Extraction from coordinate structures, the ordering of operations, and inaccessible domains
keywords: Coordinate structure constraint, across-the-board, inaccessible domain, phase, ordering

1. Outline: The paper discusses the relation between *asymmetric extraction* (AE) from coordinate structures (i.e. extraction from only one conjunct) in German and canonical *across-the-board* (ATB, Ross 1967) movement. It argues that AE and ATB are in complementary distribution. AE can apply, whenever the second conjunct (C2) is inaccessible. We argue that C2 becomes inaccessible, if certain syntactic operations have not applied in C2, which have applied in C1. It is shown that the *coordinate structure constraint* (CSC) applies cyclically, and possibly phase-by-phase. The data are therefore of importance for a general theory of coordination and the notion of inaccessible domain.

2. Phenomenon: In German coordinations a subject need not appear in C2 (1a), called *Subjektlücke in finiten Sätzen* (SLF, subject gap in finite clauses) by Höhle 1983. The subject *Hans* satisfies the requirement that [Spec,CP] be filled for both C1 and C2. SLF allows for AE apparently violating the CSC (1b). A subject, which would follow the finite verb as the V2 requirement is satisfied by *die Katze*, is absent from C2. Cyclic movement shows that the issue of CSC-violation is real (2). The possible ATB-analysis of the subject for (1a) is unavailable for (1b). Both (1a) and (1b) do not have an independent subject in C2, and are related. Only a bound reading is possible in SLF (3) (van Valin 1986, Johnson 2002, Lechner 2000). Ellipsis of the subject in C2 thus cannot be assumed (contra Schwarz 1998).

3. New observations: AE and ATB are in complementary distribution (4)-(5). SLF only allows AE (4b) and non-SLF cases only allow ATB (5a). This is unexpected on existing accounts. It is further shown that no theory that can capture the construction in (6), where SLF is embedded in C2. The puzzle is to explain, why the AE-moved element from C2A in (6) cannot move ATB together with an element from C1. (6) shows that SLF and AE are cases of genuine coordination. If C2B were subordinated (Büring & Hartmann 1998), then ATB should be possible. Further, (6) also constitutes a problem for theories with low coordination and additional mechanisms allowing a violation of the CSC (Johnson 2002). Once this relation between AE and ATB is acknowledged, it follows that an adequate theory of ATB never apply to cases of AE. It is shown that the traditional theories are not able to do so at present (e.g. Fox 2000, Goodall 1987, Moltmann 1992, Williams 1978), since they rule out AE or are unable to explain (6).

4. The account: Following Abels (2007), Williams (1974, 2002), and other weaker versions we argue that syntactic operations are intrinsically ordered. As an approximation: θ-operations << A-operations << A'-operations. We claim that the structure for SLF constructions looks as (7a) before coordination applies. The as yet independent conjuncts of label T' are asymmetric, as C1 has a subject S in [Spec,vP], whereas C2 has a variable in [Spec,vP]. Both S and x satisfy the external θ-requirement of v. When C1 and C2 are coordinated (7b) ensues. A-movement cannot apply to variables. I.e. x is stuck in [Spec,vP]. Therefore S must move to satisfy the EPP-requirement of the whole T'-complex (7c). From there it can bind the variable in C2. Since A-operations cannot apply to C2, A'-operations cannot apply either, because they are ordered after A-operations. C2 is accessible for further movement and thus also for ATB. But C1 is fully operative. T-C movement and AE can apply without any complications (7d).

5. The CSC: We claim that the CSC applies cyclically. I.e. when a C' (and possibly a v') undergoes S-O a checking procedure ensures that an A'-moved element binds variables in all local conjuncts (Fox 2000, Ruys 1992). Furthermore the output of CSC-checking can be the input for another one at a higher level. In SLF cases, we argue that checking cannot apply as C2 is inaccessible for A'-operations due to the ordering of operations. The CSC cannot apply. (6) is explained, because the CSC cannot apply in the lowest cycle and no ATB-movement happens. The higher cycle, however, must apply CSC again and therefore ATB-movement from the lower cycle is needed as input, which is not the case. This also explains the unexpected grammaticality of the so far unnoticed (9). Here SLF at a higher level does not affect ATB from an embedded clause and from the sister conjunct of SLF. The CSC and therefore ATB-movement applies successfully at the lowest cycle, which involves C'-coordination. The higher level involves SLF, and normally the CSC could not apply. However, there is a CSC input from a previous cycle and therefore the CSC can apply again, giving (9).

Data:

(1) a. Hans [hat die Katze gestreichelt] und [hat den Hund getreten].
Hans has the cat stroked and has the dog kicked

   b. Die Katze$_1$ [hat Hans t$_1$ gestreichelt] und [hat den Hund getreten].
the cat has Hans stroked and has the dog kicked
'Hans stroke the cat and kicked the dog.

(2) Den Hund$_1$ hat Karl gesagt [habe Hans t$_1$ gefüttert] und [habe sich hingelegt]
the dog has Michael said has$_{SUBJ}$ Hans fed and has$_{SUBJ}$ REFL down.lied
'Karl said that Hans fed the dog and lied down.'

(3) a. Einer [hat die Katze gestreichelt] und [hat den Hund getreten].
someone has the cat stroked and has the dog kicked
'Someone stroke the cat and kicked the dog.'

   b. ∃x (x stroke the cat & x kicked the dog)

   c. #∃x (x stroke the cat & ∃y (y kicked the dog))

(4) a. *Diese Suppe$_i$ [hat der Hans t$_i$ gekocht] und [hat t$_i$ gegessen]
this soup has the Hans cooked and has eaten

   b. Diese Suppe$_i$ [hat der Hans t$_i$ gekocht] und [hat die Maria eingeladen]
this soup has the Hans cooked and has the Maria invited
'Hans cooked this soup and invited Mary.'

(5) a. Diese Suppe$_i$ [hat der Hans t$_i$ gekocht] und [hat der Michael t$_i$ gegessen].
this soup has the Hans cooked and has the Michael eaten
'Hans cooked this soup and Michael ate it.'

   b. *Diese Suppe$_i$ [hat der Hans t$_i$ gekocht] und [hat der Michael die Maria eingeladen]
this soup has the Hans cooked and has the Michael the Maria invited

(6) *Das Buch$_1$ [$_{C1}$ hat Hans t$_1$ gelesen] und [$_{C2}$ hat Michael gesagt
the book has Hans read and has Michael said
[[$_A$ habe t$_1$ Bernd verschlungen] und [$_B$ habe sich umgebracht]]]
has$_{subj}$ Bernd devoured and has$_{subj}$ REFL killed

(7) a. [$_{T'}$ T [$_{vP}$ S V O]], [$_{T'}$ T [$_{vP}$ x V O]]

   b. [[$_{T'}$ T [$_{vP}$ S V O]] & [$_{T'}$ T [$_{vP}$ x V O]]]

   c. [$_{TP}$ S$_1$ [[$_{T'}$ T [$_{vP}$ t$_1$ V O]] & [$_{T'}$ T [$_{vP}$ x$_1$ V O]]]]

   d. [$_{CP}$ O$_3$ [$_{C'}$ C-T$_2$ [$_{TP}$ S$_1$ [[$_{T'}$ t$_2$ [$_{vP}$ t$_1$ V t$_3$]] & [$_{T'}$ T [$_{vP}$ x$_1$ V O]]]]]]

(8) a. Down the hill$_1$ [rolled the ball t$_1$] and [hit Mary on the head].

   b. *Down the hill$_1$ [rolled the ball t$_1$] and [hit Mary on the head t$_1$].

(9) Das Buch$_1$ [$_{conj1}$ hat Hans t$_1$ gelesen] und [$_{conj2}$ hat gesagt [[$_A$ habe sein Vater t$_1$
the book has Hans read and has said have$_{subj}$ his father
geliebt] und [habe seine Mutter t$_1$ gehasst]
loved and have$_{subj}$ his mother hated
'Hans read this book and said that his father liked it and that his mother hated it.'