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CONFIGURATIONAL CHANGE IN INDO-EUROPEAN COORDINATE CONSTRUCTION

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ABSTRACT. This paper presents a case study of word order change in coordinate construction across a wide range of early Indo-European (IE) languages. In synchronic terms, all early IE languages have two available configurations at their disposal: one in which the coordinating particle is placed in first and another in which it is placed in the second position with respect to the second coordinand. Diachronically, the two competing configurations reduce to a single winning one, namely the head-initial one that all contemporary IE languages retained. The analysis, both synchronic and diachronic, derives from the assumption that narrow- and post-syntactic processes operate in derivationally delimited chunks, qua phases. Resting on the notion of Junction, the analysis also succeeds in explaining the bimorphemicity signature of initial conjunctions by deriving the morpheme count as a fusional exponents of two functional heads.

1 INTRODUCTION

This paper investigates the word order change in Indo-European (IE) coordinate construction. Across the entire IE family, two morphosyn-

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tactic patterns of coordination are found as Agbayani and Golston (2010) have investigated most recently. In one type of coordinate construction, the coordinator occupies peninitial—that is, enclitic in second—position with the respect to the internal (second) coordinand (1a), while in another type, the coordinator is initially placed between any two, or more, coordinands (1b), as the the minimal representative pair from Homeric Greek shows in (1). Diachronically, the change from the two competing structures with peninitial and initial positions to the initial type is uniform across IE.

(1) a. ἀσπίδας εὐκύκλους λαισήϊά τε πτερόεντα.
aspidas eukuklous laisēia **te** pteroenta
shields round pelt and feathered
'The round shields and fluttering targets.' (Hom., *Il.*, book M: l. 426)

b. κεῖσ' εἶμι καὶ ἀντιόω πολέμοιο
keīs' eīmi **kaì** antiō polemoio
there go and meet battle
'Go thither, and confront the war.'(Hom., *Il.*, book M: l. 368)

The proposed synchronic analysis of the two coordinate structures, represented in (1a) and (1b), identifies two coordinate positions: I will show that enclitic (peninitial) coordinators occupy one of those positions, while the orthotone (initial) coordinators occupy *both* coordinator positions. By looking into the fine-grained structure of coordination synchronically in IE languages, a diachronic account resting on the feature-checking mechanism will suggest itself straightforwardly. The morphosyntactic change in word order patterns in coordination will be shown to not only have ramifications in terms of linearisation (change from peninitial to initial position), but to be tightly related to the semantics underlying the two positions we syntactically identify. I show that the alternation between the two (1a) and (1b) constructions is not free and random but rather that it obeys the phasal 'logicality' of derivation.

In the following section, I outline the theoretical foundations regarding the syntax of coordination that my analysis rests on. Section 3 then proceeds to present the Indo-European data, for which we propose an analysis in Section 4. Section 5 concludes.

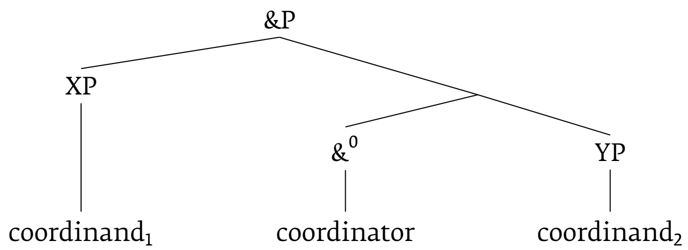
2 FROM COORDINATION TO JUNCTION

Once the binary, phrase-structure compliant, idea is laid out in §2.1, I theoretically and empirically motivate an enrichment of the this structure in ∫2.2 by appealing to a more fine-grained model of coordinate construction.

2.1 Background assumption

The syntactic structure for coordination is taken to be binary as most notably argued for by Kayne (1994) and Zhang (2010). Earliest arguments for a binary-branching model of coordinate syntax go back to, at least, Blümel (1914) followed by subsequent substantiations (see Munn 1993 for an exhaustive list of references). Following Kayne (1994), we will assume that coordinators are heads, merging an internal argument (coordinand) as its complement, and adjoining an external argument (coordinand) in its specifier, as per (2).

(2)



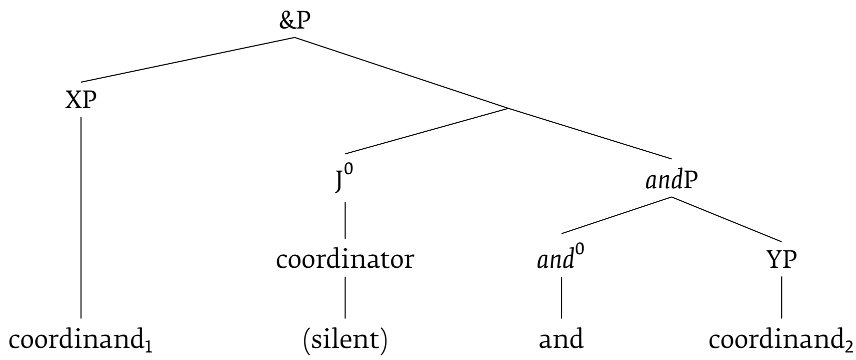
In the following three subsections, I motivate a revision of (2): instead of one coordinator position, two are additionally proposed to accommodate some theoretical and empirical facts.

2.2 An enriched structure

2.2.1 Den Dikken's J(unction)

Assuming a binary branching structure for coordination (2), den Dikken (2006) argues that exponents such as *and* and *or* do not in fact occupy the coordinator-head position as indicated in (2) but are rather phrasal subsets of the coordinator projection, with their origins in the internal coordinand. The actual coordinator head, independent of conjunction and/or disjunction, which originate within the internal coordinand, is a junction head, J^0.

(3)



The core motivation for den Dikken's postulation of the silent presence of J^0 is to capture the distribution of the floating *either* in English. As Myler (2012) succinctly summarises:

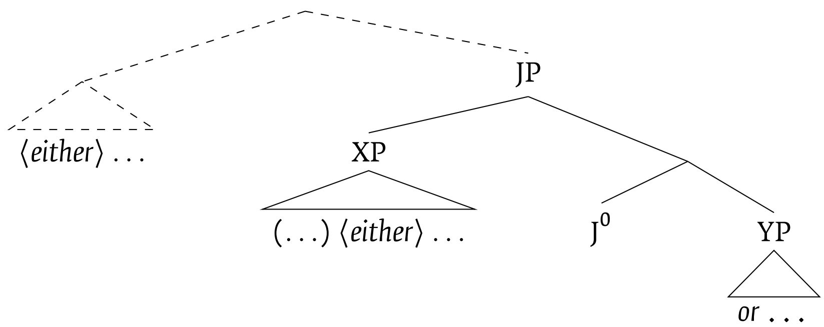
(4) den Dikken's *either* is a phrasal category and can be adjoined to any XP as long as:
   a. XP is on the projection line of the element focused in the first disjunct; *and*
   b. XP is not of C category; *and*
   c. no CP node intervenes between *either* and the focused element in the first disjunct; *and*
   d. *either* surfaces to the left of the aforementioned focused element at PF.

This characterisation of *either* predicts its floatation (optional height of adjunction if we assume a more standard coordination analysis), which is, in den Dikken's words, either too high (5) (his 1) or too low (6) (his 2).

(5) a. John ate either rice or beans.
   b. John either ate rice or beans.
   c. Either John ate rice or beans.

(6) a. Either John ate rice or he ate beans.
   b. John either ate rice or he ate beans.

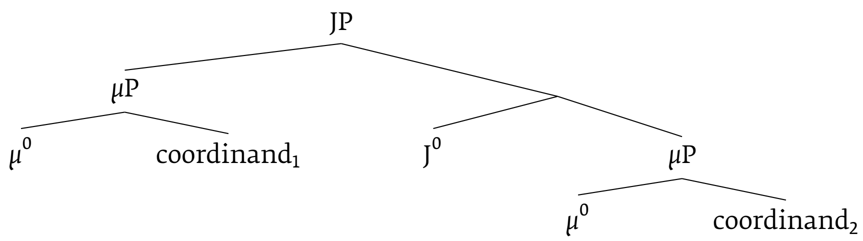
(7)



Employing (in his words, the abstract head) J^0, den Dikken's account explains not only the *either…or* coordinate constructions but also the *whether … or* and *both … and*, which are unified under the structural umbrella of JP structure. den Dikken (2006: 58) takes the head introducing the internal (second) coordinand not as the lexicalisation of J^0 but as a phrasal category establishing a feature-checking relationship with abstract J^0 instead. For an implementation of den Dikken's (2006) J-system of coordination, see also Slade (2011) and Szabolcsi (2015).

An updated and enriched structure of (2) that I propose based on den Dikken's motivation is thus the following:

(8)



There is no principled reason in his account according to which J^0 would resist or be banned from lexicalisation. For den Dikken, J^0 is an abstract 'junction' category inherently neutral between conjunction and disjunction for which no overt evidence is provided since his account rests on J^0 not being lexicalised. I take it as a reasonable hypothesis that there may be languages, which overtly realise this junctional component of coordination. In ∫2.2.2, empirical justification for (8) is provided. The following section will show that IE syntax of coordination was of the same type.

2.2.2 Lexicalised J: Avar

There are empirical arguments substantiating the fine-grained (double-headed) structure for coordination (3). Our structure for coordination supposes there are three heads involved (a J and two μs). *Mutatis mutandis*, the theory predicts that there may be languages that realise all three (J+μ/μ) heads simultaneously.

Avar, a northeast Caucasian language of Daghestan, provides such evidence.[1] Avar allows coordinate constructions of the polysyndetic (Latin *que/que*) type (9), which, according to our system, involves two overt μ heads and a silent J.

(9) keto *gi* hve *gi*
cat μ (J) dog μ

1 This novel data was provided by Ramazanov (p.c.).

'cat and dog'

Aside from the polysyndetic type, Avar also allows an English-like construction with an initially placed coordinator, which we take to be a phonological instantiation of J:

(10) keto *va* hve
cat (μ) J dog (μ)
'cat and dog'

The third and last type of construction allowed in Avar is most relevant for our purposes since it shows a union of phonological realisations in (9) and (10). In this construction type, both μ heads as well as J are realised simultaneously.[2]

(11) keto *gi va* hve *gi*
cat μ J dog μ
'cat and dog'

There is currently no alternative syntactic model of coordination, which could explain the third (11) option without further stipulations. Our fine-grained system (8), however, can not only handle (11) without any problem, it even predicts its existence.

3 INDO-EUROPEAN

Having motivated a fine-grained J-μ complex for coordinate construction, both theoretically and empirically, we now address the central concern of this paper, the IE coordinate construction. The existence of two types of construction with respect to the pen/initial positioning of the coordinator does not only correlate with (i) the alternation in linear placement of coordinator but also (ii) the very morphological structure of the the two types of coordinators heading pen/initial constructions. In the following two subsections, we take each of the two (i, ii) properties in turn.

3.1 Alternation in linear placement

We start our discussion with a diachronic perspective on IE syntax of coordination, which shows linear alternation in coordinator placement. The earliest IE languages show that there existed two syntactic types of

2 Other languages which allow 'triadic exponence' of two-argument conjunction include Hungarian, Bulgarian, Macedonian, and SerBo-Croatian. For a detailed empirical overview, see Mitrović (2014) and references therein.

coordinate structures. One in which the coordinator occupies the initial, and another in which the coordinator occupies the peninitial position with respect to the internal coordinand. Klein (1985*a*, 1985*b*) has show for Ṛgvedic that the alternation between initial and peninitial placements of the coordinator patterns with the category of the coordinands, whereby the peninitial (enclitic) coordinators generally cannot coordinate clauses which the initial coordinators can. Given in Table 1 is a clausal/subclausal conjunct distribution with respect to occurences with initial/peninitial coordinators in Ṛgvedic (see section 4 for an explanandum).

Coordinator	Distribution	[+CP] conjuncts	[−CP] conjuncts
utá (initial)	47.64% (N = 705)	51.66% (N = 364)	48.34% (N = 341)
ca (peninitial)	52.56% (N = 775)	7.61% (N = 59)	92.39% (N = 716)

TABLE 1: *Categorial distribution of sub/clausal conjuncts for Ṛgvedic pen/initial coordinators (numbers from Klein 1985*a*, 1985*b*)*

For a semantic explanandum, see Mitrović and Sauerland (2014) and Mitrović (2014).

We now turn to sketching the synchronic morphosyntactic status and diachronic decline of the double system of coordination in the three representative classical IE languages (Sanskrit, Latin, Greek). Ṛgvedic, the oldest variety of Sanskrit and Indic, show a dual grammar a conjunction: there existed an initial (12a) and a peninitial (14a) conjunction marker:

(12) VEDIC SANSKRIT:

a. मा नो॑ म॒हान्तं॑म् उ॒त मा नो॑ आर्भ॒कं
mā́ no mahā́ntam **u-tá** mā́ no arbhakám
(μ) not us great J-μ not us small

'[Harm] not either the great or the small of us.' (ṚV, 6.1.11[ab])

b. वा॒य॒व् इन्द्रं॑श् च चेतथः सु॒ताना॑ं वाजिनीवसू
vā́yav īndraś **ca** cetathaḥ sutā́nāṃ vājinīvasū
Vayu Indra and rush.2.DL rich strength-bestowing

'Vayu and Indra, rich in spoil, rush (hither).' (ṚV, 1.002.5[a])

While both initial and peninitial markers were part of the Ṛgvedic grammar of conjunction, the initial conjunction declines in the post-Vedic period, as the statistical data given in Table 2 and plotted in Fig. 1 show.

The synchronically dual status of conjunction is observable in Classical Latin, as the pair of examples in (13) show.

PERIOD	*uta*	*ca*
archaic	45.562%	54.438%
early	2.912%	97.088%
epic	0.838%	99.162%
classical	2.213%	97.787%
medieval	0.740%	99.260%
late	0.699%	99.301%

TABLE 2: *Development and loss of the double system of coordination in Indic*

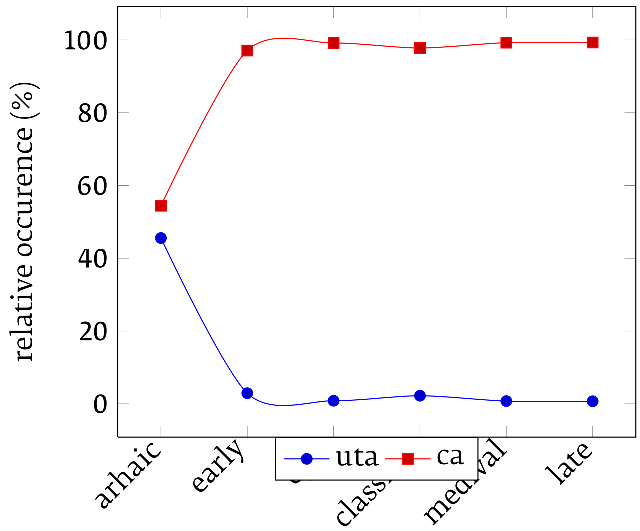


FIGURE 1: *The loss of the double system of coordination in Indic*

(13) CLASSICAL LATIN:

a. ad summam rem pūblicam **atque** ad omnium nostrum
to utmost weal common and to all of us
'to highest welfare and all our [lives]' (Or. 1.VI.27-8)

b. vīam samūtem **que**
life safety and
'the life and safety' (Or. 1.VI.28-9)

Diachronically, the peninitial marker is lost with the initial *et* becoming the predominantly single device for conjunction, as shown in Table 3 and Fig. 2. The relevance of the bimorphemic and *que*-containing coordinator *atque* will become relevant in §3.2 and in §4 where we provide an analysis.

	et	*que*	*atque*
1st c. BCE	62.2%	28.9%	8.9%
4th c. CE	92.7%	5.9%	1.5%

TABLE 3: *Grammatical change from 1st c.* BCE *to 4th c.* CE *in the conjunction system of Latin: et, que, and atque*

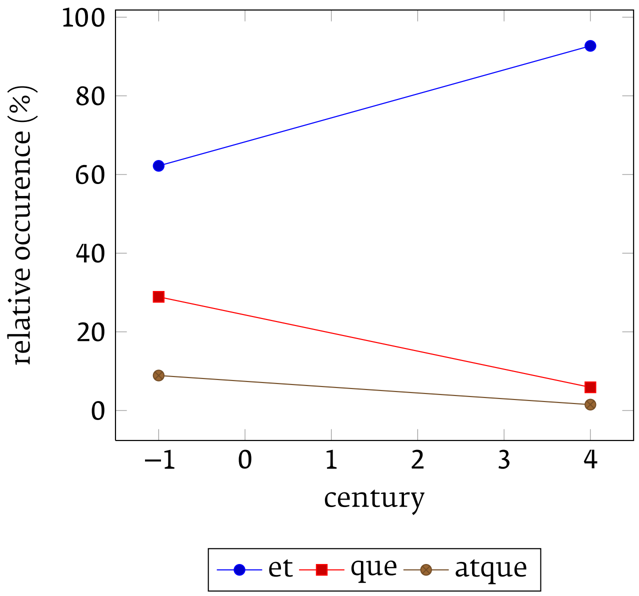


FIGURE 2: *Grammar of conjunction in Latin: et, que, and atque from 1st c.* BCE *to 4th c.* CE

Identical synchronic and diachronic pattern is found in Ancient Greek where the double system of coordination in Homeric (14) declines in the post-Homeric period, as shown in Tab. 4 and Fig. 3.[3]

(14) HOMERIC GREEK:

a. κεῖσ' εἶμι καὶ ἀντιόω πολέμοιο
keīs' eīmi **kaì** antiō polemoio
there go and meet battle
'Go thither, and confront the war.'
(Il. M. 368)

3 For details on the texts used, see Mitrović (2014).

b. ἀσπίδας εὐκύκλους λαισήϊά τε πτερόεντα.
aspidas eukuklous laisēia **te** pteroenta
shields round pelt and feathered
'The round shields and fluttering targets.'
(Il. M. 426)

period	καί (N)	τε (N)	Σ(καί, τε)	καί (%)	τε (%)
8th c. BCE	5,799	4,755	10,554	54.95%	45.05%
5th c. BCE	3,671	1,465	5,136	71.48%	28.52%
2nd c. CE	7,715	200	7,915	97.47%	2.53%
15th c. CE	1,839	40	1,879	97.87%	2.13%

TABLE 4: *Grammatical change in the Greek conjunction system of Greek from 8th c.* BCE *to 15th c.* AD

The syntactic duality of the double placement of the coordinator extends beyond the three classically representative IE languages above. It is clear from these pairs of examples that IE had prepositive (a) and a postpositive (b) series of coordinators. We could distinguish the two types of configurations by positing that the peninitially placed (enclitic) coordinator induces some form of movement, either syntactically or post-syntactically, but that the difference lies only in the linearisation of the surface placement of the coordinator. The following data goes to expand the empirical coverage beyond the three classical IE languages. In the following subsection, we move on to motivate a difference between (a) and (b) which goes beyond linear placement of the coordinator.

(15) AVESTAN:

a. 𐬎𐬙𐬀 𐬨𐬀𐬰𐬛𐬃 𐬵𐬎𐬭𐬎𐬚𐬨𐬀
uta mazdå huruθma
and wisdom.M.SG.GEN increase.M.SG.NOM
𐬵𐬀𐬊𐬨𐬀 𐬭𐬀𐬊𐬯𐬉 𐬔𐬀𐬭𐬀
haoma raose gara
haoma.M.SG.VOC grow.2.SUBJ.MID mountain.SG.M.LOC
𐬞𐬀𐬌𐬙𐬌
paiti
toward
'And [thus] may you grow upon that mountain, O Haoma, [bringing] the increase of wisdom, [...].' (AvYH. 10.4)

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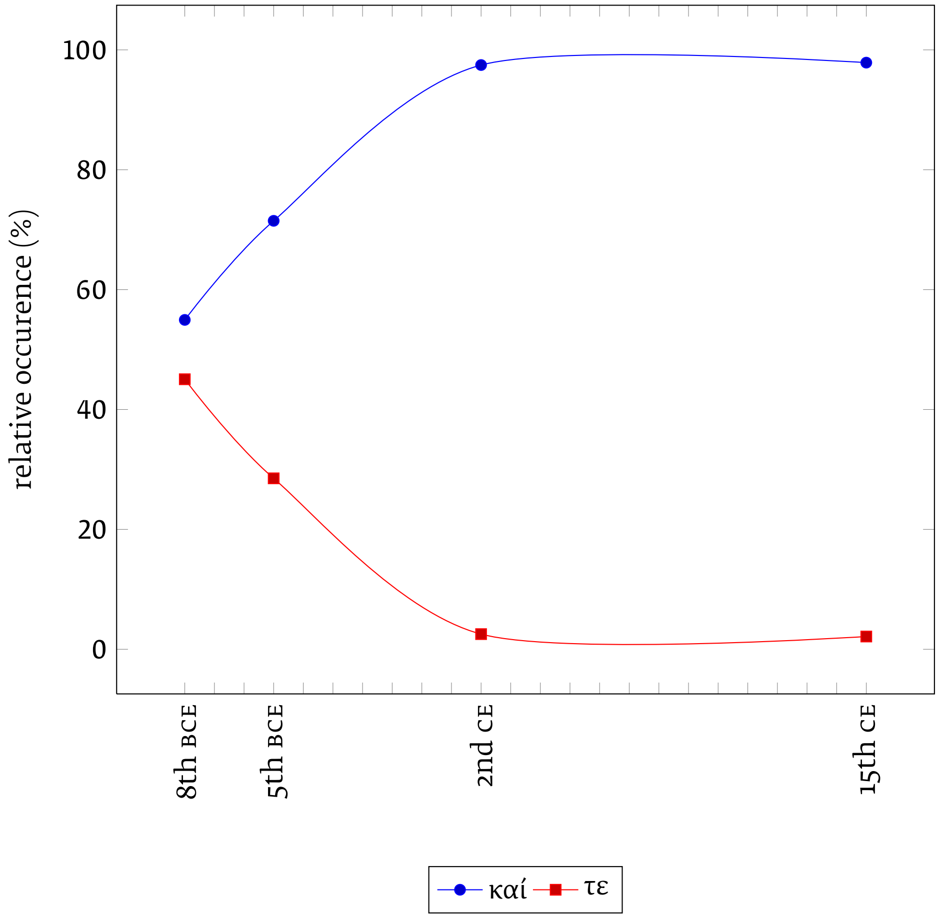


Figure 3: *Grammar of conjunction in Greek: καί and τε from 8th c.* BCE *to 15th c.* CE

b. yūžəm aēibiiō ahurā
you.2.sg.nom them.pl.dat lord.m.sg.voc
aogō dātā aṣ̌ā
strength.n.sg.acc give.2.pl.aor.imp truth.n.sg.inst
xṣ̌aϑrəm **cā**
power.n.sg.acc and

'O Lord, may you give strength to them2 through Truth and that power [. . .]' (AvYH. 29.10)

(16) Hittite:

a. **nu** kán Mursilin kuennir **nu** ešar ieir **nu**
and PRT Mursilis.ACC they.killed and blood shed.3.PL and
Hantilis nahsariyatati
Hantilis feared.3.SG.M

'And they killed Mursilis and they shed blood and Hantilis was afraid.' (2BoTU. 23.1.33-35)

b. anšu.kur.ra.meš LÚ.^{meš}is.guškin **ya** humandan
charioteers grooms.golden and all

'Charioteers and all the golden grooms.' (StBoT. 24.*ii*.60-61)

(17) OLD CHURCH SLAVONIC:

a. дѣдъ мои и оцъ мои и инии мнози
dědŭ moi, i t cŭ moi, i inii mnodzi
grandfather my and father my and those many

'My grandfather, my father, and those many others . . . '
(VC. 14[8])

b. ⰀⰈⰟ ⰆⰅ ⰃⰎⰘ ⰂⰀⰏⰟ
Azŭ **že** gljǫ vamŭ . . .
I but.REL tell.1.SG.PRES you.DAT

'But I tell you ...' (CM. Mt. 5:28)

(18) GOTHIC:

a. 𐌰𐌺 𐌰𐌽𐌰 𐌻𐌿𐌺𐌰𐍂𐌽𐌰𐍃𐍄𐌰𐌸𐌹𐌽 𐌾𐌰𐌷 𐌻𐌹𐌿𐍄𐌴𐌹𐌸
ak ana lukarnastaþin **jah** liuteiþ
neither on candle.DAT.SG and light.IND.3.SG
𐌰𐌻𐌻𐌰𐌹𐌼 𐌸𐌰𐌹𐌼 𐌹𐌽 𐌸𐌰𐌼𐌼𐌰 𐌲𐌰𐍂𐌳𐌰
allaim þaim in þamma garda.
all.DAT.PL it.DAT.PL in that.M.DAT.SG house.M.DAT.SG

'Neither do men light a candle, and put it under a bushel.'
(CA. Mt. 5:15)

b. (𐌲𐌰𐌻𐌰𐌹𐌸 𐌹𐌽 𐍀𐍂𐌰𐌹𐍄𐌰𐌿𐍂𐌹𐌰 𐌰𐍆𐍄𐍂𐌰
(galaiþ in praitauria aftra
came.PRET.3.SG in judgement hall.ACC.SH again
𐍀𐌴𐌹𐌻𐌰𐍄𐌿𐍃 𐌾𐌰𐌷) 𐍅𐍉𐍀𐌹𐌳𐌰 𐌹𐌴𐍃𐌿 𐍈𐌰𐌸 𐌿𐌷
Peilatus jah) wopida Iesu qaþ **uh**
P.NOM and called.PRET.3.SG J.ACC said.PRET.3.SG and
𐌹𐌼𐌼𐌰
imma
him.M.DAT.SG

'(Then) Pilate entered into the judgment hall again, and called Jesus, and said unto him.' (CA. Jn. 18:33)

(19) Old Irish:

a. boí Conchubur *ocus* maithi
was.3.SG.AOR C.M.NOM.SG and the nobles.PL.NOM
Ulad[N] i[N] nEṁuin
Ulstermen.M.PL.GEN in Emain Macha

'Conchobar and the nobles of the Ulstermen were in Emain Macha.' (*Compert Con Culainn*, 1.1)

b. ba *ch* ri Temrach
COP and king Tara.GEN

'And he was king of Tara.' (*Laws*, 4.179)

(20) Tocharian:

a. ṣerśkana ñi aiścer ce
sisters.F.PL.VOC me give.Q.PRES.PL.IX these.M.OBL.SG
pintwāt *epe* se ññissa śpālmeṃ
alms.M.OBL.SG or who.M.SG.NOM than me better
tākaṃ cwi aiścer
be.3.PL.SUBJ him.M.SG.GEN give.PL.PR.IX

'Sisters, will you give me these alms or will you give (them) to him who would be better than me?' (TB, *THT*, 107.18)

b. mā empeles omskeṃsac mā *pe*
not terrible.M.PL.OBL evil.M.PL.ALLT not and
tampewātsesac
powerful.M.PL.ALLT

'Not for the terrible, the evil, and not for the powerful' (TA, Puṇyavanta-Jātaka, 26[b])

The enclitic series is generally and freely prone to reduplication. As Gonda (1954) and Dunkel (1982) note, a peninitial connective like $^\star k^w e$ is traditionally reconstructed with a twofold syntax: both monosyndetic (X Y $^\star k^w e$) and bisyndetic, or indeed polysyndetic, (X $^\star k^w e$ Y $^\star k^w e$) constructions are freely available in early IE languages, as the following three pairs representatively show.

(21) Vedic and Classical Sanskrit:

a. धर्मे च अर्थे च कामे च
dharme **ca** arthe **ca** kāme **ca**
dharma/law.LOC and commerce.LOC and pleasure.LOC and

मोक्षे च भरत ऋषभ यद् इह अस्ति तद्
mokṣe **ca** bharata ṛṣabha yad iha asti tad
liberation.LOC and Bharata giant which here is.3.SG that
अन्यत्र यद् न इह अस्ति न तत् क्वचित्
anyatra yad na iha asti na tat kvacit
elsewhere which not here is.3.SG not that anywhere

'Giant among Bharatas whatever is here on Law, and on commerce, and on pleasure, and on liberation is found elsewhere, but what is not here is nowhere else.' (Mbh. 1.56.34)

b. वायव् इन्द्रश् च चेतथः सुतानां वाजिनीवसू
vā́yav īndraś **ca** cetathaḥ sutā́nāṃ vājinīvasū
Vayu Indra and rush.2.DL rich strength-bestowing

'Vayu and Indra, rich in spoil, rush (hither).' (ṚV 1.002.5[a])

(22) HOMERIC GREEK:

a. ὃς ᾔδη τά τʽ ἐόντα τά τʽ
os ede tá **te** eonta tá **te**
which were (=know.PLUP) the and exist.PART the and
ἐσσόμενα πρό τʽ ἐόντα
essomena pró **te** eonta
exist.FUT before and exist.PART

'That were, and that were to be, and that had been before.' (Il. A. 70)

b. ἀσπίδας εὐκύκλους λαισήϊά τε πτερόεντα
aspidas eukuklous laisēia **te** pteroenta
shields round pelt and feathered

'The round shields and fluttering targets.' (Il. M. 426)

(23) CLASSICAL LATIN:

a. iam tum tendit **que** fovet **que**
already then pursue and favour and

'Already then, she *both* pursued it *and* (also) favoured it.' (Aen. 1.18)

b. vīam samūtem **que**
life safety and

'the life and safety' (Or. 1.VI.28-9)

The polysyndetic pattern of enclitic coordinators in (**??**), (22a) and (23a) seems to have carried an emphatic component, akin to the modern English emphatic conjunction with *both...and*. We find the same reduplicative pattern with emphatic/focal semantics in Old Church Slavonic (OCS), which survives in contemporary SerBo-Croatian, among other modern Slavonic languages. It is OCS, and its diachronic descendants, that shows the independence of linear placement and semantic force behind the coordinator. Proto-Slavonic has independently syncretised the prepositive (initial *atque*-type) and postpositive (peninitial/enclitic *que*-type) coordinators but only lexically. As the following OCS example in (24) shows, conjunctor *i* has both the conjunctive semantics of the initial *atque*-type coordinators in IE as well as the emphatic/focal semantics of the enclitic *que*-type coordinators. While the dual semantics—to be adequately addressed below—is retained in Slavonic, the morpho-lexical difference between the two classes of coordinators has been collapsed. We will return to the syntax of this collapse below. In (24), the first pair (a) shows (reduplicative) polysyndetic coordination with emphatic/focal meaning, while the second pair (b) is an example of a monosyndetic construction.

(24) Old Church Slavonic:

a. ⰱⱁⰻⱅⰵ ⰶⰵ ⱄⱔ ⱂⰰⱍⰵ ⰿⱁⰳⱘⱋⰰⰰⰳⱁ ⰻ ⰴⱎⱘ ⰻ ⱅⱑⰾⱁ
boite že sę pače mogǫštaago **i** dšǫ **i** tělo
fear but REFL rather be.able and soul and body
ⱂⱁⰳⱆⰱⰻⱅⰻ
pogubiti
destroy

'But rather fear that which is able to destroy *both* soul *and* body.'
(CM. Mt. 10:28)

b. ⰱⱘⰴⱑⱅⰵ ⰶⰵ ⰿⱘⰴⱃⰻ ⱑⰽⱁ ⰸⰿⰻⱔ ⰻ ⱌⱑⰾⰻ ⱑⰽⱁ
bǫděte že mǫdri ěko zmiję **i** cěli ěko
be but wise as serpents and harmless as
ⰳⱁⰾⱘⰱ·ⰵ
golǫb e
doves

'Rather be wise as serpents, and harmless as doves.'
(CM. Mt. 10:16)

(25) Contemporary SerBo-Croatian:

a. Bojte se više onoga koji može *i* dušu *i* tijelo
fear REFL more that which may and soul and body
pogubiti
destroy

'But rather fear that which is able to destroy *both* soul *and* body.'
(Mat. 10:28)

b. budite dakle mudri kao zmije *i* bezazleni kao
be therefore wise as serpents and harmless as

golubovi
doves

'Rather be wise as serpents, and harmless as doves.'
(Mat. 10:16)

3.2 Morphemicity

There is one additional, and for our purposes crucial, fact distinguishing the initial and the peninitial types of coordinators. The difference also lies in the morphological structure of the two series.

The generalisation we motivate in this subsection is that (i) peninitial coordinators we find across the earliest IE languages are monomorphemic, and the (ii) the initial coordinators are bimorphemic, at least in their original form. Initially placed coordinators are bimorphemic and as such are decomposable synchronically or diachronically into two coordinators, each underlying a morpheme. Greek *kai*, for instance, derives from **kati*, itself being a concatenation of $^\star k^w e$ + **te* (Beekes 2010: 614, Boisacq 1916: 390). Conversely, Indo-Iranian (IIr.) *uta* comprises coordinator *u* + *ta* (<$^\star h_2(\acute{e})u$ + **te*); Gothic coordinators *jah* and *jau* result from **yo* + $^\star k^w e$ and **yo* + $^\star h_2 u$ respectively.[4] Dunkel (1982) reconstructs two [±ENCLITIC] series of four coordinators for PIE. One series is orthotone and another enclitic as shown in Tab. 5[5].

ORTHOTONE	ENCLITIC
$^\star k^w \acute{o}$ / $^\star k^w \acute{i}$	*-$k^w e$
$^\star h_2 \acute{e}w$	*-$h_2 u$
**yó*	*-*yo*
**tó*	*-*te*

TABLE 5: *Dunkel's (1982) reconstruction of two coordinator series in IE*

The initial coordinators in IE are generally decomposable into—and reconstructable only as—a pair of orthotone and enclitic coordinators. I take these halves to correspond to the two coordinate heads J^0 and μ^0 that we have independently motivated in §2.2 using den Dikken's (2006) proposal.

Dunkel's orthotone connectives, however, are not found in independent (uncomposed) word-level compositions, which begs the question of redundancy of the orthotone series. In its stead we may simply assume

4 I assume that the difference in moprhemicity holds of the original forms from which the coordinators develop.

5 The philological notation h_2 refers to the *a*-colouring laryngeal.

a single, inherently enclitic, series, out of which bimorphemic coordinators are composed. This reasoning derives the empirical facts in Tab. 6 in a more economical way.

	DEPENDENT / COMPOSED					INDEPENDENT	
	**k^w^e*	**te*	*h_2*u*	**yo*	**nu*	[+ε]	[−ε]
**k^w^e*		Gr. *kai*	—	—	—	IIr. *ca* Lat. *que* OIr. *ch* Goth. *uh* Gaul. *cue* Ven. *ke* Celtib. *ku*	—
**te*	OIr. *to-ch* Hit. *tak-ku*		—	—	—	Gr. *te*, *de* Alb. *dhe* Skt. *tu* Sl. *že*	Sl. *to*
*h_2*u*	Skt. *u ca* Lat. *at-que*	IIr. *u-ta* Gr. *au-te* Lat. *au-t*		—	Sl. *i-no*	IIr. *u* Gr. *au* CLuw. *ḫa*	Sl. *i*
**yo*	Goth. *ja-h*	—	Goth. *j-au*		—	Hit. *ya* TochA. *yo* Myc. *jo*	—
**nu*	OIr. *na-ch*	OIr. *na-de*	—	—		—	Hit. *nu* OIr. *no* Sl. *nŭ*

TABLE 6: *Clitic combinatorics as strategy for development of orthotone coordinators.*

We are now in a position to distinguish the three canonical word order types in IE coordination. In monosyndetic coordinations with enclitic particles, the external (first) coordinand (μP) is silent. In coordinations headed by a linearly initial bimorphemic coordinator, the two coordinate morphemes are distributed between J^0 and the head of its complement, μ^0, as per Tab. 6.[6] This idea is summarised in (26) with the three types of coordinate construction; Classical Latin *(at)que* is taken as an example (0 is a notation for phonological silence).

(26) a. **Peninitial coordinate constructions**

6 The notation [±ε] in Tab. 6 refers to whether a particle is a Wackernagel element, requiring second-position ([+ε]), or not ([−ε]). The theory and details behind the notations are addressed below.

i. *Peninitial monosyndetic coordination* (22a, 23a, 24a):

$$\Big[[_{\mu P}\ \underset{\substack{|\\ \textit{que}}}{\mu}\ \text{coord}_1]\ [\ \underset{\substack{|\\ \text{o}}}{\text{J}^0}\ [_{\mu P}\ \underset{\substack{|\\ \textit{que}}}{\mu}\ \text{coord}_2]]\Big]$$

ii. *Peninitial monosyndetic coordination* (21b, 22b, 23b, 24b) with phonologically silent μ^0_{EXT}:

$$\Big[[_{\mu P}\ \underset{\substack{|\\ \text{o}}}{\mu}\ \text{coord}_1]\ [\ \underset{\substack{|\\ \text{o}}}{\text{J}^0}\ [_{\mu P}\ \underset{\substack{|\\ \textit{que}}}{\mu}\ \text{coord}_2]]\Big]$$

b. **Initial (bimorphemic) coordinate constructions** (12a, 14a, 13a) with phonologically silent μ^0_{EXT}:

$$\Big[[_{\mu P}\ \underset{\substack{|\\ \text{o}}}{\mu}\ \text{coord}_1]\ [\ \underset{\substack{|\\ \textit{at}}}{\text{J}^0}\ [_{\mu P}\ \underset{\substack{|\\ \textit{que}}}{\mu}\ \text{coord}_2]]\Big]$$

The analysis of compound coordinators sketched in (26b), where the morphological components of initial particles like Latin *at-que* or Sanskrit *u-tá* are spread between μ^0 and J^0, also suggest itself to a diachronic analysis of the development of linear placement of coordinators in contemporary IE, which is uniformly head-initial.[7] The analysis put forth here also makes an empirical prediction for IE. Having assigned the lower μ-headed coordination structure a category status, we predict the independence of μP. According to (8), the syntax of coordination is broken down into categories of two kinds. While the higher J^0 is taken to join coordinate arguments, its substructural μP is thus, *mutatis mutandis*, predicted to be an independent phrasal category. By virtue of being junctional, for J^0 establishes a two-place relation between coordinands (a formal default of coordination). μP, on the other hand, does not establish a two-place coordinate relation, which leads us to the possibility that there are mono-argumental and morphosyntactically coordination-like constructions headed by μ in IE. Given the generalisation on monomorphemic enclitic coordinators, now treated as μ^0s, to establish (8), we need to find in IE mono-argumental constructions headed by monomorphemic μ particles like Latin *que*, Sanskrit *ca* or OCS *i*. This is in fact what we find in all IE branches. Independent μPs are of three types: polarity constructions, free-choice constructions and focus constructions. In the

7 As a reviewer reminds me, this suggests that we expect plenty of languages to spell J^0 out overtly, which seems to be empirically borne out, at least for contemporary IE languages. But see den Dikken (2006) for a discussion of the non-junctional status of English *and*.

former two, μPs contain a μ^0 and a *wh*-element. The following examples show a consistent spread of μPs across the range of early IE languages.

(27) VEDIC & CLASSICAL SANSKRIT:

a. प्रती॒दं विश्वं॑ मोदते॒ यत् किं च पृथि॒व्याम् अधिं
prátīdáṃ viśvam modate yát [kīṃ **ca**] pṛthivyā́m ádhi
this world exults which [what μ] world.F.ACC upon
'This whole world exults *whatever* is upon the earth.'
(ṚV 5.83.9[a])

b. यदि अभ्युपेतं क्व च साधु असाधु
yady- abhyupetaṃ [kva **ca**] sādhu asādhu
if promised to be accepted where μ honest dishonest
वा कृतं माया
vā kṛtaṃ mayā
or done.PST.PART 1.SG.INSTR
'If you accept *whatever* I may do, whether honest or dishonest.'
(BP. 8.9.12)

c. न यस्य कश् च तिततर्ति माया
na yasya [kaś **ca**] tititarti māyā?
NEG whom.GEN [who.M.SG μ] able to overcome illusions.PL
'No one [=not *anyone*] can overcome that (=the Supreme Personality of Godhead's) illusory energy.'
(BP. 8.5.30)

d. चिन्तयमः च न पश्र्यामि भवतां प्रति
[cintayaṃś- **ca**] na paśyāmi bhavatāṃ prati
thinking.PRES.PART μ NEG see.1.SG you unto
वैकृतम्
vaikṛtam
offence.ACC
'*Even* after much thinking, I fail to see the injury I did unto you.' (Mbh. 2.20.1)

(28) LATIN:

a. ut, in quo [quis **que**] artificio excelleret, is in suo genere
that in who [what μ] craft excels, is in his family
Roscius diceretur
R spoken
'so that he, in *whatever* craft he excels, is spoken of as a Roscius in his field of endeavor.' (Or. 1.28.130)

b. Sic singillatim nostrum unus quis-**que** mouetur
so individually we one wh-μ moved

‘So each of us is individually moved’ (Lucil. *sat.* 563)

c. Morbus est habitus cuius-**que** corporis contra naturam
sickness is reside wh-μ body contrary nature

‘The sickness is the situation of any/every/each body contrary to nature’ (Gell. 4.2.3)

d. auent audire quid quis-**que** senserit
want hear what wh-μ think

‘they wish to hear what each man’s (everyone’s) opinion was’ (Cic. *Phil.* 14,19)

(29) Gothic:

a. 𐌸𐌹𐍃𐍈𐌰𐌳 𐌿𐌷 𐌲𐌰𐌲𐌲𐌹𐍃
[þishvad **uh**] (...) gaggis.
[where μ] go.2.sg.pres.act.ind

‘**wherever** you go’ (CA. Mt. 8:19)

b. 𐌾𐌰𐌷 𐍈𐌰𐌶 𐌿𐌷 𐍃𐌰𐌹 𐌷𐌰𐌿𐍃𐌴𐌹𐌸 𐍅𐌰𐌿𐍂𐌳𐌰
jah [hvaz- **uh**] saei hauseiþ waurda
and who.m.sg and *pro*.m.sg hear.3.sg.ind words.acc.pl
𐌼𐌴𐌹𐌽𐌰
meina
mine

‘And **every** one that heareth these sayings of mine’ (CA. Mt. 7:26)

(30) Old Church Slavonic:

a. ⱂⱁⱄⱏⰾⰰ ⰹ ⱅⱁⰳⱁ ⰽⱏ ⱀⰹⰿⱏ
posŭla [**i** togo] kŭ nimŭ
sent.3.pl.aor [μ him.m.sg.acc] to then.pl.dat

‘He sent *also* him to them.’ (CM. Mk. 12:6)

b. ⱀⰵ ⰿⱁⰳⰾⱏ ⰱⰹ ⱅⰲⱁⱃⰹⱅⰹ ⱀⰹⱍⰵⱄⱁⰶⰵ
ne moglŭ bi tvoriti [n-**i**-česo-že]
neg be-able.pp would.3sg do [neg-μ-what-rel]

‘... he would not be able to do anything.’ (CM. Jn. 9:33; Willis 2000: 328, ex. 15)

(31) Classical Armenian:

a. եթէ ո ք
et‘e [o- **k‘**] ...
if who- μ

‘If *anyone* [strike (thee) upon thy right cheek ...]’ (VT. Mat. 5.39; Klein 1997: 196)

PREPRINT
Forth. in A. M. Martins & A. Cardoso (eds:) *Word order change*. Oxford: OUP.

b. երբէ ք
[erbe- **k'**] . . .
[time.LOC *μ*]
'At *any* time/*ever*.' (VT. Mt., 5.39; Klein 1997: 191)

(32) TOCHARIAN:

a. [ñemintuyo ypic olyiyaṃ sārt[h]
[jewels.PL.INST full ship.F.SG.LOC caravan.M.SG.OBL
Jambudvipac **pe**]
Jambudvipa.M.SG.ALLT *μ*]
yāmuräṣ, ṣpät
having been made.SUPP.ABS.M.SG.ABL seven
koṃsā kñukac wraṃ
day.M.PL.PERLT neck.SG.ALLT water.SG.LOC
'With a caravan to Jambudvipa *also* having been made in a ship filled with jewels [. . .]' (TA, Puṇyavanta-Jātaka, 5[a])

(33) HITTITE:

a. nu-wa *ÚL* [kuit **ki**] sakti
and-QUOT NEG [who *μ*] know.2.SG.PRES
'You know *nothing* (=not *anything*)' (KUB XXIV.8.I.36)

b. nu DUMU.MEŠ-*ŠU* [kuišš-**a**] kuwatta utnē paizzi
J sons.his who-*μ* = ∀ somewhere country.LOC went
'**Each** of his sons went somewhere to a country.'
(KBo. 3.I.1.17–18)

c. nu [kuitt-**a**] arhayan kinaizz[i
J what-*μ* = ∀ seperately sifts
'She sifts **everything** seperately.' (KUB XXIV.11.III.18)

(34) OLD IRISH:

a. [ce **cha**] taibre
[what *μ*] give.2.SUBJ
'*what*[so]*ever* thou mays give.'
(Zu ir. Hss. 1.20.15; Thurneysen 2003: 289)

b. [ce **cha**] orr
[what *μ*] slay.3.M.SUBJ
'*whichever* he may slay.'
(Anecd. II.63.14.H; Thurneysen 2003: 289)

The morphosyntactic independence of μP across a wide range of IE languages is strong evidence for the J^0-μ^0 coordination complex (8) defended here and elsewhere (cf. Mitrović 2014, Mitrović and Sauerland 2014, Slade 2011, Winter 1998, Szabolcsi 2014, *int. al.*). There is additional semantic evidence for the proposed structure, which semantically obtains two different operators. In the absence of J^0, μPs are predicted to have non-coordinate semantic contribution.[8]

By the same reasoning, we predict, for instance, that the Slovenian conjunctor *in*, being derived from a compounding of Proto-Slavonic **i* and adverbial-like connective **nŭ*, is not of μ but of J category, which explains its inability to form a polarity/free-choice item with a *wh*-element (35), unlike SerBo-Croatian (36), which has retained the Proto-Slavonic monomorphemic **i* (Derksen, 2008: 207), taken here to be of μ category.

(35) * **in** kdo
J who
'anyone/whoever'

(36) **i** (t)ko
μ who
'anyone/whoever'

Equipped with a fine-grained structure for coordination, we now turn our focus to the synchronic syntax of peninitially placed Wackernagel coordinators and derive a diachronic analysis of its loss.

4 DERIVING PENINITIAL PLACEMENT

We have empirically established that there were two canonical constructions available in IE languages: a head initial and a head peninitial one, the latter with the two mono- and polysydentic subtypes. Theoretically, given the three properties of the double system—linearisation, focus and morphemic structure—addressed in ∫3.1–∫3.2, we derived all three properties differentiating the two canonical patterns within our JP structure.

This section addresses the syntactic derivation behind the peninitial placement of the coordinator. We first investigate the synchronic constructions in IE that feature peninitial μ particles and outline a diachronic account, according to which the initial pattern is the surviving one.

The second position effect has its traditional aetiology in what is known as Wackernagel's Law. Wackernagel (1892) is credited with identifying

8 For details of the semantic aspects, and additional motivations for the proposed structure, see Mitrović (2014), Mitrović and Sauerland (2014).

the one generalisation that applies to the syntax of PIE, namely that some elements consistently occupy the second position in a given string of words, or, in modern terminology, in a given constituent. Suffice it to say that the 1892 generalisation is far from explanatory: it is solely a descriptive observation pertaining to word count. An explanation is, however, feasible in a theory of syntax which, for instance, attributes all configurational (word order related) differences to differences in movement. There have essentially been two theoretically different approaches to the explanatory account of Wackernagel's Law. Although both theories see the cause of the second position effect in movement, one confines this movement to narrow syntax while another places the movement in the post-syntactic module where it is subject to prosodic conditions.

The purpose of this section is not to categorically suggest a confinement space wherein the W(ackernagel)-movement takes place, but to suggest an over-arching factor of the distribution of the second position effects that the IE coordination data suggests. This factor, as it were, is the phasal architecture, to which not only the syntactic derivation is subject but also the phonological and prosodic processes that follow it.

A Wackernagel element like our μ (Lat. *-que*, Hom. *-te*, Goth. Lat. *-uh*, Skt. *-ca*, etc.) has a requirement which demands μ be preceded by a head. The clitic hosts are predominantly (of the size of) a head; we do not come across complex maximal categories preceding enclitic particles. There are instances of non-constituent sequences fronted to μ-left-adjacent position (e.g., Caes.2.11; 2.85). Such clitic hosts generally contain two adjacent heads, e.g. $[_{\mu P}\ [P^0\ N^0]_i\ [\ \mu^0\ t_i \ldots]]]$, which invites a prosodic analysis. See Embick and Noyer (1999: 280–281) for a prosodic account of Latin *-que* on this matter. Brian Agbayani and Chris Golston (p.c.) also bring to my attention the dislocation patterns associated with Homeric *de*, which unlike *te*[9] may move phrasal constituents to its left.[10]

(37) a. [τῇ δεκάτῃ] δ' ἀγορήνδε καλέσσατο λαὸν Ἀχιλλεύς
[tē dekatē] **d'** agorēnde kalessato laon Axilleus
[the tenth]$_i$ **and** t_i to-assembly called host Achilles
' but on the tenth Achilleus called the people to assembly' (Il. A.54)

b. [ἐκ τῶν ἔμπροσθεν] δὲ ἀνάσκεψαι
[ek tōn emprosthen] de anaskepsai
[from the previous]$_i$ **and** t_i consider
'and consider this from the previous cases' (Crat. 389[a])

9 See Denniston (1950: 516, fn. 1) for arguments and references.
10 I am grateful to Brian Agbayani and Chris Golston for bringing these exceptions to my attention.

c. [καὶ τῶν παρ' ἑαυτῷ] δὲ βαρβάρων ἐπεμελεῖτο
[kai tōn par' eautō] **de** barbarōn epemeleito
also the near himself **and** barbarians took-care-of

'and he also took care of the barbarians near him'
(Anab. 1.1.5)

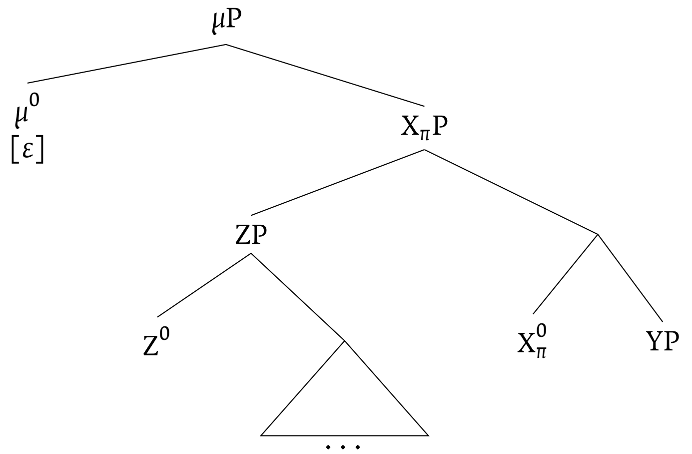
Since non-head hosts are far rarer than head hosts, we resume the discussion accounting for the head dislocations, although the overall traits of the analysis we develop could extend to XP movement. Let us assume that *μ* particles come hardwired with an [EPP]-like feature [ε] which, unlike [EPP], attracts and induces movement of the closest and the smallest syntactic object, a terminal/head. The link between [EPP] and [ε] is made empirically even clearer in light of non-head hosts of *de* in (37) above. Just like [EPP], [ε] must be checked in line with the principle of economy ("as soon as possible"). If there is a syntactically available object satisfying the two 'movement criteria'—i.e., the syntactic object is (a) the closest (b) X^{min}—then [ε] is checked syntactically. If there is no eligible local terminal in the syntactic structure, [ε] is checked post-syntactically, as per economy ("better later than never"[11]). The visibility and eligibility of such head targets is determined, as we shall see, by phasality.

Phases, as domain delimiters for structure building, do not only concern syntactic processes. It is a standard minimalist assumption to view phasal heads as 'closing off' a cycle, which is—upon merger of the phasal head, X^0_π—transferred to the two interfaces for semantic and phonological processing (interpretation and externalisation respectively). A phase therefore not only partitions narrow syntactic derivation into logical building blocks but also delimits post-syntactic operations and synchronises them with narrow syntax. In this direction, Samuels (2009: 242) takes as a starting point the conceptual argument laid out in the foundational work by Marvin (2003: 74): "If we think of levels in the lexicon as levels of syntactic attachment of affixes, we can actually say that Lexical Phonology suggests that phonological rules are limited by syntactic domains, possibly phases." Samuels thus proposes a Phonological Derivation by Phase (PDbP), which "relies on a cycle that is not proprietary to phonology." (Samuels, 2009: 243) Combining Samuels's theory with the concept of post-syntactic movement, we should predict the domain or scope of such operations based on the narrow syntactic derivation. Assume *μ* in (38) is a Wackernagel-type coordinator specified with [ε], which represents the requirement for peninitial placement. Let's assume it takes

11 See Preminger (2011) for a theoretical connection with, and background on, this kind of crash-tolerating economy.

a phasal complement $X_{\pi}P$, which has ZP as its specifier and YP as its complement.

(38)



a. ε-checkable terminals narrow syntactically: ∅
b. ε-checkable terminals post-syntactically: $\{Z^0, \ldots, X^0_{\pi}\}$
c. closest accessible terminal: Z^0

Since the phasal head, X^0_{π}, triggers the transfer of its complement, only the edge of $X_{\pi}P$ is accessible to outside operations. The head of ZP is ineligible for narrow syntactic head movement, possibly for reasons to do with anti-locality.[12] Post-syntactically, movement takes place, checking [ε]. Should the ε-accessible domain of heads be non-empty, we predict narrow syntactic incorporation to take place, in line with the aforementioned economy. Nominal coordinations of the type in (39) thus get linearised narrow syntactically since the set of ε-accessible terminals would not be empty, unlike in (38).

(39)

अज॑नय॒न्	मन॑वे	क्षाम्॒	अपश्॒	च
ájanayan	mánave	kṣā́m	apáś$_i$	*ca* t_i
for.men	created.MID.3.SG.M	earth (J)	water	μ

‘For men he created the earth and water.’ (ṚV 2.20.7^c)

On the other hand, a structure like the one in (40) could only be an instance of post-syntactic movement since the target of movement is syntactically inaccessible and incorporable (head-immovable) as the set of ε-accessible terminals is in fact empty (null C^0) and does not contain the *wh*-terminal, which originates within the specifier of the *kártvā*-headed

12 Other reasons for blocked incorporation include the ECP (Chomsky, 1986), from which it follows that only heads of complements can incorporate (see Roberts 1991: 210). generalisation that incorporation

CP. Assuming "phonology doesn't have to 'read' syntactic boundaries," since "it just applies to each chunk as it is received" (Samuels, 2009: 250), the syntactically inaccesible *wh*-temrinal *yā́* is made available to μ^0 post-syntactically, thereby checking via movement the [ε] feature.

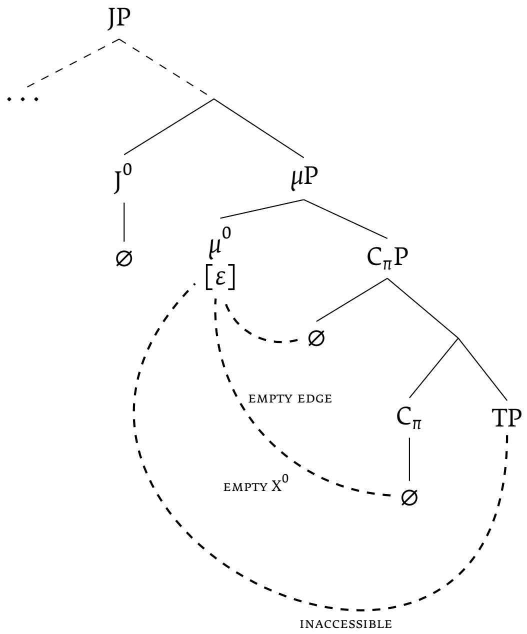
(40) कृतानि या च कर्त्वा
k̄ṛtā́ni yā́$_i$ *ca* t_i kártvā
made.PRT. (J) which.REL μ to.be.made.FUT.PART
'... what has been and what will be done.' (ṚV 1.25.11[c])

So far, we have set a system of post-syntactic rescue for ε-checking, appealing to post-syntactic access of the internal structure of specifiers and availability of post-syntactic incorporation of narrow syntactically frozen specifiers. Now we turn to cases where the edge, comprising of a specifier and head, of a phasal category is empty. Take (41):

(41) हन्ति रक्षसो
hanti rakṣáso
slay.PRES.3.SG demons.ACC.PL
'He slays the demons.' (ṚV 5.83.2[a])

The present verb *hanti* seems to sit in T^0 with the object, the demons, lower in the structure, presumably in its V-complementing *in situ* position. Assuming the category of (41) is that of CP, we see that CP edge is empty: the indicative C^0 is phonologically null and no syntactic material has been extraposed or otherwise moved to any of the left-peripheral CP specifiers, such as a Rizzian Focus head. Should such a CP undergo coordination, the [ε] feature on μ^0 would not be deleted. Given our assumptions, the derivation would crash due to this. The structure in (42) sketches this scenario, where there are no syntactically or post-syntactically accessible terminals within μ^0's search domain. The Wackernagel effect is therefore blocked by virtue of there being no suitable post/syntactic material below μ^0.

(42)



a. ε-checkable terminals narrow syntactically: $\varnothing$

b. ε-checkable terminals post-syntactically: $\varnothing$

c. closest accessible terminal: $\varnothing$

The structure in (41) is nonetheless a coordinand: as last resort, the otherwise silent J^0 receives phonological realisation for ε-checking reasons. The full internal coordination structure of (41) is given in (42). The last resort mechanism *qua* phonological realisation of J^0 may be analogised to expletive subjects in a language like English. Just as there is no subject (in the *v*P) eligible to raise to [Spec, TP] in sentences like '*it* is raining,' an expletive subject is realised as last resort. Equally, when there are no eligible heads for [ε]-checking, J^0 is overt.

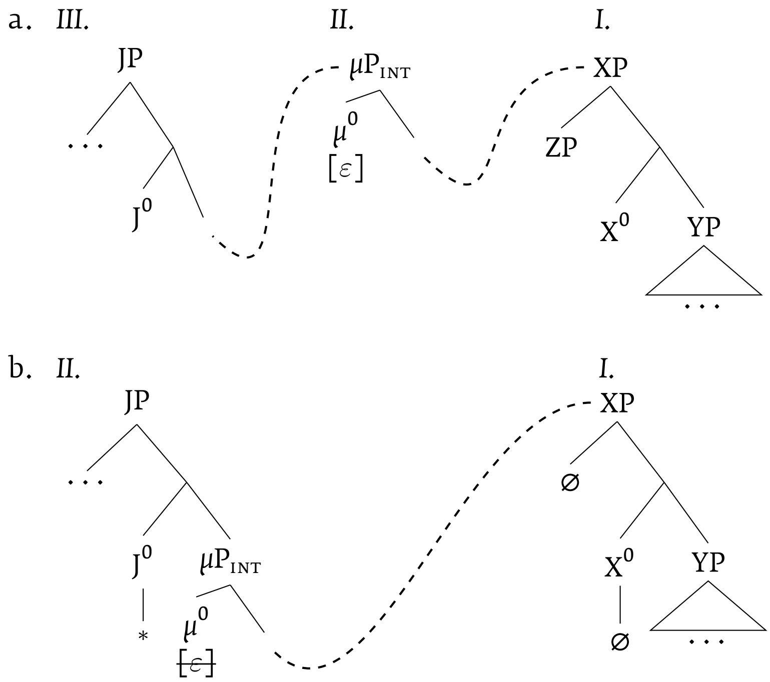
(43) उ तं हन्ति रक्षसो
u -*tá* hanti rakṣáso
J μ slay.PRES.3.SG demons.ACC.PL
'And he slays the demons.' (ṚV 5.83.2[a])

The proposed analysis is also an explanation of an empirical generalisation that has not only been extensively shown to hold not only in Ṛgvedic (Klein 1985*a*,1985*b*) and Old Persian (Klein, 1988) but across the vast array of ancient IE languages (Klein 1992, Agbayani and Golston 2010).

(44) CATEGORIAL GENERALISATION:
Peninitial coordinators tend not to feature in clausal coordinations.

Since clauses (CPs) are inherently phasal (Chomsky 2001, *et seq.*), they provide the selecting head μ with far less search space, or in the case of (43), an empty set of possible incorporees. In non-CP coordinands, [ε] may be checked by virtue of access to terminals in μ^0's complement's interior. The derivation of non-clausal coordination is therefore strictly cyclical:[13] once an XP is derived (cycle I), it is selected by μ^0 (cycle II.) whose [ε] feature is checked Agree-wise. The μ category is in turn incremented by J^0 (cycle III.), as shown in (45a). The external coordinand[14] is merged in [Spec,JP] (cycle IV.) in line with cycles II. and III. Stopping off the derivation at the point of the second cycle obtains bare μPs with focal/polar/scalar semantics (27)–(34). The third J^0-cycle yields a syntactic structure for coordination. Diachronically, the change occurs in the collapsing of the second and third cycles, whereby μ^0 and J^0 feature in a single cycle and thereby inherently yielding bimorphemic coordinators, morphologically and lexically deleting [ε] on μ^0, which in time gets 'buried' under J^0, as instantiated in (45b). The interdependence of the J-μ complex may be empirically and technically analogous to proposals by Chomsky (2008) and Richards (2007), among others, who claim that T^0 is lexically defective, bearing no ϕ-features of its own, and instead inherits its ϕ-features from the phase head C^0. In light of this, μ^0 can be analysed as lexically defective, requiring an overt (clitic hosting/*) J^0 to delete [ε].

13 Note that I employ the term 'cycle' rather pre-theoretically and these have no role other than to describe the derivational steps involved in the construction of JP.
14 The derivation of the external coordinand is ignored here.

(45)


This view predicts that the loss of enclitic monomorphemic coordinators, and the inverse rise of the inherently initial bimorphemic coordinators, entails the loss of independent μP, which features in focal additive, polar and scalar construction as in (27)–(34). This is in fact confirmed.[15]

This is schematised in generalised form in Fig. 4. Diachronically, the last resort option of realising an overt J^0 to host the μ-particles (45b) becomes the first response.[16] Clausal coordination type generalises to all categories as μ^0 comes preinstalled with a hosting morpheme. Historically, this entails the loss of Wackernagel movement (Stage I in Fig. 4) and the development of lexicalised J-morpheme (Stage II in Fig. 4).

15 The only exception to this diachronic interlock between changes in word order and semantics, would be a case where μ^0 would not carry [ε] and thus would not get buried under J^0 in time. The Slavonic branch is such an exception, which has lexically syncretised the entries for J^0 and μ^0 as *i* but the semantics of the coordinate/non-coordinate constructions clearly shows that two forms of *i* existed in OCS, which is preserved in most branches of synchronic Slavonic. See Mitrović (2014) for details.

16 We use the term 'first response', again, very pre-theoretically to label any form of movement which is not triggered by last-resort economy.

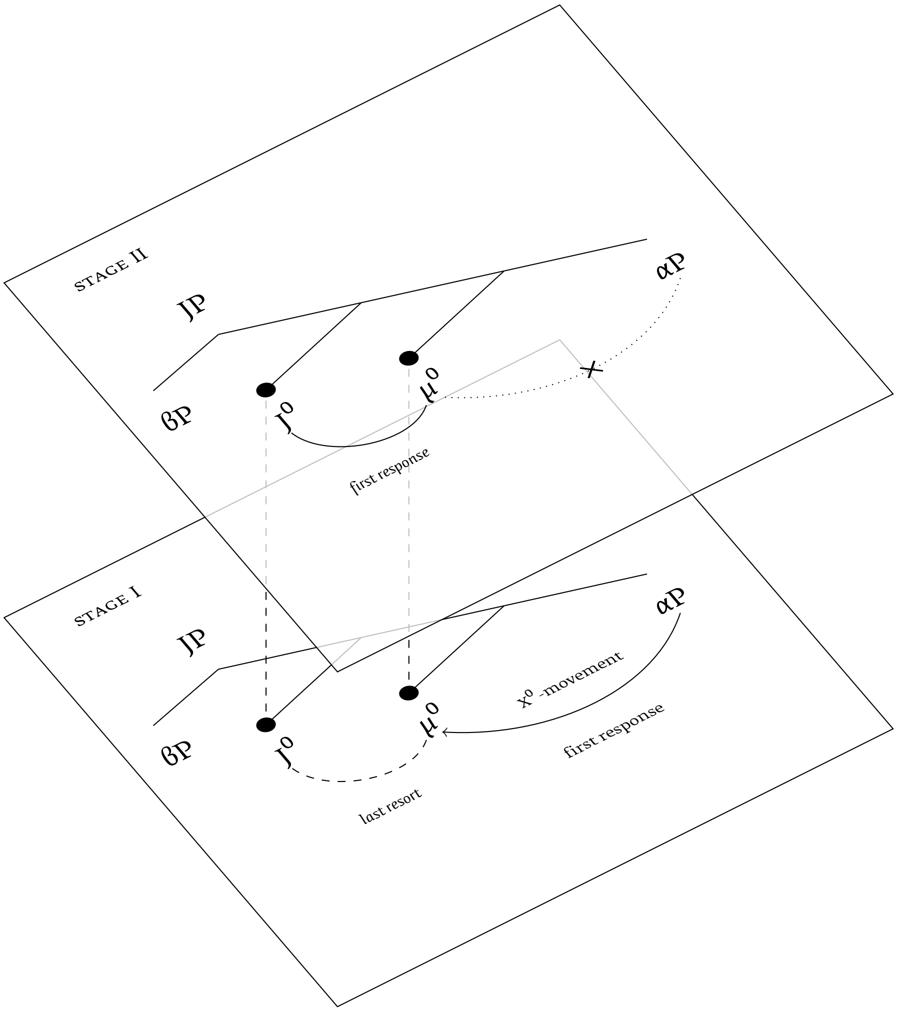


Figure 4: *A diachronic sketch of syntactic development of coordination in Indo-European.*

5 SUMMARY AND OUTLOOK

This paper looked at the synchronic and diachronic status of word order in Indo-European (IE) coordinate construction. It empirically established that all earliest attestations show that IE featured a double syntactic system of coordination where the coordinate constructions were essentially of two types:

(i) in one regard, the coordinator occupies the INITIAL position with regards to the second conjunct, as is the case in synchronic IE languages;

(ii) in another regard, the coordinator is placed in the PENINITIAL position with regards to the second conjunct, which is the standard effect of the so-called Wackernagel's law, which describes the fact that the syntax required particular elements to be second in position.

The first desideratum was therefore to unify syntactically the two series of coordinate structures, which has been accomplished by appealing to den Dikken's J(unction) structure. The proposed analysis has given both types (i) and (ii) the same structure, namely a double-headed coordinate structure. The Wackernagel type (ii) construction, obtaining peninitial placement of the coordinator, consisted of a covert high J^0 and an overt lower μ^0 carrying an incorporation-triggering feature $[\varepsilon]$, which is itself reducible, or at least translatable, to the notion of defectivity in the sense of Roberts (2010), or even to the requirement that syntactic objects follow a metrical boundary in the sense of Richards (2014). Coordination structures in which $[\varepsilon]$ may not be checked (syntactically or postsyntally), feature an overt realisation of J^0, which acts as checker. We have thus derived the two empirical generalisations on IE coordination.

(46) a. i. *initial* coordinators (i) in IE are generally *bimorphemic*
ii. *peninitial* coordinators (ii) in IE are generally *monomorphemic*
b. i. *bimorphemic initial* coordinators (i) in IE can coordinate CPs
ii. *monomorphemic peninitial* coordinators (ii) in IE cannot coordinate CPs

The J-μ system is also aligned with the model of Distributive Morphology. Assuming morphemes correspond to syntactic heads (Halle and Marantz 1994, et seq.), initial coordinators, of (i)-type, are taken to instantiate phonologically both of the two coordinate heads (J^0+μ^0), while enclitic coordinators (of (ii)-type) are instances of partially spelled out JP structure. On a more general level, we have tried demonstrating that the marriage of theoretical syntax and historical IE linguistics is a very fruitful one.

References

Agbayani, B. and Golston, C. (2010), 'Second-position is first-position: Wackernagel's law and the role of clausal conjunction', *Indogermanische Forschungen: Zeitschrift für Indogermanistik und allgemeine Sprachwissenschaft* **115**, 1–21.

Beekes, R. (2010), *Etymological Dictionary of Greek*, Leiden Indo-European Etymological Dictionary Series, Leiden: E.J. Brill.

Blümel, R. (1914), *Einführung in die Syntax*, Heidelberg: C. Winter.

Boisacq, É. (1916), *Dictionnaire étymologique de la langue grecque: étudiée dans ses rapports avec les autres langues indo-européennes*, Heidelberg: Carl Winter Universitätsverlag.

Chomsky, N. (1986), *Barriers*, Cambridge, MA: MIT Press.

Chomsky, N. (2001), Derivation by phase, *in* M. Kenstowicz, ed., 'Ken Hale: A Life in Language', Cambridge, MA: MIT Press, pp. 1–52.

Chomsky, N. (2008), On Phases, *in* R. Friedin, C. Otero and M. L. Zubizarreta, eds, 'Foundational Issues in Linguistic Theory: Essays in Honour of Jean-Roger Vergnaud', Cambridge, MA: MIT Press, pp. 133–165.

den Dikken, M. (2006), 'Either-float and the syntax of co-or-dination', *Natural Language and Linguistic Theory* **24**(3), 689–749.

Denniston, J. D. (1950), *The Greek Particles*, Oxford: Oxford University Press.

Derksen, R. (2008), *Etymological Dictionary of the Slavic Inherited Lexicon*, Vol. 4 of *Leiden Indo-European Etymological Dictionary*, Leiden: E.J. Brill.

Dunkel, G. E. (1982), 'IE conjunctions: pleonasm, ablaut, suppletion', *Zeitschrift für vergleichende Sprachforschung* **96**(2), 178–199.

Embick, D. and Noyer, R. (1999), 'Locality in post-syntactic operations', *MIT Working Papers in Linguistics* **34**(265–317).

Gonda, J. (1954), 'The history and original function of the Indo-European particle **kwe*, especially in Greek and Latin', *Mnemosyne* **4**(7), 177–214.

Halle, M. and Marantz, A. (1994), 'Some key features of distributed morphology.', *MITWPL* **21**, 275–288.

Kayne, R. (1994), *The Antisymmetry of Syntax*, Cambridge, MA: MIT Press.

Klein, J. S. (1985*a*), *Toward a Discourse Grammar of the Rigveda. Part 1.*, Vol. I, Heidelberg: Carl Winter Universitätsverlag.

Klein, J. S. (1985*b*), *Toward a Discourse Grammar of the Rigveda. Part 2.*, Vol. II, Heidelberg: Carl Winter Universitätsverlag.

Klein, J. S. (1988), 'Coordinate Conjunction in Old Persian', *Journal of the American Oriental Society* **108**(3), 387–417.

Klein, J. S. (1992), 'Some Indo-European Systems of Conjunction: Rigveda, Old Persian, Homer', *Harvard Studies in Classical Philology* **94**, 1–51.

Klein, J. S. (1997), 'Indefinite pronouns, polarity and related phenomena in Classical Armenian: A study based on the Old Armenian gospels', *Transactions of the Philological Society* **95**(2), 189–245.

Marvin, T. (2003), Topics in the Stress and Syntax of Words, PhD thesis, Massachusetts Institute of Technology.

Mitrović, M. (2014), Morphosyntactic atoms of propositional logic: a philo-logical programme, PhD thesis, University of Cambridge.

Mitrović, M. and Sauerland, U. (2014), Decomposing coordination, *in* J. Iyer and L. Kusmer, eds, 'Proceedings of NELS 44', Vol. 2, pp. 39–52.

Munn, A. (1993), Topics in the Syntax and Semantics of Coordinate Structures, PhD thesis, University of Maryland.

Myler, N. (2012), A note on Den Dikken's (2006) arguments for a J(unction) head. Ms. NYU.

Preminger, O. (2011), Agreement as a fallible operation, PhD thesis, Massachusetts Institute of Technology.

Richards, M. (2007), 'On feature inheritance: an argument from the phase impenetrability condition', *Linguistic Inquiry* **38**, 563–572.

Richards, N. (2014), *Uttering Theory*. Unpublished Monograph. MIT.

Rizzi, L. (1997), The fine structure of the left periphery, *in* L. Haegman, ed., 'Elements of Grammar', Dordrecht: Kluwer, pp. 281–337.

Roberts, I. (2010), *Agreement and Head Movement: Clitics, Incorporation, and Defective Goals*, Linguistic Inquiry Monographs, Cambridge, MA: MIT Press.

Roberts, I. (1991), 'Excorporation and minimality', *Linguistic Inquiry* **22**(1), 209–218.

Samuels, B. D. (2009), The Structure of Phonological Theory, PhD thesis, Harvard University.

Slade, B. M. (2011), Formal and philological inquiries into the nature of interrogatives, indefinites, disjunction, and focus in Sinhala and other languages, PhD thesis, University of Illinois at Urbana-Champaign.

Szabolcsi, A. (2014), What do quantifier particles do? Ms. version as of 3 March. NYU.

Szabolcsi, A. (2015), 'What do quantifier particles do?', *Linguistics and Philosophy* **38**, 159–204.

Thurneysen, R. (2003), *A Grammar of Old Irish*, Dublin: Dublin Institute for Advanced Studies.

Wackernagel, J. (1892), 'Über ein Gesetz der indo-germanischen Wortstellung', *Indogermanische Forschungen* **1**, 333–436.

Willis, D. (2000), Verb movement in slavonic conditionals, *in* S. Pintzuk, G. Tsoulas and A. Warner, eds, 'Diachronic syntax: Models and mechanisms', Oxford: Oxford University Press, pp. 322–348.

Winter, Y. (1998), Flexible Boolean Semantics: coordination, plurality and scope in natural language, PhD thesis, Utrecht University.

Zhang, N. N. (2010), *Coordination in Syntax*, Cambridge Studies in Linguistics, Cambridge: Cambridge University Press.