

# Extraction out of DP in French and proper head government

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## 0. Introduction

Cinque (1991) claims that, just as P, N, being a [-V] category, is not able to properly govern an empty category that is its complement, cf. (1).<sup>1</sup>

(1) *Definition of the ECP* (Cinque 1991:49)

A nonpronominal EC must be properly head-governed by a head nondistinct from [+V].

However, since extraction out of NP is not completely forbidden, Cinque assumes that genitive PPs can be moved via an empty [Spec, NP]. Spec-Head agreement turns N into a proper governor, so that the ECP is not violated, as in (2):

- (2) De quel livre<sub>i</sub> n'as-tu lu que la préface t<sub>i</sub>?  
'Of which book not have you read but the preface?'

In this paper, I adopt the idea that N is not a proper governor in itself, but can be turned into a proper governor via Spec-Head agreement. I will show, however, with examples from French, that, as far as extraction out of NP is concerned, the definition in (1) and Spec-Head agreement in NP do not cover all cases of proper head-government of a nonpronominal EC.

The structure of this paper is as follows. In section 1, I will discuss the proper government capacity of N, if it is lexically empty. In sections 2 and 3, I will discuss the proper government capacity of the heads of functional projections of NP. In section 4, finally, I will discuss the proper government capacity of N if it has more than one PP as its complement.

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1. *The proper government capacity of N*

Cinque (1991) distinguishes nouns (and prepositions) from [+V] categories by assuming that the complement of N (and P) is a barrier (the irrelevant parts of the definition are omitted):

- (3) *Definition of barrier for government/binding* (Cinque 1991:42)  
Every maximal projection that fails to be (...) selected (...) by a category nondistinct from [+V] is a barrier for government/binding.

In this, Cinque follows Kayne (1984), who claimed that nouns are nonstructural governors, i.e. that their governing capacity does not extend beyond their subcategorization frame. In this way, Kayne tried to explain why raising is not possible within NPs:

- (4) \*John's appearance to be sick

This would also explain why preposition stranding is impossible in NPs, even in a preposition stranding language, such as English:

- (5) \*Mary's (recent) reference to (in the newspaper)

And furthermore, it would be possible to explain why the tensed complement of a noun cannot contain a null complementizer:

- (6) The belief \*(that) she is a genius

Cinque claims that [-V] categories are not only unable to free a complement from barrierhood; they are neither proper governors (see definition (1)). This would explain the ungrammaticality of (7) (the example is Cinque's):

- (7) \*Il presidente, al quale<sub>i</sub> ho sentito [un appello t<sub>i</sub>] alla radio, ....  
'the president to whom I heard a petition on the radio'

Example (8), in contrast, is grammatical (this example is due to Rizzi 1990):

- (8) Il missile di cui ho fotografato [l'atterraggio t]  
'The missile of which I photographed the landing'

Cinque explains this difference in grammaticality by assuming that in (8) but not in (7), PP has been moved via [Spec, NP]. Spec-Head agreement turns the nominal element into an appropriate head-governor for the trace. Example (7) is ungrammatical because non-genitive elements cannot pass through

the Specifier position of NP. Since a PP that is extracted out of NP receives genitive case in [Spec, NP], it follows that only elements allowing genitive case marking can be extracted out of NP in Romance languages. Since the non-genitive PP cannot pass through [Spec, NP], in (7), the head of the NP is not turned into a proper head-governor, so that this sentence is ruled out by the ECP.

Another type of PP that is not extractable out of an NP, is a PP that is the complement of an empty N. The impossibility of this kind of extraction, too, may be attributed, in my opinion, to the ECP. Consider the difference in grammaticality between (9) and (10):

- (9) \*Des livres de quel auteur n'as-tu lu que le troisième e t?  
'Of the books of which author not have you read but the third?'  
(10) De quel livre n'as-tu lu que le troisième chapitre t?  
'Of which book not have you but read the third chapter?'

In (10) the genitive PP has been moved via [Spec, NP], just as in (8). Spec-Head agreement has turned N into a proper governor for the trace. In (9), on the other hand, one could argue that the trace is not properly governed. This might be due to the fact that, although the PP is moved via [Spec, NP], the empty N cannot be turned into a proper head-governor, because it could be assumed that the empty N is really empty and that Spec-Head agreement is not possible for this reason (see also Rizzi (1990), who states that C° that contains Agr can be turned into a proper head-governor via Spec-Head agreement, whereas an unexpanded C° is inert for government).<sup>2</sup> A sentence like (11) could be excluded on the same grounds as (9):

- (11) \*De quels livres trois e t méritent-ils d'être lus?  
'Of which books three deserve they to be read?'<sup>3</sup>

<sup>2</sup> The ungrammaticality of (9) might also be due to the fact that the PP is not really a genitive PP but rather a partitive PP. Extraction via [Spec, NP] might be forbidden, for that reason. The grammaticality of (i), however, seems to indicate that a partitive PP can be extracted via [Spec, NP]:

(i) De quel livre n'as-tu lu qu'une partie?  
'Of which book not have you read but a part?'

<sup>3</sup> Contrary to (9) and (11), (i) and (ii) are grammatical:

(i) Les livres de Zola, dont je n'ai lu que le troisième, méritent tous d'être lus  
'The books of Zola, of which I not have read but the third, deserve all to be read'  
(ii) Les livres de Zola, dont trois sont des chefs-d'oeuvre, méritent tous d'être lus  
'The books of Zola, of which three are masterpieces, deserve all to be read'

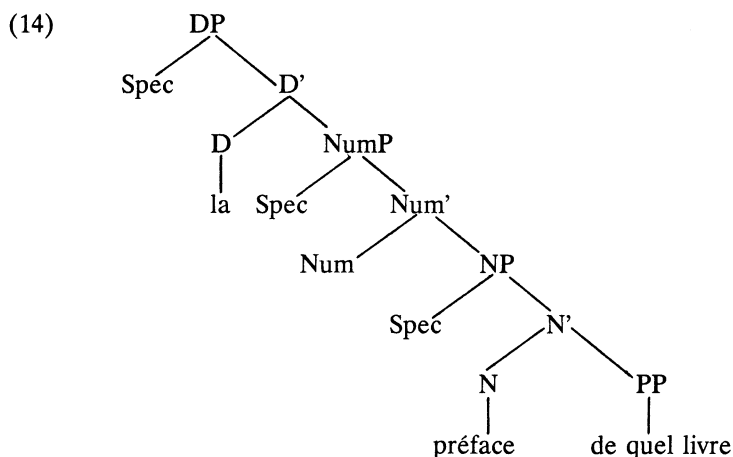
The grammaticality of these sentences can easily be explained if it is assumed (just as Hulk (1982) and Godard (1988) do) that *dont* has been base-generated in a sentence-initial position in these sentences.

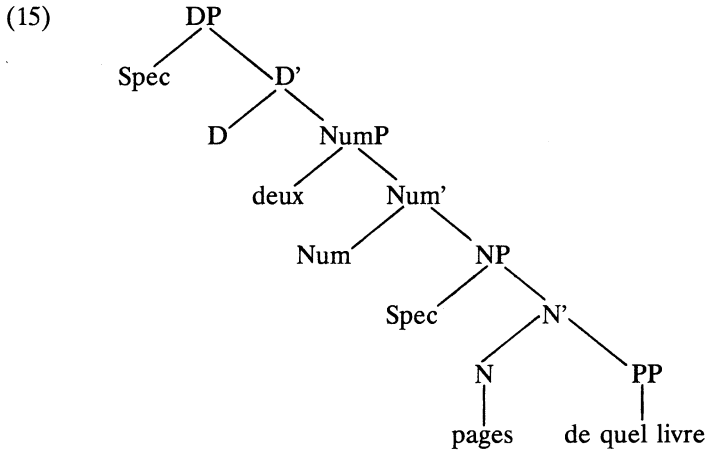
## 2. Functional projections of NP

Rizzi (1990) notes that if [Spec, NP] is already filled, PP-extraction is not possible, because N cannot be turned into a proper governor. This means that [Spec, NP] should not be filled by any determiner, cf. (12) and (13):

- (12) De quel livre n'as-tu lu que *la* préface t?  
 'Of which book not have you read but the preface?'  
 (13) De quel livre n'as-tu lu que *deux* pages t?  
 'Of which book not have you read but two pages?'

I assume that the definite determiner *la* in (12) is a head, D, the head of DP (see Abney 1987). However, the indefinite determiner *deux* in (13) is not a head, in my opinion. I assume it to be the specifier of a NumP (see Ritter 1991). Hereafter I will motivate these assumptions. I assume every NP to be dominated both by a NumP and a DP projection, even if there is only a definite determiner, as in (12) (see (14)), or only an indefinite determiner, as in (13) (see (15)):





In (16), both the head of the DP and [Spec, NumP] are filled, by *les* and *deux*, respectively:

- (16) De quel livre as-tu lu *les deux* premiers chapitres?  
 'Of which book have you read the two first chapters?'

Why should definite determiners be heads, whereas indefinite determiners are specifiers ([Spec, NumP])? Is this distinction motivated? That definite determiners should be heads, whereas indefinite determiners should be specifiers is suggested by the difference in grammaticality between (17) and (18):

- (17) J'en ai lu deux t  
 'I of them have read two'  
 (18) \*J'en ai lu les deux t  
 'I of them have read the two'

I have claimed that the complement of an empty N cannot be extracted out of NP, because its trace cannot be properly governed. Although it would be possible to move the complement of an empty N via [Spec, NP], the empty N could not be turned into a proper head-governor (see the discussion with respect to sentences (9) and (10)). For this reason the trace of *en* in (17) cannot be the complement of an empty head. But since this sentence is grammatical, it has to be assumed that the trace of *en* is the head of the NP

(see also Godard 1988).<sup>4</sup> The difference in grammaticality between (17) and (18) can then easily be explained if it is assumed that *les* in (18) is a head, D, whereas *deux* in (17) (and (18)) is a specifier. The ungrammaticality of (18) is then the result of Relativized Minimality (Rizzi 1990): the trace of *en* cannot be antecedent-governed by *en* because *les* functions as a potential antecedent-governor. The indefinite determiner in (17) is not a head, but a specifier, and, as a result, does not block antecedent-government of the trace by *en* (see also Drijkoningen 1991).<sup>5</sup>

### 3. The [+V] requirement

Although the assumption that NP is dominated by Functional Projections containing one or two determiners, makes it possible for PP to be moved via the empty [Spec, NP], it raises some problems too. Cinque assumes that the complement of a [-V] category cannot be properly governed by this category if it is not possible to turn the [-V] category into a proper governor in some way (see definition (1)). He assumes also that [-V] categories are not able to free their complement of its barrierhood (see definition (3)). Although the definitions in (1) and (3) do not pose a problem for the functional categories I and C, which Cinque assumes to be [+V] categories, they are problematic with respect to functional projections of NP, which are certainly not [+V] categories. Consider (19):

- (19) De quel homme connais-tu  $_{DP}$ [les  $_{NumP}$ [deux  $_{NP}$ [t' soeurs t]]]?  
'Of which man know you the two sisters?'

In (19), movement of the PP from [Spec, NP] should not be possible, because t' would not be properly head-governed (Since Num is not a [+V] category, it is not a proper head-governor, according to the definition in (1)). Further-

<sup>4</sup> In (i), however, the head of the NP is already filled:

(i) J'en ai lu la préface t  
'I of them have read the preface'

What is *en* in that case? A head or a maximal projection? If *en* is a head, movement of *en* out of NP is not possible, because of Relativized Minimality (see Rizzi 1990). Furthermore, the trace will not be properly governed. If *en* is a maximal projection, affixation to a verbal head does not seem to be possible. I assume therefore, that in (i), first the whole NP is moved, via [Spec, NP] to [Spec, DP]. From that point the head *en* is moved (see also Sportiche 1988).

<sup>5</sup> In (16), the indefinite determiner does not count as an A'-specifier, intervening in the A'-chain formed by the trace in [Spec, NP] and the antecedent in [Spec, CP], because it can be assumed that the trace bears a referential index (see Rizzi 1990), and, as a consequence, does not have to be antecedent-governed.

more, there is a barrier between Num and  $t'$  (see definition (3)). Neither is it possible to establish a relation between  $t'$  and its antecedent (through binding, because  $t'$  bears a referential index (see footnote 5)), because NP and NumP are barriers.

In (20), too, head-movement of *en* should result in ungrammaticality, because Num and D are not [+V] categories and, as a consequence, are not proper governors for  $t$  and  $t'$ , respectively, according to the definition in (1). Moreover, NP and NumP are barriers for government, according to the definition in (3):

- (20) J'en ai lu  $_{DP[t', NumP[deux t'_{NP[t]}]]}$   
 'I of them have read two'

Note that although *en* is moved via the intermediate empty head positions to avoid a Minimality violation (see Cinque (1991) for the assumption that even empty heads can create Minimality effects), it is not able to void the barrierhood of the NumP and the NP and to properly head-govern its trace, because it is not a [+V] category.

Since it seems to be the case here that both D and Num are able to free their complement of barrierhood and to properly govern a trace that they command, Cinque's definitions of barrierhood and of the ECP have to be revised. I assume that neither Num and D nor the other functional categories are specified with respect to either a positive or a negative N or V value. The desired effect will be obtained then with definitions as in (21) or (22) (irrelevant parts are omitted):

- (21) *Definition of the ECP (revised)*

A nonpronominal EC has to be properly head-governed.  
 [-V] categories are not proper head-governors.

- (22) *Definition of barrier for government/binding (revised)*

Every maximal projection that is selected by a [-V] category is a barrier for government/binding.

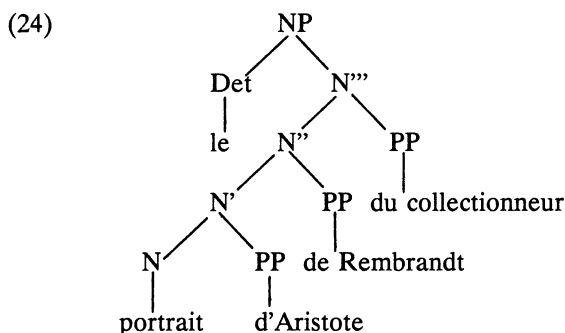
In this manner, it is not necessary to assume that I and C are [+V] categories, as Cinque is forced to do. If all functional categories are not specified with respect to a positive or negative N or V value, they always properly govern their complements and they always free their complement of its barrierhood.

#### 4. NPs with more than one PP

In this section I discuss extraction of PP out of NP if there is more than one PP. A well known example of a DP containing more than one PP is (23) (see Ruwet 1972):

- (23) Le portrait d'Aristote de Rembrandt du collectionneur  
'The portrait of Aristotle of Rembrandt of the collector'

Traditionally, each of these PPs is allocated a different position inside the NP. Also Giorgi and Longobardi (1991) do so, in a structure like the one in (24):



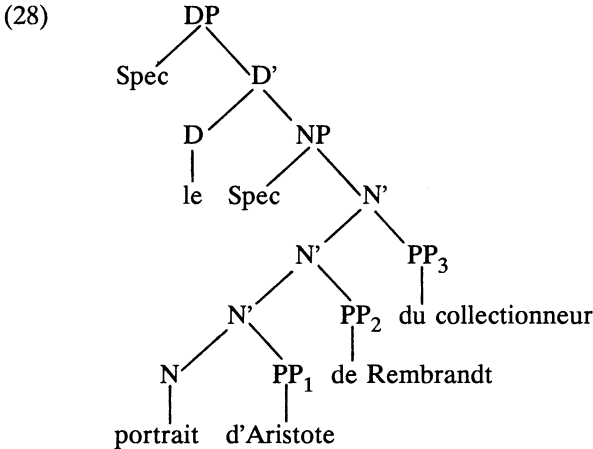
The PP that is the sister of N is the internal argument of N, the PP that is the sister of N' is the external argument and the PP that is the sister of N'' is the possessor. In French, it is possible to move each of the three PPs, provided no other PP higher in the NP is present, see (25)-(27):

- (25) De quel collectionneur as-tu vu les portraits de Rembrandt t?  
'Of which collector have you seen the portraits of Rembrandt?'
- (26) De quel peintre as-tu vu un portrait d'Aristote t?  
'Of which painter have you seen a portrait of Aristotle?'
- (27) De quel philosophe as-tu vu le portrait t?  
'Of which philosopher have you seen the portrait?'

Within a DP analysis, the movement of the external argument, i.e. the PP that is the sister of N', and the movement of the possessor, i.e. the sister of N'', pose a problem. According to the ECP, a nonpronominal empty category has to be properly governed. Properly means: governed by X° inside X', according to Rizzi (1990). Therefore, the trace of the upper two PPs in (24) cannot be properly governed by N, even if N is turned into a proper head-governor via Spec-Head agreement with the moved PP in [Spec, NP]. Also, the trace



cannot be properly governed by another head because N would constitute a Minimality barrier. A possible solution would be to assume that N' is recursive and that PP can form an adjunction to N', as in (28):



Movement of any of these PPs poses no problem then, because the trace will be governed within N' by N, which is turned into a proper head-governor via Spec-Head agreement with the moved PP.<sup>6</sup> Note that the assumption that the PPs are adjuncts makes no difference with respect to the proper head-government requirement: traces of both arguments and adjuncts have to be properly head-governed (see, for example, Rizzi 1990).

However, adopting structure (28) gives rise to a problem in that the PP that is moved must be the upper PP in the NP. In (29) and (30), this is not the case and as a result these sentences are ungrammatical:

- (29) \* De quel peintre as-tu vu les portraits t de ce collectionneur?  
'Of which painter have you seen the portraits of this collector?'

<sup>6</sup> Rizzi does not explicitly state that, in order to be properly head governed, a trace has to be c-commanded by a governing head. If a trace has to be c-commanded by a governing head, movement of PP<sub>2</sub> and PP<sub>3</sub> pose a problem, in (28), at least if the definition of c-command of Chomsky (1986b) is adopted (see (33) and (34)), for these PPs are not c-commanded by N, according to this definition. However, using a definition of c-command as given by Broekhuis and Hoekstra (1990:165) or Li (1990:408) (see (i)) and a definition of exclusion as in Chomsky (1986b:9) (see (ii)), also the upper two PPs are c-commanded by N:

- (i)  $\alpha$  c-commands  $\beta$  if the node that immediately dominates  $\alpha$  does not exclude  $\beta$ .
- (ii)  $\alpha$  excludes  $\beta$  iff no segment of  $\alpha$  dominates  $\beta$ .

- (30) \* De quel philosophe as-tu vu un portrait t de Rembrandt?  
 'Of which philosopher have you seen a portrait of Rembrandt?'

Drijkoningen (1990) explains the ungrammaticality of sentences like (29) and (30) using a revised formulation of Chomsky's (1973) Superiority Condition:

- (31) *Generalized Superiority* (Drijkoningen 1990:62):  
 If X subcategorizes YP, ZP contained in YP is eligible for movement to [Spec, XP] only if the relevant ZP is characterized as superior with respect to any other ZP contained in YP.
- (32) XP<sub>a</sub> is superior to XP<sub>b</sub> iff;  
 (i) XP<sub>a</sub> c-commands XP<sub>b</sub>, and  
 (ii) XP<sub>b</sub> does not c-command XP<sub>a</sub>.

There is a problem, however, with this solution. The Generalized Superiority Condition is based on a c-command relation. A PP that is extracted from an NP has to be superior with respect to other PPs within the NP. With a structure like (28), the Generalized Superiority Condition does not always make the right predictions, at least not if the definitions of c-command and domination of, e.g., Chomsky (1986b) are used:

- (33) *c-command* (Chomsky 1986b:8)  
 $\alpha$  c-commands  $\beta$  iff  $\alpha$  does not dominate  $\beta$  and every  $\gamma$  that dominates  $\alpha$  dominates  $\beta$ .
- (34) *domination* (Chomsky 1986b:7)  
 $\alpha$  is dominated by  $\beta$  only if it is dominated by every segment of  $\beta$ .

For although PP<sub>2</sub> is not superior with respect to PP<sub>3</sub> and PP<sub>1</sub> is not superior with respect to PP<sub>2</sub>, so that the ungrammaticality of (28) and (29) is predicted, PP<sub>3</sub> is not superior with respect to PP<sub>2</sub>, so that (25) would be excluded. A reformulation of the definition of c-command as in footnote 6 is not a possible solution here. Note that neither an explanation in terms of Relativized Minimality is possible here, because the PP-trace bears a referential index (see Rizzi 1990), and, as a consequence, does not have to be antecedent-governed. Furthermore the PPs are adjuncts, and, as a consequence, are not potential antecedent-governors (see Rizzi 1990).

I propose that the reason for the superiority effects is not a syntactic one but a semantic one, viz. Binding. I assume that the PP-trace is an anaphor that has to be bound within a domain that I will define hereafter. A solution in terms of Binding was already proposed by Cinque (1980), but the solution

that I propose here is based on a more recent version of the Binding Theory, that provides a better explanation of the data than the older version.

In order to provide an explanation for the superiority effects, I make use of the version of the Binding Theory of Chomsky (1986a). The relevant parts of the definitions given in Chomsky (1986a:171-172) are the following:

- (35) i. The indexing  $I$  and the pair  $(\alpha, \beta)$  are *compatible* with respect to the binding theory if  $\alpha$  satisfies the binding theory in the local domain  $\beta$  under indexing  $I$ :  
 $I$  is BT-compatible with  $(\alpha, \beta)$  if:
  - (A)  $\alpha$  is an anaphor and is bound in  $\beta$  under  $I$
  - (B)  $\beta$  is a pronominal and is free in  $\beta$  under  $I$
  - (C)  $\alpha$  is an r-expression and is free in  $\beta$  under  $I$
- ii. Licensing condition for a category  $\alpha$  governed by  $\Gamma$  in the expression  $E$  with indexing  $I$ :  
 For some  $\beta$ ,  $I$  is BT-compatible with  $(\alpha, \beta)$ :
  - (i) ....
  - (ii)  $\alpha$  is an anaphor or pronominal and  $\beta$  is the least Complete Functional Complex containing  $\Gamma$  for which there is an indexing  $I$  BT-compatible with  $(\alpha, \beta)$

The definition of Complete Functional Complex I use in this paper is the one of Giorgi in Giorgi and Longobardi (1991:54-55):

- (36)  $\beta$  is a Complete Functional Complex iff it meets at least one of the following requirements:
  - a. it is the domain in which all the  $\Theta$ -roles pertaining to a lexical head are assigned
  - b. it is the domain in which all the grammatical functions pertaining to that head are realized

As Giorgi notes, in the case of a referential NP, the *least* CFC will thus be the minimal projection (even non-maximal) which satisfies either (a) or (b).

A PP that is not the most prominent PP within the NP cannot be extracted, because the least CFC for which there is a BT-compatible indexing is the domain dominated by the most prominent  $N'$ , for this is the domain in which all  $\Theta$ -roles pertaining to  $N$  are assigned. However, the trace of the extracted PP is not bound within  $N'$  but within NP, by its antecedent in [Spec, NP].

A PP that is the most prominent PP within the NP can always be extracted, because  $N'$  is not the least CFC for which there is a BT-compatible

indexing. The trace can then be correctly bound by its antecedent in [Spec, NP].

### 5. Conclusion

In this paper I have adopted the idea of Cinque (1991) that N is not a proper governor in itself but can become one via Spec-Head agreement, but I have shown, with examples from French, that some provisos are needed in order to make the right predictions in some cases of extraction out of NP. Firstly, I have claimed that Spec-Head agreement should not be able to turn an empty N into a proper governor. Secondly, I have shown that Cinque's [+V] requirement is too strong, because Functional Projections of NP can function as proper governors, and I have revised it. Finally, I have claimed that, if there is more than one PP within the NP, each of the PPs should be dominated by N', in a layered structure. The fact that only the most prominent PP can be extracted can be explained by means of Binding if the definition of Complete Functional Complex of Giorgi and Longobardi (1991) is used.

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