

Coordination : a view from Ivorian French*

Josué Akpoué
Université Felix Houphouët-Boigny
<josueakpoue@gmail.com>

September 4, 2018

- DRAFT VERSION, COMMENTS WELCOME -

Abstract

This handout draft concerns the syntax and semantics of coordinate structures. It builds on Akpoué (2017a) but departs from this talk in two respects. First, it defends a split-"&" hypothesis according to which properties of coordination are distributed over several heads just like I (Pollock, 1989) or C (Rizzi, 1997). Secondly, it elaborates a more explicit formal proposal for the semantics of coordinators on the basis of the idea that coordinators are used to set up the mereological structure of given objects. The main idea is that conjunction and disjunction – as semantic operations – are respectively achieved via universal and existential quantification over parts of an object.

1 Introduction

This paper use conjunction doubling as a window into the structure and the semantics of coordinate sequences.

- (1) z̄á kē mari kē n̄-mù klékà p̄é dé divo
John COORD Mary COORD 3PL-go.TAM morning early LOC Divo
John and Mary went to Divo this morning [Wobé, Troh 2018, Example_18943]
- (2) Gouro
- a. màrìí kóó z̄áá kóó
Marie AND Jean AND
Mary and John
- b. màrìí (kóó) z̄áá kóó sèí kóó
Marie (AND) Jean AND Sehi AND
Mary, John and Sehi (Akpoué, 2017a)

Crucially, conjunction doubling suggests the idea that there is one conjunction for each conjunct, and that conjunctions serve to introduce only one conjunct – an idea independently argued for in

*I thank Hilda Koopman for helpfull and inspiring comments on my talk at WALC/LAG2017 (Akpoué, 2017a) and also the participants of "SSWL : Syntax of World's Languages" [Abidjan] seminar for their comments on v1.0 of this paper.

^o Paper's history

v1.0 [June 25, 2018] Exposes the basic data for the main conclusions

v2.0 [July 6, 2018] Elaborate the arguments and provide some crosslinguistic data

v2.1 [September 4, 2018] Structure slightly modified so as to deal with cross-linguistic arguments a bit more. Some errors has been fixed. Some missing data has been added

(Abeillé, 2003) – although the place of coordinators with respect to conjuncts may vary – see (3) and (4).

(3) Extracted from typology of coordination strategies by Haspelmath (2007)

- a. co-A co-B
- b. A-co B-co
- c. A-co co-B
- d. co-A co-B

(4) gèi-àé sèri-àé àlé pódē
 Gehi-COORD Séri-COORD COORD Podé
 Gehi, Séri or Podé

(Allou, 2017)

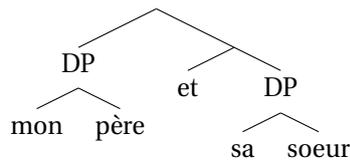
These constructions are interesting in that they challenge most of standard theories of coordination both in syntax and semantics.

Concerning syntax, for example, phenomena involving binding suggest an asymmetric treatment of coordinate structures. Consider (5).

- (5) a. *[Sa sœur]_i et [mon père]_i
 b. [mon père]_i et [sa sœur]_i

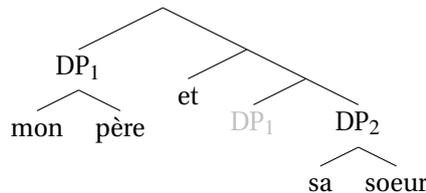
The agrammaticality of (5) suggest that [mon père] c-commands [sa sœur], hence the structure in (6).

(6)



An alternative view is to say that [mon père] and [sa sœur] start as sister, and then , mon père moves in Spec-ConjP (Chomsky, 2013).

(7)



But both accounts are suited only for *X co Y* sequences, *a priori*. Similarly, the standard analysis of coordination assumes that Conjs are binary operators (cf. i.a. Partee & Rooth, 1983; Heycock & Zamparelli, 2005; Champollion, 2015). But conjunction doubling suggest that they are, in fact, unary operators.

1.1 Methodology

Analyses to be developed in this paper will be based on data from Ivorian French. Ivorian French is a variety of French that Ivorian people are used to use in every day communication as a reflex. I'll specially look on one hand at the distribution and the meaning of three conjunctions : *o*, *wa*, *oubien*. Both can and/or must be doubled. On the other hand, we focus on e-type coordination.

2 Coordination : evidence for an external operator

As just mentioned, *o*, *wa* and *oubien* can serve as coordinators and can be doubled. Intuitively, *o* serves to make enumerations – as well as *wa* and *oubien* when doubled.

- (8) *oubien* il dort , *oubien* il mange
 COORD 3SG dormir.PRES PAUSE COORD 3SG mange.PRES
 Ou il dort, ou il mange.
- (9) il dort *wa* , il mange *wa* , je sais pas.
 3SG dormir.PRES COORD PAUSE 3SG mange.PRES COORD PAUSE 1SG know.PRES NEG
 Je ne sais pas s'il dort ou s'il mange.
- (10) il dort *o* , il mange *o* , je sais pas.
 3SG dormir.PRES COORD PAUSE 3SG mange.PRES COORD PAUSE 1SG know.PRES NEG
 Je ne sais pas s'il dort ou s'il mange.

For the remaining of this section, let's focus on some properties of *o*. We already saw that it can serve to make enumerations. but crucially, *o*-sequences are vague even if they are interpreted as conjunctions rather than disjunctions by default. Consider the following discussion

- (11) Dialogue context : a mother mend his child to bring her some pen.
 M : Envoie-moi bic.
 bring-1SG.OBJ pen
 Bring-me a pen.
 C : rouge oubien bleu
 red OR blue
 Red or blue
 M : son rouge o son bleu o envoie-moi bic ce qui est sûr
 POSS red o POSS blue o bring-1SG.OBJ pen DÉT REL be.PRÉS sure
 Red or blue, bring-me a pen for sure. DISJUNCTION
 C : Et bic noir ?
 AND pen black
 And what about a black pen ?
 M : rouge o noir o bleu o même violet, tout ça là c'est bic
 red o black o blue o even violet all this TOP it's pen
 Red, black, blue ; even violet ; all these are pens. CONJUNCTION
 M' : rouge o noir o bleu o violet o, tout ça là c'est bic
 red o black o blue o violet o all this TOP it's pen
 Red, black, blue ; all these are pens. CONJUNCTION

The dialogue in (11), shows that *o* introduces members of an enumeration and *o*-sequences are vague. That's why they can express disjunction or conjunction. So, coordination in the sense of conjunction/disjunction is not achieved at the level of *o*-structures, but in some higher position. I assume though that *o* is a weak coordinator¹.

Furthermore, *o* shows that there is no real asymmetry between DP coordination and sentence coordination.

- (12) Tu veux o , tu veux pas o , on fait rien àè
 2SG.SUJ want.PRES W.CO W.PAUSE 2SG.SUJ want.PRES NEG W.CO W.PAUSE 3SG.SUJ do nothing with

¹or an enumerator/enumeration mark. Perhaps typologists may find a better label for these items. But what *o* does is that it introduces/marks the members of an enumeration

ça
that

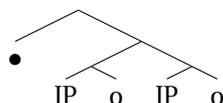
You want or you don't want, we don't care.

DISJUNCTION over IPs

The prosodic structure, highlighted by the pauses, shows that *XP o* sequences form constituents.

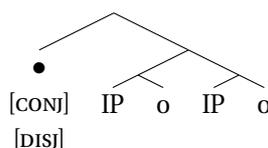
Then, it's arguably the case that the structure is as follow

(13)



The • position is instantiated by some operator(s) with a semantics to be explored in the next section but roughly achieves coordination effects, hence the structure bellow :

(14)



In the following section, I'll basically argue, based on the semantics of the three coordinators mentioned earlier – i.e. *wa*, *o* and *oubien* – that, rather than a single node, "&" must be seen as the sequences of projections just like I (Pollock, 1989). We already gave some the basic element for this conclusion. In effect, in the structure in (14), the properties of coordination are distributed over two heads – i.e. the weak coordinator position and the • position. But I'm going to argue that the latter position is likely to be a domain rather than a single node.

3 Towards the fine structure of coordination

Let's start with the conclusion of the previous section. Coordination involve a covert COORD operator which heads a sequence of adjoined constituents which in turn are respectively headed by a weak coordinator. The question, then, is what does weak and strong coordinators do respectively?

To elicit the meaning of weak coordinators, let's first consider another weak coordinator in Ivorian French : *oubien*. When doubled, *oubien* serve to introduce members of an enumeration. But, contrary to *o*, *oubien* marks members as certain. Let's consider the pair of sentences in (8) and (10), repeated bellow – (8) is modified in (15) :

(15) *oubien* il dort , *oubien* il mange . #[Mais je suis pas sûr]
 COORD 3SG sleep.PRES PAUSE COORD 3SG eat.PRES PAUSE #[COORD 1SG be.PRES.1SG NEG sure]
 He is sleeping or he is eating. But I'm not sure.

(16) il dort o , il mange o , je sais pas.
 3SG dormir.PRES COORD PAUSE 3SG mange.PRES COORD PAUSE 1SG know.PRES NEG
 Je ne sais pas s'il dort ou s'il mange.

As we saw with possible continuations in the previous sentences, when introduced by *oubien*, the members are marked as certain – this cannot be cancelled. But, those members introduced by *o* are marked as possible members. Another evidence for that is that (16) will still be fine even if none of the propositions involved in the coordination is true. But *oubien*-structures require at least one the proposition to be true to make the whole true. Where does this leaves us ? Basically, *XP o* means something like “it is possibly the case that *XP* is a member of ...” while *oubien IP* means something like “it is necessarily the case that *Q* is a member of ...” where *Q* is a situation. This entail at least that there is some modal projection involved in coordination. There is some projection over the modal one which is headed by a set forming operator. Evidence for a set

forming operator can be found e.g. in data from Akyé where there the last coordinator, which morphology differs from the other ones, can thought as a grouping operator – see comments by Bogny (2009). I also assume that the inclusive pronoun in inclusive coordination also intanciate this position. So, if we consider the structure in (14), we must conclude that there is at least two positions between • and *weak coordinators* : the position of the set forming operator – which I'll call *Incl* after the inclusive pronoun – and the position of the modal operator. The question now is whether the modal position c-commands the whole enumeration or is tied to each of the members of that enumeration. One way to deal with this issue is to consider licensing constraints. Crucially, weak coordinators are exclusive in the sense that they cannot be mixed. we cannot mix *o* and *oubien* in the same enumeration. Two possible solutions come to my mind. The first one, and perhaps the most obvious, is to posit a selectional requirement. The second one is to posit that weak coordinators are licensed. [Ivorian] French offers evidence for the second one. In effect, *o* is licensed under topic because *o*-sequences are topics necessarily. Like topics, there occur sentence initially and they do need to be followed be the comment.

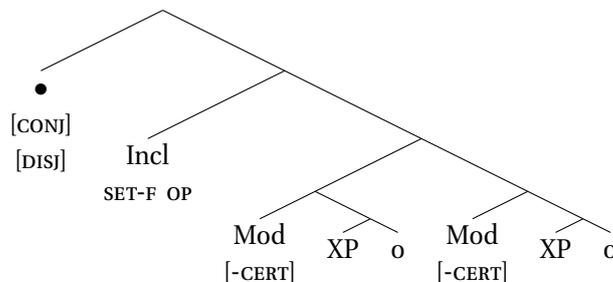
- (17) a. Ton gars grand noir là, je l' ai vu hier
 2SG.POSS guy tall black TOP 1SG.SUJ 3SG.OBJ have.PRS see.PAST.PART yesterday
 I've seen your tall and black guy yesterday.
 b. Real o Barça o, on les a gbra
 Réal-FC COORD Barcelone-FC COORD IMPERS 3PL.OBJ PERF drop
 Both Barcelone FC and Real FC has been eliminated.

(18) *il a appelé la police o , il est parti au commissariat o

(19) oubien il a appelé la police , oubien il est parti au commissariat

Similarly, *ni* in Standard French is licensed in negation contexts². This solution, I think, is cheaper than the one which use selectional requirements. But, clearly, *o* doesn't only introduce members. As we already saw, it has a modal component. So it's arguably the case that there is a modal projection that immediatly c-commands weak coordinators in each conjunct. Hence, the internal structure of *oloubien*-sequences is as follow :

(20)



In this case, the licensing constraint is preserved : *o* is licensed by [-CERT]. But, [-CERT] itself might be licensed by some modal projection higher in the sentence structure.

3.1 Interim summary

- coord/conj is not a single node but rather sequence of nodes hierarchically ordered just as I
- recursion

(21) [conj] < Incl < Mod < Weak coordinator

²see also neither, nor in English

4 The semantics of coordinate structures

4.1 Some theoretical assumptions

I treat meaning as a set of (semantic) features and features as binary symbols (after Adger, 2010) paired with some conceptual content (Akpoué, 2018). I'll also assume that the “-” value symbol is paired with some *Antonym* function i.e. “-” is such that $\llbracket - \rrbracket = \lambda x. Anto(x)$ where $Anto(x)$ holds for something that stands in some antonym relation e.g. dual, scalar, complementary, etc. The “+” value symbol is paired with some identity function i.e. $\llbracket + \rrbracket = \lambda x.x$.

4.2 The meaning of &-heads

In section 3, I explored, informally, the meaning of the heads that form the structure of the &-field. Let's build a precise model of the semantics of these units.

Weak coordinators. If we look at *o* for example, it mainly introduces parts of an objet which will be explicited at *Incl*. So, following Akpoué (2017a), I assume that weak coordinators set up the mereological structure of objects and, then, have a feature, say [+PART], such that $\llbracket [+PART] \rrbracket = \lambda x.x \leq y$. This representation will be improved later in this paper.

The modal operator. We also saw in the previous section that conjunct are not only marked as part of a given object by also crucially marked as possible or actual parts. Formally, defining a feature [NEC] with the possible values + or - such that $\llbracket [+NEC] \rrbracket = \lambda \phi. \Box \phi$ and $\llbracket [-NEC] \rrbracket = \Diamond \phi$. Following the standard theory of modality [see Kratzer 1981 and subseq], these semantic contents can be modelled as quantifiers over possible worlds - [+NEC] will be interpreted as a universal quantifier while [-NEC] will interpreted as an existential quantifier.

(22) Meaning of [NEC] features (2)

- a. $\llbracket [+NEC] \rrbracket = \lambda \phi. \forall w. \phi(w)$
- b. $\llbracket [-NEC] \rrbracket = \lambda \phi. \exists w. \phi(w)$

In section 3, two possible alternatives were introduced to capture the fact that all members of the enumeration are marked as certain and finally the second one was adopted. In fact, there is a third one, which, furthermore, seems to be match more accurately intuitions about *o*. This alternative is to posit that weak coordinators are also modal operators but it may also be the case that modal weak coordinators such as *o* or *oubien* are structurally complex instantiating more than one adjacent positions. I'll assume the latter hypothesis here.

The set-forming operator At a first glance, one can think of this head as formally consisting in an existential closure (cf. Heim, 1982). This idea is intended to capture the fact the object that subsumes the members the enumeration is explicited at the *Incl* position. Basically, what the so called set-forming operator does seems to be that it creates an object which possibly/necessarily contains the members of the enumeration.

(23) $\llbracket [+SFO/CLOT] \rrbracket = \lambda \phi. \exists x \phi$

But, the picture may be a bit more complex – see section 5.3.4.

The Conj head Given the structure of the &-domain proposed here, while the lowest head-position is that of the weak coordinator³, the highest one is the locus of conjunction and disjunction

³coordinator that can double and is fundamentally vague with respect to conjunction and disjunction. Romance coordinators should be treated as licensed under [+CONJ] or [-CONJ] respectively.

operators. Recall that the initial motivation for splitting & is the observation that weak coordinator, fundamentally, are vague with respect to conjunction. That observation suggest two hypotheses. The first one, syntactic, is that properties of coordinators are distributed over different positions in the tree. This has already been pursued. The second one, semantic, is that conjunction and disjunction share semantic properties viz there is a feature, say [CONJ], such that $\llbracket [+CONJ] \rrbracket = \llbracket [CONJ] \rrbracket$ and $\llbracket [-CONJ] \rrbracket = \llbracket [DISJ] \rrbracket$. In effect, one can model ‘strong coordinators’⁴ as quantifiers over parts of the object denoted at Incl and introduced by the weak coordinators. The viability of this proposal can be seen both at theoretical and empirical level.

Theoretically, the difference between conjunction and disjunction can amounts to the difference between universal and existential quantification. For example, at the level of sentences, in the case of *conjunction*, *all* sentences involved have to be true for the whole to be true, while *disjunction* requires *at least one* of them to be true for the whole to be true – see truth tables in (24). For reason of space, let’s limit the number of propositions is limited to 3 but the reader can confirm the generalization with n propositions. Also, the brackets are put mostly for convinience. Deleting the inner brackets or changing the way propostions are bracketed has no influence on the result (i.e. $\llbracket [P \wedge Q] \wedge K \rrbracket \leftrightarrow \llbracket P \wedge [Q \wedge K] \rrbracket \leftrightarrow \llbracket P \wedge Q \wedge K \rrbracket$. The same goes for disjunction).

(24) Truth tables for *conjunction* and *disjunction*

P	Q	K	$\llbracket [P \wedge Q] \wedge K \rrbracket$	$\llbracket [P \vee Q] \vee K \rrbracket$
1	1	1	1	1
1	1	0	0	1
0	1	1	0	1
1	0	1	0	1
0	0	1	0	1
1	0	0	0	1
0	1	0	0	1
0	0	0	0	0

The truth tables in (24) are arranged in four sets of lines. The first and last sets are respectively those where all propositions are true [first] and all of them are false [last]. In the second set of lines, two of them are true and in the third one, just one of them is true. We can notice that *conjunction* is true in the only case where all proposition are true while *disjunction* is true iff at least one of the propositions is true. Then, assuming that conjunction/disjunction of propositions yields a proposition (see e.g. Partee & Rooth, 1983), we can model the meaning of conjoined/disjoined sentences as in (25).

- (25) a. $\llbracket [P_1 \text{ and } P_2 \text{ and } P_3] \rrbracket = \llbracket [P] \rrbracket = 1$ iff for *all* $P_i \leq P$, $\llbracket [P_i] \rrbracket = 1$
 b. $\llbracket [P_1 \text{ or } P_2 \text{ or } P_3] \rrbracket = \llbracket [P] \rrbracket = 1$ iff for *some* $P_i \leq P$, $\llbracket [P_i] \rrbracket = 1$.

This analysis of strong coordinators as quantifiers can be extended to predicate coordination. In effect, one can think of coordinated predicates as yielding a predicate that is true of a given argument iff all predicates involved in the enumeration are true of that argument – see e.g. Pietroski’s conjunction operation (Pietroski, 2008, 2011, 2018, etc.).

Empirically, two arguments, at least, suport the “quantifier”-hypothesis. On one hand, quantification over the members of the enumeration can be done via usual generalized quantifiers as we see in (11) and in (26).

- (26) ali o , kouassi o , zadi o , fo appeler un parmi eux
 Ali w.CO PAUSE Kouassi w.CO PAUSE Zadi w.CO PAUSE AUX.IMP call.INF one between them

⁴coordinator which are specified for conjunction and disjunction and cannot double

seulement
only
Call Ali, Kouassi or Zadi

- (27) Drogba o , Kalou o , Yaya o , eux tous là ils sont forts
Drogba w.CO PAUSE Kalou w.CO PAUSE Yaya w.CO PAUSE them all they are talented
Drogba, Kalou and Yaya are talented.

One the other hand, there are analogies between coordinators and quantifiers that can be seen for instance in their interaction with distributivity. Only coordinator that express conjunction exhibits ambiguity with respect to distributivity (see e.g. Heycock & Zamparelli, 2005; Champollion, 2015). Treating coordinators in a par with generalized quantifiers, predicts that there will be and-type distributive coordinators and and-type collective coordinators. And this is the case⁵. We see, then an analogy between *and*-type coordinators and DP universal quantifiers : both can be distributive or collective.

	COLL/DISTR contrast
(28) AND-type coord	✓
OR-type coord	×
Universal quantifiers	✓
Existential quantifiers	×

As we see in (28), universal quantifiers and AND-type coordinators pattern together while existential quantifiers and OR-type coordinators pattern together. Hence it's arguably the case that AND-type coordinators have a [+CONJ] feature while OR-type one have a [-CONJ] feature, see (29)⁶.

- (29) Meaning of [+CONJ] and [-CONJ] (first approximation)

- a. $\llbracket [+CONJ] \rrbracket = \lambda x. \lambda P. \forall y. [y \leq x \rightarrow Py]$
b. $\llbracket [-CONJ] \rrbracket = \lambda x. \lambda P. \exists y. [y \leq x \wedge Py]$.

4.3 The collective-distributive ambiguity: a distributive coordinator in FIV

It's well known that *and* in English is ambiguous between a collective reading and a distributive one. That is, if we consider the following sentence, it can be the case that each of Peter and Jack has a ball or there is one ball for both.

- (30) Peter and Jack have a ball.

Attempts to solve this puzzle have tried to proposed a unique underlying semantic representation. But if AND-type coordinator do have a unique underlying semantic representation, then in any language, it must be so. However, there are AND-type coordinators that can't be ambiguous. For instance, *o* in Ivorian languages only trigger a distributive reading. For example, if we translate (30) in Ivorian French using *o*, the resulting sentence unambiguously gets a distributive reading. That is, it can't be the case that there is only one ball for both.

- (31) Pierre o , Jacques o , eux tous là ils ont balle
Peter w.CO PAUSE Jack w.CO PAUSE them all TOP 3PL.SUBJ have.PRES.3PL ball
Peter and Jack, they have a ball. *one ball* : ×, *two balls* : ✓

The conclusion that can be drawn from (31) is that, building a unique underlying semantic representation for AND-type coordinators will yield the wrong truth conditions for *o* i.e. it'll wrongly predict

⁵I'll present data showing that the ambiguity of *and* and *et* can, in fact, be treated as case of polysemy because not all DP conjunction operators are ambiguous.

⁶note that \exists and \forall are duals i.e. $\neg \exists x Px \leftrightarrow \forall x \neg Px$ and $\neg \forall x Px \leftrightarrow \exists x \neg Px$

that *o* will trigger collective/distributive ambiguity. But again, this outlines the parallel between AND-type coordinator and universal quantifiers. And a treatment of coordinators in terms of quantification predicts fortunately that AND-type coordinators and them alone [i] could be paraphrased using universal quantifier and [ii] possibly have a distributive reading.

5 Cross-linguistic considerations

In this section, the model defended here is tested against data from various languages from various families, mostly Niger-Congo and Indo-European. First, I formulate some predictions involved by this model and then I start testing it beginning by a discussion of Standard French coordinators – including tough slightly conjunction particles. Then, Collective-distributive ambiguity, inclusory coordination, explicit use of generalized quantifiers and conjunction doubling are in turn discussed. Much of the data from non African languages or French are taken from [Haspelmath \(2007\)](#).

5.1 Some predictions of the analysis proposed here

In this subsection, are listed 4 predictions that follow from the hypotheses defended here.

Prediction 1. Several coordinators may co-occur.

Prediction 2. Lexical ambiguity with and type coordinators. Some coordinator may have only distributive reading in a part with DP universal quantifiers.

Prediction 3. Explicit quantifiers may be used in coordinate structures but can't double.

Prediction 4. Certain coordinators may not appear in certain contexts.

5.2 Case study : 'Standard' French

Licensing, the case of *ni* *ni* is weak coordinator which commutes with the conjunction operator *and* in negative contexts.

- (32) a. Jean et Marie sont partis ce matin.
 b. Ni Jean ni Marie ne sont partis ce matin.

Ni has to double with DPs and not with VPs

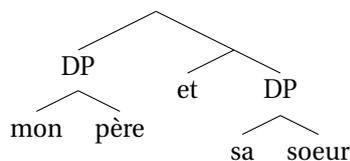
- (33) a. *(Ni) Jean *(ni) Marie ne sont partis ce matin.
 b. Il n'a pas lu mon livre ni même regardé.

We can conclude that the use of *ni* is licensed by a NEG operator located higher in the sentence – as predicted (see Prediction 4).

Condition B effects Recall coordination in 'standard' French seems to support an asymmetric structure for coordination where the first conjunct is in a c-commanding position, e.g. Spec-Conj.

- (34) a. *[Sa sœur]_i et [mon père]_i
 b. [mon père]_i et [sa sœur]_i

(35)



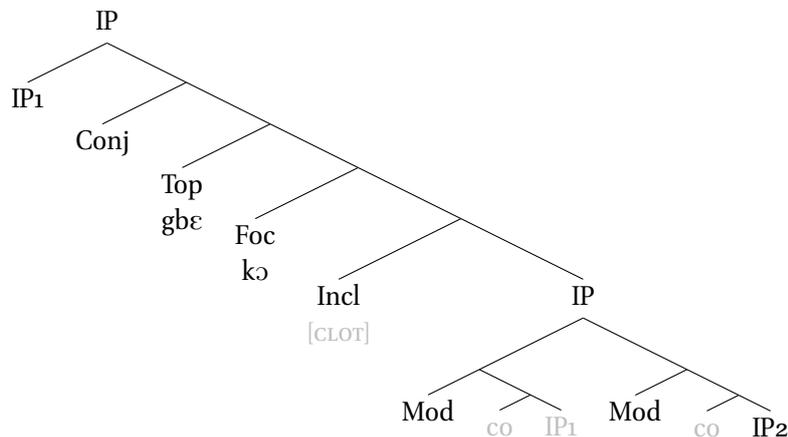
(40) Context : You are answering question : Have you eaten ?

εε, gbè-kò lók íj̀m ím
 yes TOP-FOC ventre full-NEG 1SG
 “yes, but I am not satisfied”

(Adapted from Kpami, 2018)

As it can be seen in the glosses, *gbèkò* is in fact a combination of a focus and a topic marker. This strongly support the view that adversative coordination involve a topic and a focus projection and, ultimately, the dcompositional nature of coordinator domain.

(41)



5.3.2 Co-occurrence of coordinators

In this subsection, not only are presented data supporting Prediction 1, but also data suggesting that discursive properties such as topic and focus are found as well in &-domain. Let's begin with the possibility two combine more than one coordinator to a coordinand.

(42) áfwé ò [nì àkísí ò]
 Affoué COORD COORD Akissi COORD
 Affoue and Akissi

(Baoulé-Agba)

In the example above, we see that *ni* and *o* are simultaneously associated with *àkísí* as predicted ⁸.

Furthermore, looking at the data form Ivorien languages, we can conclude that if Topic and Focus are found both within C and D., they also occur within &. We already saw this with *gbèkò*. But, many other examples show that Focus markers can be used as coordinators in various groups of Niger-Congo – namely Gur and Kwa. In Koulango – a Gur language – for example, *lε* which serve as a coordinator in (43) in fact a focus marker – see (44).

(43) wàà góí lé fè í
 3SG.NEG come back COORD take a bath NEG
 Unfortunately, you didn't take a bath.

(Koulango, cf. Kra, 2006, p. 399)

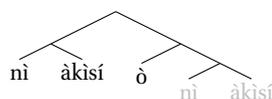
(44) gabaalɔ́ lé hɔ́N hoo dogoJo-rε
 monkey FOC 3SG eat maze-DEF
 A MONKEY eats the maze.

(Koulango, cf. Kra, 2006)

The same goes for baoulé and Mɔ̀dzukru (Kwa, Côte d'Ivoire).

⁸It's probably the case *nì àkísí* has moved leftward w.r.t *ò*.

(i)



- (45) a. m̀̀lú, k̀̀fí j̀̀ è ádí mó mé bá-li án'umá
 Molou Koffi FOC Adimo 3PL come-PST yesterday
 Molou, Koffi and Adimo came yesterday.
- b. áfwé m̀̀- ní trálé, klè j̀̀ è ñgbábwà
 Affoue give-PST cloth, hat FOC chaussure
 Affoue gave a cloth, a hat and a shoe
- c. áblà p̀̀kú j̀̀ è áblà ákpó j̀̀ é mé bā-lí ̄
 Ablá Pokou FOC Ablá Akpó FOC 3PL come-PST TOP
 Ablá Pokou and Ablá Akpó came
- d. k̀̀fí bá-li j̀̀ è é flè-li m̀̀lú j̀̀ è mé ɲ'ɔ mé wó-li ̄
 Koffi come-PST FOC 3SG.SUJ call-PST Molou FOC 3PL two 3PL go-PST TOP
 Koffi called Molou and both went (Baoulé-kòdé, cf. [Molou, 2016](#), pp.88–89)
- (46) k̀̀ boni k̀̀ mèlín
 FOC Boni FOC Melme
 Boni or Melme (M̀̀dzukru (Kwa, Côte d'Ivoire), cf. [Kpami, 2018](#))

As we see, coordinators may double and also play different roles. This supports the split-coord hypothesis and suggests the following hierarchy

- (47) Conj > Incl > Top > Foc > Mod > co

5.3.3 Adverbial conjunctions

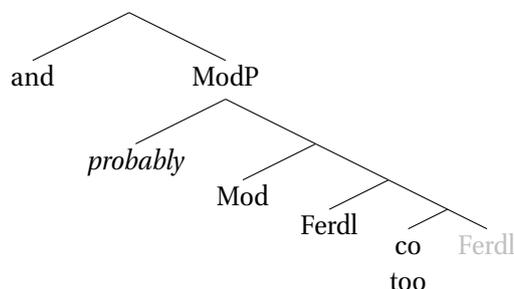
This section provides an empirical indirect evidence justifying the Mod position : adverbial conjunctions (see, for a discussion, [Križ & Schmitt, 2012](#)).

- (48) a. Gustl and *probably / possibly / unfortunately / ...* Ferdl, too, will perform at the Eden-Bar tonight.
- b. Gustl und *wahrscheinlich / vielleicht / leider / bekanntlich / ...* auch Ferdl werden
 Gustl and *probably / possibly / unfortunately / as-is-well-known / ...* also Ferdl will
 heute in der Eden-Bar auftreten
 today in the Edenbar perform

([Križ & Schmitt, 2012](#))

In effect, if we adopt the “analysis of adverbs as specifiers of different, dedicated, functional projections” ([Cinque, 2004](#), p. 683), the generalization by [Križ & Schmitt \(2012\)](#) that “in structures a and ADV b are P, the adverbial modifies the proposition that b is a part of a plural discourse referent, which serves as the argument of P”, follows straightforwardly if we assume that adverbial conjunctions integrated in syntax as specifier of Mod.

- (49)



Taking, the very same reasoning implies show that there may be an Asp projection that hosts aspectual conjunctions – see (50) from ([Križ & Schmitt, 2012](#)).

- (50) Ernie und *meistens / manchmal / selten / ...* auch Fanny arbeiten als “Begleiterinnen”
 Ernie and *most-of-the-time / sometimes / rarely / ...* also Fanny work as “companions”
 in der Eden-Bar
 in the Eden-Bar
 “Erni and often / sometimes / rarely Fanny (too) work as “companions” at the Eden Bar.”

This suggest that aspectual and modal conjunctions ay co-occur. Even if I didn’t find such cases in (Križ & Schmitt, 2012) for English and German, in French something similar may happen.

- (51) Jean ou peut-être quelque fois Marie passent par ici
 John or maybe some times Mary pass over here

Note that this match the so-called Cinque Hierarchy (Cinque, 1999) where *maybe* > *sometimes*. This lead to enrich the hierarchy adding Asp – and can expect T(ense) to be present as well e.g. for locating events qua sort of objects subsumed by another.

- (52) Conj > Incl > Top > Foc > Mod > Asp > co

5.3.4 Inclusory coordination

Inclusory coordination is the term used to refer to a conjunction strategy in which one of the conjunct has its denotation included in the other. Inclusory coordination most of the times involve an inclusory pronoun which often appears to be the including conjunct – see (53)– but may as well be used in the same way as English *and* – see (54).

- (53) e kō nɪ kã-á kō maa-à
 3SG.IND 1PL COORD 2PL 1PL hit-PRJ
 He will hit you and me. (Beirth, 1971, p. 419)

- (54) mā kò yē
 1SG.EMPH 1PL.COORD 3SG.EMPH
 Him and I (Khachaturyan, 2014)

According to a speaker of Toura, (53) admit a variant that show similar structure with (54). Then, it’s arguably the case that *mā* and *yē* start as sisters and then the former moves. The semantics of the coordinative pronoun, it’s likely to be that it instanciate *Incl*. Then, we need to review the semantics of *Incl* posited earlier. In effect, we treated $[[Incl]]$ as an existential closure operator. But, maintaining this doesn’t much the data and furthermore poses some compositional problems viz it will yield the wrong truth conditions. In effect, we don’t want the universal quantifier to scope over the exisential because this would yield several individuals rather than a single one. But, if we assume that *Incl* is the locus of inclusory pronouns, we can exploit the semantics for pronouns to avoid the above problem. In effect, assuming that pronouns are identity functions restricted by the denotation of morphosyntactic features (see a.o. Heim, 2008). In such a perspective, we would need the existential closure to be a sort of post-syntactic operation which will provide the e-type argument for the inclusory pronoun. Doing so, we’ll the non atomic individual which parts will be quantified over is still explicited qua denoted by the inclusory pronoun.

5.3.5 Additive particles, commitative markers and coordination

A priori, additive particles, commitative markers have little to do with coordinators if we focus on languages such as English or French. But, Africa languages for example provide a wide range of data showing an intricate relation between these categories. In several Sub-Saharan languages,

Y : J' ai vu Jean et Marie au parc
 I have.PRES see.PAST.PART John and Mary at.the park
 I saw John and Mary in the park.

F : Tu es sûr d'avoir vu Jean au parc ?
 You are sure that.N.FIN have.INF see.PST.PART at.the park ?
 Are you sure you have seen John in the parc ?

Y : J' ai vu et Jean et Marie au parc
 I have.PRES see.PAST.PART and John and Mary at.the park
 I saw John and Mary in the park.

These cases of conjunction doubling are odd in out-of-the blue contexts

(61) Context : *Beginning a conversation*

?? J' ai vu et Jean et Marie au parc
 I have.PRES see.PAST.PART and John and Mary at.the park
 I saw John and Mary in the park.

Then, for French, it's arguably that focalization of each conjunct is responsible of distributive property in cases where you find obligatory conjunction doubling i.e. the fact that each of the conjuncts are individually related to the predicate via focalization leads to the distributivity effect. Interestingly coordinator doubling with disjunction and NPI coordinators don't yield contrast.

- (62) a. Je donnerai 100 euros à Jean ou à Marie
 I give.FUT 100 euros to John *or* to Mary
- b. Je donnerai 100 euros *ou* à Jean ou à Marie
 I give.FUT 100 euros *or* to John *or* to Mary
 I'll give 100 euros to *either* John *or* Marie.

In both cases only 100 euros were offered in total. Similarly, for *ni* even when doubled, distributivity seems just not to be relevant.

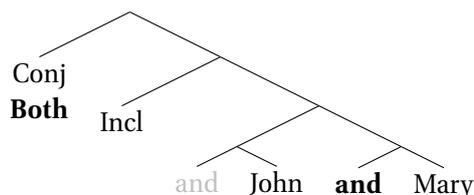
- (63) Je ne donnerai 100 euros *ni* à Jean *ni* à Marie
 I not give.FUT 100 euros *neither* to John *nor* to Marie
 I'll give 100 euros *neither* to John *nor* to Marie. Total = 0 euro

One more remark about doubled coordinators/conjunctions. Doubled coordinators also show prosodic difference w.r.t non doubled coordinators in that the former are stressed and not the latter. In effect, in obligatory conjunction doubling in French, all conjunctions are stressed though coordinators by default aren't stressed. This suggest that we shouldn't treat the initial coordinator in these sequences as an additional marker within the coordinate structure. But, there may be cases where a true additional marker internal to the structure is used. This happens for example when a lexical distributive quantifier is added to the sequence *X coord Y*, like in English.

(64) *Both* John *and* Marie will come

In (64), the presence of *Both* removes the non distributive reading of *and*. If, we look at the semantics of *both*, one can see it as a distributive quantifier – in a par with each – with the presupposition that the set it operates on only contain two individuals (Heim & Kratzer, 1998). Then, the structure of (64) will be (65)– skipping details.

(65)



5.4.2 Explicit usage of quantifiers

In some languages, conjunction may be achieved via the use of quantifiers, going from *numerals* to *universal quantifiers*.

- (66) tótó jé m̀l̀l̀ú jé zíbó mé òsá mé wó kl̀ò wà
 Toto FOC Molou FOC Zibo 3PL three 3PL be-at willage here
 Toto, Molou and Zibo are in here in the village. (Molou, 2016, p. 88)

In this sentence, we can see a quantifier – a numeral – which modifies the coordinate structure. It's usual in this language to have quantifiers – even generalized quantifiers – to be separated from the DP by a genitive pronoun. Other cases of explicit usage of quantifiers are documented in (Haspelmath, 2007, p. 36–37) under the head *summary coordination* – quoting various authors.

- (67) bagš, Gombo xojor
 teacher Gombo two
 The teacher and Gombo [Mongolian]

- (68) Yanfa seui, leuhtsī fai, gīnggéi yúng dōu yiu bēi ge
 stamp duty lawyer fee agent commission all need pay PRT
 'You have to pay stamp duty, legal fees and commission' [Cantonese]

Although numerals can double in some languages to express conjunction – see Haspelmath (2007) for a discussion –, one have to note that this doesn't contradict the current proposal for it doesn't strictly entail numerals to occupy any position in the coordinators domain. Rather one may – and perhaps should – treat numerals used so in a par with adverbial coordinators viz modifiers of silent functional element in &.

5.4.3 Logical analogies between negated/NPI quantifiers and NPI coordinators

We already saw that *ni* in French is an NPI coordinator. Let's focuss here on some of its semantics and contrast it to English *neither ... nor ...*. Before doing so let's recall that truth conditions for a sentence like (69) can be formulated in two ways shown in (70). This is because \exists and \forall are duals.

- (69) No one has come

- (70) a. $\forall x \neg COME x$
 b. $\neg \exists x COME x$

So, if [so-called strong] coordinators are quantifiers, we expect such phenomenon to happen with negated/NPI coordinators. Let's consider the following two sentences.

- (71) Ni Alain ni Léa ne sont venus.
 (72) Neither John nor Mary has/*have come.

Considering (71), it's at a first glance difficult to decide whether the the truth conditions should on a par with (70-a) or with (70-b). But, it we look at the agreement pattern, it likely to be (70-a) because the verb show plural agreement with the subject. On the other hand, the verb, in the

English sentence, show a singular agreement with the subject. This is probably due to the fact that it's an existential quantifier that is negated in this sentence. In effect, if we look at the morphology of coordinators, one can isolate what seems to be a residue of the NEG particle *no* attached to *either* and *or*. In the assumption that disjunction operators are existential quantifier, it follows that *neither ... nor ...* is the negation of an existential quantifier, hence the singular agreement.

6 Conclusion

The present paper have presented and defended mainly two hypotheses about coordinate structures and coordinators. I have argued in favor of an analysis of conjunction/disjunction operators as generalized quantifiers. This was primarily based on observations drawn from ivoirien French and then tested against several languages. One might have noticed that my account of collective-distributive ambiguity differs from that of (Heycock & Zamparelli, 2005; Champollion, 2015; Flor et al., 2018, a.o.). It's allow a lexicalist approach to the question while maintaining that, basically the semantics of conjunction/disjunction and, then, that of the dedicated operator should depart from ordinary D-theories such as Partee & Rooth (1983). Instead, we argue for a decompositionnal approach to the domain of coordinators in which each type of coordinator is merge in a dedicated position. In this framework, Conj is the highest position of the system which *co* is the lowest – corresponding to *Fin* in C. Conj is position where is achieved conjunction/disjunction. So, it is the locus of conjunction/disjunction operators which are quantifiers over parts of a given entity. The idea that coordinates structures are in some sense mereological objects has already started playing a central role in the semantics of coordinators both adverbial and grammatical (Heycock & Zamparelli, 2005; Križ & Schmitt, 2012; Flor et al., 2018, a.o.).

References

- Abeillé, Anne. 2003. A lexicalist and construction-based approach to coordinations. *Proceedings of the HPSG03 Conference* <http://csli-publications.stanford.edu/>.
- Adger, David. 2010. A minimalist theory of feature structure. *Features: Perspectives on a key notion in linguistics* 185–218.
- Akpoué, K. Josué. 2017a. Coordination in Kwa and Mande languages. *Talk given at WALC/LAG2017, Winneba* .
- Akpoué, K. Josué. 2017b. Les séquences coordonnées dans quelques langues Mandé. *Communication au colloque "Le Cours de Linguistique Générale, 1916-2016. L'émergence" (CLG2016), Atelier "Henri Frei: une syntaxe saussurienne et ses terrains empiriques au Nord et au Sud du Sahara"* .
- Akpoué, K. Josué. 2018. Encodage lexical des TAM dans les langues naturelles : cas du Baoulé et du Mbre. *Communication au premier Colloque Hispano-Africain* .
- Allou, Allou Serge. 2017. *Description Linguistique et sociolinguistique du kouzié*. Université Félix Houphouët-Boigny, Thèse de doctorat.
- Bearth, Thomas. 1971. *L'énoncé toura*. SIL.
- Bogny, Yapo J. 2009. La structure de DP dans les langues kwa. *Revue du LTML* (3).
- Champollion, Lucas. 2015. Ten men and women got married today: noun coordination and the intersective theory of conjunction. *Journal of Semantics* (Pre-final version).
- Chomsky, Noam. 2013. Problems of projection. *Lingua* 130. 33–49.

- Cinque, Guglielmo. 1999. *Adverbs and functional heads: A cross-linguistic perspective*. Oxford University Press.
- Cinque, Guglielmo. 2004. Issues in adverbial syntax. *Lingua* 114. 683–710.
- Creissels, Denis. 2015. Polysemy patterns involving non-scalar additive particles in sub-saharan languages: the coordinative connection. In *annual conference of the sle, leiden*, <http://www.deniscreissels.fr/public/Creissels-Additives.pdf>.
- Creissels, Denis. 2016. Additive coordination, comitative adjunction, and associative plural in tswana. *LLA* 11–42.
- De Vries, Mark. 2003. Hierarchy in coordinate structures. *J. Koster & H. v. Riemsdijk (Hg.), Germania et Alia: A Linguistic Webschrift for Hans den Besten*. Online .
- Dzameshie, Alex K. 1998. Structures of coordination in ewe. *Journal of West African Languages* 27(1).
- Flor, Enrico, Nina Haslinger, Hilda Koopman, Eva Rosina¹, Magdalena Roszkowski¹ and Viola Schmitt. 2018. Cross-linguistic evidence for a non-distributive lexical meaning of conjunction. *Ms* .
- Haspelmath, Martin. 2007. Coordination. *Language Typology and Syntactic Description II: Complex Constructions* 1–51.
- Heim, Irene. 1982. *The semantics of definite and indefinite noun phrases*. PhD dissertation, University of Massachusetts at Amherst.
- Heim, Irene. 2008. Features on bound pronouns. *Phi theory: Phi-features across modules and interfaces* 35. 56.
- Heim, Irene & Angelika Kratzer. 1998. *Semantics in Generative Grammar*. Blackwell.
- Heycock, Caroline & Roberto Zamparelli. 2005. Friends and colleagues: Plurality, coordination, and the structure of dp. *Natural language semantics* 13(3). 201–270.
- Khachaturyan, Maria. 2014. *Grammaire de la langue mano (mandé-sud) dans une perspective typologique*. Linguistique. Institut National des Langues et Civilisations Orientales, Thèse de doctorat.
- Kpami, Boni C. M. 2018. La périphérie gauche de la proposition interrogative en modjukru. *Communication à Abilang 3, Bouaké, Côte d'Ivoire* .
- Kra, Kouakou Appoh Enoc. 2006. *Étude phonologique et énonciative du koulango, parler de Tanda*. Université de Cocody, Thèse de doctorat unique.
- Križ, Manuel & Viola Schmitt. 2012. Adverbial Conjunctions : Exposition of a problem. *Ms* .
- Molou, Kouassi Ange Aristide. 2016. *Les tons du kode : Aspects lexical et grammatical*. Université Félix Houphouët-Boigny, Thèse de doctorat unique.
- Paperno, Denis. 2017. Coordination. *Mandekan [online]* (54).
- Partee, Barbara & Mats Rooth. 1983. Generalized conjunction and type ambiguity. *Formal semantics: the essential readings* 334–356.
- Pietroski, Paul M. 2008. Minimalist meaning, internalist interpretation. *Biolinguistics* 2(4). 317–341.

- Pietroski, Paul M. 2011. Minimal semantic instructions. In *In the oxford handbook on linguistic minimalism*, Citeseer.
- Pietroski, Paul M. 2018. *Conjoining meanings: Semantics without truth values*. Oxford University Press.
- Pollock, Jean-Yves. 1989. Verb movement, universal grammar, and the structure of ip. *Linguistic inquiry* 20(3). 365-424.
- Rizzi, Luigi. 1997. The fine structure of the left periphery. In *Elements of grammar*, 281-337. Springer.