Abstract

This paper investigates the structure and agreement of coordinated binominals in the form *Det N1 and N2* in French. We provide corpus data and experimental data to show that different agreement strategies exist, depending on their readings: singular *Det* for joint reading (*mon collègue et ami*, 'my.MSG colleague.MSG and friend.MSG'), plural *Det* (*mes frère et soeur*, 'my.PL brother.MSG and sister.FSG') or closest conjunct agreement (*mon nom et prénom*, 'my.MSG last name.MSG and first name.MSG') for split reading. These results challenge previous syntactic analyses of binominals (Le Bruyn and de Swart, 2014), stating that *Det* combines with *N1*, forming a DP and the later coordinates with N2. We then propose an HPSG analysis to account for French binominals.

1 Introduction

In French, bare nouns are not permitted in argument position (1). A singular noun requires a singular determiner (1-a) and a plural noun requires a plural determiner (1-b). But bare nouns are possible in argument position if they are coordinated (Roodenburg, 2004), with (2-b) or without (2-a) a shared determiner .

(1) a. La fille/*Fille est dans le jardin.
the.FSG girl.FSG/girl.FSG be.PRS.3SG in the.MSG garden
'The girl is in the garden.'

b. Les filles/*Filles sont dans le jardin.
the.PL girl.PL/girl.PL be.PRS.PL in the.MSG garden
'These girls are in the garden.'

(2) a. Filles et garçons sont dans le jardin.
girl.PL and boy.PL be.PRS.3PL in the.MSG garden
'Boys and girls are in the garden.'

b. Des filles et garçons sont dans le jardin.
a.PL girl.PL and boy.PL be.PRS.3PL in the.MSG garden
'Some boys and girls are in the garden.'

The determiner agreement in binominal expressions *Det N1 and N2* as illustrated in (2-b), has raised a lot of discussions. Crosslinguistically, various strategies exist: a shared singular determiner requires the conjuncts to be singular in English (3-a), and conjuncts with different numbers cannot be coordinated ((3-b), (3-c)) (Dalrymple and Nikolaeva, 2006), whereas Spanish exhibits closest conjunct agreement (4) (Demonte and Perez-Jimenez, 2012).

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(3) a. This boy and girl.
b. *This boy and girls
c. *These boys and girl

(4) [El/*Los abdomen y pecho] aparecen
the.MSG/MPL abdomen.MSG and chest.MSG appear.PRS.3PL
relativamente abultados.
relatively swollen.MPL
'The abdomen and chest look relatively swollen.'

One purpose of this paper is to establish the empirical facts of binomials agreement in French, showing that determiners can agree either with their closest conjunct or with the whole coordination.

Syntactically, two structures have been proposed, either *[Det [N1 and N2]]* (Dalrymple and Nikolaeva, 2006) or *[[Det N1] and N2]* (Le Bruyn and de Swart, 2014). The fact that the determiner can agree with the whole coordination in French challenges Le Bruyn and de Swart (2014)'s analysis considering that the determiner is combined only with the first conjunct. Furthermore, the agreement mismatch between determiner and coordinated bare nouns raised problems for the previous HPSG analysis of agreement, based on INDEX feature and CONCORD feature (Pollard and Sag (1994),Wechsler and Zlatić (2000)). We follow Villavicencio et al. (2005) using two additional agreement features: LAGR for the leftmost conjunct and RAGR for the rightmost conjunct, to explain for the different agreement strategies existing in French.

The article is organised as follows: section 2 introduces the semantic readings of *Det N1 and N2* and how the agreement varies according to the interpretation. Section 3 examines the agreement strategies employed in French using corpus data and experimental data. Section 4 provides a syntactic analysis of structure *Det N1 et N2*, arguing that *Det* is placed above coordination. Section 5 presents the HPSG formalization and section 6 consists of conclusion and some open questions.

2 Interpretations and agreement of binominals

Binominals can have two distinct readings: a joint reading ((5-a), *colleague* and *friend* are co-referent) and a split reading ((5-b), *the mother and son* denotes two distinct individuals).

(5) a. A friend and colleague has come.
b. The mother and son are coming tonight.

The semantics of joint coordination is the standard set intersection proposed by Partee and Rooth (1983): *a friend and colleague* returns one individul which is both friend and colleague (6-a). Le Bruyn and de Swart (2014) develop a special matchmaking semantic for split *Det N1 and N2* constructions: the discourse referent for the second conjunct is matched to the (discourse) referent introduced by the

DP in the first conjunct, and vice versa. In (5-b), they are *mother* and *son* of each other, unlike *the mother and the son* which could refer to two unrelated individuals.

(6) a. $[\![\text{and}_{joint}]\!] = \lambda P\ \lambda Q \lambda x(x \epsilon (Q \cap P))$
b. $[\![\text{and}_{split}]\!] = \lambda P\ \lambda Q \lambda z(z \epsilon (\text{RtoI}((Q \times E) \cap (E \times P))))$
(E refers to the universe, and RtoI the function of Relation to Individuals is defined as follows: RtoI(R)=$\{x \oplus y: R(x,y)\}$)

The split binominals are an instance of natural coordination (cf., Haiman (1983), Wälchli (2005)), in which the coordinated parts express semantically closely associated concepts. Not all bare coordinations are equally felicitous. *Boy* and *girl* are quite related semantic concepts and refer to a couple (7-a) while it is hard to form a semantic union comprising *boy* and *cat* unless in a context where *boy* and *cat* can be a pair (7-b).

(7) a. this boy and girl
b. ?this boy and cat

For singular joint reading, in French as in many languages, only the singular determiner is allowed (8).

(8) Le/*Les collègue et ami de Jean est
the.MSG/PL colleague.SG and friend.MSG of Jean be.PRS.3SG
venu hier.
come.PRSPT.MSG yesterday.
'The colleague and friend of Jean came yesterday.'

For split reading, Heycock and Zamparelli (2005) and Le Bruyn and de Swart (2014) assume that French is an exception, as singular nouns are infelicitous (9).

(9) *Ce/*Ces marin et soldat sont souvent
this.MSG/PL sailor.MSG and soldier.MSG be.PRS.3PL often
ensemble.
together
(Heycock and Zamparelli, 2005)

However, the examples in Heycock and Zamparelli (2005) and Le Bruyn and de Swart (2014) only consist of animate nouns. We will present a corpus study (corpus FrWAC) and an experiment of acceptability judgement challenging these data for singular nouns.

Plural binominals are accepted in French (Heycock and Zamparelli, 2005). We assume that both joint and split readings can be allowed. Example (10) is ambiguous between a joint reading and a split reading (it could be possible that someone at the same time is a sailor a and soldier). In the following sections, we will focus on singular binominals.

(10) Ces marins et soldats sont souvent ensemble.
this.PL sailor.MPL and soldier.MPL be.PRS.PL often together
'These sailors and soldiers are often together' (Heycock and Zamparelli, 2005)

3 Empirical evidence of binominal agreement in French

We first established a database extracting binominals from a website corpus (FrWAC) and then tested the number agreement with an experiment.

3.1 Corpus data

In FrWAC (1.6 billion words, Baroni et al. (2009)), which is a large corpus constructed from the Web, we found 371.000 tokens (96.612 types) for the construction *Det N1 et N2*. We annotated the *Detsg*/*Detpl* and *Nsg*/*Nsg* with *Flemm* (Namer, 2000). There are 51 711 tokens (31 412 types) for *Detsg N1sg et N2sg* with either joint reading ((11) for animate nouns and (12) for inanimate nouns) or split reading (13), 5137 tokens (1308 types) for *Detpl N1sg et N2sg* with only split reading(14).

(11) Le chanteur et poète québécois Gilles Vigneault
the.MSG singer.MSG and poet.SG Quebec.M Gilles Vigneault
publie en France un livre d' entretiens.
publish.PRS.3SG in France a book of interviews
'The singer and poet of Quebec, Gilles Vigneault, publishes a book of interviews in France' (FrWAC, *republique-des-lettres.fr*)

(12) Le restaurant et bar Starlight propose un
the.MSG restaurant.MSG and bar.MSG Starlight offer.PRS.3SG a
menu international.
menu international
'The restaurant and bar, Starlight, offers an international menu.' (FrWAC, *expedia.fr*)

(13) Présentez -vous à la date et lieu
introduce.IMP yourself at the.FSG date.FSG and place.MSG
indiqué pour suivre votre formation.
indicated.MSG to follow.INF your training.
'Introduce yourself at the date and place indicated to follow your training.' (FrWAC, *secours57.fr*)

(14) Les lieu et programme seront
the.PL place.MSG and program.MSG be.FUT.3PL
précisés sur le bulletin.
specified.PRSPT.MPL on the bulletin
'The places and programs will be specified on the bulletin' (FrWAC, *rao.free.fr*)

We extracted the binominals with more than five occurrences and removed the errors. We annotated noun animacy with an external dictionary (Bonami pc.) and the joint or split reading manually. Animate nouns include only humans.

The results (table. 1) show that for the joint reading, only the *Detsg* is allowed, whereas for the split reading both *Detsg* and *Detpl* are allowed : 3084 token (60 type) for *Detpl*, 7545 tokens (444 types) for *Detsg*.

	joint reading		split reading				
	Detsg		*Detsg*		*Detpl*		
	types	tokens	types	tokens	types	tokens	total
animate	196	2304	5	38	7	87	2637
inanimate	3	31	439	7507	53	2997	11030
total	199	2335	444	7545	60	3084	13667

Table 1: Numbers of binominals with joint/split reading in FrWAC

Furthermore, there is an interaction with animacy: the joint reading is more frequent with animate than inanimate nouns. For the split reading, there is also an interaction between *Det* agreement and animacy: for split animate binominals, plural determiners are preferred in a two-tailed binomial test ($p < .001$), whereas singular determiners are preferred ($p < .001$) for split inanimate binominals.

This result reveals that singular binominals do exist in French, for both joint reading and split reading. We suppose that French can permit different agreement strategies for binominals, depending on the noun animacy and context.

3.2 Acceptability judgment experiment

To test our agreement hypothesis, we then run an experiment, creating contexts where binominals can only have plural interpretations, to test the acceptability of *Detsg/Detpl* for both animate and inanimate split binominals.

We had 30 sets of experimental items: 12 singular animate binominals, illustrated in (15-a) and 12 singular inanimate binominals, illustrated in (15-b) as well as 6 control items (grammatical or not) without coordination, illustrated in (15-c). These items were inspired by corpus data. We included 15 fillers, for a total of 45 sentences.

(15) a. Le/Les directeur et sous-directeur du
the.MSG/the.PL director.MSG and assistant director.MSG of.MSG
secteur se sont mis d' accord sur
sector.MSG REFL.3 be.PRS.3PL put.PRSPT.M of agreement on
le projet.
the project
'The director and assistant director of the sector agreed on the project.'

b. Il arrive souvent que votre/vos identifiant
it happen.PRS.3SG often that your.SG/your.PL username.MSG
et mot de passe ne soient pas reconnus
and password.MSG NEG be.SBJV.3PL NEG recognized.PRSPT.PL
par le site.
by the site
'It often happens that your username and password are not recognized by the site.'

c. La tête dans le/les genoux, je
the.FSG head.FSG in the.MSG/the.PL knee.PL, I
dormirais peut-être deux heures.
sleep.COND.1SG perhaps two hour.PL
'With the head in the knee, I would sleep perhaps two hours.'

43 subjects participated in the experiment, recruited from the website RISC (*http://www.risc.cnrs.fr/*). One participant was removed as non native and 42 were retained. Participants were asked to rate the acceptability of each sentence, from 1 to 10, which is the usual scale in the French school system. They could only see one possible *Det* (singular/plural) for each binomial, the number of which was counterbalanced across participants. The binominals are in subject position and the predicate is plural and collective, in order to force the split reading.

The results (Fig.1) report the mean and standard error of acceptability judgments. They show that the judgments of experimental items are slightly lower than good controls in green, but much higher than bad controls (with grammatical agreement error) (in yellow).

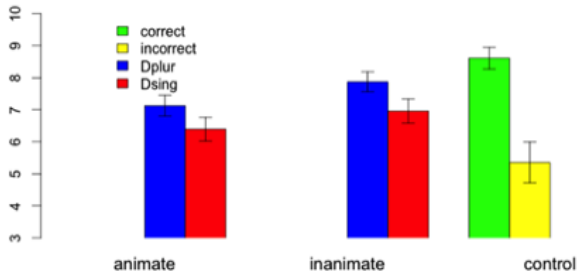

Figure 1: Acceptability judgment of split *Det N1 et N2*

We run a mixed-effect linear regression model with items and participants included as random factors. Our dependent variable is participants' acceptability judgements, which were z-score transformed prior to analysis, which can help eliminate some forms of scale bias. Independent predictors are noun animacy and determiner number. We find significant effects for both animacy (p=0.01) and determiner number(p=0.03) and there is no interaction between these factors(p=0.62).

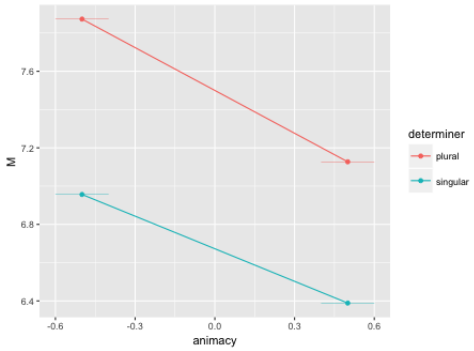

Figure 2: Results of Experiment: x values are noun animacy, -0.5 represent inanimate nouns and 0.5 represent animate nouns. y values are acceptability judgment aggregated over items and subjects. Lines show best linear fit on the data.

The acceptability judgment experiment reveals that if we use a plural verb to force the split reading, the plural determiner is more acceptable than the singular one. Meanwhile, inanimate binominals are better judged than animate ones, both with *Detsg* and *Detpl*.

However, compared with our corpus data, where *Detsg* is more frequent for split inanimate binominals and *Detpl* for split animate binominals, the experiment has a strong bias for *Detpl* given by the plural verbs. The result confirms that two strategies are permitted in French, either closest conjunct agreement (*Detsg*) or synthetic agreement (*Detpl*) and that animacy has an effect on the determiner agreement.

4 Syntactic structures of binominals in French

4.1 Le Bruyn and de Swart (2014)'s analysis

Le Bruyn and de Swart (2014) propose two different syntactic structures depending on the meaning. For the joint reading, *Det* lives in a position above the coordinated phrase (16-a). For the split reading, *Det* combines with the first conjunct only (16-b), predicting thus the ungrammaticality of *Detpl* when followed by two coordinated *Nsg*, as in English (17-a), Spanish (17-b) and supposedly for French (17-c).

(16) a. joint reading: [$_{DP}$ D [$_{CoordP}$ NP and NP]]
b. split reading: [$_{CoordP}$ [$_{DP}$ D NP] and NP]

(17) a. *These boy and girl are eating a pizza (Dalrymple and Nikolaeva, 2006)
b. *Los abdomen y pecho
the.M.PL abdomen.MSG and chest.MSG
(Demonte and Perez-Jimenez, 2012)

c. *Les homme et femme sont venus
the.PL man.MSG and woman.FSG be.PRS.3PL come.PRSPT.PL
'The man and woman have come.' (Le Bruyn and de Swart, 2014)

According to Le Bruyn and de Swart (2014), (16-b) is also compatible with bare binomials *N1 et N2*, which only have the split reading (Roodenburg, 2004), as illustrated in (18) :

(18) Nom et prénom doivent être écrits en
last name.MSG and first name.MSG must.PRS.3PL be.INF write in
noir.
black
'First and last name must be written in black'

4.2 The number agreement

We agree with Le Bruyn and de Swart (2014)'s syntactic structure for the joint reading. However, we argue that this structure should still be valable for the split reading: *Det* is placed above coordinated nouns for the split reading as well. On the one hand, the data presented above show that *Detpl* is acceptable in French, as long as the two *N* form a natural pair (19).

(19) Les mari et femme sont d' accord sur le
the.PL husband.MSG and wife.FSG be.PRS.3PL of agreement on the
partage des biens.
division of.PL property.PL
'The husband and wife agree on the division of these property.'
(FrWAC, *judiciaire.blog.20minutes.fr*)

Moreover, plural numerals may be used: example (20) refers to a pair, one brother and one sister. Following Greenberg (1963)'s Universal 20, numerals are placed lower than determiners. If the numeral is combined with the whole coordination, the determiner must be.

(20) [Mes deux [frère et sœur]]
my.PL two brother.MSG and sister.FSG

Our data show that closest conjunct agreement is also permitted in French. *Detsg* is possible for singular binominals, at least with inanimates (524 tokens for *vos nom et prénom* >'your.PL last name.SG et first name.SG', 383 for *votre nom et prénom* >'your.SG last name.SG et first name.SG'). When there is a mismatch of numbers, the determiner may also agree with the closest conjunct (21), (22).

(21) La plupart de nos établissements sont ouverts tous les
the most of our facilities be.PRS.3PL open.PL all the.PL

jours y compris le dimanche et jours fériés.
day.PL including the.MSG Sunday.MSG and day.PL holiday.PL
'Most of our facilities are open every day including Sunday and public holidays.' (FrWAC, *casino-cafeteria.fr*)

(22) Chacun essaye de trouver sa place en fonction de ses dons et charisme.
everyone try.PRS.3SG to find.INF his place in accordance of his.PL gift.MPL and charisma.MSG
'Everyone tries to find his place according to his gifts and charisma.' (FrWAC, *plaisir-catholique-yvelines.cef.fr*)

We thus assume that singular *Det* agreement for split binominals does not involve an abstract structure but is fairly superficial, like what has been proposed for Welsh by Borsley (2009), where the initial verb (*gwelais*) can agree with its adjacent subject (*i*) rather than with the coordinated phrase (23). Moreover, Demonte and Perez-Jimenez (2012) show that in Spanish the adjective adjacent to N2 can show singular agreement (24-a), while the second adjective takes syntactic plural agreement, but that the reverse pattern is not possible (24-b).

(23) Gwelais [i a Megan] ein hunain.
see.PAST.1SG I and Megan 1PL self
'I and Megan saw ourselves.'

(24) a. la radio y television pública catalanas
the.FSG radio.FSG and television.FSG public.FSG Catalan.FPL
'the Catalan public radio and television'
b. *la radio y television públicas catalana
the.FSG radio.FSG and television.FSG public.FPL Catalan.FSG

4.3 The gender agreement

We now turn to gender agreement, which is marked for *Detsg* ((25-a), (25-b)), but not for *Detpl*(25-c).

(25) a. la fille
the.FSG girl.FSG
b. le garçon
the.MSG boy.MSG
c. les filles/garçons
the.PL girl.FPL/MPL

Wechsler and Zlatić (2003) show that in French, when the subject is a coordination, the predicate adjective shows with its subject a gender resolution agreement (Corbett, 1991): a mixture of genders is resolved to the masculine (26).

(26) Le garçon et la fille sont
the.MSG boy and the.FSG girl.FSG be.PRS.SPL
compétents/*compétentes.
competent.MPL/competent.FPL
'The boy and the girl are competent.' (Wechsler and Zlatić, 2003)

Our data show that in binominals, when there is a mismatch of gender, the determiner always agrees with its closest conjunct. As illustrated in (27), with the same pair of nouns in their two possible word orders, the determiner is feminine when the first conjunct is feminine (cf.(13), repeated in (27-a)), and masculine when the first conjunct is masculine (27-b), the resolution rule cannot be applied(27-a). Note that in (27-a), the postnominal adjectif (*indiqué*) agrees with its closest conjunct (*lieu*).

(27) a. la/*le date et lieu indiqué
the.FSG/the.MSG date.FSG and place.MSG indicated.MSG
'the date and place indicated' (FrWAC, *secours57.fr*)
b. Le/*La lieu et date de
the.MSG/the.FSG place.MSG and date.FSG of
rédaction/publication
writing/publishing
'the place and date of writing/publishing' (FrWAC, *gfii.asso.fr*)

For more cases of the gender and number mismatch in coordination, see Shiraıshi and Abeillé (2016). They found that French allows determiner coordination with number or gender mismatch: in (28-a), travail 'job' is the non syncretic plural of travaux 'jobs' and in (28-b), chanteuse the non syncretic feminine of chanteur 'singer'.

(28) a. . . . pour rediriger le ou les travaux vers leur nouvelle
to redirect the.MSG or the.PL job.PL to their new
destination.
destination.
'. . . to redirect the jobs to their new destination.' (Gilles Lemaitre, *Backup exec pour Windows server: sauvegarde et restau*, 2007)
b. Il faut attendre que le, ou la chanteuse soit au
It must wait that the.MSG, or the.FSG singer.FSG is to.MSG
top.
top
'One must wait until the singer is at the top.' (Bernard Tellez, *L'aube d'hiver de Barcelone*, 2010)

5 An HPSG analysis

5.1 Previous work

In HPSG, two distinct agreement features are used, CONCORD for morphosyntactic agreement and INDEX for semantic agreement (Pollard and Sag (1994),Wechsler and Zlatić (2000)). Nouns, determiners, and attributive adjectives carry a CONCORD feature, closely related to inflection. INDEX agreement is more semantic, whose value is related to the referential/semantic possibilities of the associated nominal. INDEX and CONCORD are both head features.

Dalrymple and Nikolaeva (2006) propose an LFG analysis where CONCORD features are distributive. The conjuncts require the *Det* to have the same CONCORD value as the conjuncts. INDEX features are non-distributive, representing the set formed by the coordinate structure and triggering verb agreement.

Villavicencio et al. (2005) show that in Portuguese, the determiner always agrees in gender with the first conjunct, and in number either with the first conjunct (29) or with the coordinate structure (30).

(29) No povo e gente hebreia
on.the.M.SG population.M.SG and people.F.SG Hebrew.F.SG
'on the Hebrew population and people'

(30) Os provaveis director e ator principal
the.MPL probable.PL director.MSG and actor.MSG principal.MSG
'the likely director and main actor'

In addition to CONCORD and INDEX, they propose two new features: LAGR for the leftmost conjunct, RAGR for the rightmost conjunct. In closest conjunct agreement, *Det* agrees with the first *N* via LAGR, while a postnominal adjective may agree with the last N via RAGR. LAGR and RAGR are head features. The value of LAGR of the coordinate structure comes from the LAGR of the leftmost daughter. The CONCORD value, on the other hand, reflects the resolved agreement features of the coordinate structure, with identical values of INDEX.

5.2 The coordinated phrase

We propose a hierarchy of nominal-coordinate-phrase (Fig.3). Two subtypes are introduced given the semantic interpretations: one for joint reading and the other for split reading. Within split-nominal-coordinate-phrase, we distinguish: NP coordination (*le garcon et la fille* 'the.MSG boy.MSG and the.FSG girl.FSG') and bare nonimal coordination, with (*votre/vos nom et prénom* 'your.MSG/PL last name.MSG and first name.MSG'). or without (*nom et prénom* 'last name.MSG and first name.MSG') a shared determiner.

For joint-nominal-coordinate-phrase, the determiner can also be omitted in the predicate use (31-a). NP coordination can give a joint reading as well (31-b).

(31) a. Il devient Eric Weiss, agent de la CIA, collègue
he become.PRS.3SG Eric Weiss, agent of the.FSG CIA, colleague
et ami de Michael Vaughn.
and friend of Michael Vaughn
'He becomes Eric Weiss, agent of the CIA, colleague and friend of Michael Vaughn.' (FrWAC, *vatzhol.club.fr*)

b. C' est un ami et un collègue
this be.PRS.3SG a.MSG friend.MSG and a.MSG colleague.MSG
qui nous a quittés.
who us have.PRS.3SG leave.PRSPT.MSG
'This is one friend and one colleague who has left us.'

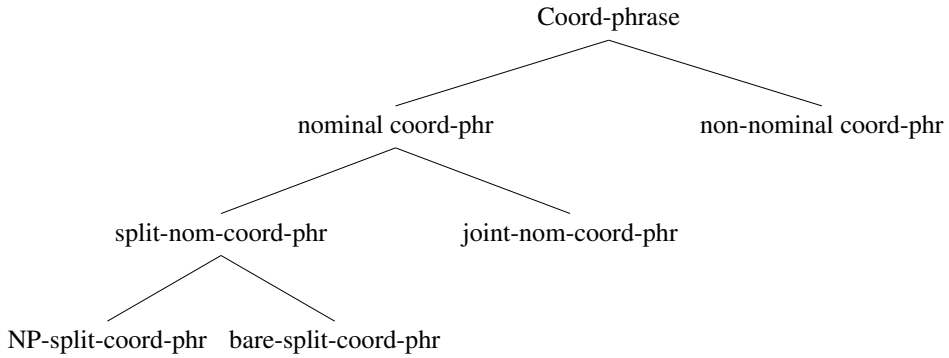

Figure 3: Hierarchy of nominal coordinate phrases

Following Borsley (2005) who argues that coordinated phrases are analysed as unheaded, we assume coordinating conjunctions to be weak heads (Abeillé (2005),Abeillé (2006)), inheriting the HEAD and Valence features from their conjunct complement and contributing a feature CONJ. Disregarding conjunction features, SLASH features are shared between the conjuncts and the coordinate phrase (Abeillé (2005), Mouret (2007)) and VALENCE features are shared by default (/)(32).

(32) Coord-phrase ⇒

$$\begin{bmatrix} \text{VAL} & /\boxed{1} \\ \text{SLASH} & \boxed{2} \\ \text{DTRS} & \left\langle \begin{bmatrix} \text{VAL} / \boxed{1} \\ \text{SLASH } \boxed{2} \end{bmatrix}, \ldots \begin{bmatrix} \text{VAL} / \boxed{1} \\ \text{SLASH } \boxed{2} \end{bmatrix} \right\rangle \end{bmatrix}$$

In this paper, we only deal with the nominal coordination, and we add LAGR and RAGR features for closest conjunct agreement.

(33) nom-coord-phr ⇒

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{noun} & \\ \text{LAGR} & \boxed{1} \\ \text{RAGR} & \boxed{n} \end{bmatrix} \\ \text{DTRS} & \left\langle \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{CONCORD} & \boxed{1} \\ \text{LAGR} & \boxed{1} \\ \text{RAGR} & \boxed{1} \end{bmatrix} \end{bmatrix}, \ldots \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{CONCORD} & \boxed{n} \\ \text{LAGR} & \boxed{n} \\ \text{RAGR} & \boxed{n} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

5.3 Binominals with joint/split reading

For joint nominal coordinated phrases, we assume that both NUM and GEN features are shared (*mon collèque et ami*, 'my.MSG colleague.MSG and friend.MSG'; *ma collègue et amie*, 'my.FSG colleague.FSG and friend.FSG'). INDEX features are also shared. (34) does not specify *Det* since it is compatible with bare noun coordination (*mon collègue et ami*) and NP coordination (c.f (31-b)).

(34) joint-nom-coord-phr ⇒

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{CONCORD} & \begin{bmatrix} \text{NUM} & \boxed{1} \\ \text{GEN} & \boxed{2} \end{bmatrix} \\ \text{INDEX} & \text{i} \end{bmatrix} \\ \text{DTRS} & \text{list}\left(\begin{bmatrix} \text{CONCORD} & \begin{bmatrix} \text{NUM} & \boxed{1} \\ \text{GEN} & \boxed{2} \end{bmatrix} \\ \text{INDEX} & \text{i} \end{bmatrix} \right) \end{bmatrix}$$

For split nominal coordination, the coordinated phrase has a different INDEX value than the conjuncts. For CONCORD features of the coordinated phrase, the NUM value is plural because it denotes a plural entity (35), the GEN value follows a resolution rule, which is feminine only when all its daugters' GEN values are feminine (and with the default masculine value otherwise).

(35) split-nom-coord-phr ⇒

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{CONCORD} & \begin{bmatrix} \text{NUM} & \text{pl} \\ \text{GEN} & \boxed{0} \end{bmatrix} \\ \text{INDEX} & \text{k=i+...+n} \end{bmatrix} \\ \text{DTRS} & \left\langle \begin{bmatrix} \text{CONCORD} & [\text{GEN} & \text{a}] \\ \text{INDEX} & \text{i} & \end{bmatrix}, \ldots \begin{bmatrix} \text{CONCORD} & [\text{GEN} & \text{z}] \\ \text{INDEX} & \text{n} & \end{bmatrix} \right\rangle \end{bmatrix}$$

$\boxed{0}$=fem iff a $\cup \cdots$ z = fem

For the NP coordination (*le frère et la soeur*, 'the brother and the sister'), the valence features of the conjuncts are saturated.

We then consider bare binominals. For them, we assume the SPR value to be optional. We propose that a split bare coordinated phrase does not necessarily share its NUM feature with the conjuncts. The LAGR feature inherits from the first conjunct and RAGR feature from the last conjunct and the CONCORD feature represents the resolved number (plural). Its SPR can have the same value of NUM as the resolved one or as that of LAGR, expecting a *Detsg* if its closest conjunct is singular and a *Detpl* if it is plural. The GEN value of SPR inherits that of its first conjunct because the *Det* only shows closest conjunct gender agreement in French, as in Spanish and Portuguese (36).

(36) bare-split-coord-phr ⇒

$$\begin{bmatrix} \text{HEAD} & \left[\text{CONCORD} \quad [\text{NUM} \quad \text{pl}]\right] \\ \text{VAL} & \left[\text{SPR} \left\langle (\text{D} \quad \left[\text{CONCORD}\begin{bmatrix}\text{NUM} & \text{pl} \vee \boxed{1} \\ \text{GEN} & \boxed{2}\end{bmatrix}\right]) \right\rangle\right] \\ \text{DTRS} & \left\langle \left[\begin{array}{ll}\text{HEAD} & \left[\text{LAGR} \quad \boxed{3}\begin{bmatrix}\text{NUM} & \boxed{1} \\ \text{GEN} & \boxed{2}\end{bmatrix}\right] \\ \text{VAL} & \left[\text{SPR}\left\langle \text{D} \quad \left[\text{CONCORD}\ \boxed{3}\right]\right\rangle\right]\end{array}\right], \ldots \left[\begin{array}{ll}\text{HEAD} & \left[\text{LAGR} \quad \boxed{4}\right] \\ \text{VAL} & \left[\text{SPR}\left\langle \text{D} \quad \left[\text{CONCORD}\ \boxed{4}\right]\right\rangle\right]\end{array}\right] \right\rangle \end{bmatrix}$$

As a result, joint-coord-phrase (*mon collègue et ami*) and bare-split-coord-phrase (*votre nom et prénom*) are presented in the following trees (Fig.4 and Fig.5).

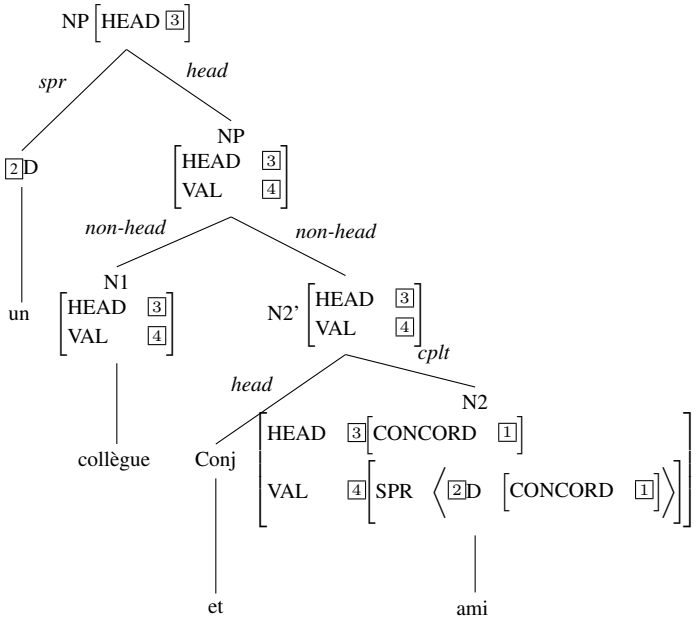

Figure 4: Joint-nom-coord-phrase

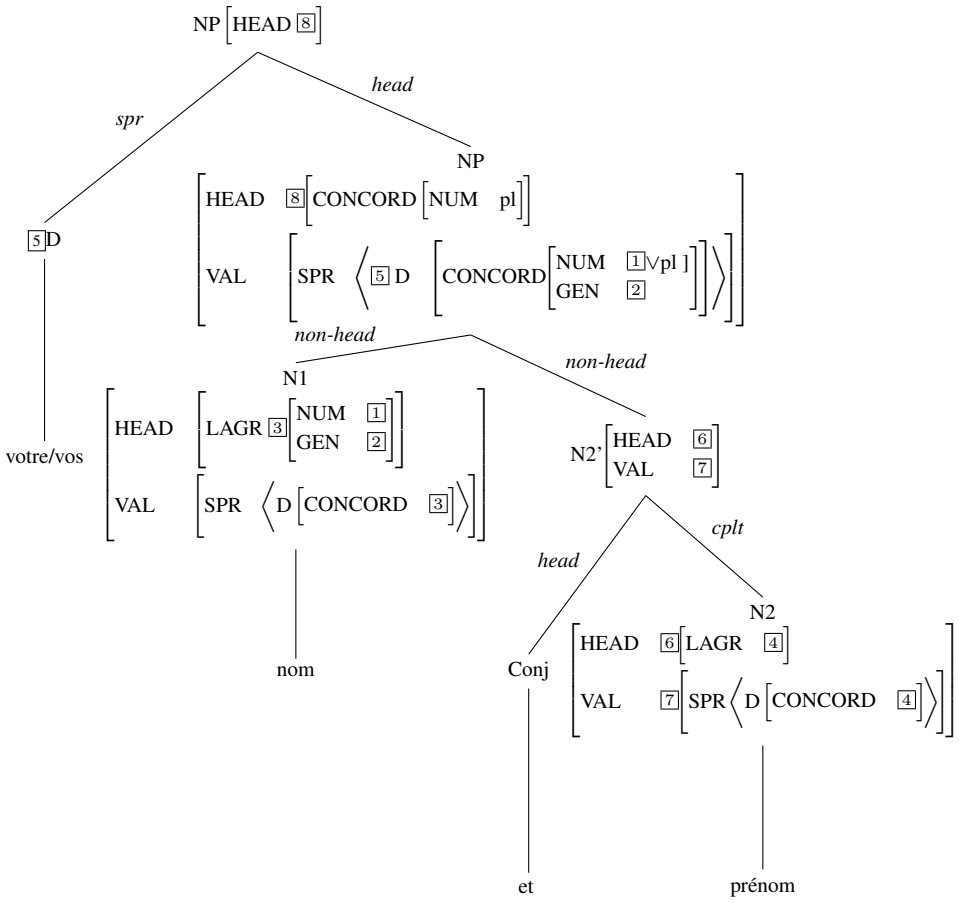

Figure 5: Bare-split-coord-phrase

6 Conclusion

On the basis of large corpus data, we argue that singular split binominals do exist in French, and that both singular and plural determiners are possible. Our experimental data further show that animacy plays a role in the acceptability judgments: inanimate binominals are better accepted than animate binominals. The fact that the determiner can agree with the coordinated phrase suggest that the determiner is placed above the coordinated nouns, contrary to Le Bruyn and de Swart (2014).

We also propose the same syntactic structure for joint and split reading, and different agreement patterns. The *Det* may agree in number with the whole coordinated phrase or the first conjunct, while it must agree in gender with the first conjunct. In the HPSG analysis, we follow Villavicencio et al. (2005), using LAGR and RAGR features to capture different agreement patterns. We leave the postnominal agreement for further study.

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