

# Coordination.

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## 1. Introduction

*Coordination* occurs when a constituent *c* (possibly an entire clause), is realized by two or more constituents similar to *c*. The concatenation of these constituents is often, though not necessarily, marked by a linker. We call the constituents so combined *conjuncts* (or *coordinands*), and the linker *conjunction* (or *coordinator*). Examples from English are given in (1b) and (2b), the brackets in (1a) and (2a) marking the constituents to be realized by the conjuncts in (1b) and (2b); *and* is the conjunction linking the conjuncts in both cases.

- (1) a. Billy loves [baseball]  
b. Billy loves [[baseball] and [basketball]]
- (2) a. [Billy loves baseball]  
b. [[Billy loves baseball] and [Bobby loves basketball]]

‘Similar’ in the definition above typically refers to syntactic category and phrase structure status (noun phrase in (1), clause in (2)), but may include other aspects such as grammatical function (e.g. predicate in (3); cf. Dik 1968:29):

- (3) Billy became [a baseball player and very rich]

In general, when *c* is realized by a coordinate structure, each of its conjuncts can substitute for *c* (‘Wasow’s generalization’, cf. Pullum and Zwicky 1986:752), modulo morphosyntactic readjustment:<sup>1</sup>

- (4) a. [Baseball and basketball] *are* fun  
b. Baseball *is* fun  
c. Basketball *is* fun

Intuitively, the relation between the conjuncts appears to be symmetric. A key area of interest in comparative syntax and syntactic theory is the extent to which this intuition of symmetry holds up. If commutativity is a test for symmetry, it appears that some cases of coordination are more symmetric than others:

- (5) a. Billy loves [baseball and basketball]  
b. Billy loves [basketball and baseball]
- (6) a. [Billy loves baseball and we drive him to every game]

<sup>1</sup> Wasow’s generalization is a special case of the Law of Coordination of Likes (LCL) of Williams (1981:646), stating without further definition that “likes and only likes can coordinate”.

- b. # [[We drive him to every game] and [Billy loves baseball]]

But even with the symmetric type in (5), questions about the internal structure and dependency relations involving a coordinate structure arise, which may lead to an analysis in terms of asymmetric structure (Munn 1993, Johannessen 1993, Haspelmath 2007:9, Zwart 2009a).

Coordination can be conjunctive, as in the examples above, but also disjunctive (7), or adversative (8):

- (7) Billy loves baseball or basketball  
(8) Billy loves baseball but Bobby loves basketball

We will be mostly concerned with conjunctive coordination in this chapter, and refer to Haspelmath (2007:25-28) for comparative remarks on disjunctive and adversative coordination (also Moravcsik 1971, Vicente 2010).

## 2. The universality of coordination

As far as I am aware, coordination as defined here occurs in the grammar of every natural language. This abstracts away from the presence of a coordinating conjunction, which we do not take to be a defining property of coordination (Mithun 1988, see also Haspelmath 2007:49). In fact, Mithun (1988:336f) demonstrates that coordination is marked primarily by intonation, and only secondarily by morphology.<sup>2</sup>

Compared to the subject matter of other chapters in this handbook, coordination shows relatively little morphosyntactic variation. There appear to be no dependencies internal to coordinate structures that give rise to morphosyntactic marking (e.g., conjuncts do not directly agree with each other; but see Note 16), and external relations typically involve the coordinate structure as a whole, not its individual members. However, coordination may give rise to morphological readjustment (as with verbal agreement in (4a)), suggesting a mechanism of feature resolution. In (4), the feature value ‘singular’ of the conjuncts is resolved into ‘plural’ for the coordinate structure as a whole. This turns out to be a source of crosslinguistic variation, especially where the feature gender is concerned (Corbett 1991:261f.). Furthermore, individual conjuncts sometimes do enter into morphosyntactic relations outside the coordinate structure, giving rise to phenomena like single conjunct agreement (see Section 3.5). Other than that, crosslinguistic variation is found mostly in the form, number and position of the conjunctions, which is the main topic to concern us in Section 3.

However, even in this domain of form, number and position of the conjunctions, striking generalizations emerge suggesting that the syntax of coordination reflects certain basic principles of grammatical organization. For example, designated coordinating conjunctions (i.e. those not also employed in other grammatical functions, see Section 3.1) appear to universally mark the left edge of the second (i.e. final) conjunct (Zwart 2009a). If true, the question is raised why this should be so, perhaps suggesting a fundamental asymmetric structural organization (De Groot 1949:66). Since coordination shows no signs of movements internal to a coordinate structure, findings

<sup>2</sup> Mithun (1988) discusses the prosody of coordinate structures in terms of the presence or absence of an intonational break, not in terms of relative pitch (which marks the second conjunct in languages like English). For a detailed analysis of the prosody of coordinate structures, see Wagner (2010).

like these may be taken to reflect directly on the nature of the structure building process assumed to be part of the faculty of language (e.g. the operation Merge of current generative grammar).

In this connection, if coordination is truly universal, the question how (recursive) coordination is achieved by a formal structure building process, and how a coordinate structure is embedded in a larger structure, also has the potential to contribute to our understanding of the faculty of language in a nontrivial way. Here, the observation that coordinate structures are typically opaque (in not allowing conjuncts or subparts of conjuncts to be moved out of the coordinate structure, per the Coordinate Structure Constraint of Ross 1967:89) seems particularly relevant. We return to these questions in Section 4, where we spell out the theoretical relevance of the comparative syntax of coordination in more detail.

### 3. The comparative syntax of coordination

#### 3.1 *The coordinating conjunction*

Coordination may be formally marked in a variety of ways. A formal marker may be absent (juxtaposition or asyndetic coordination), as in (9). There may also be a single formal marker (monosyndetic coordination), as in (10), or as many as there are conjuncts (polysyndetic coordination), as in (11).

- (9) *asyndetic coordination, Paulohi (Stresemann 1918:78)*  
 huanai lai, pipina manwa si-ulete ulata  
 small large woman man 3PL-climb mountain  
  
 si-hehi makela  
 3PL-look.for cuscus

‘Young and old, woman and man, climb the mountain and look for the cuscus.’

- (10) *monosyndetic coordination, Paulohi (Stresemann 1918:75)*  
 kereri i-fute lopu **tula** aau  
 Alfur 3SG-carry parang with shield  
 ‘The Alfur carries parang and shield.’

- (11) *polysyndetic coordination, Marind (Drabbe 1955:135)*  
 nok namèk **a** nok namùk **a**  
 1SG brother and 1SG sister and  
 ‘my brother and my sister’

Mithun (1988:356) argues that asyndetic coordination is the more basic type, and that formal marking of coordination emerges with the advent of literacy. In this connection, Mithun also notes that conjunctions are frequently borrowed, as in (12).

- (12) *borrowed conjunction, Shoshone (Dayley 1989:339)*  
 Antsi **n** Tepi taona ka mi’akwa  
 Angie and Debbie town to went  
 ‘Angie and Debbie went to town.’ (*n* < English *and*)

Borrowing aside, it appears that overt marking of coordination emerged as a further

elaboration of asyndetic coordination, using existing devices such as (additive) focus markers ('also', (13)), summative elements (14), or a comitative adposition ('with'), the latter illustrated in (10) above.

(13) *coordination by focus marking (Kalasha-ala, Degener 1998:161)*

zaga, ištri, şarmal **di** s̄arot ?  
 son wife cattle also healthy  
 'Are (your) son, wife, and cattle healthy?'  
 (cf. *uzag di* 'today also', Degener 1998:170)

(14) *coordination by summative pronoun (Mapudungu, Smeets 1989:177)*

(iñché) eyimi **inchiu** i-y-u  
 I you:SG we:DU eat-IND-1NSG-DU  
 'You and I ate.'

The summary strategy illustrated in (14) can be found to employ various types of elements, including numerals (Mongolian, Janhunen 2012:193), quantifiers (Cantonese, Matthews and Yip 1994:289), adverbs (Kolyma Jukaghir, Maslova 2003:318), aspectual markers (Thompson, Thompson and Thompson 1992:177), copulas (Koasati, Kimball 1985:454), and dualis markers (Ngaanyatjara, Glass and Hackett 1970:65).

All these morphemes may grammaticalize into coordinating conjunctions, none more common than the comitative adposition 'with' (on which see Stassen 2000, and Haspelmath 2007:29f). Signs indicating that an adposition has developed into a coordinating conjunction include the triggering of plural agreement morphology (15) and, in the case of postpositional adpositions, appearing in medial position (16), as well as the availability of a distributive interpretation.

(15) *comitative coordination, plural agreement (Ket, Werner 1997:321)*

ba:t ba:m-as' dɔl'i'n'  
 old man old woman-COM live:3PL.PST  
 'The old man and the old woman lived.'

(16) *postposition grammaticalized as medial conjunction (Shipibo, Valenzuela 2003:247-248)*

a. papa-ra wai-nko ka-[a]i tita **betan**  
 father:ABS-EVID chacra-ALL go-INC mother with  
 'Father goes to the chacra with mother.'  
 (EVID = direct evidential, INC = incomplete aspect)

b. papa **betan** tita-ra wai-nko ka-[a]i  
 father with mother:ABS-EVID chacra-ALL go-INC  
 'Father and mother go to the chacra.'

Final focus markers grammaticalizing into conjunctions may also assume the medial position between two conjuncts, as shown in (17)(cf. (13)).

(17) *focus marker grammaticalized as medial conjunction (Kalasha-ala, Degener 1998:161)*

ame-ba **di** sa Tāza Gul-kinā-ba  
 us-from also DEM Taza Gul-PL-from  
 'from us and from those of Taza Gul'

We therefore see a tendency for formal markers of coordination to assume a position between the conjuncts. The converse, e.g. comitative prepositions developing into final coordination markers, does not appear to occur. Likewise, borrowed conjunctions appear to be invariably medial (Zwart 2009a:1598).

Many languages use a designated, single-purpose formal coordination marker, such as English *and*. In Stassen's (2013) sample, these '*and*-languages' outnumber '*with*-languages' by 131 to 103. These are predominantly, perhaps even exclusively, medial (Zwart 2009a:1598).

It is very common for languages to employ several formal coordination marking strategies, and the choice of strategy may differ depending on the conjuncts' syntactic category. Thus, it is not unusual for juxtaposition to occur with clausal coordination, in languages where noun phrase coordination involves an overt conjunction (cf. Mithun 1988:350). For example:

(18) *noun phrase vs. clausal conjunction (Hausa, Newman 2000:135, 138)*

- a. gidā **dà** mōtā  
house and car  
'a house and a car'
- b. mun ci mun sha  
1PL:ASP eat 1PL:ASP drink  
'We ate and we drank.'

Likewise, clausal coordination may give rise to special formal markings not typically found with noun phrase coordination, e.g. an adverbial meaning 'then' (19) or a switch reference marker (20).

(19) *noun phrase vs. clausal conjunction (Baoulé, Timyan 1976:262, 266)*

- a. n njāābla **nĩ** bjā-nĩ be wɔ-li  
1SG sister with man-DEF 3PL go-FPST  
'My sister and the man left.'  
(FPST = factual past)
- b. sika-nĩ nga ε ji-i kũmā nũ  
gold-DEF DEM 3SG remove-FPST hole inside
- jε** ε nĩ ∅ fite-e wa-nĩ  
then 3SG with 3SG exit-FPST here-DEF
- 'that gold which he removed from the hole and brought it out here...'

(20) *noun phrase vs. clausal coordination (Tauya, MacDonald 1990: 247, 137)*

- a. ya-**sou** towe-**sou** yate-ene-ʔa  
1SG-with Towe-with go-1/2PL-IND  
'Towe and I went.'
- b. fei-**ti** ya-tu-a-ʔa  
boil-SS 1SG-give-3SG-IND  
'She cooked it and gave it to me.'  
(SS = same subject)

The example in (20) also illustrates that polysyndetic coordination, as in (20a), is often not extended to clausal coordination (see also Colarusso 1992:168, 180 on Kabardian, Haspelmath 1993:327, 335 on Lezgian, Kornfilt 1997:109, 113 on Turkish, Berry and Berry 1999:94, 213 on Abun, Gruzdeva 1988:40, 54 on Nivkh).<sup>3</sup>

With more than two conjuncts, monosyndetic coordination can increase the number of conjunctions, while staying at least one short of the number of conjuncts (21). In polysyndetic coordination, the number of conjunctions always matches the number of conjuncts (22).

(21) *monosyndetic multiple coordination, English*  
trains **and** boats **and** planes

(22) *polysyndetic multiple coordination, Abun (Berry and Berry 1999:96)*  
Abi e Arun e Joni e  
Abi and Arun and Joni and  
'Abi, Arun and Joni.'

This difference may be obscured by the phenomenon of conjunction omission (Haspelmath 2007:12), eliminating all but the final conjunctions:<sup>4</sup>

(23) *conjunction omission, English*  
a. trains, boats **and** planes  
b. \* trains **and** boats, planes

An initial focus marker may also be supplemented to give monosyndetic coordination the appearance of polysyndetic coordination:

(24) *focused monosyndetic coordination, English*  
**both** trains **and** boats

The initial focus marker may be a prosodically marked copy of the regular conjunction (see Haspelmath 2007:16 for a breakdown of the morphological variation in this domain of emphatic coordination). Stassen (2000:15) has found that initial polysyndetic coordination (of the type &A&B) is invariably an emphatic variant of medial monosyndetic coordination (see also Hendriks 2004 and Johannessen 2005 for arguments that initial conjunctions such as English *either/both* are focus adverbials).

A final remark on the type and position of conjunctions is that morphophonological rules may introduce effects of linearization obscuring the conjunction's syntactic position. This may involve encliticization to a preceding element (25) or, not infrequently, to the right of a following element, yielding a second position clitic effect (26).

<sup>3</sup> Carrera Hernández (2006) observes that languages with different conjunctions for noun phrase and clause coordination (citing Japanese, Korean, Yoruba, Wolof, Chinese, and Thai) lack gapping.

<sup>4</sup> Haspelmath (2007:13) mentions Classical Tibetan and Amharic as languages that retain the first conjunction in conjunction omission. However, the relevant cases appear to involve a mix of coordination strategies, where conjunction omission is supplemented by the introduction of a final summary element (Classical Tibetan, Beyer 1992:241), or a final focus marker (Amharic, Leslau 1995:882). Winter (2018) shows that the types in (21) and (23a) differ in many respects, suggesting that conjunction omission is not a proper characterization for the type in (23a).

(25) *enclitic medial conjunction, Zay (Meyer 2005:279)*

gɛbs-**wā**      səreyi zɛr  
millet-and    oats    sow:PRF:3SG.M  
'He sowed millet and oats.'

(26) *second position clitic medial conjunction, Latin*

ingenia      fecunda      totius-**que**      naturae      capacia  
mind:PL-ACC    fertile:PL.ACC    all:SG.GEN-and    nature:SG.GEN    grasping:PL.ACC  
'minds that are fertile and able to grasp the entire universe'  
(Pliny the Elder, *Natural History* II.190)

In (26), the conjuncts are *fecunda* 'fertile' and *totius naturae capacia* 'able to grasp the entire universe', and the conjunction *-que* is a second position clitic nestling behind the first word of the second conjunct (Carlson 1983:80). Needless to say, this type is not to be characterized as a final coordination marker, even if the second conjunct contains just a single word.

### 3.2 *Morphosyntactic features*

The morphosyntactic features of coordinate structures become apparent when they control verbal agreement morphology. The values of these features, typically person, number, and gender, depend on those of the conjuncts, but the dependence is not straightforward projection and some sort of feature resolution can generally be observed (cf. Corbett 2006:238f).

With *number*, we saw in (4) that a coordinate structure of two singular noun phrases controls plural agreement on the verb. I know of no languages where this pattern is completely absent (with the proviso that plural can give way to dual in languages that make that number distinction, such as Slovene).<sup>5</sup> This suggests that the number feature value of a coordinate structure is not syntactically projected but semantically derived. In line with this, a coordinate structure also controls plural agreement as soon as one of the conjuncts is a not a singular noun phrase:

(27) *dual + singular = plural (Slovene, Corbett 2000:199)*

dve    teleti    in    eno    žrebe    so    bil-i    zunaj  
two    calf:DU.N    and    one    foal:SG.N    AUX.PL    been-PL.M    outside  
'Two calves and a foal were outside.'

The semantic derivation of the value of the number feature allows for many exceptions to the rule, some of which have been studied in detail by Lorimor (2007) for English and by De Vries and Heringa (2008) and Heringa and De Vries (2008) for Dutch. For example, when the two conjuncts jointly refer to a single entity ('coalescence'), the coordinate structure controls singular agreement (28), and the same is true when the two conjuncts must be interpreted distributively (29)(Hoeksema 1983:74).

(28) *coalescence (English, Lorimor 2007:109)*

<sup>5</sup> In languages like Arabic, where subject-verb inversion yields singular agreement in general, plural agreement may resurface with singular coordinate subject noun phrases in these VS-orders (Benmamoun 2000:133f). Also striking is the case of Hungarian as discussed in É. Kiss (2012), where plural agreement with singular coordinate subject noun phrases is optional in SV-order and absent in VS-order.

Cream and sugar **is** behind you

(29) *distributive reading (Dutch, De Vries and Heringa 2008:13)*

Eenieder die	spiek-t	en	eenieder die	praat
everyone REL:NN.SG	cheat-3SG	and	everyone REL:NN.SG	talk:SG
zak-t	voor	het	tentamen	
fail-3SG	for	the	exam	

‘Anyone who cheats and anyone who talks fails the exam.’  
(NN = nonneuter)

Corbett (2000:200f) observes that (in Medieval Spanish, German, Russian and Serbo-Croat) reduced animacy and subject-verb inversion both lead to fewer instances of plural agreement triggered by coordinated noun phrases. It would have to be determined whether the semantic factors of coalescence and distributivity play a role in these effects, or whether they are completely independent.<sup>6</sup>

With *person* Corbett (2006:240f) finds that the feature value of the coordinate structure follows the person hierarchy (1 > 2 > 3, cf. Siewierska 2004:149), in the sense that agreement will be first person if one of the conjuncts is first person, second person if one of the conjuncts is second person (and no conjunct is first person), and third person elsewhere. This is illustrated by the person features of the reflexive pronoun bound by the coordinate subject in (30)(cf. Van Koppen 2005:29).

(30) *person agreement with coordinate subjects (Dutch)*

- a. Jij en ik ken-nen ( onszelf / \*jezelf / \*zichzelf ) goed  
2SG.SBJ and 1SG.SBJ know-PL REFL:1PL/REFL:2/REFL:3 well  
‘You and I know ourselves well.’
- b. Jij en hij ken-nen ( \*onszelf / jezelf / \*zichzelf ) goed  
2SG.SBJ and 3SG.SBJ shame-PL REFL:1PL/REFL:2/REFL:3 well  
‘You and him know yourselves well.’

With *gender*, resolution rules show more variation, owing to the variation in gender assignment rules (see Corbett 1991:261 for extensive discussion, and Corbett 2006:243f for a synopsis with more recent insights; see also Wechsler 2008). Since gender assignment refers to semantic features (either exclusively or essentially, Corbett 2006:261), resolution rules are likewise primarily semantic in nature, reflecting an animacy hierarchy or humanness dichotomy, as in (31).

(31) *gender agreement with coordinate subjects (Luganda, Givón 1970:253)*

- a. omu-kazi, es-sajja, ne olu-ana **ba**-a-lab-w-a omu-sajja  
1-woman 5-man and 11-child 2-PST-see-PASS-FV 1-man  
‘The woman, the fat man and the thin child were seen by the man.’

<sup>6</sup> The observations in the text concern conjunctive coordination, and do not automatically carry over to disjunctive coordination. In disjunctive coordination, which is by default distributive, singular agreement is preferred (i), but here an inclusive reading appears to make plural agreement possible (ii), albeit still marked (cf. Broekhuis and Corver 2019:164).

(i) Baseball or basketball **is** her favorite sport

(ii) I’ll stay in if baseball or basketball **are** on tonight



(*ba* = human plural subject agreement; FV = final vowel)

- b. en-te, omu-su, eki-be ne ely-ato **bi**-a-lab-w-a omu-sajja  
 9-cow 3-wildcat 7-jackal and 5-canoe 8-PST-see-PASS-FV 1-man  
 ‘The cow, the wildcat, the jackal and the canoe were seen by the man.’  
 (*bi* = nonhuman plural subject agreement)

In languages where gender assignment is formal (i.e. based on morphological or phonological characteristics of nouns, Corbett 1991:33), gender resolution may likewise refer to formal categories, such as in Slovene:

(32) *gender agreement with coordinate subjects (Slovene, Priestly 1993:433)*

- a. Milka in njen-a máčk-a sta bi-l-i zunaj  
 Milka<sub>F</sub> and POSS.3-F.SG cat<sub>F</sub>-NOM.SG AUX:3DU be-PST-F.DU outside  
 ‘Milka and her cat were outside.’
- b. Milka in njen-o tele sta bi-l-a zunaj  
 Milka<sub>F</sub> and POSS.3-N.SG calf<sub>N</sub>:NOM.SG AUX:3DU be-PST-M.DU outside  
 ‘Milka and her calf were outside.’

This involves the adoption of an elsewhere resolution rule, that kicks in when specific conditions dictating otherwise, are not met. In Slovene, the elsewhere rule yields masculine gender agreement (32b), at least in the singular (cf. Marušič et al. 2007), and it applies whenever the two conjuncts are not both feminine gender (in which case the agreement is also feminine, (32a)). Languages differ in how these rules are construed (see Corbett 1991:261f). Nevertheless, as Wechsler and Zlatić (2003) argue, here, too, semantic considerations may trump formal ones (*sentinelle* in (33) being formally feminine while referring to a male person):<sup>7</sup>

(33) *gender agreement with coordinate subjects (French, Wechsler and Zlatić 2003:177)*

La sentinelle et sa femme  
 DEF.F.SG sentry and 3SG.POSS:F.SG wife<sub>F</sub>

ont été pris en otage  
 AUX:3PL BE:PART take:PART.M.PL in hostage

‘The sentry and his wife have been taken hostage.’

Conversely, it appears that coordination may affect the formal number features of (one of) the conjuncts as well, yielding so-called ‘inclusory number marking’ (see Lichtenberk 2000).

(34) *inclusory number marking (Logbara, Crazzolara 1960:100)*

**àma** mi be  
 1PL 2SG with  
 ‘you and I’

<sup>7</sup> Crucially, the masculine agreement is a function of coordination, as *la sentinelle* ‘the sentry’ would normally trigger feminine agreement (Wechsler 2008:572).

In inclusory number marking, the first conjunct is unexpectedly marked for the number of the coordinate structure as a whole (dual or plural).<sup>8</sup> This often happens where the conjuncts are separated, as in (35).<sup>9</sup> The inclusory number marking may show up in the verbal morphology as well (36).

(35) *split inclusory number marking (Logbara, Crazzolara 1960:100)*

à            mu    èri            pie    àkú-a  
 SCL.1PL   go    3.M.SG    and    home-to  
 ‘He and I went home.’  
 (SCL = subject clitic)

(36) *inclusory number marking via agreement (Tzotzil, Aissen 1989:522)*

L-i-bat-**otikotik**    ta    ch’ivit    xchiʔuk    li    Xune  
 ASP-A1-go-1PL.EXCL    to    market    with            DEF    Xune  
 ‘I went to the market with Xun.’  
 (A refers to a set of agreement affixes)

### 3.3 Negation

To negate a coordinate structure like (37a), English shifts to disjunction (37b):<sup>10</sup>

- (37) a. Billy likes baseball and basketball  
 b. Billy doesn’t like baseball or basketball

This is in line with the second De Morgan law, stating that the negation of a conjunction equals the disjunction of the negated conjuncts (38b, cf. Partee, Ter Meulen and Wall 1990:112):<sup>11</sup>

(38) *De Morgan’s Laws*

- a.  $\neg(A \vee B) \Leftrightarrow \neg A \ \& \ \neg B$   
 b.  $\neg(A \ \& \ B) \Leftrightarrow \neg A \vee \neg B$

As shown by Szabolcsi and Haddican (2004), languages vary in the extent to which they conform to De Morgan’s laws, with Hungarian and several other languages (Russian, Serbo-Croat, Italian, Japanese) behaving differently:

(39) *negated conjunctive coordination (Hungarian, Szabolcsi and Haddican 2004:220)*

<sup>8</sup> Inclusory number marking appears to be restricted to pronouns. A few cases have been reported where the same effect is obtained with full noun phrases, using associative plural marking (Logbara, Crazzolara 1960:101, Margi, Hoffman 1963:57, and Central Alaskan Yup’ik, Corbett and Mithun 1996:12). Inclusory number marking is not limited to *with*-coordination (Lichtenberk 2000:4).

<sup>9</sup> Kurki (2022:113) observes that separation is the preferred option in Fenno-Swedish, and the description in Blackings and Fabb (2003:338) suggests that in Ma’di the inclusory number marking occurs only when the second conjunct is postposed.

<sup>10</sup> On the (universal) absence of a negative conjunction *n-and* in natural language, see Jaspers (2005).

<sup>11</sup> Informally, if either A or B is false, then the conjunction of A and B cannot be true.

Mari nem jár-t hoki-ra és algebrá-ra  
 Mary NEG go-3SG.PST hockey-SUBL and math-SUBL  
 ‘(lit.) Mary didn’t take hockey and algebra.’  
 meaning: Mary didn’t take hockey and didn’t take algebra.  
 (SUBL = sublativ, a case)

As pointed out by Szabolcsi and Haddican (2004:226), the ‘neither’ reading of (39) is also available for speakers of English when the conjunction is unstressed:

- (37) c. Billy doesn’t like baseball ’n’ basketball  
 meaning: Billy doesn’t like baseball and doesn’t like basketball

Likewise, under a coalescence reading (cf. (28)), the shift to disjunction does not occur:

- (40) I never take cream and sugar

Alternatively, (37a) can be negated as in (41), using a negative disjunctive coordinator:

- (41) Billy likes baseball nor basketball  
 meaning: Billy doesn’t like baseball and doesn’t like basketball

This conforms to (38a), on the understanding that the negative element in *n-or* has scope over the coordinate structure.

A similar wide scope effect can be seen in clausal coordination, where the first conjunct contains a negative focus adverbial:

- (42) *wide scope of negative focus marker in clausal coordination (German, Lechner 2000:9)*

Peter	hat	<b>weder</b>	das	Theorem	verstanden
Peter	AUX.3SG	neither	DEF.N	theorem	understand:PART
noch	konn-te	Maria	dem	Beweis	folg-en
nor	can-PST.3SG	Mary	DEF.M.DAT	proof	follow-INF

‘Neither did Peter understand the theorem, nor could Mary follow the proof.’

As Lechner argues, *weder* ‘neither’ in (42) must take scope over the coordinate clause structure ( $\neg[A \vee B]$ ), even if tucked inside the first conjunct (*pace* Wurmbrand 2008).<sup>12</sup>

### 3.4 Opacity

Ross (1967:89) famously observed that coordinate structures are islands, such that:

- (43) *Coordinate Structure Constraint (CSC)*  
 In a coordinate structure,  
 a. conjuncts may not be moved (44), and  
 b. terms of a conjunct may not be extracted from that conjunct (45)

<sup>12</sup> See Siegel (1987) and Repp (2009) for the scope of first conjunct negation in combination with gapping, as in (i).

(i) It’s clear that John can’t live in New York and Mary in LA ( $\neg$  can[John live in NY & Mary live in LA])

- (44) \* What<sub>i</sub> does Billy like [ baseball and t<sub>i</sub> ] ?  
 (45) \* (I wonder) what<sub>i</sub> [[Billy likes t<sub>i</sub> and Mary hates basketball]

While the general validity of (43) is put to the test by a range of exceptions, the opacity/transparency of regular coordinate structures is not a common source of comparative syntactic variation.<sup>13</sup>

The exceptions involve so-called Across-the-Board (ATB) rule application ((46), Williams 1977:419) and various types of ‘unbalanced coordination’ ((47), Ross 1967:93f, Schmerling 1972; see Johannessen 1993:7 for the term).<sup>14</sup>

- (46) the man who<sub>i</sub> [Bill saw t<sub>i</sub> and Mary talked to t<sub>i</sub> ]  
 (47) a. the whisky which<sub>i</sub> I [went to the store and bought t<sub>i</sub> ]  
 b. the joke that<sub>i</sub> [Spiro told t<sub>i</sub> and infuriated Paul]

There is a clear sense in which unbalanced coordination of the type in (47) is semantically different from regular coordination (see Kehler 2002 for thorough discussion), suggesting that in spite of appearances, these may not involve coordination (Ross 1967:94, Schmerling 1975:215, Goldsmith 1985:141; but see Bjorkman 2013).

### 3.5 Signs of asymmetry

Many of the phenomena illustrated above on closer inspection signal an asymmetry between the members of a coordinate structure (see Johannessen 1993 for a first comprehensive treatment).

#### *a. asymmetries relating to the conjunction*

A single conjunction appears medial or final, but never fully initial (Haspelmath 2007:8). In polysyndetic coordinate structures of the type &A&B, the initial conjunction is invariably a focus marker (Stassen 2000:15). Conjunction omission invariably retains the final conjunction (cf. Note 4 on potential counterexamples). Final coordination markers (such as the postposition ‘with’ or a focus marker) tend to grammaticalize as medial conjunctions (Zwart 2009a:1598).

Moreover, coordinate structure splitting (see Note 13) invariably groups the conjunction with the second conjunct:

- (48) *coordinate structure splitting (Dutch, Koster 2000:15)*

<sup>13</sup> Bošković (2019:72) lists a range of Coordinate Structure Constraint violations from various languages (see also Johnson 2002 for discussion). Zhang (2010:114f) notes a number of violations of the Coordinate Structure Constraint in Chinese, but these involve the comitative element *gen* and cannot occur when a distributive reading is forced (by an adverb like ‘separately’ or a quantifier like ‘each’). Georgi and Amaechi (2020:270) argue that (43a) is violated in Igbo; the relevant examples involve a resumptive pronoun, which the authors argue signals a movement dependency in these cases (p. 265). Scrambling and extraposition give rise to violations of (43a), but in these cases the conjunction is typically included with the scrambled or extraposed conjunct (e.g. Yatabe 2003 on scrambling in Japanese, Koster 2000 and Driemel 2016 on extraposition in Dutch and German); see Palancar (2012) for many more examples of this type of split conjunction.

<sup>14</sup> (47) is unbalanced in that *I went to the store and bought some whisky* or *Spiro told a joke and infuriated Paul* are not equivalent to *I bought some whisky and went to the store* or *Spiro infuriated Paul and told a joke*.

- a. Zij heeft **Jan en Peter** ge-zie-n  
 3SG.F.NOM AUX.3SG John and Peter GE-see-PTCP  
 ‘She saw John and Peter.’
- b. Zij heeft **Jan** ge-zie-n **en Peter**  
 3SG.F.NOM AUX.3SG John GE-see-PTCP and Peter  
 ‘She saw John and Peter.’
- c. \* Zij heeft **Peter** ge-zie-n **Jan en**  
 3SG.F.NOM AUX.3SG Peter GE-see-PTCP John and  
 ‘She saw John and Peter.’  
 (GE = participial prefix)

Likewise, the combination of a conjunction with a following conjunct can be presented in isolation:

- (49) *second conjunct isolation (Dutch)*  
 A Zij heeft Jan ge-zie-n  
 3SG.F.NOM AUX.3SG John GE-see-PTCP  
 B En Peter!  
 and Peter  
 ‘She saw John. // And Peter!’

These and similar observations (for which see Palancar 2012:278ff) are consistent with De Groot’s (1949:66) conjecture that the conjunction modifies the second conjunct (*contra* Dik 1968:53). If so, the cliticization observations in (25)-(26) are to be kept distinct in that the Latin type (26) is consistent with the structural organization (the conjunction modifying the second conjunct), and the Zay type (25) is not, even if both orderings may result from a process of morphophonological realignment (cf. Sadock 1991:63).

*b. agreement asymmetries*

As discussed in Section 3.2, agreement with coordinated noun phrases is typically subject to resolution rules. However, a widely attested alternative is for the verb to agree with one of the conjuncts alone (single conjunct agreement):

- (50) *first conjunct agreement (Belfast English, Johannessen 1993:28, citing Alison Henry p.c.)*  
 The egg and the bulbs (is/\*are) cracked

(51) *resolution vs. second conjunct agreement (Swahili, Bokamba 1985:44-45)*

- a. ki-ti na m-guu wa meza vi-me-vunjika  
 7-chair and 3-leg of table 8-PRF-break  
 ‘The chair and the table-leg are broken.’
- b. ki-ti na m-guu wa meza (u/\*ki)-me-vunjika  
 7-chair and 3-leg of table 3/7-PRF-break  
 ‘The chair and the table-leg are broken.’
- c. m-guu wa meza na ki-ti (ki/\*u)-me-vunjika  
 3-leg of table and 7-chair 7/3-PRF-break  
 ‘The chair and the table-leg are broken.’

Single conjunct agreement typically favors the closest conjunct, as in (51), or, more rarely, the first conjunct over the closest conjunct, as in (50), but never the second

conjunct over the closest conjunct (Corbett 2006:170).<sup>15</sup>

Agreement resolution and single conjunct agreement can be shown to cooccur, for example in complementizer agreement constructions in Continental West-Germanic:

- (52) *first conjunct agreement and resolution (Tegelen Dutch, Van Koppen 2005:40)*  
... de-s doow en ich ôs tref-fe  
COMP-2SG 2SG and 1SG 1PL:OB meet-PL  
'... that you and I meet.'

In (52), the complementizer *de* agrees with the first conjunct *doow* 'you', while the reflexively used object pronoun *ôs* and the verb *treffe* 'meet' agree with the coordinate subject *doow en ich* 'you and I' via resolution.

Another agreement asymmetry in coordination is that inclusory number marking (cf. (34)) shows up almost exclusively on the first conjunct (Schwartz 1988:237).<sup>16</sup>

### c. case asymmetries

Johannessen (1993:9) notes that asymmetric case marking in coordinate structures is 'a very common feature' and presents a range of examples (1993:9-24).

- (53) *case asymmetry (English, Johannessen 1993:14)*  
All debts are cleared between you and I  
(Shakespeare, *The merchant of Venice*, Act III, scene 2)

Weisser (2020) attempts to reason such asymmetries away, arguing instead for a 'symmetry of case in conjunction' generalization. Counterexamples may be created by processes of suspended affixation (54) or phrasal affixation.<sup>17</sup>

- (54) *suspended affixation of case-marker (Digor Ossetian, Erschler 2012:164)*  
solan ema zalijn-i χezare  
Solan:NOM and Zalijn-OBL house  
'Solan and Zalijn's house'

However, Weisser (2020:72) acknowledges that languages with differential object marking typically do allow nouns with different cases to be combined in coordinate noun phrases (Finnish marking pronominal objects accusative and nonpronominal objects genitive):<sup>18</sup>

<sup>15</sup> See also Johannessen's (1993:53) typological generalization limiting second conjunct agreement (and other non-resolution phenomena favoring the second conjunct) to OV-languages (also Walkow 2014:475, but cf. Willer Gold et al. 2017 for a counterexample from South Slavic).

<sup>16</sup> Wilkins' (1989:408-409) description of a similar construction in Arrernte appears to be an exception, where the inclusory pronoun shows up as the second conjunct (*akngeye ilake* [father 1DU] 'father and I'; the pronoun, in addition to person and number, also marks parentage and generation status w.r.t the first conjunct, a potential counterexample to the generalization in Section 2 that dependencies among conjuncts are not morphologically marked).

<sup>17</sup> Weisser (2020:53f) ascribes cases like the unexpected nominative in (53) to a postsyntactic process of pronoun allomorphy.

<sup>18</sup> Weisser (2020:73) suggests that differential case-marking is another instance of postsyntactic allomorphy, being dependent on referential properties of the noun phrase rather than on syntactic relations.

- (55) *differential object marking (Finnish, Kalin & Weisser 2019:668)*  
 me nä-i-mme häne-t ja karhu-n  
 1PL.NOM see-PST-1PL 3SG-ACC and bear-GEN  
 ‘We saw him and the bear.’

Przepiórkowski (2022) adduces more examples of case asymmetries in coordination that do not fall under the types discussed by Weisser (2020), including partitive case-marking (56) and similar cases, such as special case-marking induced by numerals, and heterofunctional *wh*-coordination (57).<sup>19</sup>

- (56) *partitive object marking (Polish, Przepiórkowski 2022:598)*  
 dajcie dobrego wina i całą  
 give:IMP.2PL good:GEN.SG.N wine:GEN.SG.N and whole:ACC.SG.F  
 świnie  
 pig:ACC.SG.F  
 ‘Serve good wine and a whole pig.’

- (57) *heterofunctional coordination (Hungarian, Lipták 2003:148)*  
 ki és mit olvasott?  
 who:NOM and what:ACC read:PST.3SG  
 ‘Who read what?’ [i.e. ‘Who read something and what was it?’]

These and similar examples seem to argue against a strict application of the Law of Coordination of Likes.<sup>20</sup>

#### *d. internal asymmetries*

Examples like (58) show a binding asymmetry between the first and second conjunct of a coordinate structure (Moltmann 1992:24, Munn 1993:16, Zhang 2006:178):

- (58) *binding asymmetry in coordination (English, Munn 1993:16)*  
 a. [Every man]<sub>i</sub> and his<sub>i</sub> dog went to mow a meadow  
 b. \* He<sub>i</sub> and John<sub>i</sub>’s dog went for a walk

But Progovac (2003:242f) shows that this pattern is far from general (also De Vries 2005:92, 2008:360f):

- (59) *no anaphor binding in coordination (Serbo-Croatian, Progovac 2003:244)*  
 \* Jovan<sub>i</sub> i svoja<sub>i</sub> žena su stigli  
 John and REFL:3SG.F wife AUX:3PL arrive:PRF.PL  
 ‘John and his wife arrived.’

- (60) *no Principle C effect in coordination (English, Progovac 2003:243)*

<sup>19</sup> Note that the relevant examples include cases that cannot be accommodated by a conjunction reduction analysis (see Section 4.2; see also Lipták 2011).

<sup>20</sup> Przepiórkowski (2022:615f) argues that a version of Wasow’s Generalization suffices to constrain the distribution of unlike category coordination. Coordination of verbs governing different cases appears to be problematic, unless the relevant cases match (Zaenen and Karttunen 1984), but see Wood, Sigurdsson and Snorrason (2022), who observe a closest conjunct effect, in the sense that the case governed by the nearest verb prevails.

John<sub>i</sub> and John<sub>i</sub>'s wife are certainly invited

(61) *no negative polarity effect in coordination (Dutch)*

- a. Hij heeft niemand ook maar iets ge-gev-en  
3SG.M AUX:3SG noone MINIM something GE-give-PTCP  
'He gave noone anything.'
- b. \* Hij heeft niemand en ook maar iets ge-zie-n  
3SG.M AUX:3SG noone and MINIM something GE-see-PTCP  
[intended] 'He saw noone and nothing.'  
(MINIM = minimizer)

This leaves the possibility of asymmetry effects brought about by linear order, which seem to abound:

(62) *linear order effect (English, Sag et al. 1985:117)*

- a. Pat is a Republican and proud of it  
b. \* Pat is proud of it and a Republican

This is especially relevant to ellipsis, typically affecting material in the second conjunct, to be elided under identity with material in the first:<sup>21</sup>

(63) *gapping (English)*

- a. Tasman discovered Tasmania and Cook (discovered) the Cook Islands  
b. Tasman \*(discovered) Tasmania and Cook discovered the Cook Islands

*e. priority*

We saw in (42) that a focus marker (German *weder* 'neither') contained within the first conjunct may have scope over the entire coordinate structure. The converse does not appear to occur. Examples of this, where the first conjunct takes priority over the second, appear to be common. Thus, Johannessen (1993:35) refers to Kiparsky's (1968) discussion of Ancient Greek coordinated imperatives, where only the first conjunct shows imperative morphology:

(64) *unbalanced mood (Ancient Greek, Kiparsky 1968:53)*

ton thes Athènayès epi gunasin èükomoyo  
DEM.ACC put:IMP Athena:GEN on knee:DAT.PL fair-haired:GEN

kay hoy hüposghesthay (etc.)  
and 3SG:DAT promise:INF

'place that on fair-haired Athena's knees and promise her ...'  
(Homer, Iliad VI, 273-274)

Similarly in the well-known case in (65), where only the first conjunct shows the effect of being in the scope of the conditional complementizer *wenn* 'when' (which blocks verb movement):

(65) *unbalanced conditional syntax (German, Höhle 1989:222)*

<sup>21</sup> 'Backward gapping', as found in e.g. Japanese (Ross 1970), may in fact involve conjunction reduction, which can leave out peripheral material from either the first or the second conjunct (Van Oirsouw 1987:134).



wenn jemand nach Hause **kommt** und da **steht**  
 when someone to house come:3SG and there stand:3SG

der Gerichtsvollzieher vor der Tür  
 DEF:SG.NOM.M bailiff<sub>M</sub> before DEF:SG.DAT.F door<sub>F</sub>

‘when someone comes home and the bailiff is standing at the door’

These priority effects may be capitalized on in theoretical accounts, such as Munn’s (1993) asymmetric analysis of Across-the-Board *wh*-movement (movement taking place from the first conjunct only; also Zhang 2010:222f) and Koster’s (2000) ‘pied-piping’ analysis of split coordination (the first conjunct spanning more structure than the second).

In this connection we also note cases like (66)-(67), where only the first conjunct shows sensitivity to subcategorization features of the matrix verb.

(66) *selective subcategorization effects (English, Munn 1993:70)*

- a. John expects Perot to run and that he’ll vote for him
- b. \* John expects that Perot will run and Bill to vote for him

(67) *selective subcategorization effects (Frisian, Hoekstra 1997:31)*

de plysje soe by him kom-me en  
 DEF police AUX.MOD:3SG at 3SG.M.ACC come-**INF** and

helje him op  
 pick:**IMP** 3SG.M.ACC up

‘The police would come [infinitive] to his place and pick [imperative] him up.’  
 (MOD = modal)

#### *f. asymmetric coherence*

Observations like (68) suggest that coordination is subject to some condition of coherence.

(68) *incoherent coordination (English, Ross 1967:105)*

- \* Please make yourself comfortable and I’ve studied Greek

Kehler (2002) proposes to distinguish three basic types of coherence (going back to Hume), which he calls ‘resemblance’, ‘cause-effect’ and ‘contiguity’. Applied to coordination, ‘resemblance’ gives rise to symmetric coordination (as in (2b)), while ‘cause-effect’ (6a) and ‘contiguity’ (9) give rise to asymmetric readings, not allowing permutation (cf. (6b)). As noted in Section 3.4, it is these asymmetric coordination types that give rise to violations of the Coordinate Structure Constraint (Schmerling 1975, Kehler 2002).

The contiguity coherence relation may develop into what has been termed pseudo-coordination (Quirk et al. 1985:978):

(69) *pseudo-coordination (English, Carden and Pesetsky 1977:88, 89)*

- a. John will **try and catch** Harry
- b. He **went and hit** me

In addition to English, pseudocoordination has been studied in detail in Afrikaans (De

Vos 2005) and the Mainland Scandinavian languages (Josefsson 1991, Lødrup 2002), generally yielding a consensus that these constructions do not involve coordination (for arguments, see Carden and Pesetsky 1977, Wiklund 1996).<sup>22</sup>

#### 4. Theoretical aspects of coordination

This article, focusing on comparative syntax, is not the place for a comprehensive review of the theoretical analyses of coordinate structures, a vast topic.<sup>23</sup> The sections that follow intend to briefly sketch how the comparative data inform theoretical analysis, from the perspective of the minimalist program of generative grammar (see Chomsky 1995, 2001; Kayne 1994; and the articles in Boeckx 2011).

##### 4.1 Structure

The picture emerging from the observations discussed above can be summarized as in (70).

- (70) In a two-member coordinate structure
- a. the first conjunct has priority over the second conjunct
  - b. the conjunction is associated with the second conjunct

Both statements are readily captured if we take coordinate structures to adhere to the X-bar theory of generative grammar, in particular as conceived in Kayne (1994), where the conjunction (&) is the head of a conjunction phrase (&P), the second conjunct is its complement (on the right), and the first conjunct a specifier or adjunct to the left of the head-complement unit (Kayne 2019:289, Johannessen 1993:60, Munn 1993:13, Collins 1988a:11, Progovac 2003:272, many others):<sup>24</sup>

- (71) [<sub>&P</sub> conjunct 1 [<sub>&</sub> & conjunct 2 ]]

This rules out ternary (or n-ary) branching structures, as entertained in earlier proposals (Chomsky 1965:196-197, Dik 1968:53, Lakoff and Peters 1969:114), both in two-member coordinate structures, treating the conjunction on a par with the conjuncts, or, abstracting away from the status of the conjunction, in structures involving multiple

<sup>22</sup> In Afrikaans, the verbs appearing in pseudocoordination may or may not be split up by verb movement (De Vos 2005:115):

(i) Jan sit (en lees) die boeke (en lees)  
John sit and read the books and read  
'John sits reading the books.'

In English and the Mainland Scandinavian languages, the verbs are always split up under verb movement.

<sup>23</sup> For a thorough recent discussion, see Progovac (2003).

<sup>24</sup> Johannessen (1993, also Zhang 2006:186) takes the linear order of the elements in (71) to be subject to parametric variation, something the theory of Kayne (1994) excludes. Munn (1993) argues that conjunct 1 is not a specifier but an adjunct, projecting its categorial features, so that no &P ensues. A variant of (71) takes every conjunct to be associated with a conjunction, and the phrase as a whole to be either a noun phrase (Lakoff & Peters 1969:114 note 2, Progovac 1997:211) or a conjunction phrase (Collins 1988b:20, Grootveld 1994:31, Zwart 1995:12).

conjuncts.<sup>25</sup>

Adopting (71) allows Kayne (1994:57) to explain the contrast in (23), where (23a) is the result of a further adjunction to the left of (71), and (23b) cannot be derived (as adjunction to the right is not an option in his theoretical model).

The idea that the conjunction is a head and hence that a coordinate structure is a conjunction phrase goes back to pre-generativist structuralist thinking (e.g. De Groot 1949:112, Nida 1949:92), and is now commonly assumed within generative grammar. Nevertheless, it is not without problems.<sup>26</sup> As we have seen in (26), the conjunction may be enclitic to the first word of the second conjunct, which is more consistent with the idea that it is a dependency marker of some kind rather than the head of the phrase. Also, the head of &P does not project any particular category features, nor does &P have any particular distributional properties, these features being unexpectedly determined by &P's specifier and/or complement (the conjuncts).<sup>27</sup> A final problem is that nothing in current minimalism forces syntactic structures to adhere to the rules of X-bar theory; if structures do adhere to these rules, that must be a function of the structure building process Merge (Chomsky 2001:3). It is therefore not a priori excluded that coordinate structures are simply the output of an operation merging two conjuncts, and that the conjunction marks the second conjunct as being joined to the first (Zwart 2009a:1599).

This entails that the head status of the conjunction is still in need of supporting argumentation. In this context, reference is often made to Collins' (1988a:5f), discussion of the pattern in (72).

(72) *conjunction adverbs (English, Collins 1988a:5,6)*

- a. John and maybe Mary went to the store
- b. # Perhaps John and Mary went to the store

In (72a), *maybe* seems to modify *Mary*, but then why is the reading that *perhaps* in (72b) modifies *John* not available? Collins argues that these conjunction adverbs in fact never modify the conjuncts, and therefore must be taken to modify *and*. This then implies that *and* is the head of the coordinate structure (Collins 1988a:11).<sup>28</sup>

However, it is not clear what it means for *maybe*, a modal adverb, to modify *and*, a conjunction. This uncertainty makes the conclusion that *and* is the head of a conjunction phrase much less compelling.

## 4.2 Derivation

<sup>25</sup> Analyses involving multiple dimensions (see Section 4.2) also typically do not assume a structure like (71), but see De Vries (2008).

<sup>26</sup> For an early critique, see Borsley (2005).

<sup>27</sup> This problem is only partly solved by Munn's (1993:17) proposal that the first conjunct is an adjunct rather than a specifier, as adjuncts also typically do not project.

<sup>28</sup> Collins (1988a:17-19) considers and rejects the obvious alternative, that constructions like (72a) result from conjunction reduction (*John went to the store and maybe Mary went to the store*). That conjunction reduction cannot be involved is shown by examples like (i), where *perhaps* is not interpreted as a clausal adverb, but merely qualifies the inclusion of *victory* in the coordinate structure.

(i) This twelve point lead and perhaps victory for Ohio State is going to be in large part due to the play of  
Cotie McMahon (Rebecca Lobo, ESPN, March 25, 2023)

The conjunction adverbs discussed by Collins (1988a) must be kept distinct from other interrupting elements inside coordinate structures (such as 'I think'), for which see Bogal-Allbritten and Weir (2017).

Chomsky (1957:113) derives noun phrase coordination via a generalized transformation rule that effectuates clausal conjunction reduction, deriving (4a) from the conjunction of (4b) and (4c) (see also Gleitman 1965:273-274). This was shown by Peters (1966) to be inadequate for cases like (73) and other symmetric predicates (see also Dik 1968:88f).<sup>29</sup>

(73) John and Mary are alike

Lakoff and Peters (1969:114) therefore proposed as an additional mechanism a phrase structure rule that expands a noun phrase into a coordinate structure of noun phrases, ultimately (74) in the category-neutral formulation of Jackendoff (1977:51).<sup>30</sup>

(74)  $X^i \rightarrow X^i - (\text{conj} - X^i)^*$

Dougherty (1970:864, 1971:300) argues that coordination can be derived without any recourse to conjunction reduction, proposing a phrase structure rule that expands phrases of any category to a string of phrases of the same category as the only mechanism needed (see also Lasersohn 1995).

As suggested by Chomsky (1982:103) and worked out in Goodall (1987), Grootveld (1994), De Vries (2008), among others, the conjuncts can also be thought of as being generated in separate dimensions, necessitating some kind of linearisation mechanism, which may be an unnecessary complication (Progovac 2003:259).<sup>31</sup>

In minimalism, individual phrase structure rules and transformations have been abandoned, and structure is derived via the single operation Merge, recursively combining elements from a given array ('numeration'). It seems a fair question to consider whether the conjunction is in the numeration, or added postsyntactically. In the latter case, Merge simply creates juxtapositions, the most basic coordination type, as we have seen (Mithun 1988). Chomsky (1995:243f) describes Merge as yielding a set, which may be ordered by a process of labeling. Alternatively, Merge can be described as yielding an ordered pair by definition (Zwart 2009b:165f; see Zwart 2011 for discussion). If so, juxtaposition is not to be equated with symmetry, and the asymmetries in coordinate structures noted in Section 3.5 may be accommodated on the simplest conception of the structure building process of the faculty of language (Zwart 2009a:1599f).

Sequences of the operation Merge may yield intermediate units to be spelled out, creating a punctuated derivation (Uriagereka 1999:256 'multiple spell-out', Chomsky 2001 'phases'). In a variant of this ('layered derivations'), coordinate structures may be analyzed as being generated in a separate derivation, creating an atomic output to be included as a single unit in the numeration for another derivation (Zwart 2009b:183f).

In minimalism, where transformations are reduced to the single structure building operation Merge, conjunction reduction, and other ellipsis phenomena, must be

<sup>29</sup> See Lasersohn (1995) and Schein (2017) for semantic treatments of the problems posed by (73). Lasersohn's analysis involves NP-conjunction and makes reference to event semantics, while Schein's analysis reinforces the original conjunction reduction approach of transformational grammar. See also Schmitt (2021).

<sup>30</sup> Jackendoff (1977:50) presents (74) as an exception to the general  $X^i$ - schema, so the notation should not be taken to designate a structure like (71), the parentheses and asterisk merely indicating which elements can be iterated.

<sup>31</sup> See De Vries (2008:362-364) for a comparison of the various multidimensional analyses.

analyzed as a function of postsyntactic realization (‘externalization’), leaving certain elements unpronounced under identity with antecedent material (e.g. Merchant 2001).<sup>32</sup>

### 4.3 Opacity

The Coordinate Structure Constraint (43) has so far resisted explanation in terms of the major theories of locality in generative grammar, including the Barriers theory of Chomsky (1986), Relativized Minimality of Rizzi (1990), and the Phase theory of Chomsky (2001).<sup>33</sup>

Earlier explanations capitalize on the Law of Coordination of Likes (LCL, see Note 1), on the assumption that a gap in one of the conjuncts breaks the required parallelism between the conjuncts (Schachter 1977:95, Gazdar 1981:172, essentially also Goodall 1987:65). In contrast, Williams (1981) argues that (43) falls under the Across-the-Board principle of Ross (1967:97), which has more generality and therefore makes appeal to the LCL superfluous.<sup>34</sup> Both approaches are problematic, as strict adherence to the LCL cannot always be observed (e.g. (62a) and other phenomena of asymmetry in coordination), and ‘rules’ as referred to in the Across-the-Board principle (see Note 34) have no theoretical status in minimalism (or in Government and Binding theory, for that matter; Chomsky 2000:8).

Adding to the difficulties of Across-the-Board movement is the proposed asymmetric analysis of the pattern (going back to Munn 1992), in which movement takes place from the first conjunct only, mimicked by an empty operator movement inside the second conjunct. While this analysis receives empirical support in Georgi (2019),<sup>35</sup> it does raise the question why such a derivation is not excluded by whatever excludes other violations

<sup>32</sup> As the realization of subject-verb agreement is also a postsyntactic process, certain arguments against conjunction reduction underlying noun phrase coordination, capitalizing on the plural agreement with conjoined subjects, as in (4), lose their force (e.g. Dik 1968:89).

<sup>33</sup> Bošković (2019:75) proposes that conjuncts are phases (local domains that require movement to their edge for extraction of any subparts), in deviation from the original conception of Phase theory, where only CP and vP are phases (Chomsky 2001:12). This allows him to explain clause (43b) of the Coordinate Structure Constraint, while at the same time allowing Across-the-Board movement, on the assumption that movement to the edge of a conjunct creates uncertainty about the categorial status (‘label’) of the conjunct, and hence to a violation of the LCL, unless the same movement takes place in both conjuncts. Zwart (2009b:183-184) argues that the Coordinate Structure Constraint follows if coordinate structures are derived in a separate derivation layer, assuming that whatever is merged in a separate derivation layer is inaccessible for Merge in any subsequent derivation (see (75)).

<sup>34</sup> Across-the-Board rule application was elevated to a principle by Williams (1977:419), and formulated as in (i).

(i) If a rule applies into a coordinate structure, then it must affect all conjuncts in that structure.

<sup>35</sup> Georgi (2019) shows that ‘long ATB-movement’, which would require successive cyclic movement from both conjuncts on a symmetric ATB-analysis, but only from the first conjunct in an asymmetric ATB-analysis, shows the reflexes of movement (in Duala, Buli, Ewe and Kiitharaka) that are expected under the asymmetric analysis. Thus, movement to an intermediate landing site is marked by a prefix (*n-*) on the verb in Kiitharaka, and this shows up only in the first conjunct of an ATB-movement construction:

(i) *Kiitharaka, movement reflexes in long ATB-movement (Georgi 2019:299)*

i-mbi	Mfana	a-thugani-a	ati	Maria	n-a-gur-ir-e	noe	John	a-rebur-a
FOC-what	Mfana	SBJ:1-think-FV	C	Maria	N-SBJ:1-buy-PRF-FV	and	John	SBJ:1-break-FV

‘What did Mfana think that Maria bought and John broke?’

of the Coordinate Structure Constraint.<sup>36</sup>

## 5. Conclusion

Coordination may not present the richest of sources for comparative syntactic analysis, but its peculiar syntactic, semantic and morphological properties provide an uncommonly fertile ground for studying the theoretical underpinnings of comparative syntax (cf. Zamparelli 2011:1739).

From a minimalist perspective, it is tempting to view coordinate structures as the direct product of the structure building operation Merge, not affected by further operations (such as movement) that might obscure the basic pattern. Since coordinate structures display all kinds of asymmetries, this would suggest that Merge creates asymmetric pairs of constituents, rather than unordered sets. This is consistent with the typological observation that juxtaposition (asyndetic coordination) appears to be the most basic type of coordination.

This then calls into question the consensus that has arisen in the theoretical literature that a coordinate structure is a regular X'-structure, headed by the conjunction (Conjunction Phrase). That line of research, which builds on the very successful idea of a structural blueprint for phrases of any category (Jackendoff 1977, Chomsky 1986), may be up for review if the only structure building operation is Merge, and X'-structures, to the extent that they need to be entertained in the model of grammar, merely owe their properties to the way Merge operates. Coordinate structures then possibly represent a more primitive kind of structure, essentially juxtapositions, which may be derived by Merge straightforwardly, in particular if Merge may be conceived of as yielding ordered pairs rather than unordered sets.

From this perspective, the general opacity of coordinate structures, still essentially stipulated, may reflect another fundamental property of the structure building process, namely that derivations inevitably incorporate elements that must have been put together in separate, auxiliary derivations (derivation layering). This requires something to the nature of (75), prohibiting Merge from operating across derivation layers.<sup>37</sup>

### (75) *Generalized Integrity*

Given two derivations  $D_1$  and  $D_2$ , with corresponding numerations  $N_1$  and  $N_2$ , and corresponding outputs  $S_1$  and  $S_2$ , such that  $S_1 \in N_2$ , no subpart of  $S_1$  may be merged in  $D_2$

If (75) may be taken to explain the general opacity of coordinate structures, it obviously fails to predict the existence of Across-the-Board movement and the movements out of the first or second conjunct (Section 3.4), which should then come up for renewed scrutiny.

From a minimalist perspective, there is no need to assume that coordination always takes place at the sentence level, an assumption that would necessitate conjunction

<sup>36</sup> This problem is compounded by the observation that other violations of the Coordinate Structure Constraint require the 'contiguity' or 'cause/effect' coherence type, and are disallowed with the 'resemblance' coherence type (Kehler 2002:101ff). Across-the-Board movement, however, requires the 'resemblance' coherence type (Kehler 2002:125).

<sup>37</sup> This puts coordinate structures, as far as opacity is concerned, in a class with subjects and adjuncts, for which see Toyoshima (1997), Johnson (2003) and Zwart (2009b:178).

reduction in the derivation of lower level category coordination. This is because nothing prevents direct merger of two nonsentential elements, yielding straightforwardly cases like (73) that are problematic for a conjunction reduction derivation. This is not to say that conjunction reduction and other instances of ellipsis under coordination cannot exist, merely that these processes need not be assumed in the derivation of all instances of coordination.

Likewise, the minimalist approach sits uneasily with an analysis of coordination in terms of multiple dimensions. This is because an analysis in terms of multiple dimensions would necessitate the definition of a special type of Merge (yielding ‘behindance’, Grootveld 1994:30), complicating the structure building process.

Coordination phenomena also present a fertile testing ground for theories of morphosyntactic dependence and morphological realization, especially in cases where conjuncts selectively enter into dependency relations (either selective in terms of hierarchical structure or in terms of linear order/proximity). While this is an area where much variation can be observed, a certain priority of the first conjunct needs to be acknowledged here as well.

In this context it is striking that the second conjunct is, to a large extent universally, both prosodically (in terms of pitch) and morphologically (in terms of hosting the conjunction) marked for being in a coordination relation with the first conjunct. This is what one would predict on the theory that the structure building operation Merge yields an asymmetric pair of sisters, underscoring the relevance of coordinate structures for the study of comparative syntax and linguistic theory.

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