The syntax of French conjunction doubling

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Introduction
In many languages such as French, Italian or Japanese, there are structures beside simplex coordinations (1a) in which the coordinating conjunction seems to be repeated in front of each conjunct, including the first one (1b). I refer to such structures as 'conjunction doubling coordinations' (CDCs) (Gross 1973).

(1)

a. Luc conna\^\i t Max et L\'\i a.
   Luc knows Max and Léa.
b. Luc conna\^\i t et Max et Léa.
   Luc knows and Max and Léa.

'Luc knows not only Max but also Léa.'

While most current approaches to coordination try to accommodate data such as (1b), it is striking that no precise description of CDC has ever been provided.2 To account for the occurrence of (what looks like) a coordinating conjunction on the left of the first conjunct, two main analyses are conceivable: the initial term can be treated as an homonymous functor (an adjunct adverb or a functional head) taking the simplex coordinate phrase as an argument or it can be considered as a true conjunction, assuming each string [conj XP], including the first one, forms a constituent.

In this paper, I present a broad description of French CDCs that undermines the functor-argument analysis and calls for a revision of the second approach in which one and the same conjunction is repeated in front of each conjunct. Given the distributional properties that CDCs exhibit, I propose to analyse them as instances of a specific Construction, making crucial use of inheritance in a partial hierarchy of coordinate constructions. I couch my analysis in a Head-driven Phrase Structure Grammar (Pollard, Sag 1994, Ginzburg, Sag 2001).

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2 For most examples, I provide glosses without translations, relying on the closeness of English and French.

2 A first classification of those structures in French can be found in Piot 2000. I leave aside doubled adverbs and subordinators in this study.
The paper is organized as follows: in the first section, I present some basic distributional properties of French CDCs; in the second section, I discuss two main analyses that have been proposed in the literature, relying respectively on a functor-argument structure and a multi-marked-conjunct structure; and in the third section, I sketch a construction-based analysis within HPSG.

1. Basic properties
Doubling concerns four coordinating conjunctions in French: it is optional with *et (and) and *ou (or) while obligatory with *ni (nor) and *soit (or): 3 4

(2)

a. **Luc** **connaît** *(ou / et)* **Max** **ou / et** **Léa.**
   Luc knows or / and Max or / and Léa.

b. **Luc** **ne connaît** *(ni)* **Max** **ni** **Léa.**
   'Luc knows neither Max nor Léa.'

c. **Luc** **connaît** *(soit)* **Max** **soit** **Léa.**
   Luc knows soit Max soit Léa.

As noted by Progovac 1998, CDCs require a specific prosodic pattern. In French, each conjunction must receive a secondary accent and each string [conj XP] must form a prosodic group.
Beside those specific properties, CDCs seem to behave exactly as expected of simplex symmetric coordinate constructions:
(i) The number of constituents that can be conjoined is unbounded (contrary to English binary constructions [Both XP and XP] and, for some speakers at least, [(n)either XP (n)or XP]):

3 *Ni* raises specific problems related to negative polarity that, due to space limitation, I cannot discuss in this paper (see de Swart 2001). I assume that there are two distinct lexical entries: *ni* is a strong negative polarity disjunction that must be licensed by a negative expression and that is never doubled, while *ni* is a negative conjunction that must be doubled giving rise to double negation or negative concord under the scope of a negative expression.

4 *Soit* is historically the subjunctive form of the verb *être* (be). In modern French, it clearly behaves as an homonymous coordinating conjunction (see Grévisse, Goosse 1993 §1041). I leave aside *[soit XP or XP] structures, which are acceptable for a large number of speakers. To accommodate those data, one could posit a specific lexical entry *soit*, syntactically an adverb, that adjoins to a disjunctive phrase. Such an analysis would explain why intermediate conjunctions *ou* can be deleted in those structures while intermediate *soit* cannot in CDCs (see section 2).
(3)

a. Luc connaît ou/et Max ou/et Léa (ou/et Paul ou/et Jean...)
b. Luc ne connaît ni Max ni Léa (ni Paul ni Jean...)
c. Luc connaît soit Max soit Léa (soit Paul soit Jean...)

(ii) Beside NPs, all the major phrasal categories can be conjoined. I only provide examples with the doubled conjunction *et* since it has received very little attention but the general distributional pattern can be reproduced with *ou*, *ni* and *soit* for the categories exemplified below.5

(4)

a. Il veut [et chanter et danser].
   VPinf He wants and to-sing and to-dance.
b. Le suspect sera [et interrogé et fouillé].
   VPpart The suspect will-be and questioned and searched.
c. ?Ce produit [et protège les gencives et renforce l’email].
   VPfin This product and protects the gums and reinforces the enamel.
d. Il compte [et sur Max et sur Léa]
   PP He relies and on Max and on Léa.
e. C’est un voyage [et long et pénible].
   AP This is a trip and long and tiresome.
   AdvP This seems and syntactically and semantically illformed.
g. ?Demain, [et il fera beau et il fera chaud]6
   S Tomorrow and it will-be shiny and it will-be warm.
h. Il veut [et qu’il fasse beau et qu’il fasse chaud].
   S′ He wants and that it be shiny and that it be warm.

While much more restricted, word-level coordinations are not excluded either, as the following data suggest:7

5 Non-constituent strings, not discussed in this paper, are also conjoinable with doubled conjunctions:
   (i) Il parle et de linguistique à Léa et de philosophie à Jean.
       He talks and about linguistics to Léa and about philosophy to Jean.

6 Data with doubled *et* are difficult to judge. Finite verbal conjuncts (V°/VP/S) structures are not accepted by all French speakers (while given grammatical by Gross 1973, Salkoff 1979 and Piot 2000). The same problem arises with doubled *ni* (*ni2*) but speakers who do not accept finite V°/VP/S coordinations in this case are not necessarily those who do not accept V/VP/S coordinations with doubled *et*.

7
Il veut [et noter et enregistrer] ce discours.

He wants and note and record this talk.

Ils discutent [et avant et après] la conférence.

They talk and before and after the conference.

Il a des dossiers [et antérieurs et postérieurs]

He has some files and prior and later to that date.

Le match donne [et faim et soif] à Luc.

The match gives and hunger and thirst to Luc.

?Il fait toujours [et plus et mieux]

He does always and more and better than the others.

(iii) CDCs obey the Coordination of Likes and Unlikes Constraint, as formulated by Sag et al. 1985: conjunct properties are intersected and the coordinate phrase, underspecified for the conflicting features (if there are some), is ruled-out if it contradicts some predicate requirements ((6c) vs (6d)). As expected, extraction only applies 'across-the-board' on a subconstituent inside each conjunct (7) (cf. Ross 1967):

Luc redoute (la hausse des prix / que les impôts augmentent).

Luc fears (the rising of-the prices / that the taxes rise)

Luc critique (la hausse des prix / *que les impôts augmentent).

Luc criticizes (the rising of-the prices / that the taxes rise)

Luc redoute (et) la hausse des prix et que les impôts augmentent.

Luc critique (et) la hausse des prix et que les impôts augmentent.

Voici la femme avec qui soit il dîne _ soit il déjeune _.

Here-is the woman with whom soit he has-dinner soit he has lunch.

*Voici la femme avec qui soit il dîne avec Marie soit il déjeune _.

c. *Voici la femme avec qui soit il dîne _ soit il déjeune avec Marie.

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7 Some of those structures can alternatively be analyzed as some instances of Right-Node-Raising (cf. Kayne 1994). See Borsley (Forthcoming) for a general discussion.
2. Current syntactic analyses
I distinguish two families of analyses according to whether or not the initial term on the left bracket of the coordinate structure is singled-out. The first family adopts a functor-argument structure for CDCs while the second assumes a multi-marked-conjunct structure.

Functor-argument structure
Two main substructures are possible: a head-adjunct structure in which the initial term is an adverb adjoined to the coordinate phrase (8a) or a head-complements structure in which the initial term is a functional head taking the coordinate phrase as a complement (8b):

(8)
- a. XP
  Adv                  XP[COORD+]
  et                        .... et ...

- b. FP
  F°                  XP[COORD+]
  et                          ... et ...

The first structure has been proposed by Johannessen 1998 for all the initial terms that call for a conjunction in various languages (including English both, (n)either and French et, ou, ni, soit) while the second has been proposed by Kayne 1994 for (French and Japanese) initial coordinating conjunctions and by Skrabalova 2003 for all the initial terms in French, English and Czech NPs conjunctions. I show that both structures, while maybe appropriate for some initial terms in coordinate constructions, are inadequate for French CDCs.

The main motivation for distinguishing the initial term from the subsequent conjunctions is semantic in nature. As noted among others by Kayne 1994, Skrabalova 2003, Zamparelli 1999 and Zoerner 1999, doubling the conjunction et with NPs triggers a distributive reading (compare (9a) and (9b)) that is obligatory (9c). It is argued this can be captured by a functor analysis, assuming initial et is a distributive operator taking the semantics of the (plural) coordinate NP as an argument.

(9)
- a. Max et Léa font leurs devoirs.
  Max and Léa are-doing their homework.
  =ambiguous (collective or distributive reading)

- b. Et Max et Léa font leurs devoirs.
  =distributive
And Max and Léa are doing their homework.

*Et Max et Léa forment un couple heureux.
And Max and Léa make a happy couple.

However, such an argument looses much of its weight when one takes into account the full range of XPs making up CDCs with *et* (cf. section 1): NPs but also various categories such as VPs, PPs, APs or Ss, for which the notion of distributive reading (Link 1983) has no clear content. Moreover, CDCs with *ou* and *soit* have a disjunctive meaning and once again, the link with distributivity needs clarification. Hence, for the time being, a functor analysis of initial terms does not constitute any simplification of the syntax-semantic interface.

Second, Johannessen 1998 and Skrabalova 2003 have noted distributional differences between initial terms such as English *both* (+plural, dual), *(n)either* (+or) and the subsequent conjunctions. The same distributional pattern can be observed with some French initial adverbials such as à la fois, en même temps (at the same time) or respectivement (respectively)⁸ that bear on a plural entity, but crucially not with initial *et*, *ou*, *ni* and *soit* in CDCs. I contrast the properties of *both*, à la fois and *et* concerning the occurrence outside the coordinate phrase (10-11-12) and the occurrence between two conjuncts (13-14-15).

(10)

a. He has learned both Spanish and Italian.
b. He has both learned Spanish and Italian.

(11)

a. Il a appris à la fois l' espagnol et l' italien.
   He has learned at the same time Spanish and Italian.

b. Il a à la fois appris l' espagnol et l' italien.
   He has at the same time learned Spanish and Italian.

(12)

a. Il a appris et l' espagnol et l' italien.
   He has learned and Spanish and Italian.

b. *Il a et appris l' espagnol et l' italien.
   He has and learned Spanish and Italian.

(13)

a. He has learned both Spanish and Italian.

⁸ Note that those adverbials are compatible with doubled conjunctions:

(i) Il a appris à la fois et l' espagnol et l' italien.

I leave open the analysis of 'non seulement ... mais' (not only ... but) structures.
b. *He has learned Spanish both Italian.

(14)
a. Il a appris à la fois l'espagnol et l'italien.
b. *Il a appris l'espagnol à la fois l'italien.

(15)
a. Il a appris et l'espagnol et l'italien.
b. Il a appris l'espagnol et l'italien.

A third problem raised by a functor-argument structure for French CDCs concerns the distribution of intermediate conjunctions. When there are more than two conjuncts, intermediate conjunctions cannot be deleted in CDCs (16a) while this is possible in coordinate structures introduced by an adverbial (16b).

(16)
a. Il a appris et l'espagnol *(et) l'italien et le grec.
b. Il a appris à la fois l'espagnol (et) l'italien et le grec.

This contrast is unexpected given the unified functor analysis of initial terms. It requires the postulation of a specific feature [NULL±] on the coordinate phrase available for selection by initial adverbs / heads (Johannessen 1998).  

Finally, no functor-argument analysis can account for CDCs with the conjunction soit, which has no simplex counterpart:  

(17)
Il discutera *(soit) avec Luc soit avec Léa.
He will-talk either with Luc or with Léa.

Indeed, under the proposals (8a) or (8b), one has to make the distribution of [XP soit XP] dependent of the functor soit with which it combines, a stipulation that does not fit the orientation of the head-adjunct or head-complement relation.

I conclude that a functor-argument structure is inappropriate for French CDCs and turn to approaches in which the initial term is treated as a coordinating conjunction.

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9 A less stipulated solution is given below.
10 A non-doubled soit does exist in French but it is clearly an homonymous conjunction meaning that is to say. Moreover, the phrase [soit XP] is prosodically detached in this case, which makes it a good candidate for an incidental analysis.
Multi-marked-conjunct structure
The idea that each conjunction projects its own phrase is compatible with different analyses of coordination. Indeed, it has been proposed both in a P&P perspective with a ConjP structure (Progovac 1998) in which the first constituent \([\text{conj } XP]\) is the specifier of the head conjunction (18) and in a GPSG perspective with a multi-headed structure (Sag et al. 1985) (19).\(^{11}\) I focus on the GPSG analysis.

\[(18)\]
```
  ConjP
    ConJP
      conj       NP
      et / ε  Max
    conj       NP
      et       Léa
```

\[(19)\]
a. \[\text{NP[CONJ } \text{null}]\] b. \[\text{NP[CONJ } \text{null}]\]
```
  NP[CONJ } \text{null}]     NP[CONJ } et]
    conj       NP
    et       Léa
  NP[CONJ } et]
    conj       NP
    et       Max
  NP[CONJ } et]
    conj       NP
    et       Léa
```

Since one allows the first conjunct to be marked by a conjunction, one does not have to treat soit CDCs separately and all things being equal, a unified account of CDCs must be preferred.

Moreover, the ban on intermediate conjunctions deletion (repeated in (20b/c)) can be captured by a linear precedence constraint that linearizes unmarked conjuncts before marked ones in coordinate constructions (20a). Contrary to the ad-hoc feature \([\text{NULL±}]\) proposed by Johannessen 1998, this constraint is independently needed to rule out (20e):

\[(20)\]
a. coord-ph => [CONJ null] < [CONJ ¬null]
b. Et Luc et Max et Paul: [CONJ et] < [CONJ et] < [CONJ et]
c. *Et Luc Max et Paul: *[CONJ et] < [CONJ null] < [CONJ et]

\(^{11}\) Those structures are reminiscent of early work in transformational syntax relying on a spreading operation of the conjunction (by c-adjunction to each conjunct) applied on an output of the form \([\text{conj } X (X)^*]\) followed by some appropriate deletions (cf. Ross 1967).
d. *Luc Max et Paul: *[CONJ et] < [CONJ null] < [CONJ null] < [CONJ null]

e. *Et Luc Max Paul: *[CONJ et] < [CONJ null] < [CONJ null] < [CONJ null]

This analysis however encounters a problem. Since CDC is just another variant of the same coordinate construction, we do not expect distributional differences between simplex coordinations and CDCs. Still, there are some distributional differences:

(i) CDCs have a restricted distribution with prepositions: some prepositions can take a CDC complement (21) (e.g. avec (with), entre (between), envers (towards), vers (to/around)) while others cannot (22) (e.g. à (to/about), de (of), en (in), sur (on), chez (by), contre (against), pour (for)).

\[(21)\]
a. Il cherche une chambre avec (ou) un lit simple ou un lit double.
He seeks a room with or a single-bed or a double-bed.
b. Il éprouve de la haine envers (et) son frère et sa soeur.
He has some hate towards and his brother and his sister.

\[(22)\]
a. Les livres sont posés sur (*ou) le buffet ou la table.
The books are left on or the sideboard or the table.
b. Il pense à (*et) son frère et sa soeur.
He thinks about and his brother and his sister.

(ii) Unsaturated nouns (23) (Bègue 1977) as well as prenominal adjectives (but not postnominal ones) (24) (Abeillé, Godard 1999) cannot be conjoined:

\[(23)\]
a. Mes (*et) collègues et amis viendront.
My and colleagues and friends will-come.
b. Les (*ou) parents ou grands-parents viendront.
The or parents or grand-parents will-come.

\[12\] No preposition admits a CDC complement with $\textit{ni}$.
\[13\] There is no distinction between prepositions heading an adjunct PP and prepositions heading an argument PP in French, contrary to Zamparelli's 1999 observation concerning $[\textit{sia} \textit{XP sia/che XP}]$ structures (=Both ... and ...) in Italian.
(24)
a. *Il a fait un (et) long et pénible voyage.*
   He has done a and long and tiresome trip.

Those distributional restrictions can be captured by positing a specific Construction (in the theoretical sense of Fillmore, Kay 1999) for CDCs. In the following section, I sketch a construction-based analysis within HPSG that enables one to express both the general and the specific properties of French CDC in a uniform constraint-based fashion.

3. A construction-based approach in HPSG

I first present some general assumptions on coordination within Head-driven Phrase Structure Grammar. Then, I provide a partial hierarchy of French coordinate constructions with some appropriate constraints on types and some examples of implicational constraints that can be used to account for the distributional restrictions mentioned above.

Coordination in HPSG

The present treatment of CDC embodies two general assumptions on coordination:

(i) Following Abeillé 2003, I analyze coordinating conjunctions as weak heads that inherit most of their syntactic features from the subsequent sign with which they project a head-complements-phrase:

\[
\text{conj-word} \Rightarrow \begin{cases} 
\text{HEAD} [1] \\
\text{CONJ} \text{ conj} \\
\text{SUBJ} [2] \\
\text{SPR} [3] \\
\text{COMPS} [4] \\
\text{CONT} \text{ conj-rel} \\
\text{ARGS} \{i, \ldots, n\} \\
\end{cases} \oplus \{5\}
\]

Note that a CONJ feature (declared appropriate for the type category) takes the form of the conjunction as its value. Assuming headed phrases inherit the CONJ specification of their head-daughter, *[conj XP]* phrases can be prevented

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14 Would those restrictions follow from some pragmatic or semantic properties of CDC, they would still be properties of the Construction.

15 I assume that signs are specified [CONJ null] by default.
from occurring in argument positions (*Peter loves and Mary), given the additional constraint on the argument structure of words in (26).

(ii) Symmetric coordinate structures are non-headed constructions (Pollard, Sag 1994) with a sharing constraint of (at least) the HEAD, VALENCE and SLASH features between conjuncts and between conjuncts and mother. Moreover, the mother node is specified [CONJ null], so that the coordinate phrase can occur in argument positions (27).

An example of simplified coordinate structure is given in (28):

Constraining coordinate constructions
Both derivational and non-derivational approaches of coordination have tried to reduce such constructions to a single dimension of constraints, be it the conjunction with ConjP analyses (cf. Johannessen 1998) or the properties of the conjuncts making up the structure (with various phrase structure rules, as in GPSG). Following Abeillé 2003, I take advantage of HPSG cross-classification work. I propose to cross-classify coordinations according to two different

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16 Thus accounting for the coordination of likes Constraint. See Sag 2003 for a treatment of coordination of unlikes consistent with (27).
dimensions: the distribution of conjunctions, with different subtypes (29) for which appropriate constraints are given in (30) and the properties of the conjuncts (X° / XP / non-constituent coordinations), that I leave aside in this paper.

(29)

\[
\begin{array}{c}
\text{coord-pb} \\
\text{CONJ-DISTRIBUTION} \\
\text{CONJUNCTS} \\
\text{basic-coord-pb} \\
\text{iterative-coord-pb} \\
\text{asyndetic-coord-pb} \\
\text{doubling-coord-pb}
\end{array}
\]

[ Pierre Paul et Marie ] [ Pierre et Paul et Marie ] [ Pierre Paul Marie ] [ et Pierre et Paul et Marie ]

(30)


b. iterative-coord-ph => [ NON-HD-DTRS <[CONJ null]> ⊕ nelist([CONJ [1]et ou ou ni1]) ] 

c. asyndetic-coord-ph => CONTENT \[et-reln\] 

\[ARGS\{i,...,n\}\] 

\[NON-HD-DTRS\{CONJ [1]null\} \_{INDEX i}...\{CONJ [1]\}_{INDEX n}\] 

The description of CDC can be stated as follows:

(31)

doubling-coord-ph => \[DOUBLING [1]et ou ou ni2 ou soit \]

\[NON-HD-DTRS ([CONJ [1]],...,[CONJ [1]])\]

Each daughter's CONJ feature is specified for the same conjunction form, which is restricted to et, ou, ni2 or soit in the construction description. The mother node contains a DOUBLING feature which takes the form of the conjunction as its value so that distributional constraints (such as the ban on conjoining prenominal adjectives (32a), or unsaturated nouns (32b) or the lexical restrictions with prepositions (32cd) can be expressed.  

17 18

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17 This feature is declared appropriate for the type category and signs are specified [DOUBLING null] by default.

18 See Abeillé, Godard 1999 concerning the [WEIGHT lite/non-lite] specification. It is only indirectly linked to lexicality (X° vs XP) since some XPs can be lite (e.g. prenominal APs).
(32)
a. \[
\text{head-adjunct-ph} \Rightarrow \text{[NON-HD-DTRS \{HEAD \ adj \ \text{weight}\time\text{lite}\}]} \Rightarrow \text{[NON-HD-DTRS \{[DOUBLING null]\}]} 
\]
b. \[
\text{HEAD noun} \Rightarrow \text{[DOUBLING null]} 
\]
c. prep-word \Rightarrow [\text{COMPS ([DOUBLING \sim ni2])}] 
d. à / de / en / sur / contre-word \Rightarrow [\text{COMPS ([DOUBLING null])}]

A simplified licensed structure is illustrated in (33):

(33)

\[
\begin{array}{c}
\text{NP} \\
\text{head-complements-ph} \\
\text{CONJ} \\
\text{DOUBLING} \\
\text{null} \\
\text{[2]} \\
\text{CONJ} \\
\text{null} \\
\text{[1]} \\
\text{head-complements-ph} \\
\text{CONJ} \\
\text{null} \\
\text{[1]} \\
\text{head-complements-ph} \\
\text{CONJ} \\
\text{null} \\
\text{[2]} \\
\end{array}
\]

\[
\begin{array}{c}
\text{ conj} \\
\text{NP[HEAD[2]noun]} \\
\text{ conj} \\
\text{NP[HEAD[2]]} \\
\text{ soit} \\
\text{Max} \\
\text{ soit} \\
\text{Léa} \\
\end{array}
\]

Conclusion
In this paper, I have shown that a comprehensive description of French CDCs undermines the functor-argument analysis that has been proposed in the recent literature. I have further argued that approaches that allow one and the same conjunction to be repeated in front of each conjunct need to be refined in order to account for the distributional properties of CDCs. I have sketched a construction-based approach in HPSG that enables one to express both their general properties (inherited from more general coordinate constructions) and their specific properties (introduced by a special subtype) in a constraint-based fashion. Further research on the semantic and pragmatic properties of CDC should bring more support to those proposals.
References


