind to the trace positions as these would both be separated from the coordination by a phase boundary, namely their respective local vPs, i.e. a more accurate property (c) of AC is the one in (i). As a consequence, if we find a subject gap with a finite verb in the second coordinate, the subject gap itself must have undergone movement to Spec,TP.

(i) The final landing sites of the overt element and its corresponding gap(s) are not separated from the coordination by a phase boundary.

19. Hans-Martin Gärtner (p.c.) cites the grammaticality of (i) as a counterexample, but (i) actually supports our argument: the adverbial *so* forces inverse scope, hence, the relation between the absence of inverse scope and the impossibility of a subject gap cannot be observed in (i). The example should thus be grammatical according to the reasoning in the text.

(i) German
So [backt immer **einer der Köche** einen Kuchen] und [muss ____
this-way bakes always one of-the cooks a cake and must
dann abwaschen]
then do-the-dishes
'Some cook always bakes a cake this way and must then do the dishes.'
* (always < ∃), (∃ < always)

20. The original observation is due to Wunderlich (1988). He claims that this restriction is due to quantifiers like *keiner*, but shows that proper names are subject to similar restrictions.

    (i) German
    *Wenn uns Hans willkommen heißt und schließt uns in die Arme,
    If   us Hans welcomes   and takes us in the arms
    'If Hans welcomes us and gives us a hug, …'

21. The same reviewer points out the observation by Brandner (1993) that expletive subjects cannot be related to SLF-gaps. We conclude from this that expletives cannot undergo QR, presumably for semantic reasons.

22. The formulation below brushes over the facts discussed in Williams (1978) having to do with parallelism of objects and embedded subjects. Moreover, case-matching requirements may apply to ATB-movement (see Citko 2003) – the cases assigned to the trace positions must have identical morphological exponents. See also pertinent discussion by Zwart (1991), Heycock and Kroch (1994).

23. We use topicalization as case of extraction. (i) shows that asymmetric extraction is worse with *wh*-expressions. The reason for this could be semantic/pragmatic: an individual is not in the set of individuals who Hans danced with if either Hans did not dance with that individual or if he will not play with Maria. For instance, if Hans danced with Susanne but will not play with Maria, one would have to conclude that Susanne is not in the set of individuals dancing with Hans. In fact, this conclusion would hold for every other individual. The complete true answer would thus be that Hans did not dance with anyone. Clearly, asking a question like (i) is not a good strategy for finding out who Hans danced with.

    (i) German
    #Mit   wem$_1$ [[$_{C'}$ hat **Hans** morgens t$_1$ getanzt] und [$_{C'}$ wird ____
    with   whom   has Hans in.morning danced and   will
    abends   mit   Maria spielen].
    in.evening   with Maria play

    We might thus get better results if the second coordinate is semantically related to the first one. For instance, in (ii), for Susanne to be a member of the set of individuals the speaker is interested in, she must be a person who Hans danced with such that he was tired after having danced with her. This type of question makes sense. Indeed, (ii) seems better than (i).

    (ii) ?Mit   wem$_1$ [[$_{C'}$ hat **Hans** morgens t$_1$ getanzt] und [$_{C'}$ war ____
    with   whom   has Hans in.morning danced and   was
    danach   erschöpft].
    afterwards   tired

24. In that respect AC differs from pseudo-coordination in Scandinavian. Here asymmetric extraction from the second, possibly SLF, coordinate is possible, as an anonymous reviewer reminds us.

25. The definition of the CSC in the text ignores the requirements that no coordinate itself be moved that the moved element serve parallel grammatical roles in all coordinates, as discussed above. A more precise version is (i).

(i) a. A structure S with X moved from coordinate structure C with coordinates
         $C_1, \ldots C_n$, $[_S \ldots X_i [_C \ldots]]$, is grammatical at a level of representation L iff X
         has a trace t_i in each coordinate C_i such that S with C replaced by C_i, $[_S \ldots X_i$
         $[_{C_i} \ldots t_i \ldots]]$, is grammatical at L and the traces t_i serve parallel grammatical
         roles, and only in such coordinates.
     b. No coordinate may be moved individually in a coordinate structure.

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