Chapter 5

Coordination

Ingo Reich
Universität des Saarlandes

Coordination is often referred to as symmetrical linkage of like constituents. However, both phrase and sentence coordination also exhibit quite a number of asymmetries, some of which are relevant to the syntax of coordinate structures and some of which are not. This article gives an overview of the relevant phenomena and discusses their implications for the analysis of coordination. Particular attention is paid to coordinate structures that block coordination ellipses and (only) allow for asymmetric extraction, as both are properties more associated with subordinate structures and are thus of particular importance in delineating coordination from subordination, the central subject of the present handbook.

1 Delimiting coordination from subordination

1.1 Functional (in)dependency

In traditional linguistics, it is generally assumed that there are two modes in building complex sentences: *coordination* and *subordination*. A sentence S2 is called subordinate to a sentence S1 if (and only if) S2 *depends on* S1 in one way or another. Typically, such a dependency is established in one of the following two ways: Either the subordinate sentence functions as an argument to an expression in the matrix clause, see (1a), or it modifies an expression in the matrix clause. Modification, in turn, also comes in two modes. If, on the one hand, the complementizer of the subordinate sentence establishes a semantic relation such as causality between the two clauses, this is called *adverbial modification*, see (1b). If, on the other hand, the subordinate sentence picks up on an expression of the matrix clause, which it restricts or comments on, this is called *relative modification* and the subordinate sentence is a relative clause, see (1c).

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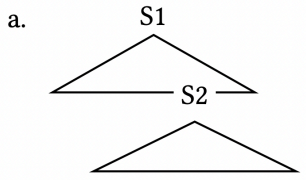
(1) a. You told me [*you don't like him*].
b. I like him [*because you don't like him*].
c. I don't like [the people [*that you like*]].

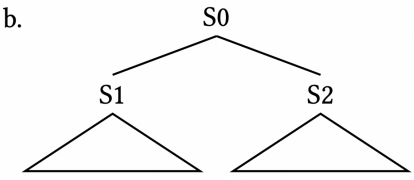
In the case of coordination, there is (typically) no such dependency. Both conjuncts are, in this respect, independent from each other. This is illustrated with (2a–2c): None of the sentences in (2a–2c) function as an argument to an expression of the other sentence, nor do they modify any expression of the other sentence. This is not to say, of course, that there are no dependencies at all. In (2b) and (2c), for example, the subject of the second clause is pronominalized, since it is coreferent with the subject of the first clause. This kind of dependency, however, is orthogonal to the coordination/subordination distinction and can be ignored in the following.

(2) a. [John likes hiking], and [Bill plays football].
b. Either [John is hiking], or [he is at his office].
c. [Bill plays football], but [he is not a natural].

1.2 Syntactic (in)dependency and syntactic (des)integration

What is crucial to the coordination/subordination distinction, however, is that the dependency criterion has a structural correlate: If a sentence S2 depends on a sentence S1 in the sense sketched above, then S2 is in some structural sense part of S1. If there is no such dependency, there is (typically) also no such part-whole relation: Neither is S2 in any relevant sense part of S1 nor is S1 part of S2. In a first step, this difference can be sketched as follows:

(3) a. 

b. 

There are several ways to specify this part-whole relationship. One way to do so is the following (see Reich & Reis 2013): Suppose S is your favorite label for sentences in formal syntax. Then, a sentence S2 is *a part of* / *syntactically dependent on* a sentence S1, if there is at least one node labeled S1 that dominates the topmost node labeled S2. Moreover, a sentence S2 is called *a proper part of* / *syntactically integrated into* a sentence S1 if the lowest node labelled S1 dominates

the topmost node labelled S2. In other words, if S2 adjoins to S1, then S2 is still syntactically dependent on S1, but it is not syntactically integrated.

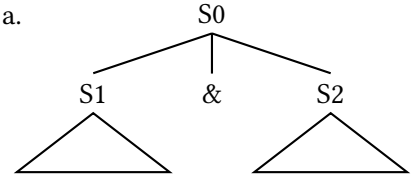
Within the realm of syntactic integration, there are several levels to distinguish (see Reis 1997, and articles 2, 3, 4 and 5 in this volume). However, this is not central to the purpose of the present paper. What is relevant to our discussion is that the proposed definition of syntactic dependency narrows down the possible structures of coordination. The structure of coordination and, more generally, its basic properties is the topic of Section 2. This includes a short discussion of constituent coordination and the question of whether constituent coordination can be taken to be an elliptical variant of sentential coordination. After a closer look at the external syntax of coordination (in particular the *External Homogeneity Condition*), it becomes more and more clear that also for coordinate structures there are several types to be distinguished, starting from typical instances of symmetric coordination (Section 3) up to various forms of asymmetric coordination (Section 4) that come rather close to subordinate structures in their syntactic behavior. In this way, this article approaches the topic of this handbook, clausal embedding, which is essentially subordination, successively from its counterpart: coordination.

2 Basic properties of coordinate structures

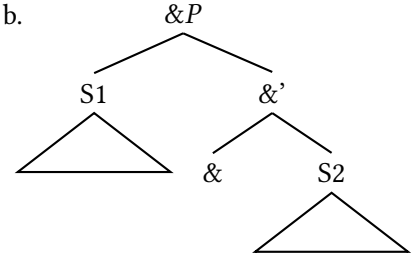
2.1 Phrase structure

Given a standard approach to phrase structure, coordination can be analyzed as an exocentric (tripartite) structure as sketched in (4a). Alternatively, the conjunction & can be taken to project to a conjunction phrase *&P* with the second conjunct located in the complement position and the first conjunct in the specifier position, see (4b) (Johannessen 1998). The way I defined dependency rules out structures like the one proposed in Munn (1993), in which the second conjunct plus the coordinating conjunction is adjoined to the first conjunct.

(4) a.



b.



Empirical support for binary branching comes from the fact that in parenthetical constructions the coordinating conjunction forms a constituent with the second conjunct, see (5a). Moreover, coordinating conjunctions can be used in utterance-initial position, see (5b). Though this might be a somewhat different kind of use (see e.g. Blakemore 2006), it is still suggestive evidence.

(5) a. Peter runs, and I am really serious here, 100m in 10.2 seconds.
b. And how do we proceed from here?

The right-branching structure in (4b) with the complement S2 following the head & is typical for English, German, and other Germanic languages. Typologically, however, one also observes mirrored, left-branching structures with the complement S1 preceding the conjunction. A case in point is the Korean converb *ko* in (6) cited after Haspelmath (1995: 2):

(6) Achim mek-ko hakkyo ey kassey yo.
breakfast eat-CVB school to went PT
'I ate breakfast and went to school.'

When shifting the focus to constituent coordination, one further observes asymmetries in the binding of pronouns. In (7a), the pronoun *his* is naturally interpreted as being coreferent with *John*. This reading seems barely accessible in (7b). Building on the assumption that the binding of pronouns is primarily a matter of hierarchical relations, the most straightforward explanation is that the structure of coordination is in fact asymmetric, the first conjunct *John* being in a higher position from which it c-commands the second conjunct.

(7) a. [[John$_i$] [and [his$_i$ colleagues]]] went to the movies last night.
b. ?? [[His$_i$ colleagues] [and [John$_i$]]] went to the movies last night.

Again, mirrored structures with the specifier of *&P* following the head and its complement can be observed in the languages of the world, see the following example from Classical Tibetan (cited after Haspelmath 2007: 8), with *daŋ* ("and") coordinating *bgegs* ("demon") and N*dre* ("spirit"):

(8) Blama-s [[bgegs-daŋ] Ndre] btul.
Lama-ERG [[demon-and] spirit] tamed
'The lama tamed demons and spirits.'

The above considerations mainly concern simple conjunctions like *and*, *or*, and *but*, which link sentences as well as constituents. Besides these frequently discussed conjunctions, there are also complex conjunctions that consist of more than one word (like *as well as*) or that are split in two parts (like *neither … nor*, *both … and*). Moreover, in the case of sentences, there is also the possibility of asyndetic coordination, which is the paratactic serialization of sentences without a conjunction. These constructions raise important questions concerning the syntax of coordination, ranging from its delineation from discourse up to the question whether all languages of the world do in fact express coordination in one way or another (see Gil 1991, Haspelmath 2007 for discussion). For reasons of space, however, I cannot go into more detail here, but will focus on aspects that are more to the core of the coordination/subordination distinction.

2.2 The law of the coordination of likes

Even though the syntax of coordination in (4b) is structurally asymmetric, coordinate structures are typically symmetric in the sense that both conjuncts are of the same syntactic category. This is true both on the sentence level and on the level of constituents. On the level of constituents, there is a strong preference to coordinate, for example, VPs with VPs, PPs with PPs, APs with APs, and NPs with NPs, see (9) and (7) above. Similarly, on the sentence level, there is a strong preference to coordinate declaratives with declaratives (10a), interrogatives with interrogatives (10b), and imperatives with imperatives (10c). Moreover, in a language like German, which exhibits two verb positions (fronted, final) and three different verb orders (verb first (V1), verb second (V2), verb final (VL)), this preference for symmetry also extends to verb order, see (11).

(9) a. They decided [[$_{\text{VP}}$ to stay at home] and [$_{\text{VP}}$ to watch a movie]].
b. Sue looked for her keys [[$_{\text{PP}}$ in the apartment] and [$_{\text{PP}}$ at her office]].
c. John is a [[$_{\text{AP}}$ competent] and [$_{\text{AP}}$ popular]] colleague.

(10) a. John likes hiking, and Bill plays football.
b. Who likes hiking and who likes playing football?
c. Come by and bring some food!

(11) a. *Geh* doch bitte runter und *hol* die Post.
Go PT please down and get the mail
'Please go down and get the mail.'

b. Ich *putze* die Wohnung und du *machst* das Abendessen.
I clean the apartment and you make the dinner
'I clean the apartment and you make dinner.'

c. Ich frage mich, ob er zu Hause *bleibt* und einen Film *anschaut*.
I wonder me if he at home stays and a movie watches
'I wonder if he stays home and watches a movie.'

This observation is usually referred to as the "law of coordination of likes," and it is known in formal syntax since its very beginnings, see Chomsky (1957). It is also known since Chomsky (1957) that this rule is not without exceptions, see the cross-categorial coordinations in (12) from Sag et al. (1985: 117/8).

(12) a. Pat is [$_{NP}$ a Republican] and [$_{AP}$ proud of it].
b. Pat is either [$_{AP}$ stupid] or [$_{NP}$ a liar].
c. That was [$_{NP}$ a rude remark] and [$_{PP}$ in very bad taste].

In order to account for the full range of coordinate structures, Chomsky (1957: 35) entertains the hypothesis (CR$_{\rightarrow}$), which suggests that the coordination of two constituents can be traced back to the coordination of two sentences plus some kind of "Conjunction Reduction" (CR), see e.g. Ross (1967), Hudson (1973) and more recently Wilder (2018) for discussion.

(CR$_{\rightarrow}$) If we have two sentences $Z + X + W$ and $Z + Y + W$, and if X and Y are actually constituents of these sentences, we can generally form a new sentence $Z + X + Y + W$.

Since in Chomsky's (1957) original formulation, only sufficient conditions on deletion are given (from the coordination of full sentences we derive the coordination of constituents), this rule is indexed with the symbol $\rightarrow$ for implication. As we will see, however, the more controversial question is whether each (apparent) coordination of constituents can be traced back to the coordination of two sentences. This necessary condition on CR will be indexed with the reversed implication symbol $\leftarrow$ below. If it turned out that both (CR$_{\rightarrow}$) and (CR$_{\leftarrow}$) are viable, we could strengthen Chomsky's rule to a biconditional (CR$_{\leftrightarrow}$).

While (CR$_{\rightarrow}$) deals with the categorially symmetric as well as the cross-categorial cases we saw above, Chomsky also notes that this rule cannot account for the ungrammaticality of **the scene* [[*of the movie*] *and* [*that I wrote*]] *was in Chicago*. On the other hand, restricting (CR$_{\rightarrow}$) to "constituents of the same type" (Chomsky 1957: 36) excludes the well-formed cases in (12).

This puts us in a dilemma. On the one hand, the rule ($CR_{\rightarrow}$) that generates coordinate structures seems to be too liberal. Adding a syntactic likeness constraint, on the other hand, is too restrictive. To resolve this dilemma, Sag et al. (1985) start from the observation that all the conjuncts in the cross-categorial coordinate structures in (12) are used predicatively in a copula construction. This suggests, according to Sag et al. (1985), that the copula *be* actually selects for a higher-level category – a predicational phrase PredP – rather than specifically for NPs, APs, or PPs. What we observe in (12) then is strictly speaking not a cross-categorial coordination of NPs, APs, and PPs, but a categorially symmetric coordination of PredPs (or more precisely of different feature extensions of PredPs). This saves the syntactic likeness constraint.

At the same time, this approach rules out cross-categorial coordinate structures like the one in (13a), essentially because the conjuncts have different functions: The adverb *beautifully* modifies the verb *sang*, while the NP *a carol* constitutes its direct object. As a consequence, there is no single syntactic phrase structure rule that generates both the sentence *John sang beautifully* and the sentence *John sang a carol*. The categorially symmetric, but functionally asymmetric, structure in (13b) is ruled out by the same reasoning.

(13) a. *? John sang [$_{\text{AdvP}}$ beautifully] and [$_{\text{NP}}$ a carol].
b. *? Hans sang [$_{\text{NP}}$ das Lied von Coldplay] und [$_{\text{NP}}$ den ganzen Tag].
Hans sang [$_{\text{NP}}$ the song of Coldplay] and [$_{\text{NP}}$ the whole day]
'Hans sang the song of Coldplay and the whole day long.'

Rather than taking a syntactic approach, the obvious alternative is to look for an appropriate semantic constraint. Instead of stipulating an underspecified syntactic category like PredP, one might demand that the conjuncts in a coordinate structure are of the same logical type, which is $\langle e,t\rangle$ in the case of copula constructions. In fact, such a constraint is already in place if *and* is modelled in terms of generalized conjunction, see Partee & Rooth (1983). Generalizing the sentential connective $\wedge$ to the coordination of two predicates in a copula construction, *and* is essentially taken to map two properties P and Q of type $\langle e,t\rangle$ onto their intersection $P \cap Q$ (i.e. *and* translates as $\lambda Q \lambda P \lambda x(P(x) \wedge Q(x))$). This accounts for the cross-categorial coordinations in (12). At the same time, the coordinate structures in (13) are ruled out, since the nominal objects *a carol* / *das Lied von Coldplay* (type *e*), and the adverbial modifiers *beautifully* / *den ganzen Tag* (type $\langle\langle e,t\rangle,\langle e,t\rangle\rangle$) are of different logical types. Thus, in a sense Chomsky (1957: 36) was right in stipulating that the conjuncts in constituent coordination need to

be "constituents of the same type," though the relevant notion turns out to be semantic rather than syntactic.

However, restricting coordinations to conjuncts of the same logical type still seems to be insufficient. Consider the contrasts in (14) and (15): The conjuncts *slowly*, *with great care*, *yesterday* and *on Tuesday* are adverbial modifiers across the board and thus of the same logical type. Still, crossing manner adverbials with time adverbials (14) seems to be worse than conjoining manner with manner and time with time adverbials (15). Similarly, the subjects *John* and *the water hose* are of the same logical type (type *e*), but (16) is still degraded. This is arguably due to the polysemy of the verb *to lie* that selects either for agentive subjects like *John* or non-agentive ones like *the water hose* (Manfred Krifka, p.c.).

(14) a. ?? John walked with great care and on Tuesday.
b. ?? John ate beans yesterday and slowly.

(15) a. John walked slowly and with great care.
b. John ate beans yesterday and on Tuesday.

(16) ? [$_{NP}$ John] and [$_{NP}$ the water hose] are lying on the lawn.

Even though the contrasts in (14) to (16) might not be as strong as in the type clash cases above, they are there. This suggests that there is a more fine-grained notion of semantic types, which includes types like *manner*, *time*, and *place* as proposed in Munn (1993). Alternatively, one might follow Lang (1984, 1991) in assuming that the concepts expressed by the conjuncts need to relate to a superordinate concept called "common integrator" (CI) in a more or less straightforward way. In the case of *grandpa and grandma* in (17a), this is the concept *grandparents*, in (17b) it is the question (under discussion) "*Who left us what?*".

(17) a. Grandpa and grandma left us the house and the Mustang.
b. Grandma left us the house and grandpa left us the Mustang.

(18) a. ? John and his hat took a walk along the Boston river.
b. ? John likes ice cream and the Earth revolves around the Sun.

In (18) the conjuncts are of the same semantic type (individuals and propositions, respectively), but compared to (17) it is less straightforward to relate the conjuncts to a common integrator. In (18a), one might imagine that the hat is a typical accessory of John, and in (18b) one might interpret the first conjunct in

view of the second conjunct as a matter of course. But this requires some extra reasoning on the side of the hearer, and it is that extra reasoning on the side of the hearer that can be made responsible for the degraded acceptability.

2.3 The limits of "conjunction reduction"

One might thus argue that coordinations, both on sentence and constituent level, are subject to the following syntactic, semantic, and pragmatic constraints:

($\mathrm{CR}^{+}_{\rightarrow}$) If $\Phi(X)$ and $\Phi(Y)$ are well-formed sentences, and both X and Y are constituents in these sentences, then the coordination $\Phi(X \ \& \ Y)$ is well-formed, too, provided that

a. X and Y are of the same logical/semantic type. (semantics)

b. X and Y are easily related to a common integrator. (pragmatics)

The constraint ($\mathrm{CR}^{+}_{\rightarrow}$) only implements sufficient conditions on the well-formedness of coordinate structures. One might wonder whether it is possible to strengthen the conditional *if* to a biconditional *if and only if* as follows:

($\mathrm{CR}^{+}_{\leftarrow}$) Suppose $\Phi(X \ \& \ Y)$ is a well-formed sentence and $X \ \& \ Y$ is a constituent in this sentence with X and Y being of the same logical/semantic type and easily relating to a common integrator, then both $\Phi(X)$ and $\Phi(Y)$ are well-formed sentences, too.

This property of coordinate structures is also called "*substitution salva grammaticalitate*" (see Höhle 1990) or just "substitutability" (Wilder 2018). Another way to put ($\mathrm{CR}^{+}_{\leftarrow}$) is this: Is it possible to reduce all instances of constituent coordination to sentential coordination?

This question is certainly more interesting and has a rather long tradition that is traced back in Krifka (1991) even to Beattie (1788), who gives a negative answer. The crucial argument concerns, like in contemporary linguistics, the existence of collective readings, and thus the need for sum formation or grouping alongside Boolean conjunction. But let us start with a less problematic case: The coordination of two DP subjects triggers plural morphology on the finite verb; however, the corresponding sentences are in the singular:

(19) Sue and Bill are originally from Arizona.

a. Sue is originally from Arizona.

b. Bill is originally from Arizona.

One way to deal with this problem is to attribute the plural feature in (19) to the conjunction that heads the coordination. Since there is no conjunction in (19a) and (19b), there is also no need to take the plural feature into account.

The assumption that it is the coordinating conjunction & that triggers plural morphology on the verb predicts, however, that the verb is always in the plural. This is (mostly) correct as long as the subject precedes the finite verb. If the subject follows the verb, however, there is also the option of agreement with the first conjunct only, see (20). This phenomenon is called "first-conjunct agreement" (FCA), see e.g. Aoun et al. (1994, 1999) for the discussion of Arabic dialects and Johannessen (1998) for Czech and German.

(20) a. There was a man and a woman sitting on a bench.
b. There was a man and a woman reading the same book.

Aoun et al. (1994, 1999) propose that what looks like agreement with the first conjunct only actually derives from clausal coordination followed by ellipsis (*there was a man sitting on a bench and there was a woman sitting on a bench*). This view is challenged in Munn (1999). Munn (1999) argues that expressions like *same* require a semantic plural, even though they are consistent with a syntactic singular. As a consequence, the clausal coordinate structure **there was a man reading the same book and there was a woman reading the same book* is degraded, and the FCA in (20b) lacks a grammatical clausal source.

This argument relates to a more general phenomenon, namely the distinction between collective and distributive predicates. Consider, for example, the verb *to meet*. Apparently, *to meet* is a collective predicate that makes a statement over a group of people, and thus requires a semantically plural (and non-distributive) subject, see (21). This is why (21a) and (21b) make no sense in terms of semantic interpretation. The verb *to go*, on the other hand, allows for a distributive reading, meaning it licenses the entailments from (22) to (22a) and (22b). It is thus straightforward to relate coordinated subjects with distributive predicates to clausal coordination, but it is less so with collective predicates.

(21) Sue and Bill met at the museum.
a. * Sue met at the museum.
b. * Bill met at the museum.

(22) Sue and Bill went to the museum.
a. Sue went to the museum.
b. Bill went to the museum.

The existence of collective predicates is, therefore, one of the most central arguments against the assumption that constituent coordination of the form $\Phi(X \ \& \ Y)$ can be traced back systematically by way of conjunction reduction to sentential coordination of the form $\Phi(X) \ \& \ \Phi(Y)$. Reversing the reasoning, Munn (1993) proposes a group-building semantics for DP-coordination as in (21) and generalizes this semantics to other cases of constituent coordination (see also the discussion e.g. in Krifka 1990 and Schmitt 2021). Following Link (1983) and others, the basic idea is that if Sue refers to the individual *s* and Bill to the individual *b*, the coordination *Sue and Bill* refers to a complex individual $s \oplus b$ that is represented as the "sum" of the two individuals *s* and *b*. It is this complex individual $s \oplus b$ that is the logical subject of the predication $\textsc{met}(s \oplus b)$ in collective readings. Distributive readings as in (22) are then derived either by (i) attributing the distributivity to the semantics of the predicate and introducing an operator DIST that distributes over atomic parts of complex individuals, or (ii) by avoiding complex individuals and interpreting the coordinate structure by way of generalized conjunction: $\lambda y \lambda x \lambda Q(Q(x) \wedge Q(y)))$. While the latter strategy is consistent with the assumption of constituent coordination, it basically implements a semantic equivalent to syntactic deletion. Furthermore, the discussion of iterated coordinations like *Napoleon and Wellington and Blücher fought against each other* raises the question whether, besides complex individuals, a notion of groups of (complex) individuals is needed as well (note that Blücher and Wellington fought on the same side against Napoleon), see e.g. Landmann (1989). According to Krifka (1991), the grouping of (complex) individuals can also be accounted for on the level of discourse by introducing suitable antecedents for anaphoric interpretation along the dynamic interpretation of the syntactic structure of coordination (guided by prosody).

As suggestive as the evidence from collective predicates is, the matter has still not been finally settled. Schein (2017: 3f), for example, reminds us of the fact that in Right Node Raising constructions, like (23a), the bracketed part is likewise a collective predicate (for it contains the reciprocal phrase *each other's spouses*). As a consequence, the fully spelled out counterpart *Marvin made a grand entrance at the gala with each other's spouses on their arms, and Bernice swept in at the gala with each other's spouses on their arms* is degraded. The strings that are linked here in Right Node Raising, however, are not necessarily constituents (see Section 3.2), and therefore an analysis in terms of constituent coordination is not readily available. Similarly, the subjects in (23b) cannot refer to a plurality since they participate in two different events.

(23) a. Marvin made a grand entrance Δ_i and Bernice swept in [at the gala with each other's spouses on their arms]$_i$.
b. Marvin this afternoon from Great Neck and Bernice this evening from Syosset are arriving at Leonard's with each other's spouses in rented Mercedes.

This suggests that the structures in (23) need to be accounted for in terms of sentential coordination. And, so the argument goes, whatever a viable solution for (23) is, it is also a viable solution for all the other cases involving collective predicates. The strategy proposed in Schein (2017) is to shift the problem from individuals to events. The crucial idea here is that (23) is in fact not a predication about a group of people, but a statement about an event e in which each of the subjects participates. According to Schein (2017), an example like (21), repeated here as (24a), is assigned an interpretation along the lines of (24b):

(24) a. Sue and Bill met at the museum.
b. $\exists e[\textsc{participated}(e, \textit{Sue}) \;\&\; \textsc{participated}(e, \textit{Bill}) \;\&\; \textsc{meet-at-the-museum}(e)]$

This way, we can have our cake and eat it, too: Since *participate* is a distributive predicate, the two predications that Sue participated in e and that Bill participated in e can be linked by sentential conjunction. Since it is the very same event, the collective reading is preserved.

2.4 Homogeneity and (a)symmetric coordination

Whatever the correct analysis of collective readings is, the empirical fact remains that none of the conjuncts in (24a) can substitute for the coordinate structure *salva grammaticalitate*. Still, the conjuncts seem to conform to a constraint called the "External Homogeneity Condition (EHC)" in Höhle (1990), which requires that the external syntax of all conjuncts is the same:

(EHC) *External Homogeneity Condition*: In a coordinate structure $\Phi(X \;\&\; Y)$ the combinatorial properties of the conjuncts X and Y are satisfied by Φ in the same way.

Building on the EHC, Höhle (1990) splits coordinations into *symmetric* and *asymmetric* ones, depending on whether they comply with this constraint, or not. In this sense, conjoined subjects under collective predicates are symmetric, for *neither* of the two conjuncts substitutes for the coordination *salva grammaticalitate*.

Typically, cross-categorial coordination is also symmetric, but for a different reason. In cross-categorial coordination, *each* of the conjuncts substitutes for the coordination (except the infamous *you can depend on my assistant and that he will be on time*, see Sag et al. 1985). However, first conjunct agreement is in general asymmetric, since by definition it is only the first conjunct that stands in an agreement relation to the finite predicate.

What Höhle (1990: 222) was aiming at, however, was not phrasal coordination, but the coordination of (dependent) sentences (in German). Consider (25):

(25) a. Wenn [[jemand nach Hause kommt] und [da der
When [[someone to home comes] and [there the
Gerichtsvollzieher vor der Tür **steht**]], …
bailiff at the door stands]], …
'When someone comes home and there is the bailiff at the door, ...'

b. Wenn [[jemand nach Hause kommt] und [da **steht** der
When [[someone to home comes] and [there stands the
Gerichtsvollzieher vor der Tür]], …
bailiff at the door]], …
'When someone comes home and there is the bailiff at the door...'

The coordination in (25a) is symmetric in the sense that both conjuncts can substitute for the whole coordinate structure *salva grammaticalitate*. This is different in (25b). Within the second conjunct in (25b), the finite predicate *steht* 'stands' is fronted, resulting in a V2 structure. But V2 is inconsistent with the subordinating conjunction *wenn* 'when', see **Wenn da steht der Gerichtsvollzieher vor der Tür* […] 'when there stands the bailiff at the door'.

A similar point can be made with respect to (26b) from Höhle (1990: 222). Here too, the finite verb in the second conjunct is fronted. This time, however, this results in a V1 structure, since the subject *jemand* 'someone' is external to the coordinate structure. This structure is called SLF-coordination in Höhle (2019[1983]), where SLF is short for "subject lacking in fronted structure."

(26) a. Wenn jemand [[nach *Hause* kommt] und [den Gerichtsvollzieher
When someone [[to home comes and [the bailiff
sieht]], …
sees]], …
'When someone comes home and sees the bailiff …'

b. Wenn jemand [[nach *Hause* kommt] und [**sieht** den
When someone [[to home comes] and [sees the
Gerichtsvollzieher]], …
bailiff]], …
'When someone comes home and sees the bailiff …'

The following English examples, first discussed in Ross (1986: 103), also look unsuspicious at first glance; they show parallel word order as well as categorial symmetry. However, when (27a) is turned into a relative clause, see (28a), and (27b) into a *wh*-clause, see (28b), an asymmetry becomes transparent. The fronted *wh*-expressions are moved out of the second conjunct only.

(27) a. I [[went to the store] and [bought some whisky]].
b. She [[has gone] and [ruined her dress now]].

(28) a. Here's the *whisky which*$_i$ I [[went to the store] and [bought t_i]].
b. *Which dress*$_i$ [[has she gone] and [ruined t_i now]]?

This obviously violates the EHC, or to be more precise, a constraint on coordinate structures that is known as "Across the Board movement rule (ATB)" since Ross (1967). This constraint basically states that if a *wh*-expression binds a trace t_i in one conjunct, it binds a trace t_i in all other conjuncts as well. ATB-movement, therefore, is a corollary of the EHC. This constraint is empirically motivated by the observation that in general *wh*-extraction is not asymmetric, but ATB, see e.g. the following contrast discussed in Sag et al. (1985: 148):

(29) a. Which books did Robin [[read t_i] and [hate t_i]]?
b. * Which books did Robin [[talk to Chris] and [read t_i]]?
c. * Which books did Robin [[read t_i] and [talk to Chris]]?

Concerning cases like (27a), Ross (1986: 104) observes that the *and*-phrase alternates with an infinitival, see (30), and entertains the hypothesis that what looks like coordination in (30a) is in fact (somehow) derived from the subordinated structure in (30b).

(30) a. I went to the store [and bought some whisky].
b. I went to the store [to buy some whisky].

In German, a similar case is the implicative *and*-construction, see Reis (1993): The *and*-phrase in (31a) alternates with the infinitival in (31b), which depends on the adverb *so* (*nett*).

(31) a. Er war so nett und fuhr mich nach Hause.
He was so kind and drove me to home
'He was so kind and drove me home.'

b. Er war so nett, mich nach Hause zu fahren.
He was so kind me to home PT drive
'He was kind enough to drive me home.'

It is exactly those constructions that show properties of both coordinated and subordinated structures, and which are crucial, if one wants to understand where and how to draw the line between coordination and subordination (if at all). In the rest of the paper, I will therefore focus on sentential coordinate structures, first elaborating on the properties of symmetric coordination, followed by a more detailed discussion of the above (and more) asymmetric cases.

3 (Some) properties of symmetric coordination

3.1 ATB-movement

The way I introduced the terms symmetric and asymmetric in the last section, the EHC and, in particular, the ATB-criterion are defining characteristics of symmetric coordination. It should be noted that this notion of symmetry is orthogonal to the more logical notion, which requires that in a coordination "A & B" the conjuncts can be swapped without a relevant change in meaning. In this logical sense, the structures in (32) are asymmetric, see (33) (and Xu (2025) for further discussion with reference to German, English and Chinese).

(32) a. Zuerst hat er Hans eingeladen und **dann** hat sie ihn wieder
First has he Hans invited und then has she him again
ausgeladen.
uninvited
'First he invited Hans, and then she uninvited him.'

b. Sie hat Hans ausgeladen und **deswegen** hat er ihn wieder
She has Hans uninvited and therefore has he him again
eingeladen.
invited
'She has uninvited Hans, and that is why he has invited him again.'

(33) a. * **Dann** hat sie Hans wieder ausgeladen und zuerst hat er ihn
Then has she Hans again uninvited and first has he him
eingeladen.
invited
'Then she uninvited Hans and first he invited him.'

b. * **Deswegen** hat er Hans wieder eingeladen und sie hat Hans
Therefore has he Hans again invited and she has Hans
ausgeladen.
uninvited
'That is why he has invited Hans again and she has uninvited him.'

The reason why the coordinations in (32) are fixed in order is obvious: The adverbs *dann* ("then") and *deswegen* ("therefore") express asymmetric relations like temporal order and causality. The same is true of the coordinate structures in (34), which at the same time show ATB-movement of the direct object:

(34) a. Wen$_i$ hat er zuerst t_i eingeladen und (hat) sie dann wieder t_i
Who$_i$ has he first t_i invited and (has) she then again t_i
ausgeladen?
uninvited?
'Who did he invite first and she uninvite again?'

b. Wen$_i$ hat sie t_i ausgeladen und (hat) er deswegen wieder t_i
Who$_i$ has she t_i uninvited and (has) he therefore again t_i
eingeladen?
invited?
'Who did she uninvite and he invite again because of that?'

This is worth mentioning as it suggests that ATB-movement is consistent with all three kinds of coherence relations (i.e. semantic or pragmatic relations that connect two sentences into a coherent piece of text) distinguished in Kehler (2002): resemblance, cause-effect and contiguity relations. One might suspect that contrasting the subjects *sie* ("she") and *er* ("he") and the predicates *einladen* ("invite") and *ausladen* ("uninvite") creates a (possibly additional) layer of semantic parallelism, which might then be argued to constitute a necessary condition on ATB-movement (see e.g. Culicover & Jackendoff 1997). And in fact, most examples that are used to illustrate ATB-movement in the literature show some kind of contrastive relation. The examples in (35), however, suggest that this is in fact not necessarily the case. Apart from the fact that both predicates are transitive and share the same direct object, there is no reason to assume any kind of

semantic parallelism here. Still, ATB-movement is possible. However, if there is no corresponding object in the second conjunct, asymmetric extraction is also an option, see (36). (One might argue that in (36) the trace t_i is external to the first conjunct. But this is not really an option since, in this case, the first conjunct would be of type $\langle e, \langle e, t\rangle\rangle$ and the second conjunct of type $\langle e, t\rangle$. I take it, following Höhle 1990, that even in the case of asymmetric coordination, the two conjuncts need to be of the same logical type or degree of saturation.)

(35) a. Wen$_i$ hat sie [[t_i eingeladen] und [dann den ganzen Abend über t_i
Who$_i$ has she [[t_i invited] and [then the whole evening PREP t_i
ignoriert]]?
ignored]]
'Who did she invite and then ignore all evening?'

b. Wen$_i$ hat sie [t_i ausgeladen und deswegen von der Liste t_i nehmen
Who$_i$ has she [t_i uninvited and therefore off the list t_i taken
müssen]?
must]
'Who did she uninvite and have to take off the list because of that?'

(36) a. Wen$_i$ hat sie [[t_i eingeladen] und [sich dann die ganze Zeit
Who$_i$ has she [[t_i invited] and [REFL then the whole time
darüber gefreut]]?
it-about rejoiced]]
'Who did she invite and then was happy about it all the time?'

b. Wen$_i$ hat sie [[t_i ausgeladen] und [sich deswegen schwere
Who$_i$ has she [[t_i uninvited] and [REFL therefore heavy
Vorwürfe gemacht]]?
reproaches made]]
'Who did she uninvite and blame herself heavily because of that?'

This suggests that semantic parallelism is not a necessary condition for ATB-movement. But is it a sufficient condition? Kehler (1996) argues that it is: If the relevant coherence relation is a resemblance relation, then movement needs to be across the board, see (37).

(37) a. Which book$_i$ did Robin [[read t_i] and [hate t_i]]?

b. * Which book$_i$ did Robin [[read t_i] and [hates *Aspects*]]?

The contrasts in (34–37) show that there are in fact two kinds of coordinate structures that allow for ATB-movement: Those that, in addition, allow for asymmetric extraction (type II) and those that do not (type I). Furthermore, if asymmetric structures are taken into account that do not allow for ATB-movement at all, see Section 4, this results in the typology in Table 1.

Table 1: Extraction types (in German)

	COORDINATION STRUCTURE	ATB-MOVEMENT	ASYMMETRIC EXTRACTION
1.	symmetric (type I)	yes	no
2.	symmetric (type II)	yes	yes
3.	asymmetric (type III)	no	yes

Examples illustrating type I structures are found all over the place. The minimal contrast in (38) illustrates once more the less-known type II structures (see Höhle 2019[1983], Heycock & Kroch 1994):

(38) a. Diesen Vorschlag$_i$ will die Kommission [[t_i prüfen] und
This suggestion$_i$ wants the committee [[t_i check] and
[möglichst bald dem Bundestag t_i vorlegen.]]
[as-possible soon the Bundestag t_i submit]]
'The committee wants to check this suggestion and submit it as soon as possible to the Bundestag.'

b. Diesen Vorschlag$_i$ will die Kommission [[t_i prüfen] und
This suggestion$_i$ wants the committee [[t_i check] and
[möglichst bald dem Bundestag einen Entwurf vorlegen.]]
[as-possible soon the Bundestag a draft submit]]
'The committee wants to check this suggestion and submit as soon as possible a draft to the Bundestag.'

The typology in Table 1 suggests that extraction out of coordinate structures is in fact subject to two constraints: one licensing ATB-movement and the other one licensing asymmetric extraction (see e.g. Reich 2007a). The constraint that licenses asymmetric extraction (both in type II and type III structures) is arguably semantic. Asymmetric extraction is only licensed if the coherence relation in question is either a cause-effect or a contiguity relation. Or, to put it differently, it is only licensed if the coordinate structure is understood as a description of a complex event (see e.g. Schmerling 1975, Lakoff 1986). ATB-movement, however,

is syntactically constrained. Meaning it is only licensed if the relevant syntactic structure is a Boolean phrase *&P* (rather than e.g. an adjunction structure). Even though (38b) does not conform to the EHC, there is good evidence from verb order (all conjuncts are verb final) that both (38a) and (38b) are to be analyzed as canonical coordinate structures in terms of a Boolean phrase *&P*. This licenses ATB-movement (if the relevant arguments are coreferential). At the same time, (38a) and (38b) are (narrative) descriptions of a complex event. This in turn licenses asymmetric extraction (in case the relevant arguments are not coreferential). If this is basically on the right track, the question is not whether the conditions on ATB-movement are syntactic or semantic. In order to get the full picture, both levels need to be taken into account.

This leaves us with two questions: Firstly, why is it that canonical coordinate structures (Boolean phrases *&P*) allow for ATB-movement? Secondly, why is it that in structures like (38) also asymmetric extraction is an option (given that the preconditions are met)?

Let us first have a look at the first question, since there are already several proposals on the market (see de Vries 2017 for a recent overview). Building on Ross (1967), one might stipulate that in canonical coordinate structures there is an "ATB movement" rule that relates an external phrase to identical traces (copies of that phrase) in each conjunct, see (39).

(39) Which book$_i$ did Robin [[read t_i] and [hate t_i]]?

But it is mysterious as to why there is such a rule in the first place and why it is restricted to coordination. Starting with Williams (1978), this motivated multi-dimensional analyses that construe coordination as a kind of secondary layer operating on basic phrase structure rules (see e.g. Goodall 1987, Muadz 1991, de Vries 1992, Moltmann 1992, Grootveld 1994). The basic idea is that the conjuncts in a coordinate structure are located in parallel on different dimensions sharing identical structure like the trace t_i of the *wh*-phrase *which book* in (40).

(40) Which book$_i$ did Robin $\left|\begin{array}{lll} \text{read} & & \\ & t_i & \text{and} \\ \text{hate} & & \end{array}\right|$

In a way, multi-dimensional approaches shift the peculiarity of ATB-movement from extraction to the grammar of coordination: Because of structure sharing moving a *wh*-phrase *across the board* is not a one-to-many relation anymore,

but a one-to-one relation like any other kind of (standard) movement. The grammar of coordination, however, is considerably complicated by stipulating multiple dimensions. Basically, the same is true of multi-dominance approaches (see Citko 2005, Gračanin-Yuksek 2007, Kasai 2007, Bachrach & Katzir 2009, de Vries 2013) that stipulate that in coordinate structures one and the same node (e.g. the trace t_i) can be dominated by two or more different nodes (e.g. the verbs *read* and *hate*). The sideward movement approach proposed in Nunes (2004) and Hornstein & Nunes (2002) implements basically the same idea, though in a somewhat different way (see e.g. de Vries 2009 for discussion).

Since in both multi-dimensional and multi-dominance approaches it is one and the same phrase that is moved, two crucial predictions are made. Firstly, the trace in each conjunct refers to one and the same object. Secondly, the extracted *wh*-phrase has the same syntactic function in each conjunct. Both predictions are discussed and questioned in de Vries (2017). According to de Vries (2017: 8) the sentences in (41) are fine even though they require (41a), or at least suggest (41b) a non-coreferential reading. (42a) illustrates ATB-movement of a *wh*-phrase that is a direct object in the first and a prepositional object in the second conjunct. And in (42b), cited from Chaves (2012: 482), *some parts* relates to a subject and an object position at the same time.

(41) a. I wonder *which song* Peter composed _ today and Susan sang _ yesterday.
b. *How many* matches did Peter play _ and Susan win _?

(42) a. *Which tree* did you say [Peter hugged _] and [Susan talked to _] ?
b. There were *some parts* that [[I enjoyed _] and [_ were very suspenseful]].

Even though there might be ways to account for such examples also within multi-dominance approaches, see e.g. de Vries (2013), the data situation is not entirely clear. Rating studies on ATB-extraction in German, for example, show a significant decrease in acceptability if (covert) case requirements differ across conjuncts, see Hartmann et al. (2016).

An alternative approach to ATB-movement is traced back to Chomsky & Lasnik (1977) in de Vries (2017). Technical details aside, the basic idea is that what looks like ATB-movement is in fact an artifact of *wh*-extraction from the first conjunct only, in tandem with (i) covert operator movement (see Munn 1993, Franks 1993), (ii) bound covert pronouns (Zhang 2009), or (iii) internal *wh*-movement of "identical" copies in non-initial conjuncts followed by ellipsis (e.g. Wilder 1994,

Reich 2007a, Salzmann 2012). The illustration in (43) follows the proposal in Reich (2007a): First, within each conjunct, a copy of *what* is moved to the conjunct's left periphery. The copy of *what* that resides in the leftmost conjunct then attaches to *&P* (by way of traceless movement or, alternatively, it remerges with *&P*) from where it proceeds to the sentence's left periphery, see (43).

(43) *What* 3 did Robin [$_{\&P}$ t_3 [$_{\&P}$ [~~what~~ 1 [read t_1]] and [~~what~~ 2 [hate t_2]]]?

While approaches of this sort typically avoid the stipulation of additional grammatical layers or processes, they still have to link the different movement and deletion processes in one way or another, for example by (independently) requiring the conjuncts in a coordinate structure to be of the same semantic type (which is $\langle e, \langle e, t\rangle\rangle$ in the case above).

Although there is not yet a broad consensus on how to model ATB-movement, the above discussion has made it clear that there are several ways to do so. What is not so clear, however, is how to derive the asymmetric extraction in (38b). As we saw above, a necessary condition on asymmetric extraction seems to be that the coordinate structure is understood as a description of a complex event. This suggests that in type I coordinations, like (39), each conjunct is a "closed sense unit" (Chomsky 2000, 2001) in the sense that the event variables *e* introduced by the finite predicates are (existentially) bound within each conjunct, see (44), where the ATB-movement of the subject *Robin* is ignored for expository reasons. In other words, each conjunct is a phase and, in order to escape from this phase, conjunct-internal movement is required.

(44) What 3 did Robin$_7$
[$_{\&P}$ t_3 [~~what~~ 1 $\exists e_4$ [t_7 read(e_4) t_1]] and [~~what~~ 2 $\exists e_5$ [t_7 hate(e_5) t_2]]

(45) This suggestion 1 $\exists e = e_4 \oplus e_5$ wants the committee$_7$
[$_{\&P}$ [t_7 check(e_4) t_1] and [t_7 submit(e_5) as soon as possible a draft]]

Type II coordinations like (38), however, are descriptions of complex events. This is captured by existentially binding the event variables *e* externally to the coordinate structure, see the schematic illustration in (45). As a consequence, the conjuncts are not closed sense units and, therefore, are not phases in the relevant sense. This, in turn, means that conjunct-internal movement is not compulsory, and the object *diesen Vorschlag* ("this suggestion") can be moved in one go to the sentence's left periphery. The fact that extraction is restricted to the first conjunct might be due to locality constraints or, what is more likely, relates to the

asymmetry between the two events e_4 and e_5. In (45), the event e_5 depends on the event e_4, and e_5 is in this sense semantically subordinated to e_4, see Reich (2007a) and Weisser (2015) for discussion. Two more notes are in order here. Firstly, in (44) as well as in (45), identity in logical type is respected. Secondly, the possibility of asymmetric extraction does not necessarily exclude ATB-movement. (In fact, the subject *the committee* in (45) needs to be moved *across the board*.) This is basically because movement is followed by the deletion of identical copies in the c-command domain. Suppose that *diesen Vorschlag* ("this suggestion") is the direct object in both conjuncts, but asymmetrically extracts from the first conjunct only. The following deletion process then also targets the copy of *diesen Vorschlag* ("this suggestion") in the second conjunct, which results (without further assumptions) in an uninterpretable structure. It thus follows that if there are identical copies of a phrase in different conjuncts, those copies need to be moved conjunct-internally.

The above discussion should give a general idea of how to model ATB-movement and asymmetric movement in canonical coordinate structures. This leaves us with structures of type III, which allow for asymmetric extraction only. Before I go into details here, however, I have to deal with another crucial property of symmetric coordination: ellipsis.

3.2 Ellipsis in coordinate structures

In Section 2, we already saw that Chomsky (1957: 35) suggested the generalization in ($CR_{\rightarrow}$), repeated here for convenience, to account for the coordination of subsentential constituents.

($CR_{\rightarrow}$) If we have two sentences $Z + X + W$ and $Z + Y + W$, and if both X and Y are actually constituents of these sentences, we can generally form a new sentence $Z–X + Y–W$.

Now, suppose that $W = \emptyset$, i.e. we have two sentences of the form $Z + X$ and $Z + Y$. The generalization in ($CR_{\rightarrow}$) then (correctly) predicts that the following structures should be perfectly fine:

(46) *Forward conjunction reduction* / *Rightward ellipsis* / *Phrasal coordination*
   a. *He* likes to play soccer, but ~~he~~ hates to go hiking.
   b. *He likes* to play soccer, and ~~he likes~~ to go hiking.
   c. *He likes to play* soccer, and ~~he likes to play~~ chess.

If we, on the other hand, suppose that $Z = \emptyset$, i.e., if we have two sentences of the form $X + W$ and $Y + W$, then the generalization in ($CR_{\rightarrow}$) correctly predicts that the structure in (47a) is fully acceptable, see also the discussion in Section 2. ($CR_{\rightarrow}$) does not license the structures in (47b,c), however, since the strings *John enjoyed* and *Tom picked* are not (canonical) constituents. (Note that e.g. *enjoyed* forms a constituent together with its object *the play*, which excludes the possibility that *enjoyed* also forms a constituent with its subject *John*.) In a footnote, Chomsky (1957: 35f) in fact takes issue with examples like (47b) and points out that they show properties like long pauses (between *liked* and *the*) and contrastive stress that "normally mark the reading of non-grammatical strings." Without ultimately committing himself, Chomsky entertains the possibility to consider examples like (47b) and (47c) as semi-grammatical.

(47) *Backward conjunction reduction* / *Leftward ellipsis* / *Right node raising*
   a. Tom ~~went to the movies~~ and Sally *went to the movies*.
   b. John enjoyed ~~the play~~ and my friend liked *the play*.
   c. Tom picked ~~these grapes~~ and I washed *these grapes*.

To derive structures like (47b) and (47c), Ross (1986: 108) proposed a rule of "conjunction reduction" that ATB-moves the constituents *the play* and *these grapes* to the right periphery of the complex sentence and adjoins it to the coordinate structure. This way of deriving structures like (47b) and (47c) is better known as "Right Node Raising" (RNR) since Postal (1974), see for example Sabbagh (2014) and Wilder (2018) for recent overviews.

RNR is probably one of the most controversially discussed cases of reduced structures since it shows seemingly contradictory properties. The facts that RNR shows no island effects, see (48) from Sabbagh (2014: 29), that RNRed indefinites like German *etwas* ("something") do not have to be coreferential, see (49), and that the target of RNR does not have to be a constituent (e.g. Wesche 1995, Hartmann 2002), see (50), question a movement analysis.

(48) Max publicly denounced the senator who wrote __ , and Pauline outwardly criticized the magazine editor who published *the speech that encouraged the riot*.

(49) Peter hat mir ___ und ich habe Peter *etwas* *geschenkt*.
Peter has me ___ and I have Peter something given
'Peter gave me, and I gave Peter something.'

(50) Peter hat auf ___ und Hans hat neben *dem Sofa gelegen.*
Peter has on ___ and Hans has next-to the sofa lain
'Peter was lying on and Hans was lying next to the sofa.'

The latter two facts are also potentially problematic for multi-dominance approaches like the ones proposed by Wilder (1999), Kluck & de Vries (2013) and many others, even though there are more or less obvious solutions here, see Wilder (2018) for relevant discussion. Yet, there are (by now familiar) arguments from collective predicates (51) and agreement (52) (cited from Wilder 2018: 708), which are hard to account for in an *in situ* deletion approach; but see Section 2 for discussion.

(51) John hummed __ and Mary whistled *the same tune.*

(52) The pilot claimed that the first nurse __, and the sailor proved that the second nurse, *were* spies.

Thus, neither a rightward ATB-movement approach nor an *in situ* ellipsis approach accounts for the relevant data without further assumptions. And since RNR structures apparently "form a class of utterances distinct from 'John enjoyed the play and liked the book,' etc., where constituent structure is preserved perfectly" (Chomsky 1957: 36), also an analysis in terms of constituent coordination is not available – at least it seems so. In fact, there are proposals on the market which argue that the relevant strings are constituents within categorial grammar (see Steedman 2000, 2007), or at some point during the incremental processing of the relevant structure (Phillips 1996, 2003). The appeal of these analyses is that they derive without further ado the characteristic property of RNR that deletion in non-final conjuncts is right-peripheral or left-adjacent to the coordinating conjunction (see also Wilder 1999 for an early proposal to derive this property in multi-dominance approaches based on linearization and see Hartmann 2002, Féry & Hartmann 2005 for a proposal to link this property to the prosodic properties of the RNR target within *in situ* ellipsis approaches). This is even more convincing if we assume that the structures in (53) are also cases of phrasal coordination rather than sentential coordination followed by ellipsis. The coordination of "constituents" in (47) then results in what is called "right-peripheral deletion" ("leftward ellipsis"); and the coordination of constituents in (53) results in "left-peripheral deletion" ("rightward ellipsis").

(53) a. He [[likes to play soccer], but [hates to go hiking]].
b. He likes [[to play soccer], and [to go hiking]].
c. He likes to play [[soccer], and [chess]].

One of the crucial arguments for an analysis of (53a-c) in terms of phrasal coordination is the fact that the overt reconstruction of quantificational subjects, like *nobody*, results in a sentential coordination that has a completely different reading. Compare, for example, (54a) to (54b): While (54b) denies amongst others the existence of people that like to play soccer, (54a) only denies the existence of people that like to play soccer and, at the same time, hate to go hiking.

(54) a. Nobody likes to play soccer and hates to go hiking.
b. Nobody likes to play soccer and nobody hates to go hiking.

Thus, to derive the coreferential reading of (54a) one has to stipulate that either rightward ellipsis transforms the quantifier *nobody* into some kind of covert pronominal *e* that gets bound during the deletion process by the first occurrence of *nobody* in some way or another, or that structures like *nobody likes to play soccer and s/he hates to go hiking* are the source of the ellipsis process from the outset, see e.g. Wilder (1997, 2018) for relevant discussion.

Another class of examples not covered by Chomsky's original proposal concerns what is now called gapping (55a), see Ross (1970), and stripping (55b):

(55) a. John likes Mary, and Mary John.
b. John gives a book to his mom, and flowers, too.

Typically, gapping is defined as the elision of the finite verb in non-initial conjuncts (see Repp 2009 for an in-depth discussion of the relevant notion of finiteness), possibly together with additional material, leaving behind at least two major constituents. Stripping is very similar to gapping, except that it strands only one major constituent (which is typically modified by negation or focus particles), see Johnson (2018) for an overview.

The fact that both gapping and stripping are sensitive to islands – see Neijt (1979) and the examples in (56), cited from Johnson (2018: 568, 573) – suggests that in both cases some kind of movement is involved.

(56) a. * Some asked who ate seafood once, and others bread.
b. * Smith asked who ate seafood once, and bread, too.

The observation that the remnants in gapping and stripping are contrastively stressed (see e.g. Hartmann 2002, López & Winkler 2000, Konietzko & Winkler 2010, Konietzko 2016, Winkler 2018) suggests that the kind of movement in question is focus movement. The basic idea then is that contrastively focused constituents are first moved to the left periphery of the sentence (or the coordinate structure) followed by deletion of the sister, see (57).

(57) a. John likes Mary, and [Mary]$_{1,F}$ [John]$_{2,F}$ [~~t_1 likes t_2~~].
b. John [[gives a book to Ann], and [flowers]$_{1,F}$ [~~gives t_1 to Ann~~]], too.

This *move-and-delete* approach has been proposed in Merchant (2001) for sluicing and subsequently extended to other kinds of ellipses like stripping (Merchant 2003) and fragments (Merchant 2004), see also Sag (1976), Depiante (2000), Kolokonte (2008), Konietzko (2016) for similar proposals and Johnson (2018) for the discussion of alternatives that rely on different kinds of movement like heavy NP shift, object shift or ATB-movement.

Within the *move-and-delete* approach, ellipsis is constrained by a condition that requires the antecedent to be semantically equivalent to the target modulo the focused constituents (the e-Givenness constraint proposed in Merchant 2001). This semantic condition nicely captures the fact that gapping and stripping allow for morphosyntactic variation, see (58).

(58) a. Wir lieben Fußball und du ~~liebst~~ Wandern.
We love football and you love hiking
'We love football and you hiking.'
b. Wir lieben Fußball und du ~~liebst~~ auch ~~Fußball~~.
We love football and you love too football
'We love football and you, too.'

The ellipsis approach also captures the fact that indefinites like German *etwas* ("something") do not have to be coreferential in gapping and stripping: In both scenarios in (59) it is likely and highly plausible that the books given away are not one and the same.

(59) a. Hans schenkte Maria ein Buch und Maria ~~schenkte~~ Hans ~~ein Buch~~.
Hans gave Maria a book and Maria ~~gave~~ Hans ~~a book~~
'Hans gave Maria a book, and Maria Hans.'
b. Hans schenkte Maria ein Buch und ~~Hans schenkte~~ Anna auch ~~ein~~
Hans gave Maria a book and ~~Hans gave~~ Anna too ~~a~~
~~Buch~~.
~~book~~
'Hans gave a book to Maria, and to Anna, too.'

What is hard to account for in a *move-and-delete* approach is the fact that modal particles in German, which are regarded to be bound to a sentence-internal position, may intervene between two remnants in gapping, see (60a) and the

discussion on Gapping in Reich (2011: 1861) and on sluicing and short answers in Ott & Struckmeier (2018).

(60) a. Ich kann Hans mitnehmen und du doch Anna.
I can Hans take-along and you MP *Anna*
'I can take along Hans, and you Anna.'

b. Ich kann Hans mitnehmen und $[\text{du}]_F$ ~~kannst~~ doch $[\text{Anna}]_F$
I can Hans take-along and $[\text{you}]_F$ ~~can~~ PT $[\text{Anna}]_F$
~~mitnehmen~~
~~take-along~~

This data is straightforwardly accounted for, however, in an *in situ* deletion approach along the lines of Steedman (1990), Reich (2007b), and Ott & Struckmeier (2018): (60a) is the result of deleting all and only the backgrounded material given semantic identity modulo focus. Deletion thus leaves focused constituents untouched, as well as modal particles and evaluative adverbs like *vielleicht* ("probably"), which communicate the speaker's attitude (see Ott & Struckmeier 2018). This approach is couched into a question under discussion (QuD) framework (see e.g. Roberts 2012, Onea 2016, Beaver et al. 2017), essentially treating the target of gapping and stripping as a short answer to an implicit *wh*-question that is made salient by the first conjunct in a coordinate structure. In the case of (60b) this is the *wh*-question *Wer kann wen mitnehmen?* ("Who can take along who?"). In this approach, the island sensitivity of gapping and stripping is taken to be an artifact of the island sensitivity of *wh*-movement within the (accommodated) QuD, and possible remnants are predicted to be in principle identical in form to corresponding short answers (see Reich 2007b for discussion).

In ditransitive constructions like (61), taken from Carlson et al. (2005: 210), gapping creates a global structural ambiguity: *Samuel* can be interpreted either as the indirect object to *insulted* (object reading), see (61a), or as its subject (subject reading), see (61b).

(61) Somehow, Robert insulted the guests during dinner and Samuel during the dance.
a. … and ~~Robert insulted~~ Samuel during the dance. (object reading)
b. … and Samuel ~~insulted the guests~~ during the dance. (subject reading)

In experimental work on such structures, Carlson (2002) found evidence for a strong bias towards the object reading in adults. She attributes this to the fact that – alongside a sentential coordination analysis followed by ellipsis – (61a)

could also be analyzed in terms of phrasal coordination (VP coordination) followed by ATB-movement, which she takes to be preferred for reasons of structural economy. If this is on the right track, this bias is not easily accounted for in QuD approaches to gapping, which presuppose sentential coordination. Bryant's (2006) observation that younger children actually show a subject bias rather than an object bias does not contradict Carlson's approach. On the contrary, as Bryant (2006) argues, the data suggests that younger children follow a semantic parsing strategy (and prefer the semantically simpler sentential conjunction over a conjunction of properties), while adults go for a syntactic parsing strategy, which generally prefers the coordination of smaller conjuncts.

4 (Some) properties of asymmetric coordination

The possibility of RNR, gapping and ATB-movement is, where applicable, certainly one of the crucial diagnostics for symmetric coordination. It can be seen, however, that even within the bounds of the EHC, we may observe certain asymmetries, e.g., in syntactic category or, more crucially, in the ordering of the sentential conjuncts caused by conjunctional adverbs like *dann* ("then") and *deswegen* ("therefore") which indicate asymmetric coherence relations like temporal succession or cause-effect relations. The presence of such asymmetries is consistent with ATB-movement though and thus not a sufficient criterion for asymmetric coordination in a strict sense. If it can be argued that a given construction allows *only* for asymmetric extraction (which typically goes along with degraded acceptability of coordinate ellipses like gapping or RNR), or that the conjuncts do not meet the criterion of *substitutability*, this constitutes a violation of the EHC, and I conclude this construction is asymmetric in the relevant sense.

4.1 Asymmetric coordination and scene-setting

Interestingly, these core cases of asymmetric coordination also show an asymmetry with respect to the events referred to by the conjuncts. One of the events is typically understood as being backgrounded, or as setting the scene for the other event (like in Ross's example or in SLF-coordination). This kind of "scene setting" (see Weisser 2015 for a recent overview) seems to constitute a necessary condition for asymmetric extraction and is frequently associated with either sentence-internal coordination (at some level of VP or *v*P, see e.g. Höhle 1990), or adjunction structures that basically parallel adverbial modification (see e.g. Büring & Hartmann 1998). An analysis in terms of adverbial modification seems particularly straightforward if extraction is only asymmetric and restricted to

the presumed adjunction site (since adverbials are known to be islands for *wh*-movement). If ATB-movement is an option, besides asymmetric extraction (as with type II coordination), the assumption of sentence-internal coordination (*&P*) seems more appropriate, see Table 2 and the discussion in Section 3.1.

Table 2: Parameters of (a)symmetric coordination

	&P	ADJUNCTION
no scene setting	type I	–
scene setting	type II	type III

When I introduced the EHC constraint on symmetric coordination in Section 2.4, I already mentioned some kinds of asymmetric coordination in English and German. The first examples are due to Ross (1986: 103) himself and are repeated in (62–63) for convenience.

(62) a. I [[went to the store] and [bought some whisky]].
b. She [[has gone] and [ruined her dress now]].

(63) a. Here's the whisky which$_i$ I [[went to the store] and [bought t_i]].
b. Which dress$_i$ [[has she gone] and [ruined t_i now]]?

In all these examples, the first conjunct is in fact backgrounded and sets the scene for the second conjunct, which communicates the primary information, see (62). Extraction seems to be restricted to the second conjunct as e.g. Weisser (2015: 132) argues on the basis of (64a):

(64) a. * Which phone did he pick up and call John?
b. Welches Telefon hat er [[sich t_i gegriffen] und [(damit) Hans
Which phone has he [[REFL t_i taken] and [(it-with) Hans
angerufen]]?
called]]?

While structures corresponding to (63a) are ungrammatical in German, those corresponding to (64a) are not, see (64b). This is probably why I, as a non-native speaker of English, do not reject examples like (64a) or the corresponding variant of Ross' example: *To which store did he go and buy some whiskey?* What is common to both languages is that the relevant constructions – with the notable exception of (62b) – alternate with infinitival constructions, see (65):

(65) a. I went to the store *to buy some whiskey.*
b. Ich habe mir das Telefon gegriffen, *um damit Hans anzurufen.*
I have REFL the phone taken, to it-with Hans call.
'I took the phone to call Hans with it.'

Ross (1986: 103/4) furthermore observes that the second conjunct is restricted to non-stative verbs, that asymmetric extraction from the second conjunct systematically excludes a subject in this very conjunct, and that tense needs to be identical across conjuncts, see (66):

(66) a. * The tall friend who Tony has a Fiat and yearns for is cruel to him.
b. * Here's the whiskey which I went to the store and Mike bought.
c. * The excellent whiskey which I went to the store and have bought was very costly.

These properties parallel the behavior of the infinitival constructions, which is why Ross (1967) entertains the hypothesis that the coordinate structures in (63) are not derived from coordinate nodes in deep structure (and thus not subject to the Coordinate Structure Constraint, CSC). An analysis in this spirit is presented in Weisser (2015) who argues that the backgrounded part is first attached to the (future) second conjunct, thus creating an adverbial structure, which blocks movement out of the (future) first conjunct. This structure then forms the complement of the coordinating conjunction *&*. In a final step, the previously attached sentence moves to the specifier of *&P* thus creating a coordinate structure, which allows for ATB-movement of the coreferential subject.

Ross's whiskey example and so-called implicative *and*-constructions in German are similar in that both constructions alternate with an infinitival construction. Also, the first conjunct is backgrounded and sets the scene for the second conjunct, see (67), modeled after an example from Reis (1993).

(67) a. Er war so nett und fuhr mich nach Hause.
He was so kind and drove me to home
'He was so kind and drove me home.'
b. Er war so nett, mich nach Hause zu fahren.
He was so kind me to home PT drive
'He was so kind to drive me home.'

However, in contrast to Ross's whiskey example, tense is not required to be the same across the conjuncts, see e.g. *er war so nett und hat mich nach Hause*

gefahren, with simple past in the first and present perfect in the second conjunct. Moreover, the implicative interpretation is due to the implicative predicate *so nett* ("so kind"), which further selects the infinitive in the subordinate construction, and arguably the second conjunct (in one way or another) in the implicative *and*-construction (since *er war so nett* is ungrammatical in isolation). Reis (1993: 217) further argues that the implicative *and*-construction allows for gapping and RNR, see (68), even though ATB-movement seems to be excluded, see (69a) (my judgment). Extraction is asymmetric and might proceed according to Reis (1993) from the first conjunct, see (69b), or (in particular with *so* + adjective predicates) from the second conjunct, see (69c) (original judgements).

(68) a. *Würdest du* so nett sein und __ hier mal aufräumen?
Would you so kind be and __ here PT clean-up
'Would you be so kind and clean up a little bit here?'

b. Wenn Peter doch mal so nett sein __ und aufräumen *würde.*
If Peter PT PT so kind be __ and clean-up would
'If Peter was so kind to clean up.'

(69) a. * Lass hören, wem$_i$ Peter [[t_i den Gefallen tat] und [t_i öffentlich
Let hear whom$_i$ Peter [[t_i the favor did] and [t_i publicly
schmeichelte]].
flattered]]
'Tell me, who did Peter a favor and flattered him publicly?'

b. ? Lass hören, wem$_i$ Peter [[t_i den Gefallen tat] und [*ihm*$_i$ öffentlich
Let hear who$_i$ Peter [[t_i the favor did] and [him$_i$ publicly
schmeichelte]].
flattered]]
'Tell me, who did Peter a favor and flattered him publicly?'

c. Für wen$_i$ war Hans so nett und hat t_i die Blumen gegossen?
For who was Hans so kind and has t_i the flowers watered
'Who was Hans so kind to water his flowers?'

Since it is uncommon that ATB-movement is strictly excluded, but coordinate ellipsis is not, I would rather suggest an analysis of the data in (68) in terms of constituent coordination along the lines of [[*so nett sein*] *und* [(*hier mal*) *aufräumen*]] ("[[so kind be] and [here PT clean-up]]"). In German, the position right before the finite verb in declarative sentences (the so-called "prefield") typically hosts one and only one constituent. Therefore, I predict the sentence [*so nett sein*

und (hier mal) aufräumen] wird er wohl nie] ("[so kind be and (here PT) clean-up] will he PT never") to be perfectly acceptable. And this is exactly what we observe. I take this as evidence that, in (68), there is in fact only one *würde* ("would"), which is external to the coordinate structure and c-commands it. While I share the intuitions with respect to ATB-movement in (69a) and asymmetric extraction from the first conjunct in (69b), I judge the asymmetric extraction from the second conjunct in (69c) as strongly degraded (in the indicated reading).

Reis (1993: 216) further observes that implicative *and*-constructions also occur in the form of what is called SLF-coordination in the literature, see e.g. (70a). According to Höhle (2019[1983]), SLF-coordination is characterized by basically three properties: (i) the second conjunct starts with a finite predicate (it has overt V1-structure), (ii) there is a subject lacking in the second conjunct (indicated by SL in (70)), and (iii) the subject *keiner* ("nobody") in the first sentence is located in the middle field, i.e. it follows the fronted position of the finite verb, see (70). The first two properties are reflected in the term "Subject Lacking in Fronted structure" (SLF), but it is the third property that distinguishes SLF-coordination from the coordinations in (71). (A recent diachronic investigation into SLF-coordination is found in Oppermann 2025.)

(70) a. Hoffentlich ist keiner so blöd und fällt SL auf ihn rein.
Hopefully is nobody so stupid and falls SL for him PT
'Hopefully no one is so stupid and falls for him.'

b. Hoffentlich sieht keiner unsern Freund und zeigt SL ihn an.
Hopefully sees nobody our friend and reports SL *him* PT
'Hopefully, no one will see our friend and report him to the police.'

(71) a. Keiner$_i$ [[ist t_i so blöd t_{verb}] und [fällt t_i auf ihn rein-t_{verb}]].
Nobody [[is t_i so stupid t_{verb}] and [falls t_i for him PT-t_{verb}]]
'No one is so stupid and falls for him.'

b. Keiner$_i$ [[sieht t_i unseren Freund t_{verb}] und [zeigt t_i ihn an-t_{verb}].
Nobody [[sees t_i our friend t_{verb}] and [reports t_i him PT-t_{verb}]]
'No one sees our friend and reports him to the police.'

In (71), the subject *keiner* ("nobody") is in the prefield of the first sentence, and therefore a symmetric analysis in terms of two fronted V1-structures and ATB-movement of the subject *keiner* ("nobody") to the prefield is readily available. This is different in (70). In (70), the subject *keiner* ("nobody") is positioned in the middle field of the first sentence, and for reasons of semantic interpretation, the overt subject needs to bind the subject gap SL in the second conjunct in one way

or another. Unlike in (72), it is necessarily the same person in SLF-coordination who both sees our friend and reports him to the police.

(72) Hoffentlich [[sieht keiner unsern Freund t_v] und [zeigt ihn keiner
Hopefully [[sees nobody our friend t_v] and [reports him nobody
an-t_v]].
PT-t_v]]
'Hopefully, no one sees our friend and no one reports him to the police.'

Thus, as long as semantic binding is taken to require c-command on the level of syntax, we are forced to assume that the subject *keiner* ("nobody") is external to the coordinate structure. And since the subject is external to the coordinate structure, we can conclude that the first conjunct is a verbal projection, say VP. The second conjunct, however, is a V-first structure, and thus includes a functional head like I° or C°, depending on your favorite syntax. It follows then that SLF-coordination links a VP and an I'/C'-projection, see Höhle (1990).

One might suggest that the subject *keiner* is generated conjunct-internally and has moved ATB to an external position as sketched in (73a). Höhle (2019[1983]), however, showed that SLF-coordination is inconsistent with ATB-movement, see (74a), and only allows for asymmetric extraction from the first conjunct. If there is a coreferent DP in the second conjunct, it is pronominally resumed, see (74b). This suggests that (if at all) the subject *keiner* is asymmetrically extracted from the first conjunct and binds a covert pronoun SL in the second conjunct (in the prefield or in the middle field), see (73b). Büring & Hartmann (1998) propose that this process is mediated by a covert operator OP in the prefield of the second conjunct, which binds the subject gap in the middle field, see (73c).

(73) a. Hoffentlich sieht keiner$_i$ [[t_i unsern Freund t_v] und [(t_i) zeigt (t_i)
Hopefully sees nobody$_i$ [[t_i our friend t_v] and [(t_i) reports (t_i)
ihn an-t_v]].
him PT-t_v]]

b. Hoffentlich sieht keiner$_i$ [[t_i unsern Freund t_v] und [(SL) zeigt
Hopefully sees nobody$_i$ [[t_i our friend t_v] and [(SL) reports
(SL) ihn an-t_v]].
(SL) him PT-t_v]]

c. Hoffentlich sieht keiner$_i$ [[t_i unsern Freund t_v] und [OP$_i$ zeigt SL$_i$
Hopefully sees nobody$_i$ [[t_i our friend t_v] and [OP$_i$ reports SL$_i$
ihn an-t_v]].
him PT-t_v]]

(74) a. * Die Briefmarken$_i$ zeigt Karl dem Onkel und bietet SL t_i ihm zum
The stamps$_i$ shows Karl the uncle and offers SL t_i him for
Verkauf an.
sale PT
'Karl shows the stamps to his uncle and offers them for sale to him'.

b. Die Briefmarken$_i$ zeigt Karl dem Onkel und bietet SL sie$_i$ ihm
The stamps$_i$ shows Karl the uncle and offers SL them$_i$ him
zum Verkauf an.
for sale PT
'Karl shows the stamps to his uncle and offers them for sale to him.'

The crucial ingredient of Büring & Hartmann's (1998) account is the assumption that the second conjunct is adjoined to the first sentence at some level within the c-command domain of the subject. This nicely captures the mentioned extraction properties of SLF-coordination since adverbial adjuncts are known to be islands for extraction. From the observation that also objects can bind a pronoun in the second conjunct of an SLF-coordination, see (75), they conclude that the adjunction site is in fact flexible and might even be below the object.

(75) Im Zirkus Krone serviert der Dompteur jedem Löwen eine Antilope$_i$
In-the Circus Krone serves the tamer each lion an antelope$_i$
und würzt sie$_i$ mit Löwensenf.
and seasons it$_i$ with lion-mustard
'At the Krone Circus, the tamer serves each lion an antelope and seasons it with Löwensenf ("lion mustard").'

However, this assumption is inconsistent with the assumption that both the adjunction site and the adjunct are of the same semantic type (show the same degree of saturation). But if we take it that the relevant level for binding is LF, the data can also be accounted for by asymmetric quantifier raising of the object *eine Antilope* ("an antelope") to a position above VP.

More recently, Mayr & Schmitt (2017: 10) argued that the adjunction site needs to be C' rather than a projection like VP that excludes the subject. The argument is as follows: If the second conjunct is linked to the first sentence at the level of VP (by way of coordination or adjunction), another coordination at a level higher than VP should be fine. The following example instantiating such a structure is, however, judged to be ungrammatical:

(76) * Gestern musste [[der Hans morgens mit der Anna
yesterday must.PRET [[the Hans in.morning with the Anna
frühstücken und sollte __ abends mit der Maria ausgehen]
have.breakfast and should.FIN __ in.evening with the Maria go.out]
und [der Peter die Susi treffen]].
and [the Peter the Susi meet]]

However, as far as I can see, there is an alternative explanation. First, note that according to Mayr & Schmitt (2017: 10), the intended reading of (76) is: '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.' This suggests that the modal *musste* ("must" / "had to") is either moved across the board from the first and the last conjunct or gapped in the last conjunct. But ATB-movement is known to typically come with parallelism of the conjuncts (see e.g. Williams 1978), and the same holds for gapping (see e.g. Hartmann 2002, Konietzko & Winkler 2010 and many others). It seems thus straightforward to assume that the second conjunct of the SLF-coordination disturbs this parallelism and blocks ATB-movement / gapping in the final conjunct. If there is no need for either ATB-movement or gapping adding another conjunct is fine, see (77).

(77) Entweder sieht ihn jemand und zeigt ihn an oder er hat nochmal
Either sees him someone und reports him PT or he has again
Glück gehabt.
luck had
'Either someone sees him and reports him to the police or he gets lucky again.'

Not least to explain the scene-setting interpretation of SLF-coordination (see Bonitz 2013 for experimental evidence), mixed approaches have been put forward recently. Weisser (2019), for example, extends his above-mentioned analysis of Ross' whiskey examples (adjunction of the secondary conjunct followed by movement to the specifier of *&P*) to SLF-coordination. And Barnickel (2017), building on the ideas developed in Weisser (2015), presents an analysis in terms of small clauses, different workspaces, and sideward movement that results in a CP-coordination. The basic idea is that the future second conjunct starts out as a small clause in the specifier of *v*P of the future first conjunct. This complex asymmetric predicate is made responsible for the scene-setting interpretation of SLF-coordination. The second idea is that the subject of the small clause takes over, at the same time, the role of the subject of the future first conjunct. Technically, this is done by moving the small clause (in a last resort operation) to a

different workspace where it promotes independently of its former host to a full CP, with the subject in the specifier of CP (the prefield). By sideward movement, this subject re-merges as the subject of the *v*P of the former host, which also promotes to a full CP. Finally, the two CPs are linked again in a categorially symmetric CP coordination. In order to bind the base position in the second conjunct, the small clause needs to be reconstructed at LF.

Even though this kind of approach to SLF-coordination is rather complex and requires some probably not fully uncontroversial assumptions, it seems quite promising. What worries me though, is the compositional semantics, in particular the interpretation of the trace left by sideward movement in the prefield of the second conjunct, which is neither bound at spell-out nor at LF (as long as the subject is not asymmetrically extracted at LF). Concerning embedded instances of SLF-coordination like the bailiff sentence in (78a), Barnickel (2017) argues for a categorially asymmetric coordination of a TP and a CP, which is the complement and thus in the scope of the subordinating conjunction *wenn* ("when"). The fact that *wenn* 'when' triggers verb final order only in the first conjunct is traced back to the special status of the first conjunct as evidenced by the phenomenon of first conjunct agreement (see Section 2.3).

(78) a. Wenn jemand nach Hause kommt und sieht den Gerichtsvollzieher,
When someone to home comes and sees the bailiff,
…
…

b. Wenn jemand nach Hause kommt und da steht der
When someone to home comes and there stands the
Gerichtsvollzieher vor der Tür, …
bailiff at the door, …

The discussion of the bailiff-sentences is in fact less prominent in the literature, and I think this is for a good reason. On the one hand, if we suppose that *wenn* ("when") takes the coordination as a complement, we are forced to assume, like Barnickel (2017) does, categorially asymmetric coordination (which is probably less problematic), and we need a convincing account for the fact that the verb order in the second conjunct is not affected by *wenn*. On the other hand, if we suppose that *wenn* only heads the first conjunct, the verb order properties follow without further ado, but the compositional semantics gets more complicated (see the discussion in Reich 2009). What is far more challenging, however, is the fact that the bailiff-sentence in (78b) shows the same kind of scene-setting interpretation as the subordinate SLF-coordination in (78a) does, even though the second

conjunct in (78b) has its own subject. And, as far as I can see, the derivation of the scene-setting interpretation relies in the mixed approaches on the presence of a subject gap in tandem with either some kind of small conjunct analysis (predicate coordination), or the proximity of SLF-coordination to participle constructions like e.g. *Wie immer steht Karl im Flur, mit den Kollegen schwatzend* ("As always, Karl is standing in the corridor, chatting with the colleagues"), an example taken from Barnickel (2017: 73). In (78b), however, the scene-setting interpretation can only be due to the V2 verb order in the second conjunct, which apparently pushes this conjunct to the foreground, since V2 is the canonical word order in German main clauses and has (quasi) assertional force, see Gärtner (2002) and Truckenbrodt (2006). In the end, it might thus not be the SL in SLF-coordination that is ultimately responsible for the specific interpretation, but the F.

4.2 Asymmetric coordination and conditional interpretation

All the cases of asymmetric coordination discussed so far show an interpretation that can be characterized as scene-setting, backgrounding or fusioning. But there is yet another class of coordinate structures that shows a quite unexpected kind of asymmetric interpretation, namely an interpretation as a conditional. This class of examples has been drawn attention to by Culicover & Jackendoff (1997: 198) and might be called *Big Louie*-sentences after a prominent example in their paper. Consider (79). At first sight, (79) seems to be a run-of-the-mill case of sentential coordination, but it is interpreted as a conditional:

(79) Big Louie sees you with the loot and he puts out a contract with you.
(= If Big Louie sees you with the loot, he puts out a contract with you.)

Culicover & Jackendoff (1997: 198f) argue that the conditional reading is lost if both conjuncts contain a complementizer or two VPs are conjoined. They also show that gapping and RNR are not compatible with the conditional interpretation of what they call left-subordinating *and*. Left-subordinating *and* follows the pattern of conditionals when it comes to the binding of pronouns, see (80) and (81): A quantifier in the second conjunct can bind a pronoun in the first one (80), and an indefinite in the first one can bind a pronoun in the second one (81).

(80) a. You give him$_i$ enough opportunity and every senator$_i$, no matter how honest, will succumb to corruption.
b. If you give him$_i$ enough opportunity, every senator$_i$, no matter how honest, will succumb to corruption.

(81) a. You give anyone$_i$ too much money, and he$_i$ will go crazy.
b. If you give anyone$_i$ too much money, he$_i$ will go crazy.

Since Culicover & Jackendoff (1997) take it that the binding of pronouns takes place at the level of conceptual structure, they argue that the *Big Louie*-sentences are semantically subordinating even though they are coordinating at the syntactic level. Culicover & Jackendoff's (1997: 206) observation that the *Big Louie*-sentences do not like ATB-movement (82a), but allow for asymmetric extraction from the first (82b) as well as from the second conjunct (82c) is accounted for by construing the CSC as a semantic constraint. Since the *Big Louie*-sentences are subordinate at the semantic level, the CSC does not kick in, and asymmetric extraction becomes an option.

(82) a. ?? This is the thief that$_i$ you just point out t_i and we arrest t_i on the spot.
b. ? This is the loot that$_i$ you just identify t_i and we arrest the thief on the spot.
c. ? This is the thief that$_i$ you just identify the loot and we arrest t_i on the spot.

The crucial reason why Culicover & Jackendoff (1997) stick with a coordinate structure at the level of syntax is that conditionals do not allow for extraction out of the *if*-clause (see Culicover & Jackendoff 1997: 207):

(83) a. ? Who did John say Mary goes out with and her father disinherits her?
b. * Who did John say(,) if Mary goes out with(,) her father disinherits her?

With respect to semantic interpretation, Culicover & Jackendoff (1997) propose that at the level of conceptual structure, the first conjunct of a *Big Louie*-sentence ends up in the restrictor of a generic operator GE and the modalized coordination is interpreted along the lines of (84), see also Keshet (2013) and Weisser (2015) for similar proposals. This way, *and* itself is interpreted as usual as the connector &, but the overall structure is essentially equivalent to $(p \rightarrow (p \ \& \ q))$, which in turn is equivalent to the conditional $(p \rightarrow q)$ in propositional logic.

(84) [GE: p] $(p \ \& \ q)$

There is one more thing though. Culicover & Jackendoff (1997) also show that the conditional interpretation is lost if the predicates are in the past tense. This puts them close to a class of categorially asymmetric coordinate structures called pseudo-imperatives, see the examples in (85), taken from Franke (2008). In (85a), an imperative and a declarative are conjoined, and the resulting structure is interpreted as a conditional. (85b) shows essentially the same pattern with the exception that the conjuncts are linked by the conjunction *or*. This structure is now interpreted in an "if you *do not* … then …" fashion:

(85) a. Close the window and I will kill you.
(= If you close the window, I will kill you.)
b. Close the window or I will kill you.
(= If you *do not* close the window, I will kill you.)

If we follow Kaufmann (2012) in assuming that imperatives denote modalized propositions, the link between *Big Louie*-sentences and pseudo-imperatives becomes apparent. Suppose that the modal introduced by the imperative gets scope over the conjunction, then the simplified LF of (85a) can be stated as MOD(p & q), which is pretty close to (84). This is in fact essentially what is proposed in Keshet & Medeiros (2019). They moreover assume that the speech-act related part and the modal part of the directive can be dissociated. If this is correct, then the semantics of the *Big Louie*-sentences is essentially identical to the semantics of pseudo-imperatives like (85a) minus the speech-act related conditions.

5 Concluding remarks

The starting point of this article was a dichotomy that has a long tradition both in traditional and modern linguistics: the distinction between coordination and subordination. In short, a sentence is subordinated to another sentence if it depends on that sentence in a relevant way. If there is no such dependency, we are faced with coordination. Although there are, of course, clear cases of both coordination and subordination, the main purpose of this overview article was to illustrate that between these poles, there is a bouquet of constructions that exhibit, to varying degrees, properties typically attributed to coordination, but also properties typically attributed to subordination. This is not to say that the distinction between coordination and subordination is a continuum. But it shows that the world between these two poles is a complex and exciting one. It is crucial to understand why each of these constructions exhibits the properties it does if one is to gain a deeper understanding of coordination and subordination, or more generally, of the way complex sentences are formed.

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References

Aoun, Joseph, Elabbas Benmamoun & Dominique Sportiche. 1994. Agreement, word order, and conjunction in some varieties of Arabic. *Linguistic Inquiry* 25. 195–220.

Aoun, Joseph, Elabbas Benmamoun & Dominique Sportiche. 1999. Further remarks on first conjunct agreement. *Linguistic Inquiry* 30. 669–681.

Bachrach, Asaf & Roni Katzir. 2009. Right-node raising and delayed spell-out. In Kleanthes K. Grohmann (ed.), *Interphases: Phase-theoretic investigations of linguistic interfaces*, 283–316. Oxford: Oxford University Press.

Barnickel, Katja. 2017. *Deriving asymmetric coordination in German: A nonmonotonic approach*. Universität Leipzig. (Doctoral dissertation).

Beattie, James. 1788. *The theory of language*. Menston: The Scholar Press.

Beaver, David, Craige Roberts, Mandy Simons & Judith Tonhauser. 2017. Questions under discussion: Where information structure meets projective content. *Annual Review of Linguistics* 3. 265–284.

Blakemore, Diane. 2006. Discourse markers. In Laurence R. Horn & Gregory N. Ward (eds.), *The handbook of pragmatics*, 221–240. Malden: Blackwell.

Bonitz, Petra-Kristin. 2013. *Subjektellipsen in Koordinationsstrukturen. Theoretische Fundierung und empirische Erkenntnisse*. Universität Göttingen. (Doctoral dissertation).

Bryant, Doreen. 2006. *Koordinationsellipsen im Erstspracherwerb. Die Verarbeitung potentieller Gapping-Strukturen*. Berlin: Akademie Verlag.

Büring, Daniel & Katharina Hartmann. 1998. Asymmetrische Koordination. *Linguistische Berichte* 174. 172–201.

Carlson, Katy. 2002. *Parallelism and prosody in the processing of ellipsis sentences*. London: Routledge.

Carlson, Katy, Michael Walsh Dickey & Christopher Kennedy. 2005. Structural economy in the processing and representation of gapping sentences. *Syntax* 8. 208–228.

Chaves, Rui Pedro. 2012. On the grammar of extraction and coordination. *Natural Language and Linguistic Theory* 30. 465–512.
Chomsky, Noam. 1957. *Syntactic structures*. Berlin: De Gruyter Mouton.
Chomsky, Noam. 2000. Minimalist inquiries: The framework. In Roger Martin, David Michaels & Juan Uriagereka (eds.), *Step by step: Essays on Minimalist Syntax in honor of Howard Lasnik*, 89–156. Cambridge: MIT Press.
Chomsky, Noam. 2001. Derivation by phase. In Michael Kenstowicz (ed.), *Ken Hale: A life in language*, 1–52. Cambridge: MIT Press.
Chomsky, Noam & Howard Lasnik. 1977. Filters and control. *Linguistic Inquiry* 8. 425–504.
Citko, Barbara. 2005. On the nature of merge: External merge, internal merge, and parallel merge. *Linguistic Inquiry* 36. 475–496.
Culicover, Peter & Ray Jackendoff. 1997. Semantic subordination despite syntactic coordination. *Linguistic Inquiry* 28. 195–217.
de Vries, Gertrud. 1992. *On coordination and ellipsis*. Tilburg: Catholic University of Brabant. (Doctoral dissertation).
de Vries, Mark. 2009. On multidominance and linearization. *Biolinguistics* 3. 344–403.
de Vries, Mark. 2013. Multidominance and locality. *Lingua* 134. 149–169.
de Vries, Mark. 2017. Across-the-board phenomena. In Martin Everaert & Henk van Riemsdijk (eds.), *The Wiley Blackwell companion to syntax*, 2nd edn. Oxford: John Wiley. DOI: 10.1002/9781118358733.wbsyncom094.
Depiante, Marcela Andrea. 2000. *The syntax of deep and surface anaphora: A study of null complement anaphora and stripping/bare argument ellipsis*. University of Connecticut. (Doctoral dissertation).
Féry, Caroline & Katharina Hartmann. 2005. The focus and prosodic structures of German gapping and right node raising. *The Linguistic Review* 22. 69–116.
Franke, Michael. 2008. Pseudo-imperatives and other cases of conditional conjunction and conjunctive disjunction. In Cathrine Fabricius-Hansen & Wiebke Ramm (eds.), *'Subordination' versus 'coordination' in sentence and text: From a cross-linguistic perspective*, 255–279. Amsterdam: John Benjamins.
Franks, Steven. 1993. On parallelism in across-the-board dependencies. *Linguistic Inquiry* 24. 509–529.
Gärtner, Hans-Martin. 2002. On the force of V2 declaratives. *Theoretical Linguistics* 28. 33–42.
Gil, David. 1991. Aristotle goes to Arizona, and finds a language without 'and'. In Dietmar Zaefferer (ed.), *Semantic universals and universal semantics*, 96–130. Dordrecht: Foris.

Goodall, Grant. 1987. *Parallel structures in syntax: Coordination, causatives, and restructuring*. Cambridge: Cambridge University Press.
Gračanin-Yuksek, Martina. 2007. *About sharing*. Cambridge: MIT. (Doctoral dissertation).
Grootveld, Marjan. 1994. *On parsing coordination generatively*. Leiden University. (Doctoral dissertation).
Hartmann, Jutta, Andreas Konietzko & Martin Salzmann. 2016. On the limits of non-parallelism in ATB movement: Experimental evidence for strict syntactic identity. In Sam Featherston & Yannick Versley (eds.), *Quantitative approaches to grammar and grammatical change*, 51–84. Berlin: De Gruyter.
Hartmann, Katharina. 2002. *Right node raising and gapping. Interface conditions on prosodic deletion*. Amsterdam: John Benjamins.
Haspelmath, Martin. 1995. The converb as a cross-linguistically valid category. In Martin Haspelmath & Ekkehard König (eds.), *Converbs in cross-linguistic perspective*, 1–56. Berlin: Mouton de Gruyter.
Haspelmath, Martin. 2007. Coordination. In Timothy Shopen (ed.), *Language typology and syntactic description: Complex constructions*, 2nd edn., vol. 2, 1–51. Cambridge: Cambridge University Press.
Heycock, Caroline & Anthony Kroch. 1994. Verb movement and coordination in a dynamic theory of licensing. *The Linguistic Review* 11. 257–284.
Höhle, Tilman N. 1990. Assumptions about asymmetric coordination in German. In Joan Mascaró & Marina Nespor (eds.), *Grammar in progress. GLOW essays for Henk van Riemsdijk*, 221–235. Dordrecht: Foris.
Höhle, Tilman N. 2019[1983]. Subjektlücken in Koordinationen. In Stefan Müller, Marga Reis & Frank Richter (eds.), *Beiträge zur Deutschen Grammatik. Gesammelte Schriften von Tilman N. Höhle. Zweite, durchgesehene Auflage*, 193–218. Reprint of an unpublished paper from 1983. Berlin: Language Science Press.
Hornstein, Norbert & Jairo Nunes. 2002. On asymmetries between parasitic gap and across-the-board constructions. *Syntax* 5. 26–54.
Hudson, Richard A. 1973. Conjunction-reduction. *Journal of Linguistics* 9. 303–305.
Johannessen, Janne Bondi. 1998. *Coordination*. Oxford: Oxford University Press.
Johnson, Kyle. 2018. Gapping and stripping. In Jeroen van Craenenbroeck & Tanja Temmerman (eds.), *The Oxford handbook of ellipsis*, 562–604. Oxford: Oxford University Press.
Kasai, Hironobu. 2007. *Multiple dominance in syntax*. Cambridge: Harvard University. (Doctoral dissertation).
Kaufmann, Magdalena. 2012. *Interpreting imperatives*. Heidelberg: Springer.

Kehler, Andrew. 1996. Coherence and the coordinate structure constraint. In Jan Johnson, Matthew L. Juge & Jeri L. Moxley (eds.), *BLS 22*, 220–231. Berkeley: Berkeley Linguistics Society.

Kehler, Andrew. 2002. *Coherence, reference, and the theory of grammar*. Stanford: CSLI Publications.

Keshet, Ezra. 2013. Focus on conditional conjunction. *Journal of Semantics* 30. 211–256.

Keshet, Ezra & David J. Medeiros. 2019. Imperatives under coordination. *Natural Language and Linguistic Theory* 37. 869–914.

Kluck, Marlies & Mark de Vries. 2013. Cumulative rightward processes. In Gert Webelhuth, Manfred Sailer & Heike Walker (eds.), *Rightward movement in a comparative perspective*, 281–318. Amsterdam: John Benjamins.

Kolokonte, Marina. 2008. *Bare argument ellipsis and information structure*. Newcastle University. (Doctoral dissertation).

Konietzko, Andreas. 2016. *Bare argument ellipsis and focus*. Amsterdam: John Benjamins.

Konietzko, Andreas & Susanne Winkler. 2010. Contrastive ellipsis: Mapping between syntax and information structure. *Lingua* 120. 1436–1457.

Krifka, Manfred. 1991. How to get rid of groups, using DRT. *Texas Linguistic Forum* 32. 71–110.

Lakoff, George. 1986. Frame semantic control of the coordinate structure constraint. In Ann M. Farley, Peter T. Farley & Karl-Erik McCullough (eds.), *Proceedings of CLS 22*, vol. 2, 152–167. Chicago: Chicago Linguistic Society.

Landmann, Fred. 1989. Groups, I. *Linguistics and Philosophy* 12. 559–605.

Lang, Ewald. 1984. *The semantics of coordination*. Amsterdam: John Benjamins.

Lang, Ewald. 1991. Koordinierende Konjunktionen. In Arnim von Stechow & Dieter Wunderlich (eds.), *Semantik: Ein internationales Handbuch zeitgenössischer Forschung*, 597–623. Berlin: de Gruyter.

Link, Godehard. 1983. The logical analysis of plurals and mass terms: A lattice-theoretical approach. In Rainer Bäuerle, Christian Schwarze & Arnim von Stechow (eds.), *Meaning, use, and interpretation of language*, 302–323. Berlin: De Gruyter.

López, Luis & Susanne Winkler. 2000. Focus and topic in VP-anaphora constructions. *Linguistics* 38. 623–664.

Mayr, Clemens & Viola Schmitt. 2017. Asymmetric coordination. In Martin Everaert & Henk van Riemsdijk (eds.), *The Wiley Blackwell companion to syntax*, 2nd edn. Oxford: John Wiley. DOI: 10.1002/9781118358733.wbsyncom070.

Merchant, Jason. 2001. *The syntax of silence – sluicing, islands, and the theory of ellipsis*. Oxford: Oxford University Press.

Merchant, Jason. 2003. Remarks on stripping. Ms., University of Chicago.
Merchant, Jason. 2004. Fragments and ellipsis. *Linguistics and Philosophy* 27. 661–738.
Moltmann, Friederike. 1992. *Coordination and comparatives*. Cambridge: MIT. (Doctoral dissertation).
Muadz, Husni. 1991. *A planar theory of coordination*. University of Arizona at Tucson. (Doctoral dissertation).
Munn, Alan. 1993. *Topics in the syntax and semantics of coordinate structures*. University of Maryland. (Doctoral dissertation).
Munn, Alan. 1999. First conjunct agreement: Against a clausal analysis. *Linguistic Inquiry* 30. 643–668.
Neijt, Anneke. 1979. *Gapping*. Dordrecht: Foris.
Nunes, Jairo. 2004. *Linearization of chains and sideward movement*. Cambridge: MIT Press.
Onea, Edgar. 2016. *Potential questions at the semantics-pragmatics interface*. Leiden: Brill.
Ott, Dennis & Volker Struckmeier. 2018. Particles and deletion. *Linguistic Inquiry* 49. 393–407.
Partee, Barbara H. & Mats Rooth. 1983. Generalized conjunction and type ambiguity. In Rainer Bäuerle, Christian Schwarze & Arnim von Stechow (eds.), *Meaning, use, and interpretation of language*, 361–383. Berlin: De Gruyter.
Phillips, Colin. 1996. *Order and structure*. Cambridge: MIT. (Doctoral dissertation).
Phillips, Colin. 2003. Linear order and constituency. *Linguistic Inquiry* 34. 37–90.
Postal, Paul. 1974. *On raising*. Cambridge: MIT Press.
Reich, Ingo. 2007a. From phases to 'across the board movement'. In *Proceedings of CLS 43*, vol. 2, 217–232. Chicago: Chicago Linguistic Society.
Reich, Ingo. 2007b. Toward a uniform analysis of short answers and gapping. In Kerstin Schwabe & Susanne Winkler (eds.), *On information structure, meaning and form*, 467–484. Amsterdam: John Benjamins.
Reich, Ingo. 2009. What Asymmetric Coordination in German tells us about the syntax and semantics of conditionals. *Natural Language Semantics* 17. 219–244.
Reich, Ingo. 2011. Ellipsis. In Klaus von Heusinger, Claudia Maienborn & Paul Portner (eds.), *Semantics. An international handbook of natural language meaning*, vol. 2, 1849–1874. Berlin: De Gruyter.
Reich, Ingo & Marga Reis. 2013. Koordination und Subordination. In Jörg Meibauer, Markus Steinbach & Hans Altmann (eds.), *Satztypen des Deutschen*, 536–569. Berlin: de Gruyter.

Reis, Marga. 1993. Satzfügung und kommunikative Gewichtung: Zur Grammatik und Pragmatik von Neben- vs. Unterordnung am Beispiel 'implikativer' *und*-Konstruktionen im Deutschen. In Marga Reis (ed.), *Wortstellung und Informationsstruktur*, 203–249. Tübingen: Niemeyer.

Reis, Marga. 1997. Zum syntaktischen Status unselbständiger Verbzweit-Sätze. In Christa Dürscheid, Karl Ramers & Monika Schwarz (eds.), *Sprache im Fokus. Festschrift für Heinz Vater*, 121–144. Tübingen: Niemeyer.

Repp, Sophie. 2009. *Negation in gapping*. Oxford: Oxford University Press.

Roberts, Craige. 2012. Information structure in discourse: Towards an integrated formal theory of pragmatics. *Semantics and Pragmatics* 5(6). DOI: 10.3765/sp.5.6.

Ross, John R. 1967. *Constraints on variables in syntax*. Cambridge: MIT. (Doctoral dissertation).

Ross, John R. 1970. Gapping and the order of constituents. In Manfred Bierwisch & Karl Erich Heidolph (eds.), *Progress in linguistics*, 249–259. The Hague: Mouton.

Ross, John R. 1986. *Infinite syntax!* Norwood: Ablex.

Sabbagh, Joseph. 2014. Right node raising. *Language and Linguistics Compass* 8. 24–35.

Sag, Ivan A. 1976. *Deletion and logical form*. Cambridge: MIT. (Doctoral dissertation).

Sag, Ivan A., Gerald Gazdar, Thomas Wasow & Steven Weisler. 1985. Coordination and how to distinguish categories. *Natural Language and Linguistic Theory* 3. 117–171.

Salzmann, Martin. 2012. A derivational ellipsis approach to ATB-movement. *The Linguistic Review* 29. 397–438.

Schein, Barry. 2017. *'and': Conjunction reduction redux*. Cambridge: MIT Press.

Schmerling, Susan. 1975. Asymmetric conjunction and rules of conversation. In Peter Cole & Jerry L. Morgan (eds.), *Speech acts*, 211–231. New York: Academic Press.

Steedman, Mark. 1990. Gapping as constituent coordination. *Linguistics and Philosophy* 13. 207–263.

Steedman, Mark. 2000. *The syntactic process*. Cambridge: MIT Press.

Steedman, Mark. 2007. On 'the computation'. In Gillian Ramchand & Charles Reiss (eds.), *The Oxford handbook of linguistic interfaces*, 575–611. Oxford: Oxford University Press.

Truckenbrodt, Hubert. 2006. On the semantic motivation of syntactic verb movement to C. *Theoretical Linguistics* 32. 257–306.

Weisser, Philipp. 2015. *Derived coordination: A minimalist perspective on clause chains, converbs and asymmetric coordination*. Berlin: De Gruyter.
Weisser, Philipp. 2019. Implicational complement coordination and beyond: Towards a coherent theory of asymmetric coordination in German. *Zeitschrift für Sprachwissenschaft* 38. 81–121.
Wesche, Birgit. 1995. *Symmetric coordination: An alternative theory of phrase structure*. Tübingen: Niemeyer.
Wilder, Chris. 1994. Coordination, ATB, and ellipsis. *Groninger Arbeiten zur Germanistischen Linguistik* 37. 291–331.
Wilder, Chris. 1997. Some properties of ellipsis in coordination. In Artemis Alexiadou & T. Alan Hall (eds.), *Studies on universal grammar and typological variation*, 59–107. Amsterdam: John Benjamins.
Wilder, Chris. 1999. Right node raising and the LCA. In Sonya Bird, Andrew Carnie, Jason D. Haugen & Peter Norquest (eds.), *Proceedings of the 18th West Coast Conference on Formal Linguistics*, 586–598. Somerville: Cascadilla Press.
Wilder, Chris. 2018. Conjunction reduction and right-node raising. In Jeroen van Craenenbroeck & Tanja Temmerman (eds.), *The Oxford handbook of ellipsis*, 680–718. Oxford: Oxford University Press.
Williams, Edwin. 1978. Across-the-board rule application. *Linguistic Inquiry* 9. 31–43.
Winkler, Susanne. 2018. Ellipsis and prosody. In Jeroen van Craenenbroeck & Tanja Temmerman (eds.), *The Oxford handbook of ellipsis*, 356–386. Oxford: Oxford University Press.
Zhang, Niina Ning. 2009. *Coordination in syntax*. Cambridge: Cambridge University Press.