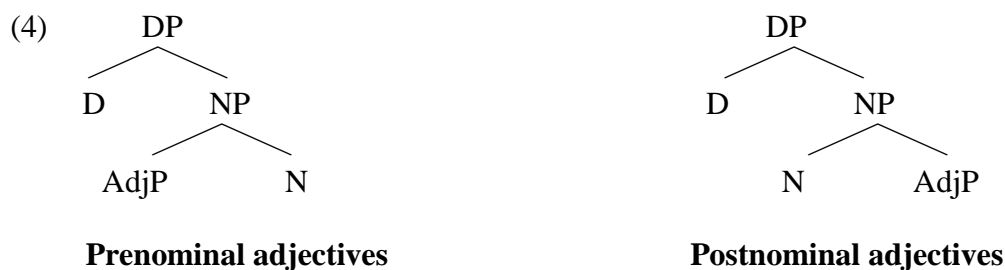
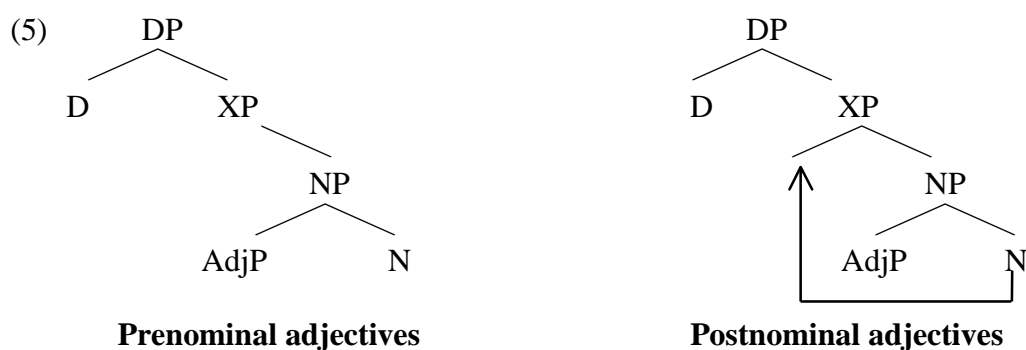


- c. une voiture splendide/minuscule
 a car splendid/tiny
- d. une splendide/minuscule voiture
 a splendid/tiny car

Following the comparative perspective of Principles & Parameters theory (Chomsky & Lasnik 1992), the variations observed among languages with respect to the pre/postnominal placement of attributive adjectives may have many possible explanations. The widespread standard analysis given within the Government & Binding framework relies on the directionality of attachment of adjectives. The prenominal placement of attributive adjectives, say in English and partially in Romance, results from the left attachment of adjectives to the nominal phrase, either as the specifier of NP following Abney's (1987) DP-hypothesis or in a position left-adjoined to NP. In contrast, the postnominal placement of adjectives, as in Hebrew and partially in Romance, derives from their occurrence in a right-adjoined position. This is roughly represented in (4).



More recently, the restriction of right-attachment to complements, as advocated by Kayne (1994) in his antisymmetry theory and adopted by Chomsky (1995), leads one to consider the possibility that postnominal adjuncts are not in a right-hand position, but that their linear placement is affected by leftward movement of the noun. Following the N-movement analysis advanced by Bernstein (1991), and developed by Cinque (1994) within the framework of a Spec-head analysis of adjective licensing (extended to adverbs in Cinque 1999), the noun can raise as a head. This is represented in (5).



As far as French is concerned, Lamarche (1991) and Bouchard (1998) propose that prenominal adjectives are heads adjoined (i.e. incorporated) to the noun, while postnominal adjectives are either right-adjoined to NP (Lamarche) or merged as complement of N (Bouchard). We will return to this kind of analysis in section 5.

The left/right-attachment and N-movement analyses of adjective positioning make different predictions with respect to adjective ordering in prenominal vs. postnominal

contexts. The N-movement approach is based on the strict merger of adjectives in the DP-structure, and hence predicts that the order of stacked adjectives is the same in a prenominal context as in a postnominal context (see Cinque 1994 for a detailed discussion). This is sometimes the case, as in Irish (Sproat & Shih 1988) or in some Romance contexts. This is shown in (6) and (7).

- (6) a. English : a large green cup.
 b. Irish : cupán mór uaine
 cup large green
 ‘green large cup’
- (7) a. English: a [round₁] [red₂] chair.
 b. French: une chaise [ronde₁] [rouge₂]

Nonetheless, the mirror image ordering of postnominal adjectives with respect to prenominal adjectives is also attested to cross-linguistically, as pointed out by Sproat & Shih (1988). For instance, Shlonsky (2000) shows that in Hebrew the mirror image effect is produced in the sequences of postnominal adjectives. These data are to be expected following the left/right-attachment analysis of adjective positioning. The level of attachment of adjectives on the left (by adjunction) mirrors the level of attachment of adjectives on the right. In this respect, Lamarche (1991) mentions some French cases in which the ordering of postnominal adjectives is the mirror image of the ordering of prenominal adjectives found in English. On the basis of (8), Lamarche argues against a N-movement approach to adjective ordering.

- (8) a. une voiture [rouge₂] [splendide₁] vs. a [beautiful₁] [red₂] car
 b. un fruit [orange₂] [délécieux₁] vs. a [delicious₁] [orange₂] fruit²

Cinque (1994) replies to Lamarche’s criticism in arguing that the right-hand postnominal adjectives in (8) are not attributive adjectives (“adjectif épithète”), but actually predicative adjectives which are generated/merged in a predicative phrase position on the right of the noun, hence their final position. I will return to this analysis in section 4.3.

This paper raises several questions related to the formal licensing of attributive adjective distribution. Mainly, the discussion deals with the interaction of the structural properties of adjectives with their semantic properties, i.e. at the level of the syntax-semantics interface. Before treating this question, we will give a survey of the typology of attributive adjectives and try to bring out their natural semantic classes. Another question that will be discussed in this paper concerns the link between the positioning of attributive adjectives and the structure of nominal phrases. As adjuncts adjectives occur in non-argumental positions, i.e. in adjunction positions and/or specifier positions. The distribution of adjectives around the noun as well as their inner ordering give clues to the inner structure of nominal phrases. We must also take into consideration movement possibilities within DP, since they affect the linear placement of adjectives. Finally, external interface conditions (phonological, pragmatic, stylistic conditions) can also have effects on the placement of adjectives.

²The corresponding Hebrew examples will be as in (i) and (ii).

- (i) mexonit ‘aduma yafa
 car red beautiful
 ‘a beautiful red car’
- (ii) pri katom ta’im
 fruit orange tatsy
 ‘a tasty orange fruit’

Taking into account the above questions, the paper is organized as follows. Section 2 deals with the general question of the syntax-semantics interface for adjunct licensing. Section 3 presents the classification of adjectives based on their semantic properties. In section 4, the long-standing question of adjective positions within DP is tackled from both a structural (adjunction, specifier, head, site of attachment) and semantic (relation between position and interpretation) point of view. In section 5, different types of DP-internal movement are discussed (X° -movement, cyclic XP-movement, remnant XP-movement, pied-piping “snowballing” XP-movement), especially with regard to their consequences on the surface placement of adjectives and their respective ordering in the pre- and postnominal domains. Section 6 contains the conclusion.

2. THE SYNTAX-SEMANTICS INTERFACE

The basic idea of the present work consists of correlating the syntactic position of adjectives with their interpretation. To this end, a syntactico-semantic explanation will be set out for (i) the placement of adjectives with respect to the noun and (ii) the order of co-occurring adjectives.

The question underlying the above hypothesis concerns mainly the syntax-semantics interface and the architecture of the grammar. Principles & Parameters theory (henceforth P & P) relies on a modular conception of the grammar (as a cognitive system) in which the Lexicon feeds the Syntax. This in turn feeds the phonological component (PF) and the semantic component (LF). In the minimalist theory of grammar (conceived as a computational system), linguistic information is also transferred from the lexical component to the interface levels corresponding to PF (sound) and LF (meaning). The role of syntax is to combine linguistic expressions together (forming maximal categories from minimal categories), to displace them such that (some of) their features can be licensed (Checking Theory). Spell-Out is the point of the derivation where these features are sent to the interface components for interpretation. In Chomsky (1995) Spell-Out is a single access point to LF (and PF), whereas in Chomsky (1998) multiple Spell-Outs give access to the interpretation components at any point during the derivation.

We will adopt here the P & P framework with the Single Output model of Spell-Out. As far as attributive adjectives are concerned, they are endowed with lexical features (categorical, semantic) which are checked by the merger of the adjectives in the nominal structure. Checking Theory plays a crucial role here. The merger of adjectives results in the checking of [+Interpretable] features (similarly to θ -features).³ Thus, these features are checked before Spell-Out, but they cannot be erased. They are interpretable at LF⁴ (see section 3 below concerning the semantic typology of attributive adjectives).

3. TYPOLOGY OF ADJECTIVES

As we know, more than one attributive adjective can modify a noun. From a distributional point of view, attributive adjectives function as satellites of the noun. They occur between the determiner and the noun in Germanic languages. In Romance, they can occur either before the noun (but after the determiner) or after the noun. The respective position of adjectives co-occurring in the neighborhood of the noun is certainly not arbitrary provided that the same

³ Checking by Merge is presumably restricted to [+Interpretable] features.

⁴ We may assume that there is no LF-checking, hence no LF-movement in the sense of Kayne (1998). Consequently, there is no quantifier raising at LF for adverbs (as in Travis 1988, Laenzlinger 1998).

sequential ordering is found in many languages (see Sproat & Shih 1988 for a cross-linguistic survey). If we look closely at some of the distributional criteria on adjective placement, we can create classes of adjectives that are semantically coherent. However, the classification of adjectives differs in function to the type of nouns they can modify, such as object denoting nouns and Event nominals. The latter can be modified by the classes of adjectives in (9) according to a strict ordering constraint, as illustrated in (10) for English (from Cinque 1994).⁵

(9) Adj_{speaker-oriented} > Adj_{subject-oriented} > Adj_{manner} > Adj_{thematic}

(10) the probable clumsy immediate American reaction to the offense

As for object denoting nouns, they can be modified by the types of adjectives listed in (11) according to a specific sequential order, as illustrated in (12).

(11) Adj_{quantification} > Adj_{quality} > Adj_{size} > Adj_{shape} > Adj_{color} > Adj_{nationality}

(12) a. numerous wonderful big American cars
b. various round black Egyptian masks

The present work will be concerned essentially with object denoting nouns. Scott (1998) refines the classification in (11) by using further distributional tests on adjective ordering. The typology is given in (13) with the adjectives occurring in their canonical sequential order. This classification holds for non-complex and result nominals.

(13) Ordinal > Cardinal > Subjective Comment > Evidential > Size > Length > Height > Speed > Depth > Width > Temperature > Wetness > Age > Shape > Color > Nationality/Origin > Material

(Scott 1998:71)

For ease of simplification, some classes of adjacent adjectives given by Scott (1998) can be grouped together on the basis of the semantic meta-classes in (14).

(14) [QUANTIF Ordinal > Cardinal] > [SPEAK-ORIENT Subjective Comment > Evidential] > [INTERNAL PHYSIC PROPERTY Size > Length > Height > Speed > Depth > Width] > [MEASURE Weight > Temperature > ?Wetness > Age] > [EXTERNAL PHYSIC PROPERTY Shape > Color > Nationality/Origin > Material]

Two main questions arise from the typological work on attributive adjectives. First, the sequential ordering constraint on adjective co-occurrences is supposed to be structure-dependent. In this sense, it is essential to identify the exact positions of attributive adjectives in the nominal structure in function to their semantic specifications. The second question concerns the licensing principle for the merger of adjectives in their appropriate position.

The first question underlies the working hypothesis that adjectival sequential ordering as observed in (13-14) can be expressed in terms of a hierarchy of positions associated with distinct classes of adjectives. In other words, the hierarchy of DP-internal functional

⁵ Interestingly, the adjective ordering in (9) parallels the hierarchy of adverbs, as discussed in Valois (1991), Cinque (1994, 1999). Compare (10) with (i).

(i) They probably have clumsily reacted immediately to your letter.

projections dictates the sequential order of adjectives. The second question is related to the syntax-semantics interface conditions discussed in section 2. Following Chomsky's (1991, 1995) Checking Theory, the licensing of semantic features – that is to say scope properties – can be expressed in terms of feature checking done in specific configurations.⁶ These formal aspects will be further discussed in the next section.

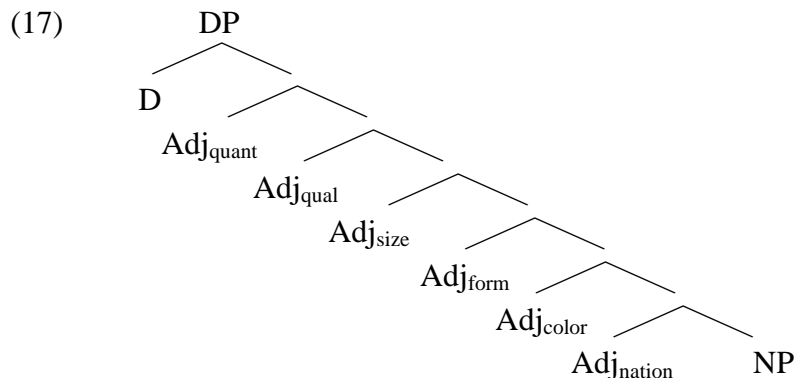
4. DP-INTERNAL ADJECTIVE POSITIONING AND ORDERING

The sequential order of adjectives given in (13-14) is expressed transparently in English: all attributive adjectives occur between the determiner and the noun (i.e. between D and N) in an adjacency configuration. This is illustrated in the nominal expression in (15), on the basis of the simplified ordering classification in (16) (cited by Sproat and Shih 1988, 1991 and Cinque 1994 for object denoting nouns).

(15) different nice little round white tables / numerous beautiful round Egyptian masks

(16) $D > \text{Adj}_{\text{quant}} > \text{Adj}_{\text{qual}} > \text{Adj}_{\text{size}} > \text{Adj}_{\text{form}} > \text{Adj}_{\text{color}} > \text{Adj}_{\text{nationality}} > N$

Following Abney's (1987) DP-structure, the intervening adjectives between D, the highest functional head, and N, the lowest lexical head, are positioned in such a way that their top-down hierarchy of merging corresponds to their left-to-right ordering. This is represented in (17).



There is a long-standing debate in the literature as to the nature of the DP-internal adjectival positions. Most recently, two alternative hypotheses of analysis have been pursued for adjective (and adverb) positioning: (i) the adjunction-based approach (Sproat & Shih 1988, 1990, Bernstein 1991, Lamarche 1991) and (ii) the specifier-based approach (Cinque 1994, Scott 1998).⁷ As argued by Laenzlinger (2000) with respect to adverbs, the specifier-

⁶ Note that scope can also be expressed independently of syntax (for instance, not involving command relations), that is to say, in purely semantic terms (see Szabolcsi 1997 and references cited there).

⁷ There is a third approach mentioned in the literature (originally Abney 1987) according to which the adjective is the head of a projection that is part of the backbone of the DP-structure, as represented in (i).

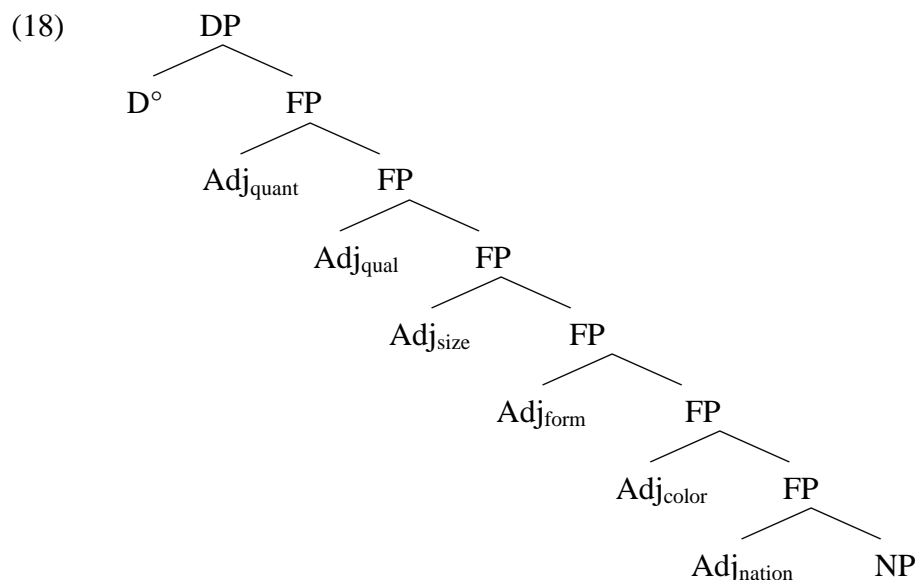
(i) $[_{DP} \ D^\circ \ [_{AdjP} \ \text{Adj}^\circ \ [_{AdjP} \ \text{Adj}^\circ \ [_{NP} \ N^\circ]]]]$

I will not take this analysis into account for two reasons. First, the sequence of functional projections in (i) cannot be licensed as such on the grounds of categorial selection. Second, it is quite difficult on the basis of the structure of noun phrases in (i) to derive alternatively the pre-/postposition of adjectives with respect to the noun they modify (see Laenzlinger 2000 for similar arguments applying to adverbs).

based analysis is more compatible with Checking Theory than the adjunction-based analysis. Following Chomsky’s (1995) definition of Checking domain, there are two configurations that hold for feature checking: Spec-head and head-head. Adjunction of a head to a head leads to a legitimate checking configuration, but adjunction to XP does not give rise to a possible checking relation between the adjoined element and X° .⁸

Regarding the head-head checking relation, some authors (Lamarche 1991, Bouchard 1998) have proposed that prenominal adjectives, at least in French, are heads incorporated into the noun. Incorporation is prototypic of a head-head checking configuration. However, there are some strong arguments against the incorporation status of attributive adjectives in French, i.e. their clitic status. On the basis of Kayne’s (1975) tests for clitic-hood for pronouns, one observes that prenominal adjectives can be modified (*une extrêmement belle fille* ‘an extremely beautiful girl’), focalized, (*une SUPERBE voiture*’), coordinated (*une belle et gentille fille*’), etc. Hence, they cannot qualify as clitics incorporated into the noun (see section 5.3 where weak adjectives are discussed). Let us assume that all adjectives project maximally and merge as specifiers of the category with which they enter into a checking relation.

Furthermore, the adjunction-based analysis of prenominal adjectives does not readily account for the hierarchy illustrated in (17), at least in configurational terms, since adjunction is an intrinsically unordered operation (see Laenzlinger (1998:73)). If all attributive adjectives are adjoined to NP, the question then is to explain why they do so in the hierarchical order given in (17). As for the specifier-based analysis, it can account for the hierarchy of adjectives in (17) if we follow two basic assumptions. First, the adjective-related specifier is unique in a given projection (against Chomsky’s 1995 Multiple Specifier Hypothesis⁹); second, there are as much adjective-related functional projections as there are adjectives occurring between the determiner and the noun. This is represented in (18).



⁸ Chomsky (1995) mentions the case of adjunction to the specifier of XP leading to a legitimate checking configuration between the adjoined element and the head of XP. However, this case is not relevant to the positioning of attributive adjectives.

⁹ Note that Chomsky’s (1995) Multiple Specifier Hypothesis raises exactly the same problems of unordering and overgeneration as does the theory of free adjunction.

The categorial label of these FPs remain to be identified For the time being, they will be referred to as QuantP, QualP, SizeP, etc. Adjectives are merged as the specifier of their corresponding FP categories.

4.1. The French case

Adjectives of form, color and nationality are postnominal in French, and their left-to-right sequential ordering has been given in (18). As for quantificational adjectives, they are preferably prenominal, although few of them can be postnominal (e.g. *talents divers*). Adjectives of quality and size are found both in prenominal and postnominal contexts. The distributional properties of French attributive adjectives are illustrated in (19).

- (19) a. une table ronde blanche
 a table round white
 ‘a round white table’
 b. une voiture rouge italienne
 a car red Italian
 ‘a red Italian car’
 c. de nombreuses belles petites voitures
 numerous nice small cars
 ‘numerous nice small cars’
 d. de belles voitures énormes
 nice cars enormous
 ‘nice enormous cars’
 e. de petites voitures magnifiques
 small car beautiful
 ‘beautiful small cars’

The fact that some adjectives have an ambivalent distribution raises technical issues regarding their structural analysis. First, a subset of them can change meaning, which means that they merge in different positions in the DP-structure. Second, those that keep their intrinsic meaning display some particular properties when they are prenominal, such as focus, emphasis, subjectivity. Usage factors (frequency, collocation) can also force prenominalization (see Grevisse 1980), which strengthens the semantic link between the adjective and the noun (see section 5.3 for further details).

- (20) a. un grand homme (moral quality) / un homme grand (physical quality)
 a great man a man tall
 b. une voiture superbe / une SUPERBE voiture
 a car splendid / a beautiful car
 c. une maison (toute) petite/ une petite maison (use/frequency)
 a house (all) small/ a small house

As illustrated in (21), the hierarchy pattern in (18) does not apply transparently to adjectives of quality and size in French. When they co-occur within the noun phrase, the adjective of size precedes the noun, while the adjective of quality follows it, as in (21a). In prenominal contexts, they behave in the same way as in English in accordance with (18), as illustrated in (21b). In contrast, they have a surprising behavior in postnominal contexts. They can follow adjectives of color and nationality in contradiction with the ordering pattern given in (18). This is illustrated in (21c-d).

- (21) a. une énorme maison magnifique vs. *une magnifique maison énorme
 a enormous house beautiful a beautiful house enormous
 ‘a beautiful enormous house’
- b. une belle petite voiture vs. *une petite belle voiture
 a nice small car a small nice car
 ‘a nice small car’
- c. une voiture italienne magnifique vs. ??une voiture magnifique italienne
 une voiture rouge magnifique ??une voiture magnifique rouge
 a car Italian/red beautiful a car beautiful red/Italian
 ‘a beautiful red/Italian car’ (neutral intonation)
- d. une fusée américaine/rouge énorme vs. ??une fusée énorme rouge¹⁰
 a rocket American/red huge a rocket huge red
 ‘an enormous American/red rocket’

As noted by Lamarche (1991), the N-movement analysis encounters serious problems when analyzing (21a) and (21c-d). Moving N past Adj_{size} in (18) leads to the surface order [(N) Adj_{quality} (N) Adj_{size}], which is not the one expressed in (21a). The same line of argumentation holds for (21c-d) involving adjectives of size/quality and adjectives of color and nationality. Cinque (1994) replies to Lamarche’s (1991) objection by arguing that the postnominal adjectives in (21) do not have an attributive function (direct modification following Sproat & Shih terminology), but a predicative function (indirect modification). Crucially, the ordering constraint derived from (18) holds only for attributive adjectives. To pursue this discussion on appropriate grounds, we have to sort out the semantic properties of these adjectives with respect to their attributive and predicative functions.

4.2. Semantic (type) classification

The main hypothesis of the analysis advanced in section 2 consisted of mapping out the interpretation of attributive adjectives to their position within the noun phrase on the basis of a semantic typology of adjectives. The primary distinction that can be made among attributive adjectives following Kamp (1975) is the one between “predicative” and “non-predicative” adjectives. Predicative adjectives are those that are likely to occur in the copular construction [NP *be/être* Adj]. This is true for adjectives of size, quality, shape, color, and identity: *Jean est beau/grand/blanc/français* (‘Jean is handsome/tall/white/French’). They denote a property predicated on the set of individuals denoted by the noun. Adjectives of quantity, time, subjective appreciation, and epistemic adjectives qualify as non-predicative, provided that they cannot occur in a copular construction: **mes élèves sont futurs* (‘my students are future’), **mes élèves sont prétendus* (‘my students are supposed’), **ce chercheur est faux* (‘this researcher is false’), **cet homme est grand* (‘this man is great’), **cet église est ancienne* (‘this church is former’). The function of modification of these adjectives does not apply to the set of individuals denoted by the noun, but rather to the assignment function itself of the reference set (see Bouchard 1988:143ff). With reference to the hierarchy in (18), one observes that non-predicative adjectives occur higher in the nominal structure than predicative adjectives. On the basis of this distinctive classification, Cinque’s (1994) analysis of (21) as involving predicative postnominal adjectives is not tenable. The distinction between

¹⁰ The example below, however, is considered slightly better:

- (i) ?une fusée énorme américaine
 a rocket enormous American

predicative and non-predicative adjectives is inherent to the adjectives themselves, not to their position.¹¹

A further distinction can apply to predicative adjectives in that they can be intersective or non-intersective. The denotation of an intersective adjective and the noun it modifies corresponds to the intersection of the individuals denoted by the noun and those denoted by the adjective. This is the case for *chien* and *vert* in *chien vert* ('green dog'). As for non-intersective (predicative) adjectives, they modify only a property expressed by the noun. This is the case in *bon élève* ('good student'). Non-intersective adjectives usually involve subjectivity (e.g. *un pauvre type* 'a poor guy'), while objectivity is characteristic of predicative adjectives like adjectives of size(?)¹², form, color, nationality. The distinction between subjective and objective adjectives also holds for non-predicative adjectives. Quantificational and temporal adjectives involve objective properties, whereas epistemic and moral adjectives involve a large part of subjectivity.

On the basis of the distinctive features [objective/subjective] and [predicative/non predicative], the distributional hierarchy in (18) can be mapped upon the semantic hierarchy in (22), which results in the complex nominal structure in (23).

So far, if one applies the above distinctions to the distributional hierarchy in (18), one obtains a semantic hierarchy that goes as follows:¹³

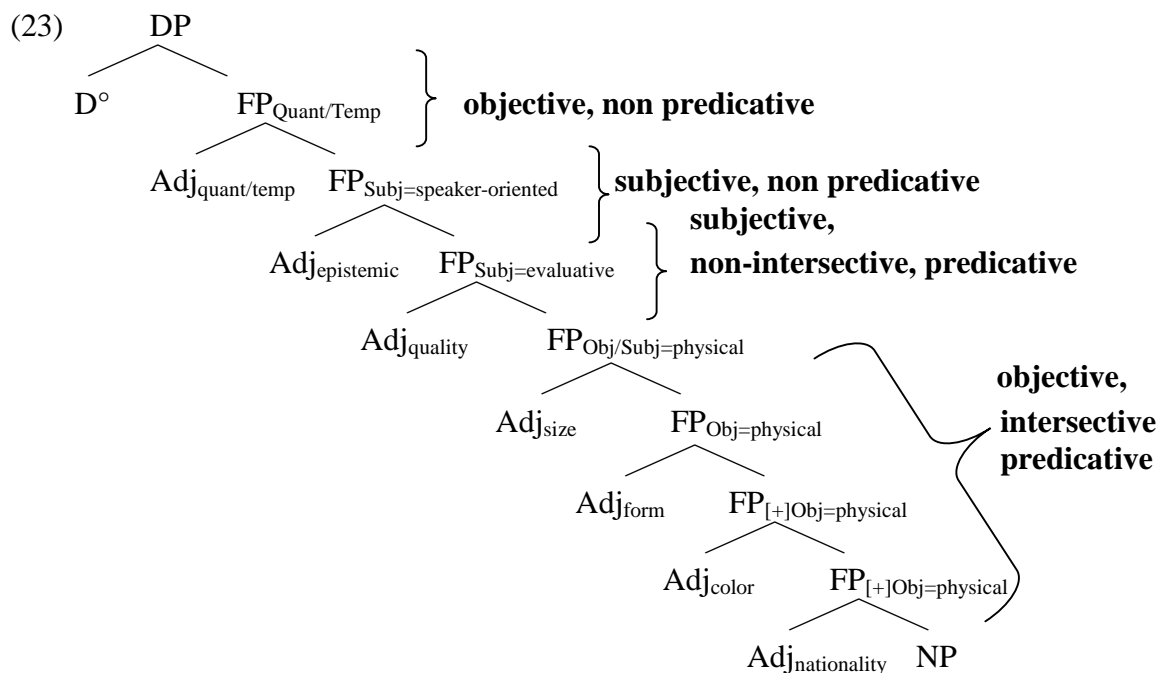
- (22) objective non predicative > subjective non predicative > non-intersective predicative > intersective predicative

¹¹ Cinque (1994) maybe refers to another type of predication, some sort of secondary predication, like the one involved with heavy, parenthetical postnominal adjectives (see section 4.3).

- (i) un homme français entièrement nu
a man French entirely naked
- (ii) une femme blanche dénuée de tout scrupule
a woman white devoided of any scruples
- (iii) une femme italienne, tout ce qu'il y de plus belle / la plus belle.
a woman Italian who is the prettiest

¹² Note that size is not an absolute objective physical quality, since it involves a scale of comparison (e.g. *un petit éléphant* is still a big animal).

¹³ See Laenzlinger & Etchegoyhen (1999) for an implementation of this type of analysis for parsing and generation of French nominal phrases.



The primary idea is that the syntactic hierarchy of adjectives is the reflex of their semantic hierarchy. This analysis departs from Sproat & Shih’s (1991) psycholinguistic explanation for the hierarchy of adjectives: “more (less) absolute adjectives are more (less) distant from the noun” in function to the scale of computation needed for the interpretation of the attributive adjectives. The hierarchy in (23) is established on semantic grounds. The resulting configuration can serve as a basis for computing adjective scope properties in terms of (c-)command relations. Still, the order among objective adjectives, i.e. [form > color > identity] is left unexplained, unless we assume that a scale of objectivity is involved: More objective adjectives are closer to the noun than less objective ones (including subjective adjectives).

4.3. Strongly postnominal adjectives

We have seen that English attributive adjectives are basically prenominal. However, there exist some adjectival phrases that can only occur in a postnominal position. This is the case for subcategorizing adjectives and external adjectival predicates, as illustrated in (24).

- (24) a. a man all naked vs. *an all naked man
 b. a man proud of his son vs. *a proud of his son man

These types of adjectives are also strongly postnominal in French. More precisely, they must occur on the right of other postnominal adjectives, as shown in (25).

- (25) a. un homme tout nu vs. *un tout nu homme
 a man all naked
 b. un homme fier de son fils vs. *un fier de son fils homme
 a man proud of his son
 c. un homme gentil tout nu/fier de son fils
 a man kind all naked/proud of his son

vs. *un homme tout nu/fier de son fils

These adjectives do not function as attributive adjectives, but rather as external (or secondary) predicates. Regarding the structural analysis of these predicates, it is assumed that a predicative projection, say PredP, hosts them in the nominal structure. This projection is linearly on the right of the position of adjectives of nationality: *un homme français tout nu* ('a French man all naked'). In terms of structural hierarchy, this means that the predicative projection is lower than the projection with which the adjective of nationality merges as its specifier, as represented in (26). The linear surface order in (25) can be derived from movement of the noun (or a projection containing the noun; see section 5 for a detailed analysis).

(26) [DP [Adj_{nationality} [PredP [NP]]]]

Consider now the co-occurrence of postnominal adjectives with PP complements and adjuncts (see Lamarche 1991 and Cinque 1994 for discussion). The French sentences in (27a-b) show that the order between a PP complement/adjunct and a postnominal adjective is relatively free. Note that one order can be favored over another if there is a strong lexico-semantic link between the noun and the postnominal adjective. Thus, in (27c-d), the noun and the PP adjunct form a complex expression in which the semantic link between the noun and the preposition phrase is strengthened by lexical factors (semi-compounds, collocations) and/or factors of usage (frequency). A configuration in which the noun and the PP are adjacent is strongly preferred, as shown by the contrast between (27c) and (27d).¹⁴ The same explanation holds for the contrast between (27e) and (27f), where the tight relation between the noun and the postnominal adjectives requires adjacency.

- (27) a. une voiture rouge/française/magnifique de course
 a car red /French /beautiful of race
 'a red / French / beautiful racing car
- b. une voiture de course rouge/française/magnifique
 a car of race red /French/beautiful
- c. un homme d'église français/honnête
 a man of church French/honest
 'a honest French clergyman'
- d. ?? un homme français/honnête d'église
 a man French / honest of church
- e. un homme bon de la région
 a man good from the area
 'a good man from the area'
- f. ?? un homme de la région bon
 a man from the area good

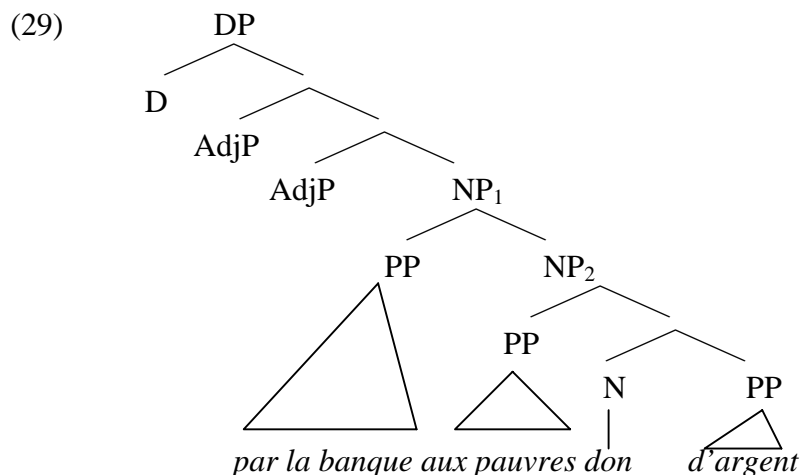
As will be shown in section 6.3, the occurrence of PPs within the postnominal domain also affects the placement of predicative adjectives (merged as the specifier of PredP). On the basis of the facts in (28), there appears to be some optionality in the ordering between the PP and the predicative adjective, unless the PP forms a strong lexico-semantic unit with the noun as in (28c-d).

¹⁴ The adjacency configuration is forced within lexical compounds, such as *pommes de terre* ('potatoes'), since they are stored as lexical units: *une pomme de terre ronde* ('a round potato') vs. **une pomme ronde de terre*.

- (28) a. un homme tout nu de talent (free PP adjunct)
 a man all naked of talent
 b. un homme de talent tout nu
 a man of talent all naked
 c. un homme d'église tout nu (collocation)
 a man of church all naked
 'a clergyman all naked'
 d. ??un homme tout nu d'église
 a man all naked of church

From a structural point of view, the placement of the prepositional phrase in the DP structure depends on its semantic function. A postnominal prepositional phrase can be an argument or an adjunct. More precisely, it can be a subcategorized argument (*fidélité à Marie*), a semantically/thematically related element (*la destruction de la ville, la tante de mon père, le ministre de la justice*) or an adjunct modifier (*un homme de grande taille, un acte de courage*). If the prepositional phrase is a true complement, it merges with N as its complement. If it is an adjunct, it is merged as the specifier of some NP-related projection, in the spirit of Kayne's (1994) LCA. As the specifier is always on the left of its projection, the surface order [N+PP] is obtained after noun (projection) raising.¹⁵

We know that more than one prepositional phrase can occur in the postnominal field. In the case of two prepositional phrases, there can be two PP arguments following the noun (*don d'argent aux pauvres* 'gift of money to the poor'), one PP argument and one PP adjunct (*don d'argent de bon cœur* 'gift of money with good heart'), or two PP adjuncts (*un homme de talent de grande taille* 'a man of talent of big size'). Following Kayne's very constrained theory of phrase structure (one adjoined specifier), one is led to assume that the NP projection is assigned a more complex structure than just a lexical projection for the merger of multiple PPs. By analogy with the VP-shell analysis (Larson 1988, Chomsky 1995), it has been proposed that the NP category contains a recursive structure like (29) (see Bosque & Picallo 1986).

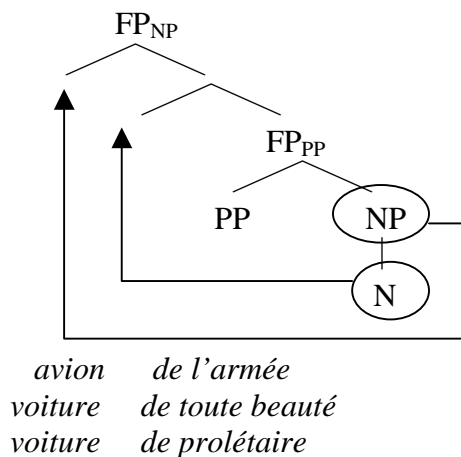


¹⁵ We leave aside the previously standard analysis of postposed nominal adjuncts as right-adjoined to NP, simply because it is not compatible with Kayne's LCA. In the framework of this paper, the position of specifier is used for the merger of adjective and prepositional adjuncts.

As with the verb's arguments in the VP-shell, the noun's arguments are merged in the NP-shell according to a specific hierarchical configuration. The external argument merges with NP₁ as its specifier, while the "direct" (i.e. theme) internal argument merges with NP₂ as its complement. When a second "internal" (i.e. beneficiary) argument is selected, it merges with NP₂ as its specifier. This illustrated in (29) with *un don d'argent aux pauvres par la banque* (see section 6.3 for the derivation of the surface order).

Postnominal PP-arguments are generally associated with derived nominals. With object-denoting nouns, postnominal prepositional phrases function as adjuncts (i.e. modifiers) in most cases. We have already mentioned the possibility that these PP adjuncts can be part of a collocation or an idiomatic expression (*voiture de formule 1*, *match de football*, *avion de chasse*, etc.). In this case, they presumably merge with N as its complement and, thus, constitute a unit with the noun at the root. As free expressions, the PP adjuncts behave as modifiers in the same way as adjectives, the only difference being their category. In this sense, PP modifiers plausibly merge as specifiers of a functional projection distinct from NP, denoted FP_{pp} in (30). This projection licenses the occurrence of PP adjuncts on semantic grounds, although it remains closely tied to the noun by immediately dominating the NP projection, as represented in (30). The linear order obtained so far is [PP + N], which is not a correct output sequence. The order [N + PP] is derived by subsequent noun raising, an instance of either N-movement or NP-movement, as represented in (30) (see section 6.3 for a detailed analysis). Noun (projection) raising will be examined in the next section.

(30)



5. TYPES OF DP-INTERNAL MOVEMENT

5.1. Noun raising: N-movement vs. NP-movement

Following a strict phrase structure theory in which no right-adjunction is allowed (mainly Kayne 1994), the linear order [noun + adjunct] has to be derived through movement of the noun past the adjectives. Bernstein (1991) and Cinque (1994), among others, propose that noun raising is an instance of N-movement. By analogy with Pollock's analysis of the [V, Adv] order in terms of verb movement, the order [N Adj] results from nominal head (N^o) movement past the adjective. Since English displays the surface sequence [Adj + N], as in (31a), no N-movement is involved within the noun phrase (base order). On the contrary, the corresponding French nominal expression in (31b) shows that the noun is raised beyond the adjective.

- (31) a. a French car
 b. une [voiture]_N française [t]_N
 c. ein Französischer Wagen

The N-movement approach encounters three types of difficulties. First, the analogy with V-movement is weakened by the difference in nature between N-movement and V-movement. The latter clearly involves morphological properties (number and person at least), while the former seems not to rely solely on morphological evidence. If we consider German, we note that the nominal system in German is morphologically as strong as in French as far as gender and number are concerned. Still, the attributive adjective is prenominal in (31c). Second, N-movement in French can be qualified as short and also optional in some contexts. This is illustrated in the structure in (32) where the noun must move past the adjective of color, although it cannot move past the quantificational adjective. Besides, the noun optionally raises past an adjective of quality, as shown in (32c).

- (32) a. la maison rouge => *la rouge maison
 the house red
 'the red house'
 b. les maintes raisons => *les raisons maintes
 the various reasons
 c. une splendide voiture => une voiture splendide
 a splendid car

Third, there is not always a linear correspondence between French and English left-to-right sequences of adjectives. Compare (33a) with (33b).

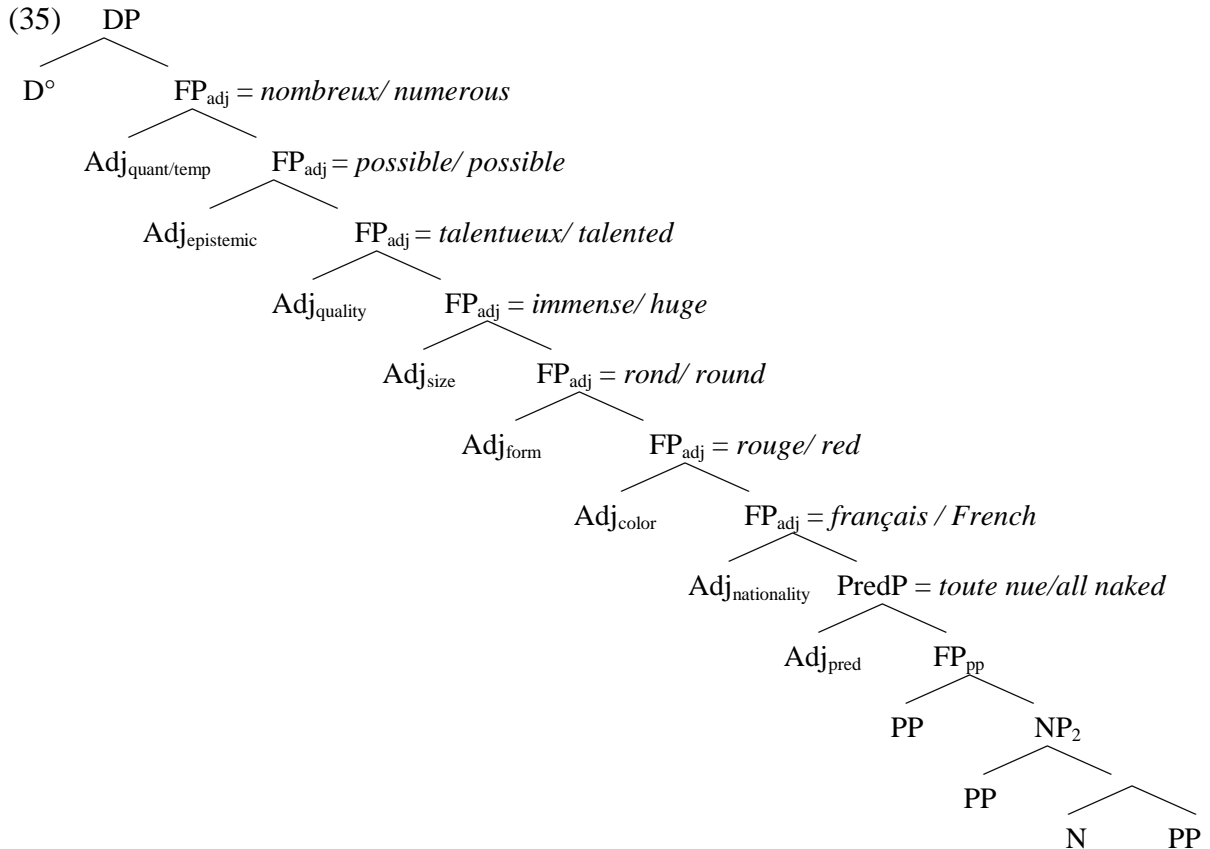
- (33) a. la [belle]₁ maison [rouge]₂ / the [nice]₁ [red]₂ house
 b. un [jeune]₁ étudiant [brillant]₂ / a [brilliant]₁ [young]₂ student

Most interestingly, when the two adjectives are postnominal in French, their linear order either matches the order of English prenominal adjectives, as in (34a), or shows a mirror image of the English sequential order, as in (34b).

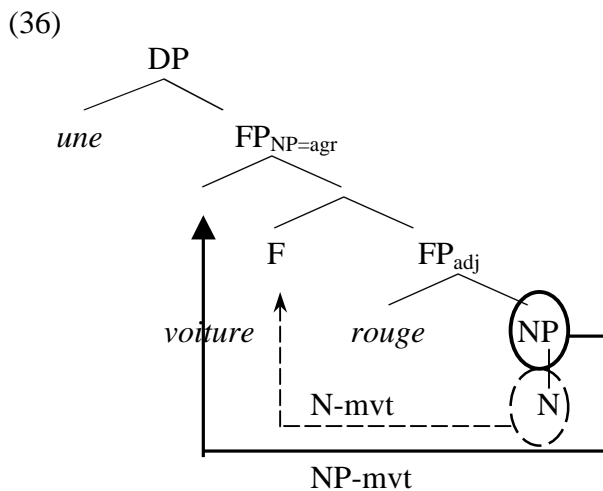
- (34) a. une voiture rouge française / a red French car (linear matching)
 b. une voiture française magnifique / a wonderful French car (mirror image)

So far, French does not seem to enter into any of the three typological distinct classes of N+Adj sequences, namely (i) [Adj₁ Adj₂ N] (ii) [N Adj₁ Adj₂] (iii) [N Adj₂ Adj₁]. Given the complexity of the data, Cinque's N-analysis cannot handle all cases of adjectival ordering in French, even if postnominal adjectives are considered as predicates, rather than attributes, and exempt from any ordering constraint (Sproat & Shih 1988, 1990). As will be shown in the next sections, one will be led to postulate various types of DP-internal movement that can generate all possible adjectival sequences in French.

On the basis of the syntactico-semantic typology in (22-23), a quite complete representation of the DP-structure looks like (35).



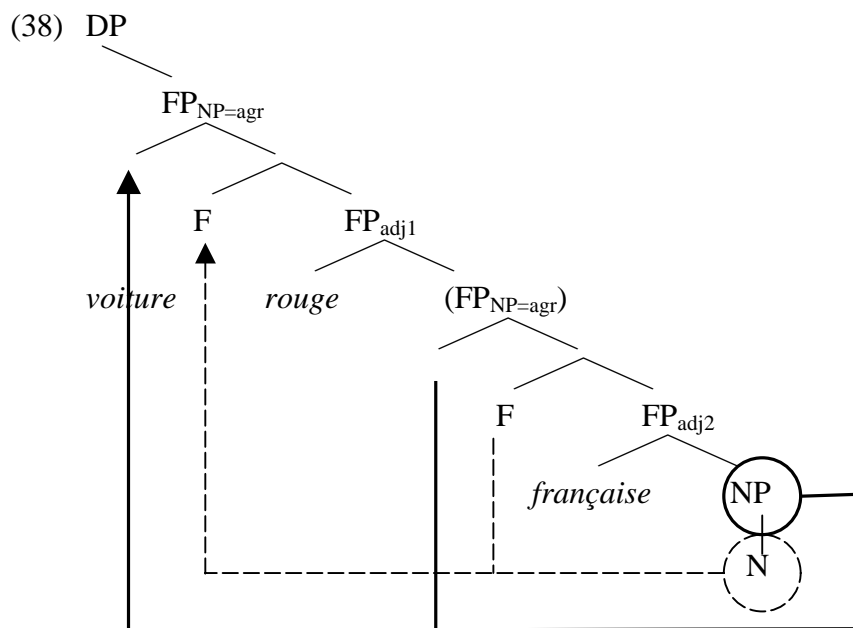
Consider the derivation of a nominal expression like *une voiture rouge* ('a red car'). First, the noun projects its own maximal category, while the adjective is merged as the specifier of FP_{color} . At this point, the order obtained is [*rouge* [*voiture*]]. In a subsequent step, the noun raises past the adjectival position to some higher functional projection. This position stands for an agreement NP-related position (within DP), i.e. FP_{NPagr} . As already mentioned, noun raising can be analyzed as an instance of N-movement or alternatively NP-movement.



The examples of (37) show that a noun can precede more than just one adjective. In (37a-b), the linear order of the two adjectives respects the hierarchy of adjective-related functional projections given in (35).

- (37) N > Adj1 > Adj2
- a. une voiture rouge française
a car red French
'a red French car'
 - b. une île verte française
a island green French
'a green French island'
 - c. une maison carrée espagnole
a house square Spanish
'a square Spanish house'
 - d. un vase blanc chinois
a vase white Chinese
'a white Chinese vase'

The derivation follows the same step as in (36), except that N/NP-movement goes past two adjective-related functional projections, possibly cyclically through the specifier of an intermediate $FP_{NP=agr}$. This is represented in (38).¹⁶



The question that arises now is to choose between N-movement and NP-movement.¹⁷ We have observed that the analogy of noun movement with verb movement is weakened by

¹⁶ The noun can also precede three adjectives, but on condition that the right-hand one behaves as a secondary predicate rather than a true attributive adjective (see section 4.3 below).

¹⁷ PP placement with respect to the noun and the postnominal adjective(s) can give us clues as to the type of movement involved in noun displacement on the left. Consider (i) where the argumental PP complement of the noun occurs also on the left of the adjective. This order can be derived though NP-movement, since the PP is merged with N as its complement. Yet, an argument for NP-movement based on PP placement weakens in view

the lack of morphological evidence for a difference in the weak/strong properties of nominal inflection, as for instance between French and German (where adjectives are prenominal). In the next part of the paper, we will follow the hypothesis that there is no (long) N-movement past the adjectives in French (see also Shlonsky 2000 for Hebrew). More precisely, the placement of the noun before its modifier(s) results from NP-movement. The NP raises past all adjective-related functional positions within DP. The reason for such a movement is twofold: (i) there is a strong agreement relation between the noun and the adjectives¹⁸ and (ii) the noun must occur very close to the determiner on the surface, as is the case in (38) where it is a result of NP-movement (see section 6 for a more detailed analysis).¹⁹

5.2. FP_{NP}-movement: snowballing effects on adjective ordering

In (39), the noun also precedes the two adjectives, but the latter are realized in mirror image order with respect to the left-to-right sequence of their corresponding functional projections (see (35)).

- (39) N > Adj2 > Adj1²⁰
- a. une voiture italienne/rouge magnifique
a car Italian /red beautiful
'a beautiful red/Italian car'
 - b. une table ronde magnifique
a table round beautiful
'a beautiful round table'
 - c. une île verte splendide
a island green splendid
'a splendid green island'

of (ii), where the noun is separated from its PP complement by the adjective. We will return to the analysis of this type of nominal expression in section 6.3.

- (i) un don d'argent généreux
a gift of money generous
- (ii) un don généreux d'argent
a gift generous of money
'a generous gift of money'

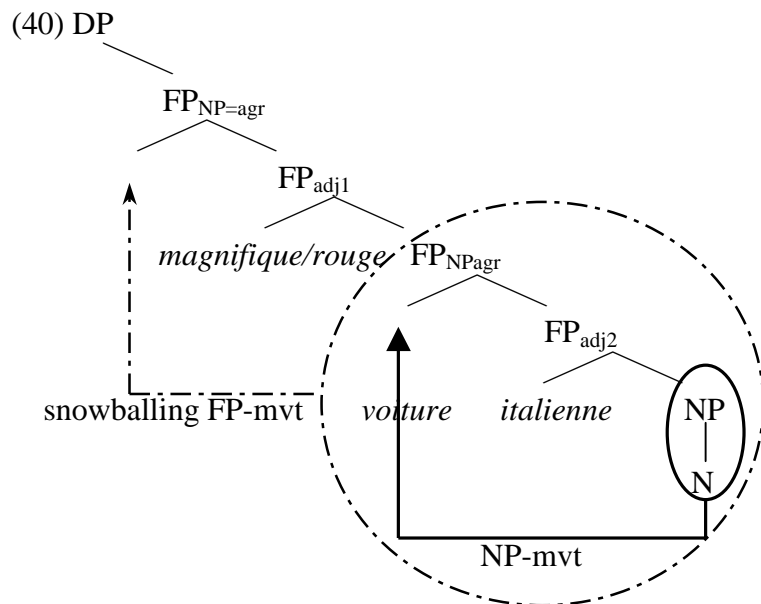
¹⁸ There is still a problem of parametrization between French and German, since agreement in gender and number between the noun and its adjectival modifiers (and also the determiner) is as strong in French as it is in German.

¹⁹ Note that there is no problem of relativized minimality (Rizzi 1991), since NP-movement targets an A-like specifier, while crossing A'-like specifiers occupied by the adjectival modifiers.

²⁰ See also the similar examples given in (i)-(iv) below.

- (i) une voiture italienne rouge
a car Italian red
'a red Italian car'
- (ii) ? un vase chinois ovale
a vase Chinese oval
'an oval Chinese vase'
- (iii) une île française ronde
an island French round
'a round French island'
- (iv) ? une maison espagnole blanche
a house Spanish white
'a white Spanish house'

The derivation reaches the above surface result through the following successive steps: First, the noun moves as a NP to the intermediate FP_{NPagr} . Then, this FP_{NPagr} raises to the specifier of the higher FP_{NPagr} , producing some snowballing effects (cf. Aboh 2000 for a formalization of this kind of pied-piping movement; see also Shlonsky 2000 for the case of mirror image order of postnominal adjectives in Hebrew).²¹ The derivation for (39) is given in (40).²²



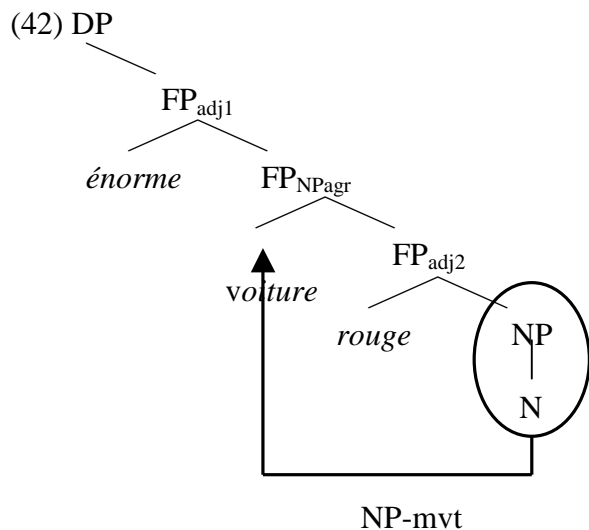
As it will be shown in section 6.2, this type of pied-piping movement with snowballing effects is limited to a one-step move in French (and presumably in Romance).

5.3. Prenominal adjectives

In view of (41) the noun can apparently be partially raised within the DP-structure. In this example, the noun intervenes between two adjectives realized in the expected linear order given by (35). The structure in (42) shows that the noun stops raising at the level of the intermediate $FP_{NP=agr}$.

- (41) Adj1 > N > Adj2
 une énorme/petite voiture rouge
 a enormous/small car red
 ‘a(n) enormous/small red car’

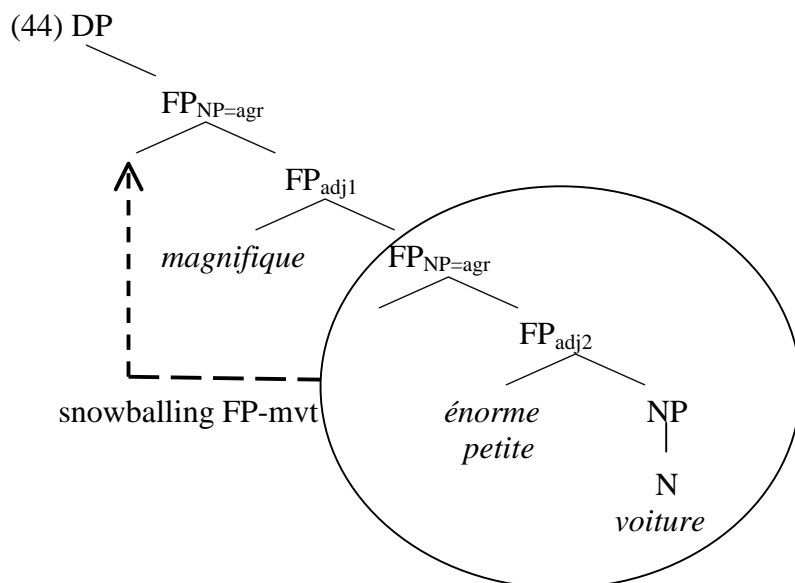
²¹ Pearson (1998) proposes similar derivations for the mirror image positioning of stacked adverbs in Malagasy.
²² Note that such a surface result would be quite difficult to obtain by means of N-movement.



The example in (43) differs from (41) in that the linear order between the two adjectives is reverse and displays a mirror image of the sequential order of adjective-related projections represented in (35).

- (43) Adj2 > N > Adj1
 une énorme/petite voiture magnifique
 a enormous/small car beautiful
 'a beautiful enormous/small car'

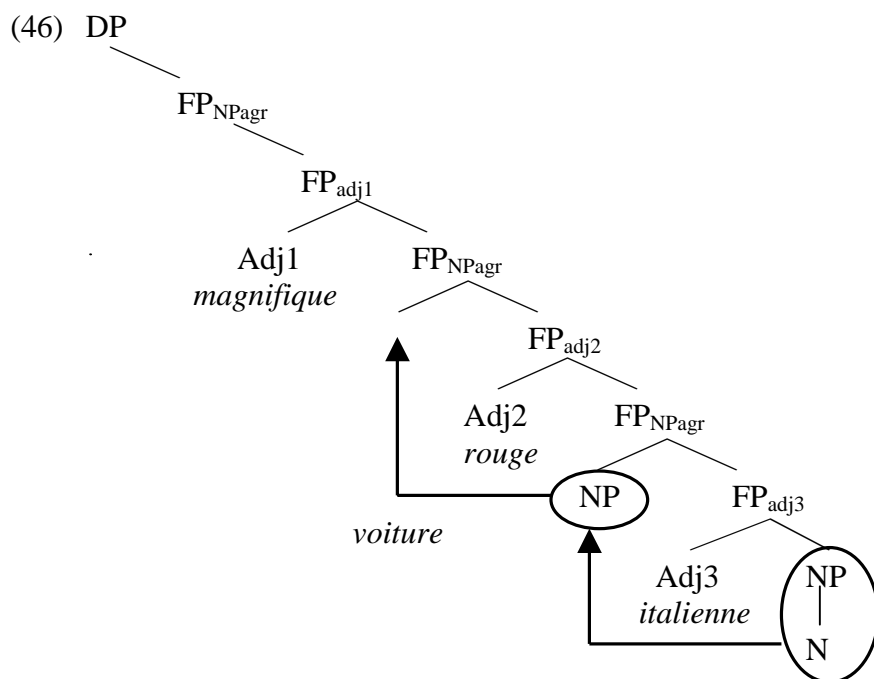
As in (39), the mirror image order Adj2 > Adj1 in (43) is derived from pied-piping movement with snowballing effects. The intervention of the noun between the two adjectives derives from raising the FP_{NPagr} containing both the prenominal adjective and the noun. This is represented in (44).



The most natural way of expressing noun modification by three adjectives is to split the sequence of adjectives in two, i.e. into positions before and after the noun. Consider the fully acceptable nominal expression in (45).

- (45) Adj1 > N > Adj2 > Adj3
 une magnifique voiture rouge italienne
 a beautiful car red Italian
 ‘a beautiful red Italian car’

This configuration results from NP-raising to the specifier of the FP_{NPagr} occurring between FP_{adj1} and FP_{adj2}, as shown in (46).



In the next section, we will explore an analysis of DP-internal movement that is quite different from the one presented in the previous sections. The aim of this analysis is to dispense with partial NP movement. For instance, the fact that the NP must move beyond *italienne* and *rouge* in (45), but not beyond *magnifique*, has no straightforward explanation. The forthcoming analysis also aims at establishing a close structural relation (i.e. Spec-head), not only between the noun and all its adjectival modifiers, but also between the noun and the determiner. This relation is obtained at some step of the derivation, and is motivated by DP-internal agreement feature checking.

6. NEW PERSPECTIVES ON MOVEMENT TYPES WITHIN THE DP-INTERNAL STRUCTURE

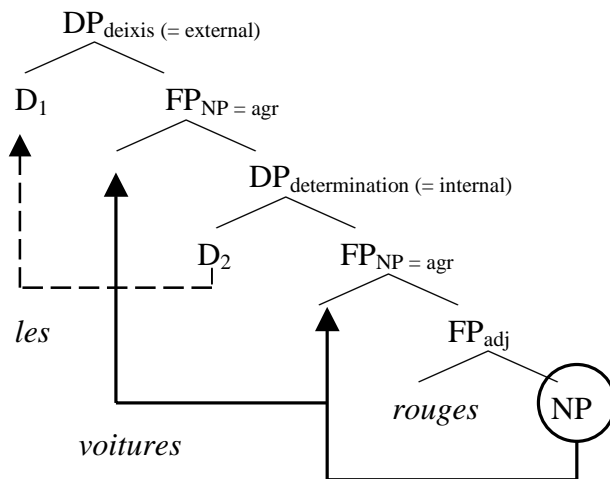
6.1. Complex DP-structure

Many recent studies on the structure of noun phrases (Cinque 1994, Longobardi 1994, Bosque & Piccolo 1996, Guisti 1997, Aboh 2000, Shlonsky 2000, among others) propose a DP-structure that is quite complex in terms of internal functional projections. In the present work, we have assumed that adjectives are specifiers of discrete functional projections

(FP_{quality,size,color, etc.}, see Cinque 1994), associated with an agreement-like functional projection (FP_{NPagr}) that hosts NP-movement. Following Kayne (1994), Bosque & Picallo (1996), Starke (1996), Aboh (2000) and others, the DP category can be split into a rather complex determiner structure (the so-called Split-DP hypothesis). First, the topmost functional projection of the noun phrase is not a simple DP, but a CP-like projection.²³ By analogy with Rizzi's (1997) split-CP analysis, we assume that the higher DP functional projection is analogous with Rizzi's (1997) ForceP, while the lower DP corresponds to his FinP (see also Aboh (2000; forthcoming), Ihsane 2000). These categories are represented in (51). The higher DP is the locus of the pragmatic interpretation of the noun phrase and thus can express referentiality, deixis, and so on. The lower DP expresses determination (definiteness, indefiniteness, partitivity, and so on), looking downward at the lexical properties of the noun. In other words, the DP domain contains an external determiner category and an internal one. The former is represented as DP_{deixis} and the latter as DP_{determination}.

Crucially, we also propose that an NP-related agreement projection be associated with the root determiner phrase. This position permits the checking of agreement features (overt agreement in number and gender) between the noun and the determiner. Thus, the lexical determiner, say *les*, is merged at the root as D, while the NP, say *voitures*, raises to the FP_{NP} immediately dominating D_{determination}. The constituent order so far results in the unacceptable string [*voitures les*]. The correct output string *les voitures* is obtained after raising the determiner *les* to D_{deixis}. Consider now the occurrence of a postnominal attributive adjective, say *rouge*. As proposed in the previous section, the noun moves as an NP to the specifier of the FP_{NP} – an agreement-related position – associated with the adjective. As a further step, the NP raises to the specifier of the FP_{NP} associated with the determiner, also an agreement-like position. The derivation so far is represented in (47).

(47)



However, this analysis predicts that all attributive adjectives are postnominal in French, which is not the case given (43) and (45), where it has been observed that some adjectives can be placed in a prenominal position.²⁴ As a matter of fact, adjective prenominalization is not

²³ This projection is denoted as Ψ P by Starke (1996). We can also refer to Guisti's (1997) KP (case phrase), although this projection is located lower than the topmost D category.

²⁴ The present analysis also raises the problem of parametrization. In French, the NP displays strong/overt agreement with the adjectives (and with the determiner). Hence, it raises overtly to the relevant agreement positions. In English, on the contrary, the NP does not move to these positions in overt syntax, since DP-internal agreement is rather morphologically weak. The problem arises with the properties of nominal phrases in German:

the most natural configuration in French. The canonical position of attributive adjectives is obviously postnominal. The prenominal placement of adjectives is triggered by three particular situations, namely:

1. when the adjectives are weak forms
2. when the adjectives have an emphatic interpretation or a strong subjective reading
3. when the adjectives are quantifiers

Each of these situations is expressed in the nominal expressions in (48).

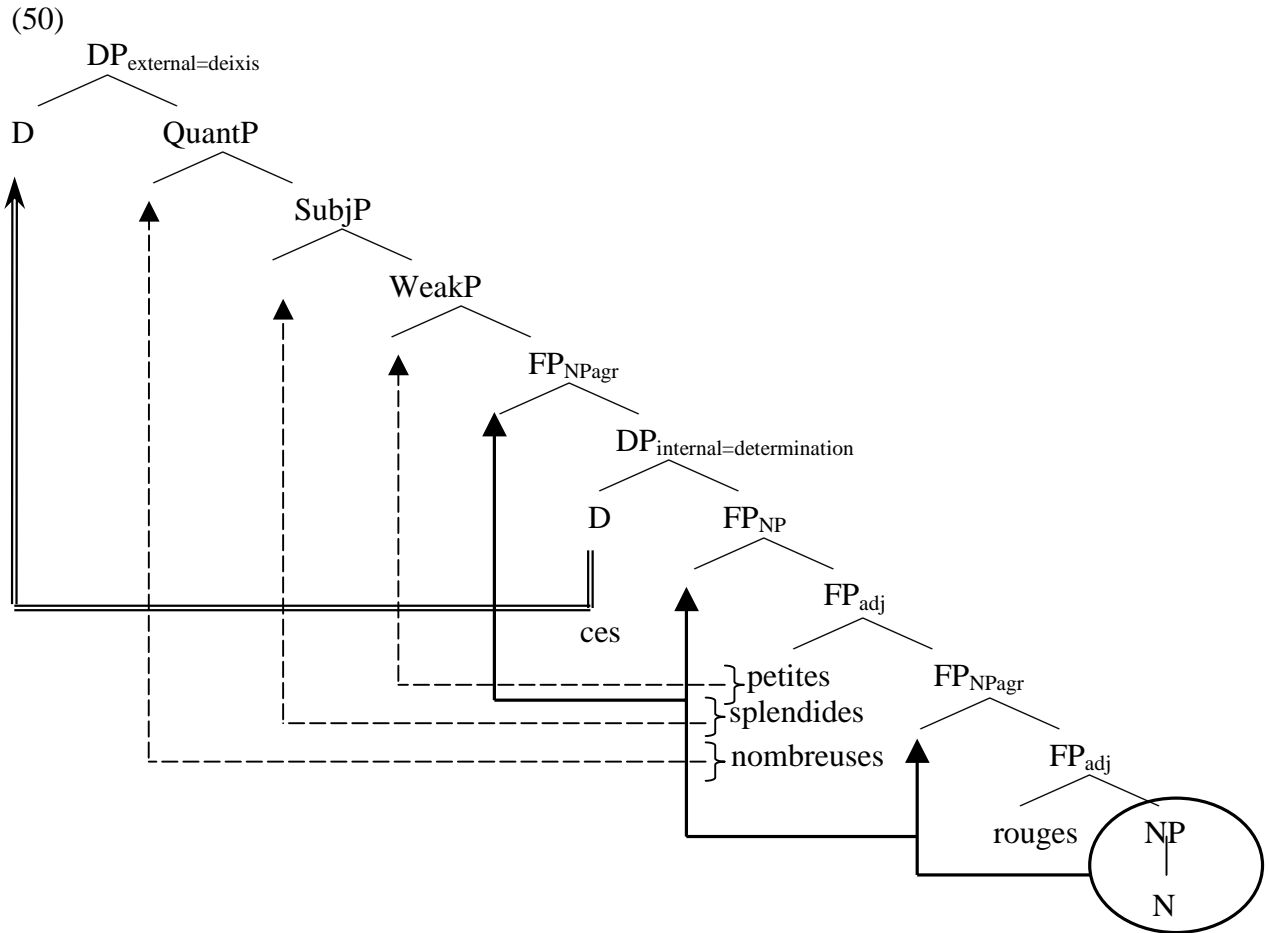
- (48) a. de gros avions
 big airplanes
 b. de superbes créatures
 wonderful creatures
 c. de nombreux accidents
 numerous accidents

In the analysis proposed above, the nominal projection (NP) raises above $D_{\text{determination}}$, more precisely to the specifier of NP_{NPagr} , which produces the configuration [N Det Adj]. The determiner raises above N giving rise to the order [Det N Adj]. For the adjectives to occur in a prenominal position, they also raise above $D_{\text{determination}}$, targeting an appropriate position in the domain between $D_{\text{determination}}$ and D_{deixis} . In other words, these adjectives are merged in their semantically relevant position, i.e. Spec-FP_{size} for *gros* in (48a), Spec-FP_{qual} for *superbes* in (48b), and Spec-FP_{quant} for *nombreux* in (48c). They subsequently move past $D_{\text{determination}}$ to a position in which they can express or satisfy their interface properties: quantification, emphasis (strong subjectivity), and incorporation (weakness).²⁵ The three projections hosting the preposed adjectives in (48) are hierarchically ordered as in (50), and on the basis of the linear sequence in (49).

- (49) ces nombreuses superbes petites voitures rouges
 these numerous wonderful small cars red
 ‘these numerous wonderful small red cars’

DP-internal agreement is rather strong in number and gender, but the attributive adjectives remain in a prenominal position, as in English. This situation is contradictory in terms of morphological parametrization, and casts doubt on the validity of an analysis of NP-raising in terms of strong/weak agreement in number and gender.

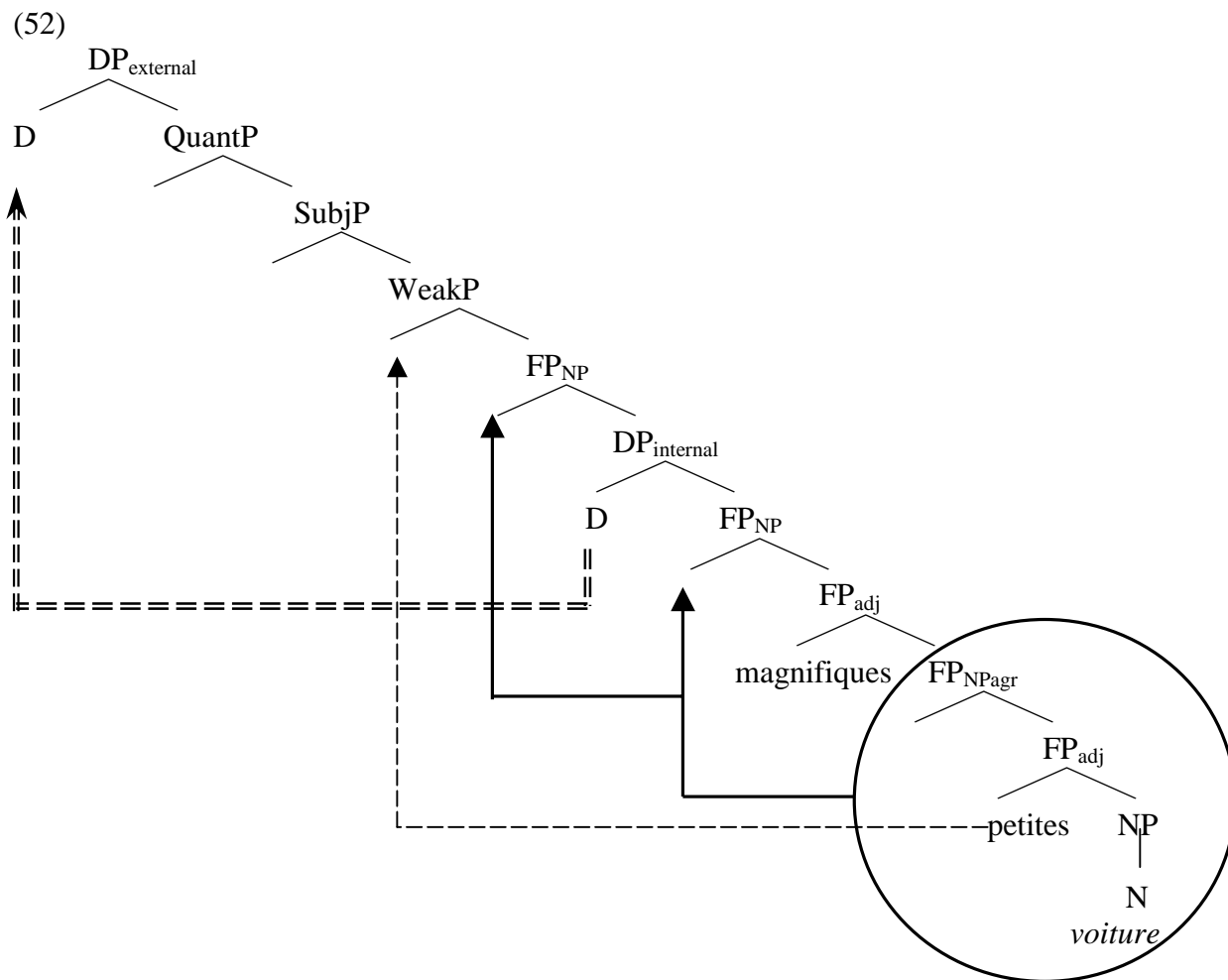
²⁵ These interface properties will be further discussed in the appendix.



Consider now the nominal expression in (51), corresponding to (43). One observes that the adjective of quality is postnominal, while the adjective of size is prenominal. Moreover, the left-to-right occurrence of the two adjectives in (51) is the mirror image of their corresponding functional projection, as illustrated by the English nominal expression *wonderful small cars*. The derivation of (51) consists of (snowballing) FP_{NPagr} -movement. The adjective *petite* moves to the specifier of WeakP, from where it can incorporate into the noun at Spell-Out.²⁶ This is represented in (52).

(51) de petites voitures magnifiques
 small cars wonderful
 ‘wonderful small cars’

²⁶ There is certainly a closer relation between a prenominal adjective and the noun than between a postnominal adjective and the noun, as supported by the facultative liaison in *des pommes(_)*entières ‘entire apples’ in comparison to the obligatory liaison in *de beaux_*yeux ‘beautiful eyes’.



The main claim advanced in this section is that attributive adjectives are most naturally postnominal in French, though they are inserted at the root in a prenominal position. Some adjectives can undergo a sort of upward reconstruction movement that replaces them in a prenominal position on surface. Adjective prenominalization is motivated by interface properties: scope quantification, subjective emphasis (or speaker-orientation), and the incorporation requirement on weak adjectives (strong adjacency requirement). These interface properties are expressed at the “external” layer of the DP-structure, namely between $DP_{determination}$ and DP_{deixis} .

6.2. Evidence for a DP-internal predicative phrase

In most of the examples discussed so far, the sequences of adjectives do not contain more than two elements. Let us now examine the co-occurrence of three adjectival modifiers. One can observe that a strong restriction applies to a sequence of three adjacent postnominal adjectives, as in (53). With the neutral intonation, this nominal expression is considered at best strongly marginal and at worst ungrammatical.

- (53) N > Adj > Adj > Adj
 *une voiture rouge italienne magnifique
 a car red Italian beautiful
 ‘a beautiful red Italian car’

However, the above adjectival sequence becomes much more acceptable if the rightmost adjective functions as a secondary predicate (see section 4.3), e.g. as a focussed element, as illustrated in (54).

- (54) ?une voiture rouge italienne (vraiment) MAGNIFIQUE
 a car red Italian (really) BEAUTIFUL
 a really BEAUTIFUL red Italian car

The above configuration, namely [N Adj Adj Pred_{adj}], is not possible with any sequence of three adjacent postnominal adjectives, as shown in (55).

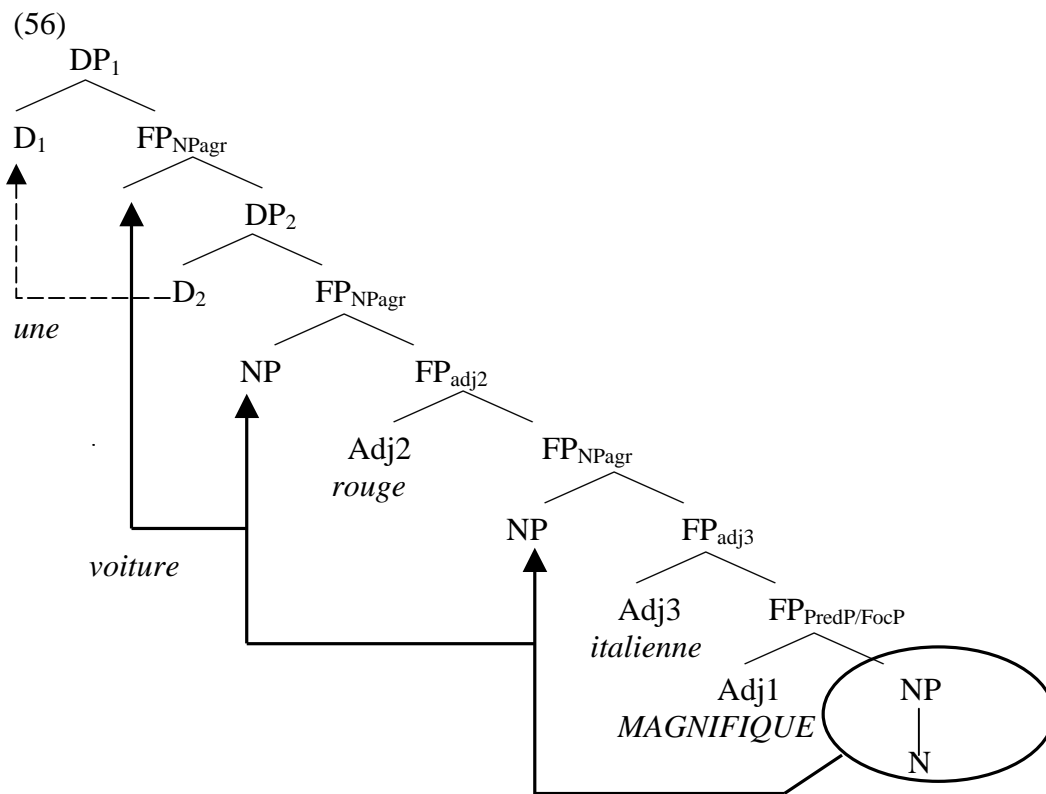
- (55) a. *un vase splendide chinois OVALE
 a vase splendid Chinese OVAL
 b. ??un vase chinois ovale SPLENDIDE
 a vase Chinese oval SPLENDID

The possibility that the rightmost adjective in a sequence of three adjectives may behave as a secondary predicate is limited, at first sight, to the configuration in (54), namely (i) N > Adj2 > Adj3 > Adj1_{pred}.²⁷ This configuration is obtained after cyclic noun raising to the highest FP_{NPagr}, as illustrated in (56). The predicative-like adjective is merged as the specifier of a specific predicative projection, say FP_{PredP/FocP} (see section 4.3).

²⁷ As would be expected, the modification of a noun by four postnominal adjectives is not acceptable for most speakers, as shown in (i). This is certainly due the complexity and heaviness of multiple modification. Nevertheless, the four adjectives can be distributed before and after the noun, giving rise to balanced, hence acceptable, sequences of adjacent adjectives. The configurations in (ii) show some possibilities of placement for four adjectives around the noun.

- (i) *une table ronde blanche savoyarde magnifique/MAGNIFIQUE
 a table round white savoyardian beautiful/BEAUTIFUL
- (ii) a. Adj2 > N > Adj3 > Adj4 > Adj1 (ok if Adj1 is predicative)
 une petite/énorme voiture rouge italienne MAGNIFIQUE
 a small/enormous car red Italian BEAUTIFUL
 ‘a BEAUTIFUL small/enormous red Italian car’
- b. Adj1 > Adj2 > N > Adj3 > Adj4
 une magnifique petite table ronde savoyarde
 a beautiful small table round savoyardian
 ‘a beautiful small round savoyardian table’
- c. Adj1 > Adj2 > Adj3 > N > Adj4
 une seule jolie petite voiture rouge
 one only nice small car red
 ‘only one nice small red car’

The analyses proposed here for nominal expressions containing three adjectives can be extended to the nominal expressions in (ii).

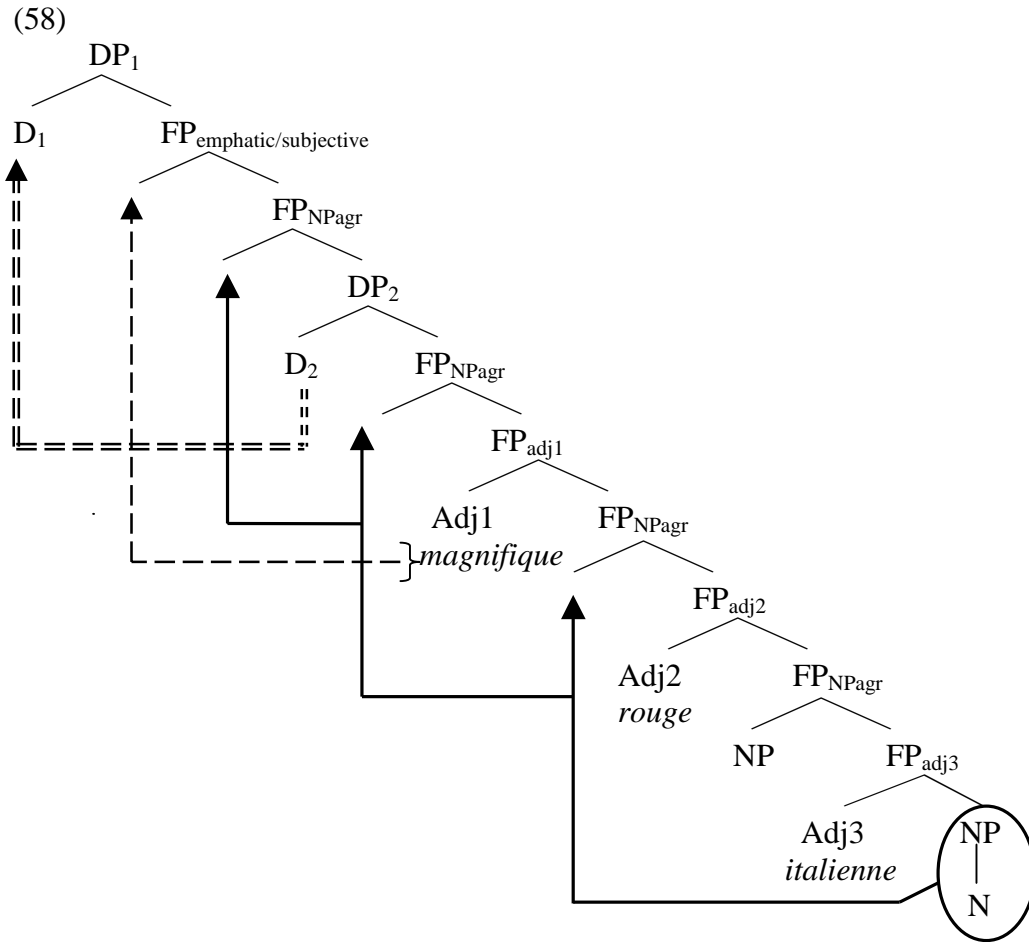


The ungrammaticality (55) indicates that pied-piping FP_{NPagr} -movement is prohibited when the $FP_{PredP/FocP}$ is realized. Therefore, the configuration $N > Adj2 > Adj1 > Adj_{pred}$ cannot be derived in French.

The most natural way of expressing the modification of a noun by three adjectives is to distribute them before and after the noun. This is the case in the fully acceptable nominal expression in (57).

- (57) $Adj1 > N > Adj2 > Adj3$
 une magnifique voiture rouge italienne
 a beautiful car red Italian
 ‘a beautiful red Italian car’

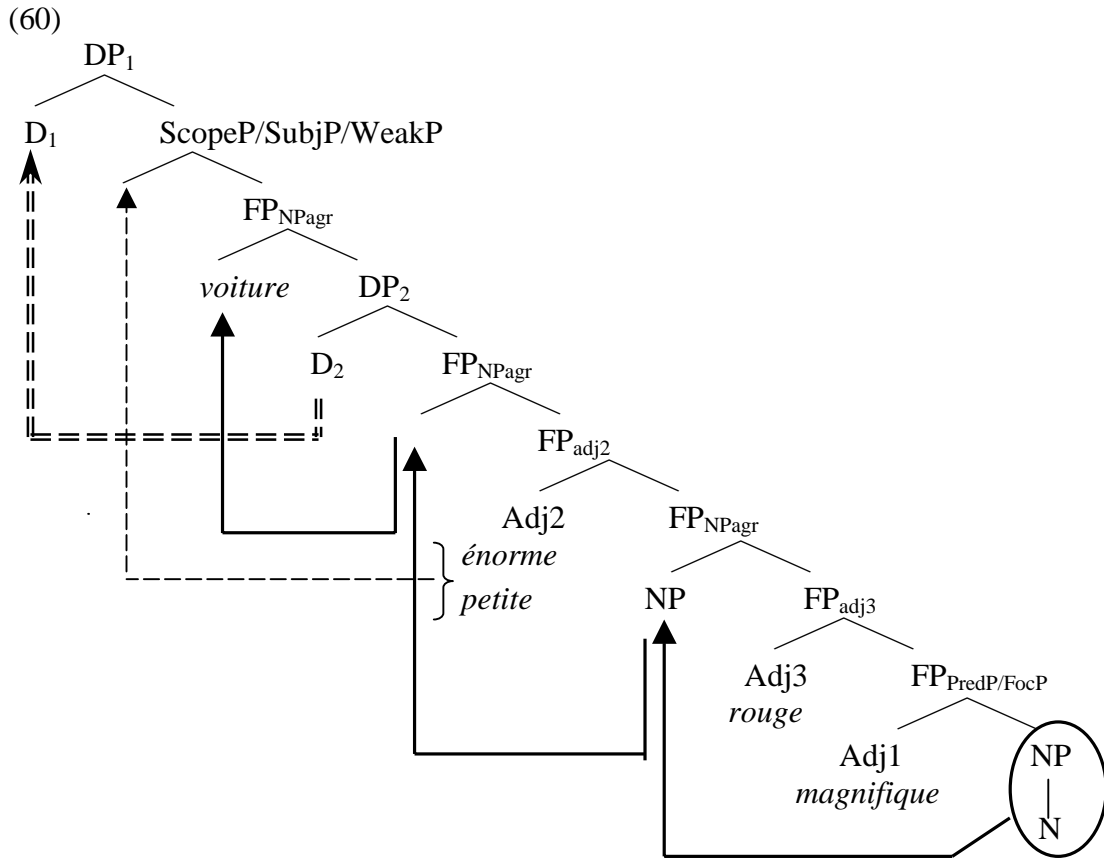
This configuration results from (i) NP-raising to the specifier of the highest FP_{NPagr} occurring between DP_1 and DP_2 and (ii) movement of *quality* to a focal/emphatic prenominal position. This is shown in (58).



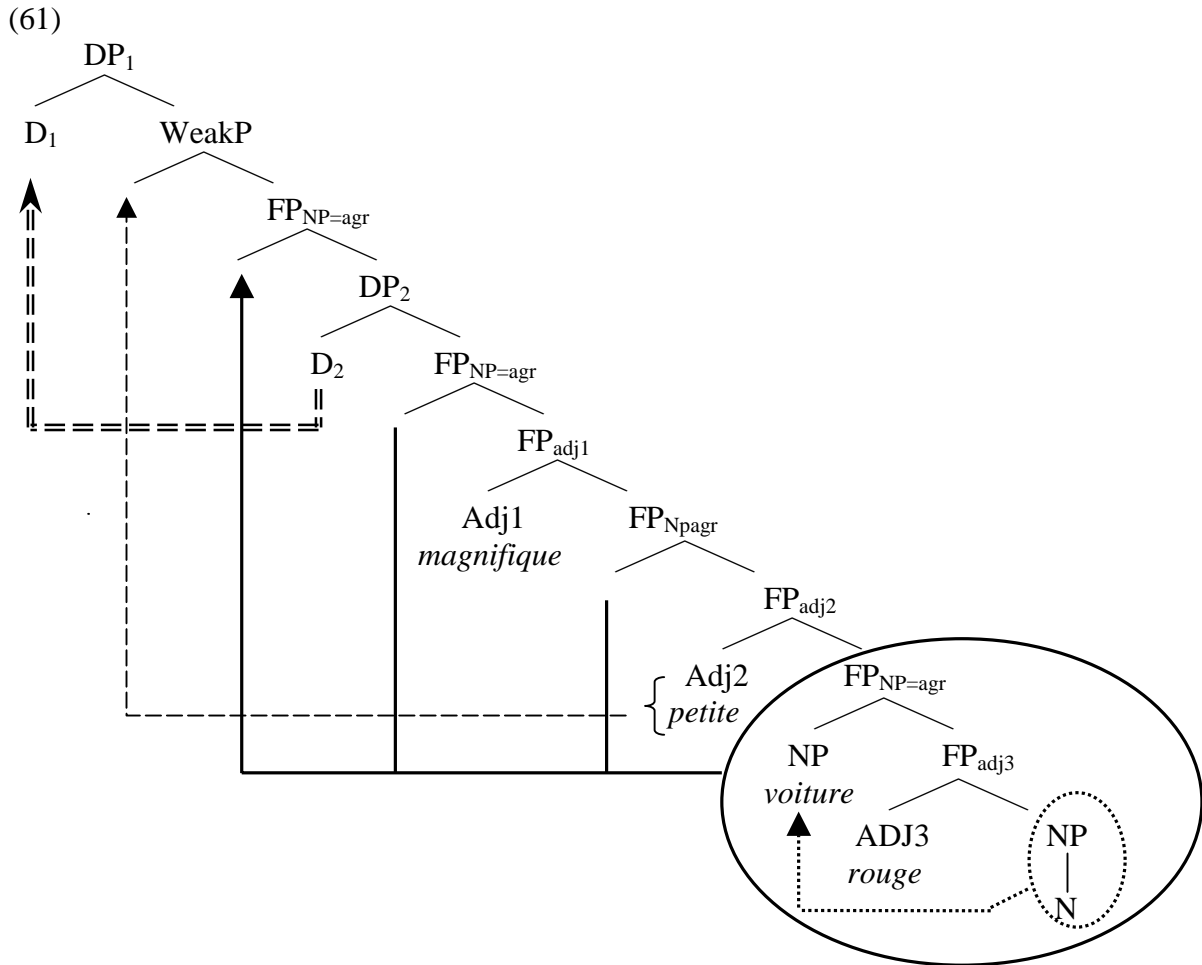
In the above example, the three adjectives respect the hierarchical order of their corresponding functional projection (as represented in (35)). In contrast, the adjective of quality is final in (59) resulting in a (partial) mirror image of the adjective ordering.

- (59) Adj2 > N > Adj3 > Adj1
 une énorme/petite voiture rouge magnifique
 a enormous/small car red beautiful
 'a beautiful enormous/small red car'

The linear order of adjectives in (59) can be the result of two possible derivations. One derivation consists of having the DP-final adjective functioning as a secondary predicate merged as the specifier of $FP_{PredP/FocP}$. The noun phrase is raised to the closest FP_{NPagr} . This analysis is represented in (60).



The alternative derivation is much more complex, and it does not give rise to a fully grammatical nominal expression: ^{?(?)}*une petite voiture rouge magnifique* (“a beautiful small red car”). For some speakers, this nominal expression is considered slightly odd, but not ungrammatical. It is derived on the basis of the two following steps: (i) NP-raising to Spec- FP_{NPagr} (ii) FP_{NPagr} -raising to the highest FP_{NPagr} through the intermediate FP_{NPagr} (pied-piping plus cyclic movement). This is represented in (61).



The nominal expression in (62a) is another example of noun phrase containing one prenominal adjective and two postnominal adjectives. This nominal expression is only acceptable if the rightmost adjective acts as a secondary predicate, as shown by the contrast between (62a) and (62b).

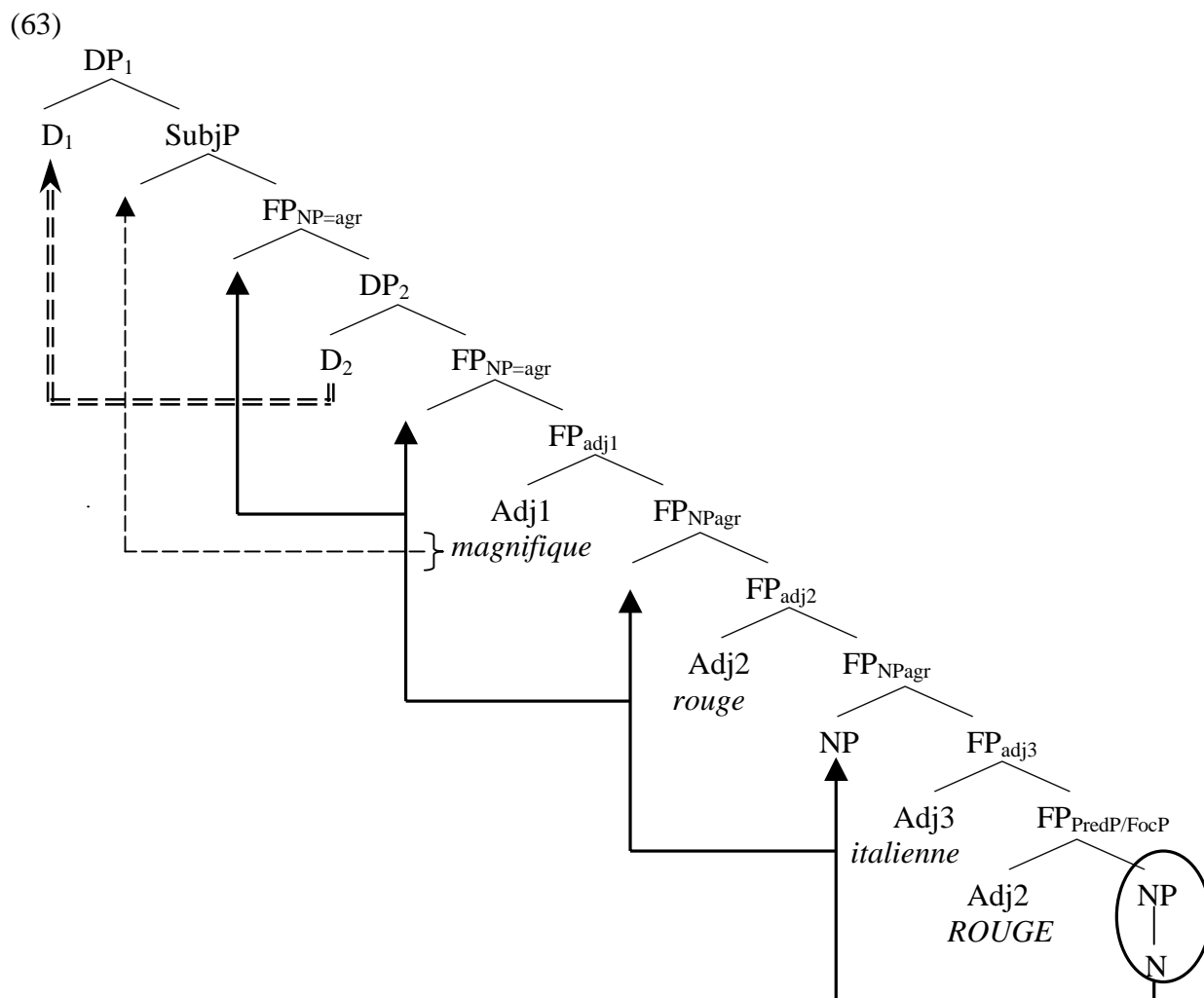
- (62) Adj1 > N > Adj3 > Adj2²⁸
- a. ^{??}une magnifique voiture italienne rouge
 a beautiful car Italian red
- b. [?]une magnifique voiture italienne ROUGE
 a beautiful car Italian RED
 'a beautiful RED Italian car'

Given the nominal structure in (63), the expression in (62b) is derived from merger of *ROUGE* as the specifier of $FP_{PredP/FocP}$ and NP-movement above *italienne*, but below *magnifique*. The strong marginality of (62a) shows that pied-piping FP_{NPagr} -movement is not available. Yet, the nominal expression improves in acceptability if the noun and the adjacent

²⁸ See also:

- (i) un magnifique vase chinois OVALE
 a beautiful vase Chinese OVAL
 'a beautiful OVAL Chinese vase'

adjective display a strong semantic cohesion (e.g. *vase+chinois* in the expression *?un magnifique vase chinois ovale*, as compared to (62)).



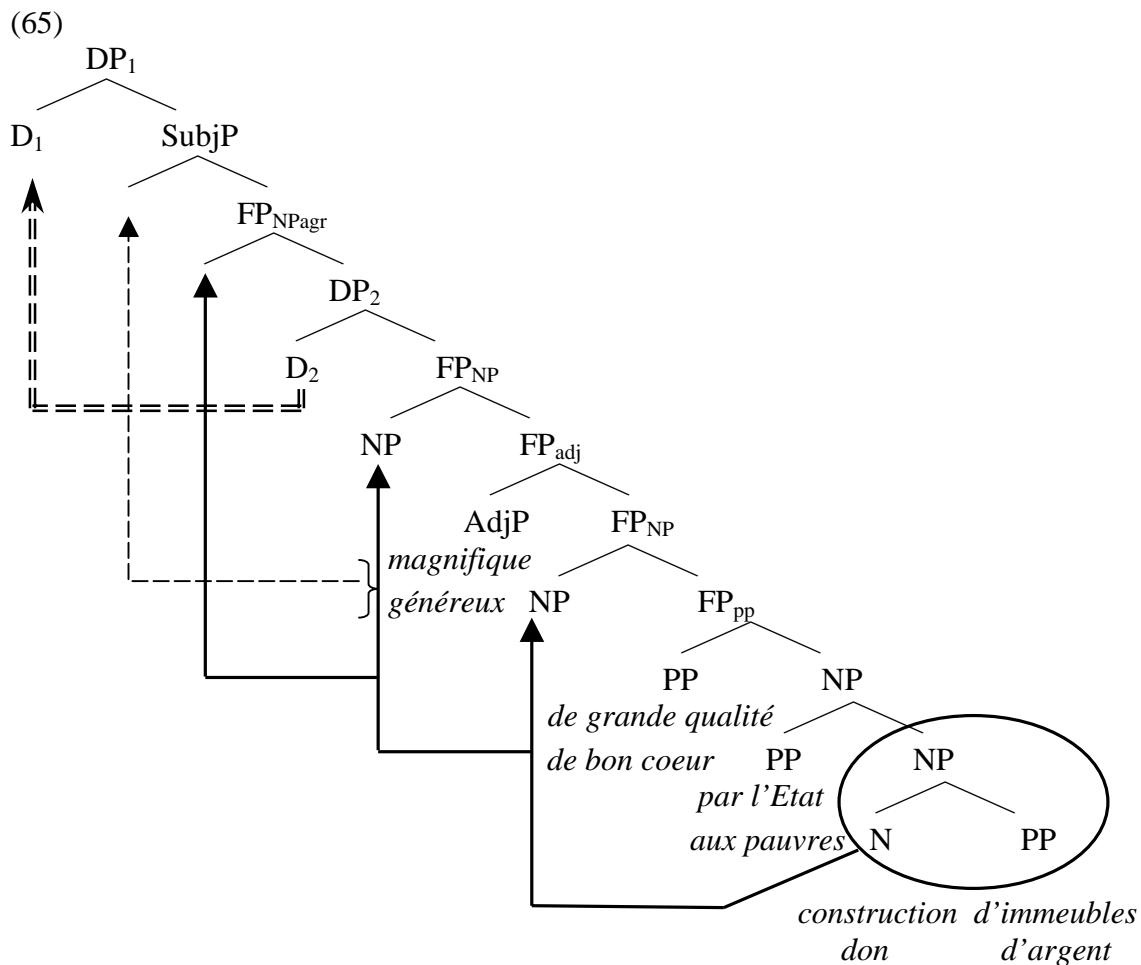
In the next section, the discussion will focus on the co-occurrence of PPs with postnominal adjectives. As will be shown, the occurrence of a prepositional phrase affects the linear placement of attributive adjectives in the postnominal field.

6.3. The interference of PPs in adjectival sequences

As observed in section 4.3, the occurrence of a prepositional phrase after the noun has some restricting effects on the distributional possibilities of postnominal adjectives. The domain for the merger of multiple PP complements and adjuncts has been identified as an (extended) NP-shell. Consider the following examples: *l'attaque de l'ennemi* 'the attack by the enemy', *la victoire des innocents* 'the innocents' victory', and *le portrait de sa femme* 'the portrait of his wife'. In these cases, the prepositional phrases behave as arguments. The PPs behave as adjuncts in the following examples: *un homme de courage* 'a man of courage', *un travail de qualité* 'a work of quality', and *un poste de ministre* 'a position of minister'. We have proposed in section 4.3 that argumental PPs are merged as complements or specifiers of N

depending on their thematic function. As for PP adjuncts, they are analyzed in the same as noun modifiers in general. They are merged as specifiers of discrete DP-internal functional projections. For instance, the projections relevant to the merger of attributive adjectives have been identified in (35). As for adjunct prepositional phrases, we propose that they are merged as specifiers of the FP_{pp} immediately dominating NP. Thus, they are part of the extended domain of the NP-shell. Let us illustrate this analysis with the nominal expressions in (64) that contain three prepositional phrases following the noun. One of prepositional phrases is an argument, while the two other PPs are adjuncts. The full derivation of (64) is given in (65) within the framework of the NP-shell analysis.

- (64) a. de magnifiques constructions d'immeubles de grande qualité par l'Etat
 beautiful constructions of buildings of great quality by the State
 b. un généreux don d'argent aux pauvres de bon cœur
 a generous gift of money to-the poor willingly



A more detailed account of the derivation for (64a) and (64b) goes as follows: The nominal head plus its prepositional complement raise cyclically to the specifier of the highest FP_{NP} . Such a movement gives rise to the surface order $[N + PP_1 + Adj + PP_2 + PP_3]$, where PP_1 is the internal argument (THEME) of the noun, PP_3 is the external argument and PP_2 is an adjunct modifier like the intervening adjective (Adj). In this example, the noun is deverbal; it inherits an argument structure from the verbal root (Event nominal). Thus, the noun can be associated with arguments in addition to adjuncts. The present paper is concerned mainly with

object denoting nouns, like *voiture*, *vase*, *maison* and so on. The prepositional phrases related to these nominals are essentially modifiers, i.e. adjuncts.²⁹ The examples in (66) illustrate the co-occurrence of a single PP with a postnominal adjective.

- (66) N > PP > Adj
 N > Adj > PP
- a. une voiture de course rouge
 a car of race red
 - b. une voiture rouge de course
 a car red of racing
 ‘a red racing car’
 - c. une île des Caraïbes verte
 a island of the Caribbean green
 - d. une île verte des Caraïbes
 a island green of the Caribbean
 ‘a green Caribbean island’
 - e. un vase de jade marron
 a vase of jade brown
 - f. un vase marron de jade
 a vase brown of jade
 ‘a brown jade vase’
 - g. une maison du 19^e savoyarde
 a house from the 19th Savoyard
 - h. une maison savoyarde du 19^e
 a house Savoyard from the 19th
 ‘a Savoyard house from the 19th’

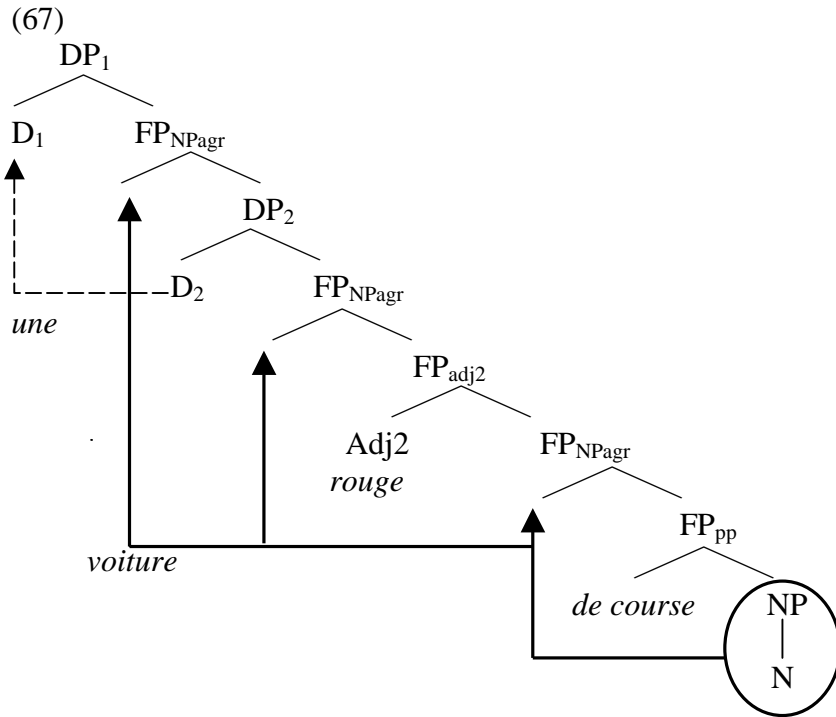
The order N > Adj > PP derives from NP-raising, as illustrated in (67). One can reasonably assume that the prepositional modifier occurs in the specifier of FP_{PP} (rather than in the complement position of N). The NP, containing only *voiture*, raises cyclically from Spec-FP_{NP} to Spec-FP_{NP}.³⁰ After short D-movement, the resulting expression is *la voiture rouge de course*.

²⁹ Bosque & Piccalo (1996) point out that object-denoting nouns can be modified by a subclass of what is called *relational adjectives*, namely categorial adjectives :

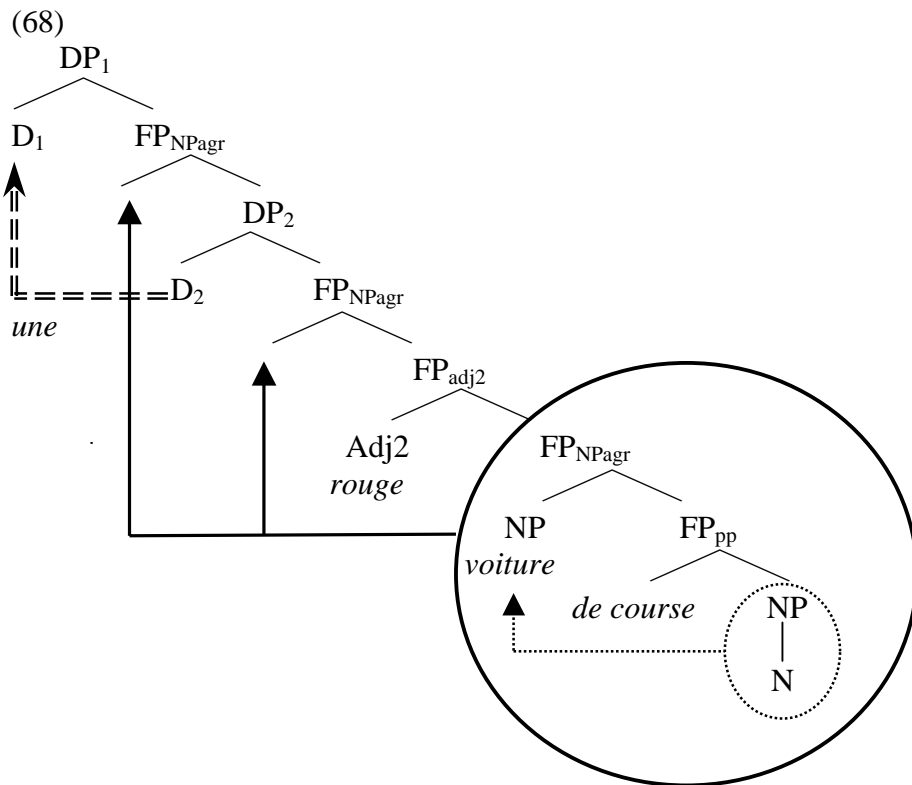
- (i) musical comedy/comédie musicale
 - (ii) racial conflict/conflit racial
 - (iii) manual production/production manuelle
- etc.

On one hand, these adjectives cannot be considered as true adjuncts, since they entertain a tight lexico-semantic relation with the noun. On the other hand, unlike thematic adjectives, they are not arguments of the noun: theme, agent, etc. Rather, they have a circumstantial reading (see Bosque and Piccalo 1996:367ff for the positioning of these adjectives within the nominal structure). They seem to have a close relation with the noun (adjacency), for they form a collocation with it, not a lexical compound.

³⁰ A question arises from the occurrence of a FP_{NP} associated with a PP adjunct. Morphological agreement is apparently not the licensing mechanism (no visible agreement between the noun and the prepositional phrase). As such, we may think that it results from (i) abstract agreement or (ii) semantic licensing (cf. Larson 1985). The occurrence of FP_{NP} associated with adjectives is licensed by both agreement and semantic relations. Note that in English, agreement is weak, and does not attract the NP. However, the semantic licensing relation must be established differently from overt movement (see LF-movement or Chomsky’s downward AGREE).



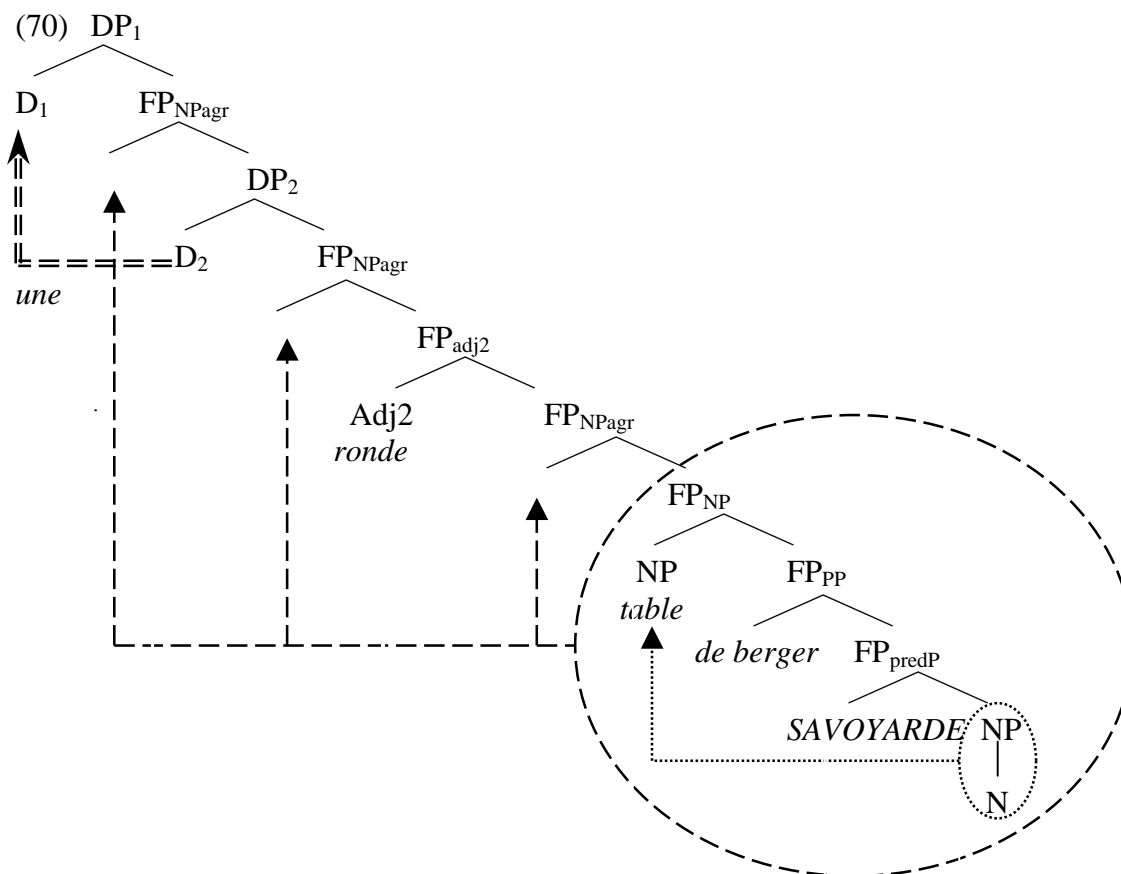
As for the order $N > PP > AdjP$ in (66), it is obtained by cyclic movement of the lowest FP_{NP} up to the specifier of the highest FP_{NP} . Since the lowest FP_{NP} contains both the noun (after NP-raising) and the PP adjunct/modifier, the derivation results in the surface string *voiture de course rouge*, as represented in (68).



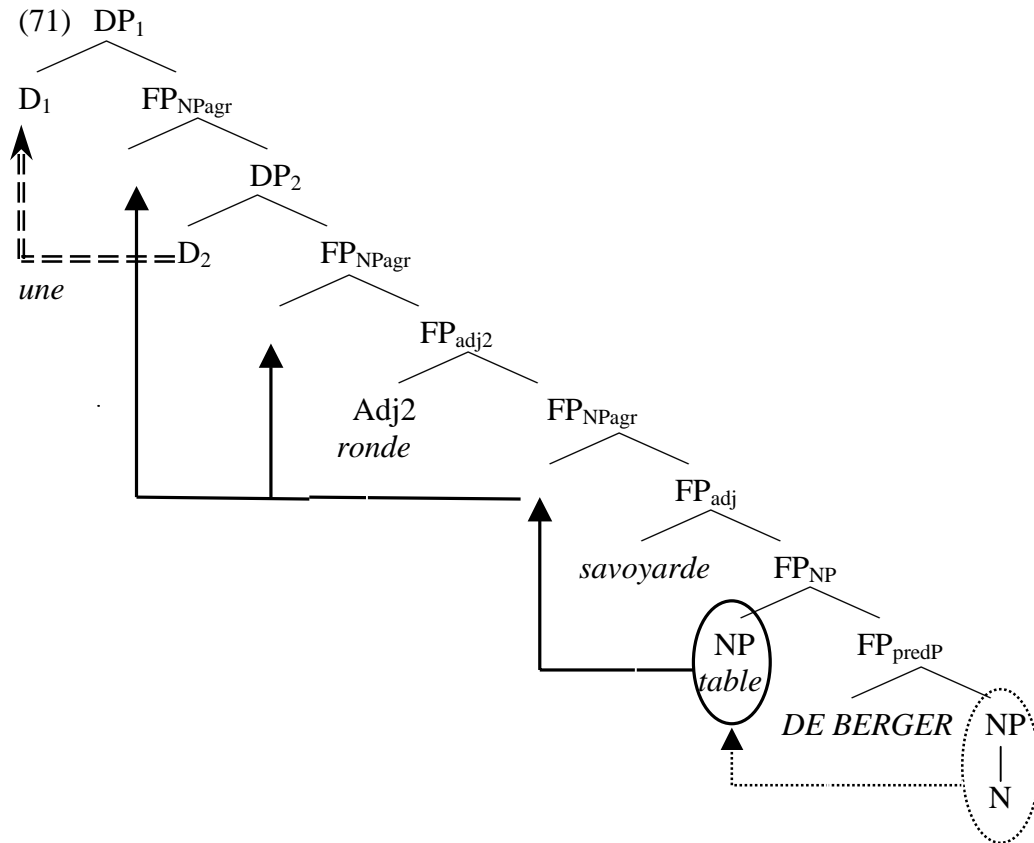
Let us now examine more complex cases of PP co-occurrence with postnominal adjectives. In (69), the PP co-occurs with two adjectives that are realized in the English-type linear order. As shown by the contrastive pairs of examples in (69), the co-occurrence of two adjectives with a prepositional phrase is only acceptable if the rightmost constituent is interpreted as a secondary predicate.

- (69) N > (PP) > Adj1 > (PP) > Adj2 > (PP)
- a. ^{??}une table de berger ronde savoyarde vs. ^{ok}une table de berger ronde SAVOYARDE
 a table of shepherd round Savoyard
 ‘a round Savoyard shepherd table’
 - b. ^{?*}une table ronde savoyarde de berger vs. [?]une table ronde savoyarde DE BERGER
 a table round Savoyard of shepherd
 - c. ^{*}une table ronde de berger savoyarde vs. [?]une table ronde de berger SAVOYARDE
 a table round of shepherd Savoyard

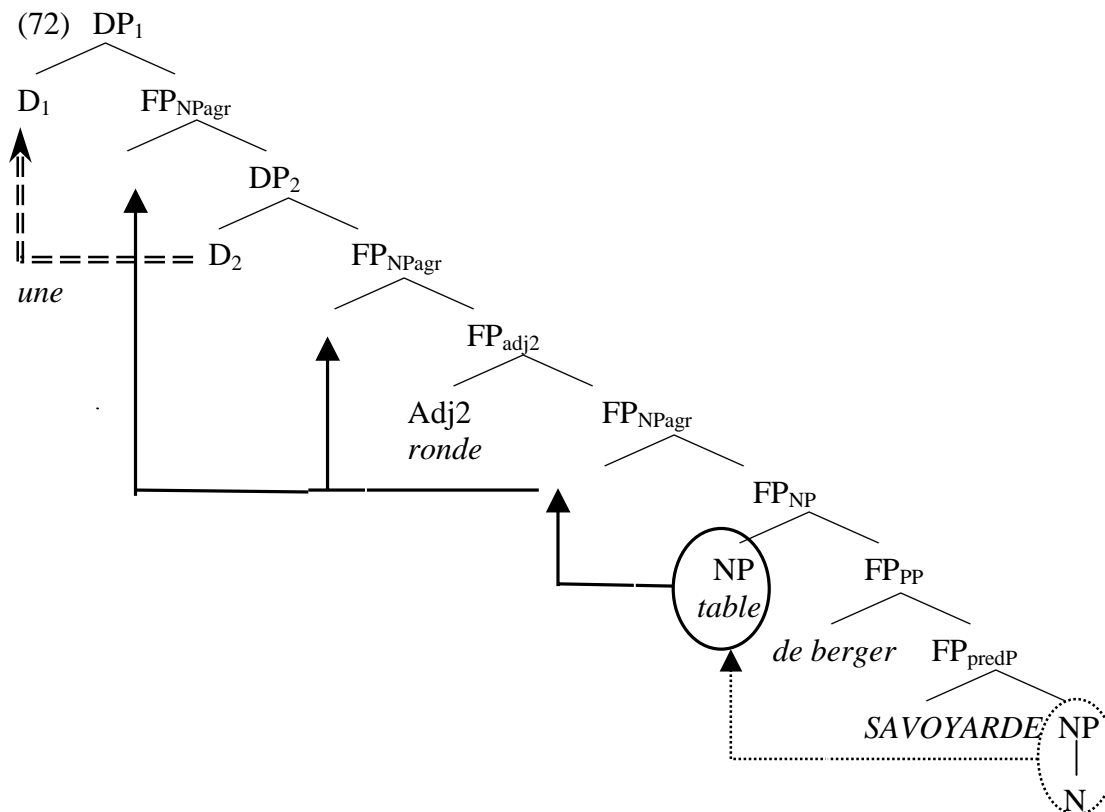
The most natural order of constituents is given in (69a). The sequence N > PP > Adj > Adj_{pred} derives from raising the FP_{NP} associated with FP_{pp} — which contains both the noun *table* and the PP adjunct *de berger* — to the specifier of the highest FP_{NP_{agr}}. The predicative adjective merges as the specifier of PredP, resulting in the surface string *une table de berger ronde savoyarde*. This derivation is represented in (70).



In the slightly marginal sequence in (69b), the constituent that is merged as the specifier of PredP is the prepositional phrase. The noun phrase moves alone to the specifier of the highest FP_{NPagr} , which gives rise to the expected order, as represented in (71).



As for (69c), the predicative adjective merges with Pred as its specifier, while the noun phrase raises as NP, not as FP_{NP} , thus leaving the prepositional phrase behind (PP-stranding). This derivation is represented in (72).

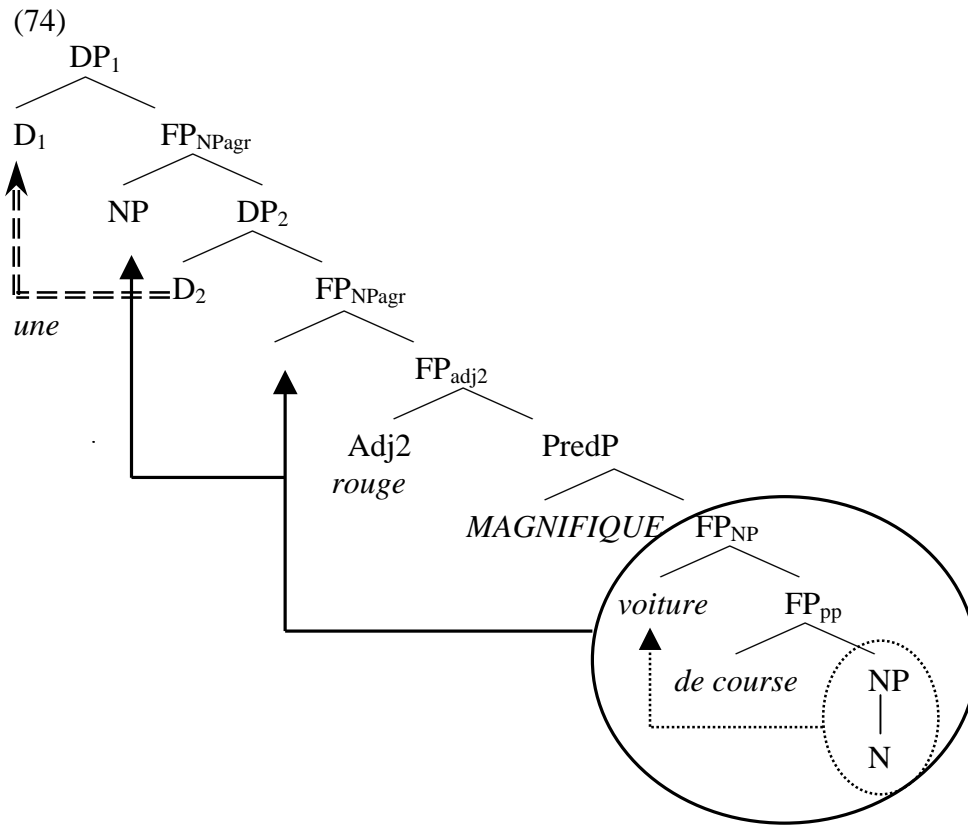


In (73) we provide additional instances of PP co-occurrence with two adjectives. The adjective ordering in these examples is the mirror image of the English one. The only acceptable sequence is the one realized in (73a), i.e. [N > PP > Adj2 > Adj1]. The two other combinations in (73b-c) lead to unacceptability. In addition, the right-hand adjective (Adj1) must function as a secondary predicate.

- (73) N > (PP) > Adj2 > (PP) > Adj1 > (PP)
- a. une voiture de course rouge [?]MAGNIFIQUE /*magnifique
a car of race red beautiful
‘a beautiful red racing car’
 - b. ^{??} une voiture rouge magnifique/MAGNIFIQUE de course
a car red beautiful of race
 - c. ^{*/??} une voiture rouge de course magnifique/MAGNIFIQUE
a car red of race beautiful

As discussed throughout sections 6.2 and 6.3, the linear order [Adj2 > Adj1] can be derived in two ways: either by pied-piping/snowballing FP_{NPagr}-movement or by the merger of Adj1 in a low predicative position (Spec-FP_{pred}). As indicated by the contrast in (73a), the former derivation (non-predicative reading) is prohibited. In other words, pied-piping/snowballing FP_{NPagr}-movement is incompatible with the occurrence of a postnominal prepositional phrase. The derivation of (73a) where the right-hand adjective is interpreted as a secondary predicate goes as in (74). For unknown reasons, remnant NP-movement (i.e. after PP extraction) renders snowballing FP-movement impossible, as shown by the ungrammaticality of (73b). With respect to (73c), the ungrammaticality of the sequence [N > Adj2 > PP > Adj1] finds an explanation in the absence of a legitimate position between the two adjectives for the merger

of the prepositional phrase, regardless whether the right-hand adjective is in its canonical position or in the specifier of PredP.³¹



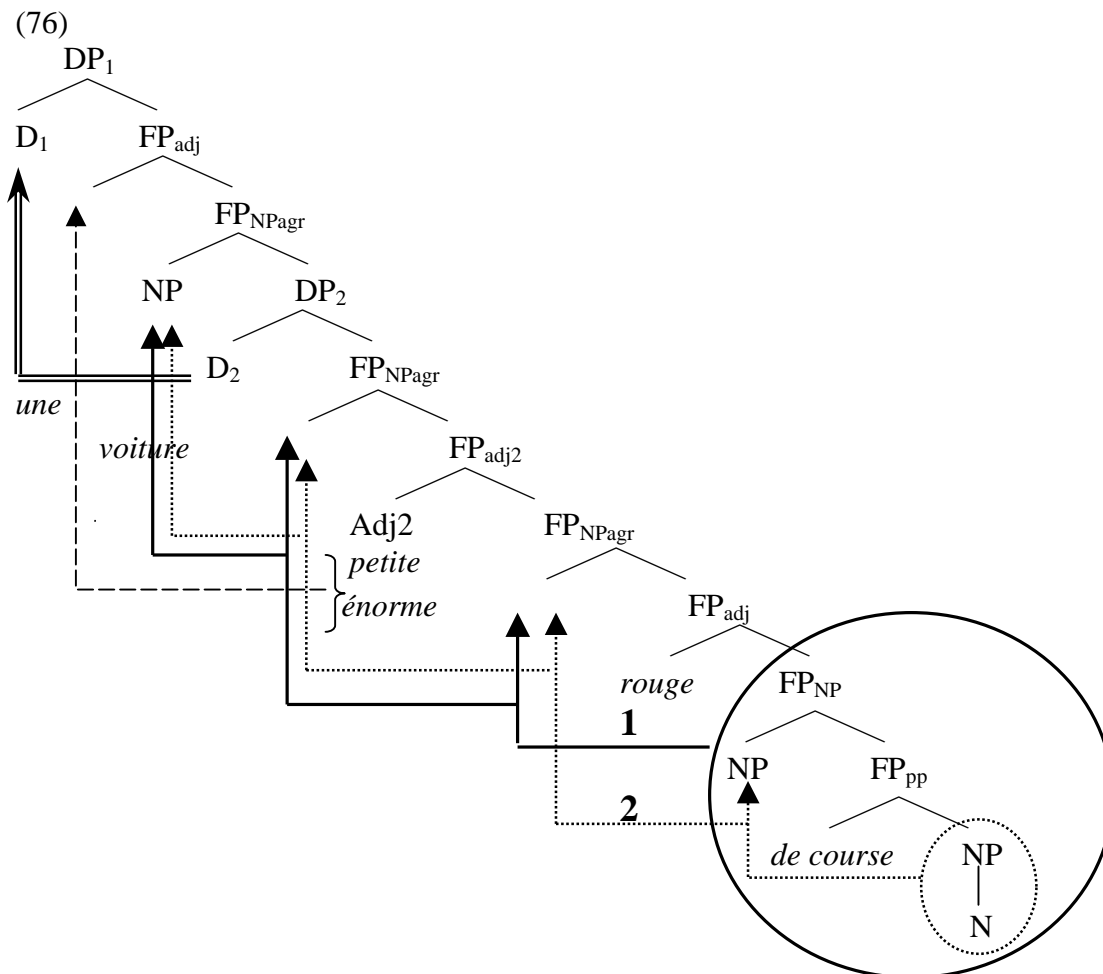
The modification of a noun by two adjectives plus a prepositional phrase can also be realized in a configuration like (75), where one of the adjective is prenominal and the other is postnominal.

- (75) Adj1 > N > (PP) > Adj2 > (PP)
- une énorme/petite voiture de course rouge
a huge /small car of race red
'a huge/small red racing car'
 - une énorme/petite voiture rouge de course
a huge /small car red of race
'a huge/small red racing car'

The intervention of a prepositional phrase between the noun and the postnominal adjective, as in (75a), results from pied-piping/snowballing FP_{NP}-movement (bold arrows (1) in (76)) after NP-raising. The DP-final position of the PP in (75b) results from cyclic NP-movement (dotted arrows (2) in (76)), which leaves the PP adjunct behind. The prenominal position of

³¹ The unacceptability of (73c) can also be explained by the distance between the noun and the prepositional phrase, which forces the latter to be predicative. Thus, *magnifique* and *de course* compete for the same position, namely the specifier of PredP. This closeness effect is reinforced by the cohesive nature of the unit *voiture de course*. For instance, the nominal expression *île verte magnifique des Caraïbes* 'beautiful green Caribbean island' is much less unacceptable than (73b).

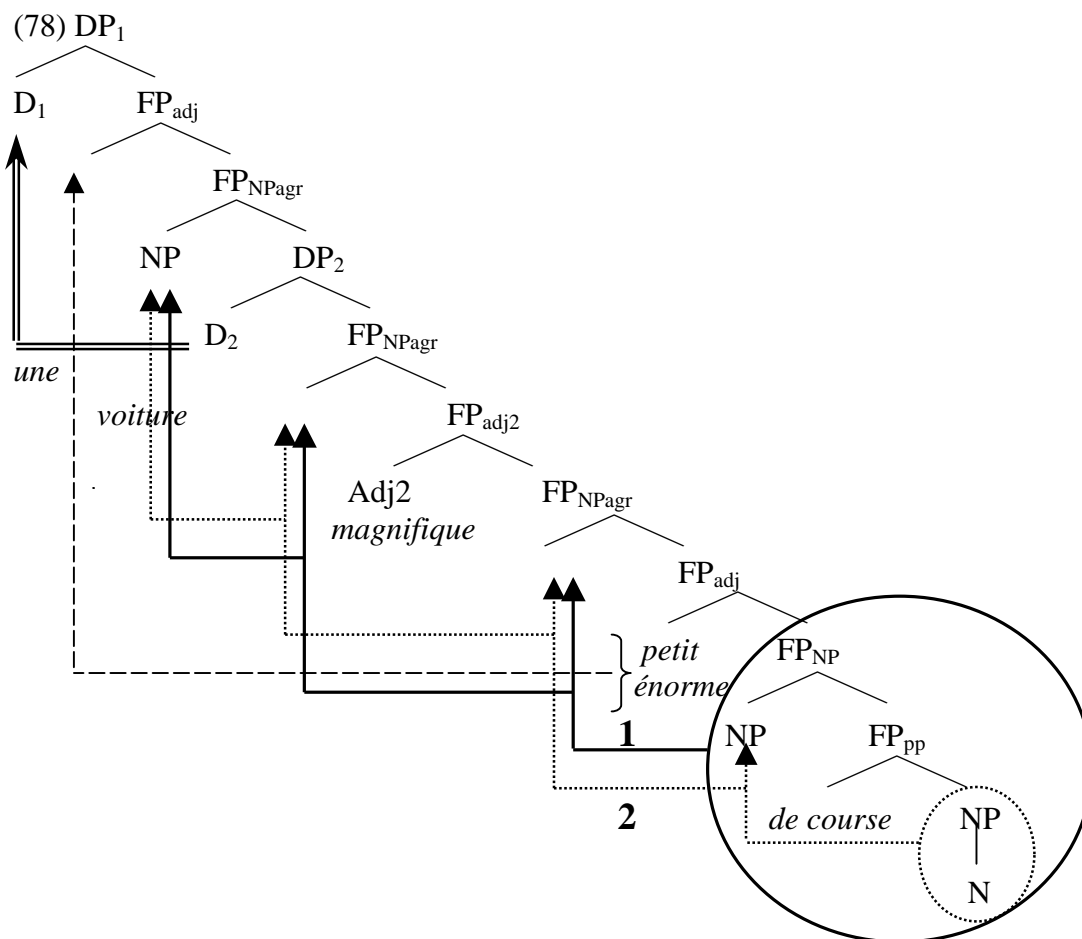
the adjective of size in (75) is the result of an upward reconstruction movement to a position at the left periphery of the noun phrase.



The example in (77) illustrates the case of a mirror-effect on the linear order of two adjectives, one being pronominal and the other postnominal. The PP adjunct can be placed either immediately after the noun or after the postnominal adjective. Prenominalization of the adjective of size is the effect of upward reconstruction. The derivation of the nominal expression in (77) (see also examples in footnote 31) is very similar to that of (75), and is represented in (78). The only difference between (76) and (78) lies in the position of the right-hand adjective. The adjective of quality *magnifique* in (78) merges in a position higher than that of the adjective of size. In (76) the adjective of color *rouge* merges in a position lower than that of the adjective of size. In both structures, raising of the adjective of size results in the rightmost placement of the second adjective.

(77) Adj2 > N > (PP) > Adj1 > (PP)³²

- a. une énorme/petite voiture de course magnifique
 a huge /small car of race beautiful
 ‘a beautiful huge/small racing car’
- b. ?une énorme/petite voiture magnifique de course
 a huge /small car beautiful of race
 ‘a beautiful huge/small racing car’



³² A further relevant example is given in (i)-(ii).

- (i) une petite île des Caraïbes magnifique
 a small island of the Caribbean beautiful
 ‘a beautiful small Caribbean island’
- (ii) une petite île magnifique des Caraïbes
 a small island beautiful of the Caribbean
 ‘a beautiful small Caribbean island’

Before concluding this section, it is worth pointing that the co-occurrence of a prepositional phrase with three postnominal adjectives results in ungrammatical constructions, irrespective of the order among the adjectives and the prepositional phrase.³³ This is shown in (79).

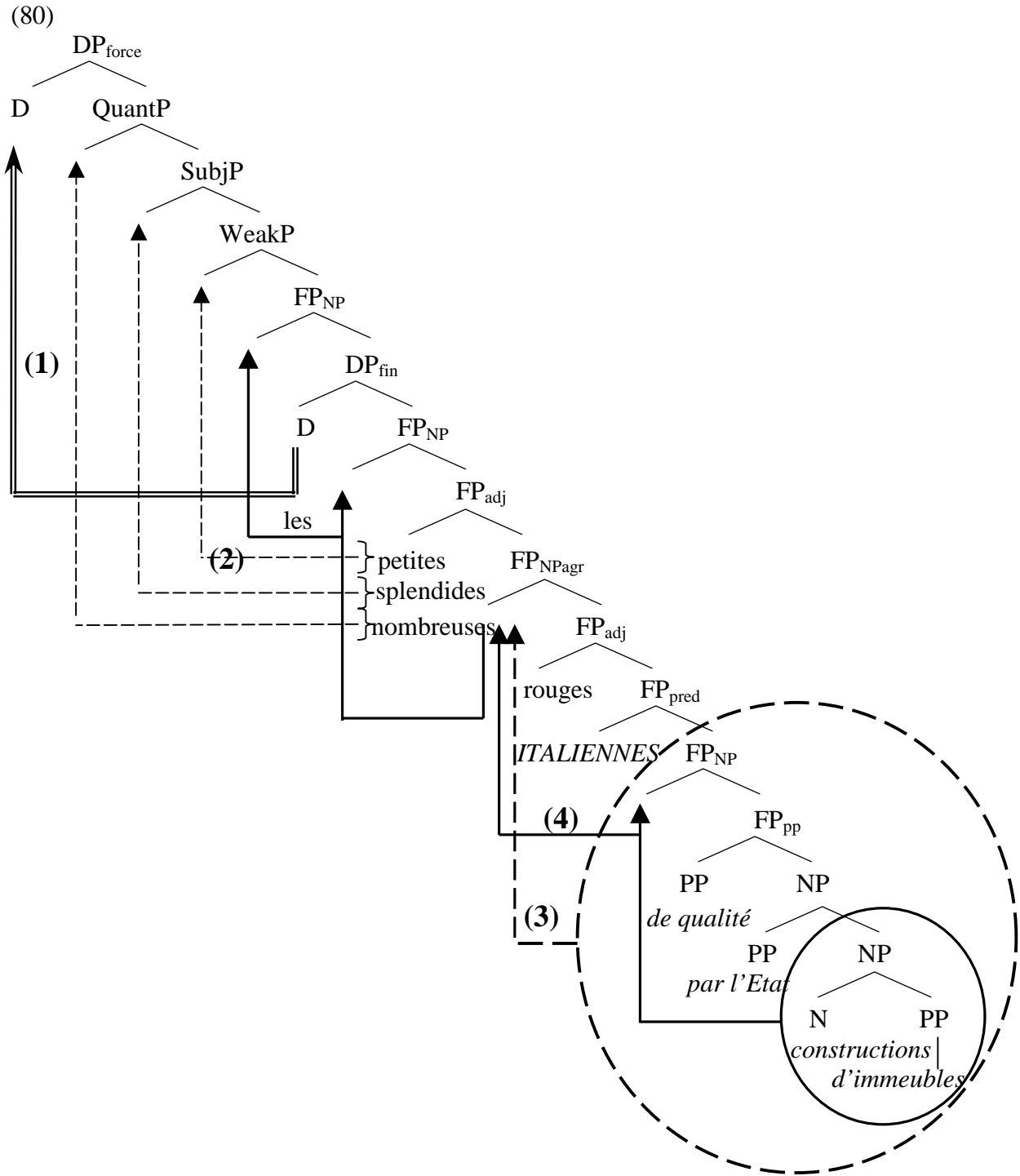
- (79) N > (PP) > Adj2 > (PP) > Adj3 > (PP) > Adj1 > (PP)
 N > (PP) > Adj1 > (PP) > Adj2 > (PP) > Adj3 > (PP)
- a. *une voiture (*de course) rouge (*de course) italienne (*de course) magnifique
 a car of race red of race Italian of race beautiful
 (*de course)
 of course
- b. *une table (*de berger) ronde (*de berger) blanche (*de berger) savoyarde
 a table of shepherd round of shepherd white of shepherd Savoyard
 (*de berger)
 of shepherd

The ungrammaticality of (79) shows that some derivational constraints apply to such complex nominal structures. These constraints have been previously identified as follows: (i) cyclic NP-movement cannot exceed a certain number of steps (3/4 steps); (ii) FP_{NP}-movement is restricted to one step; (iii) PP-stranding (remnant NP-movement) is incompatible with the occurrence of PredP.

To conclude this section, let us draw the main lines of the analysis of DP-internal movement types we have proposed for French (and presumably in other Romance languages). The basic structure for noun phrases that contain attributive and predicative adjectives, prenominal and postnominal adjectives, and PP-adjuncts and PP-arguments is reproduced in (80). This structure is illustrated here with a derived nominal, since an object-denoting noun cannot be associated with thematic PPs. Apart from PP arguments, the structure in (80) also holds for object-denoting nouns in general.

³³ Note that the nominal expressions in (79) remain ungrammatical even if the rightmost adjective acts as a secondary predicate. The possibility of having three adjectives co-occurring with a prepositional phrase depends on three conditions: (a) at least one of the adjectives must be prenominal, (b) the prepositional phrase must be adjacent to the noun, and (c) the right-hand adjective must behave as a secondary predicate. This is illustrated in the contrast between (ia) and (ib). The analysis of the acceptable sequence in (ia) relies on FP_{NP}-movement (*voiture de course*), the occurrence of PredP (*ITALIENNE*) and raising of the prenominal adjective *magnifique*.

- (i) Adj1 > N > (PP) > Adj2 > (PP) > Adj3 > (PP)
- a. une magnifique voiture (^{??}de course) rouge (^{??}de course) italienne (^{??}de course)
 a beautiful car of race red of race Italian of race
- b. une magnifique voiture ([?]de course) rouge (^{??}de course) ITALIENNE (^{??}de course)
 a beautiful car of race red of race Italian of race
 ‘a beautiful red Italian racing car’



Four types of DP-internal movement have been formalized following the representation in (80). First, the determiner undergoes a short head movement to the higher D (1). Second, the noun projection (NP) raises cyclically to the higher FP_{NP} (2). Third, the projection FP_{NP} , which contains the noun and possibly adjectives and prepositional phrases, can also raise cyclically to the upper FP_{NP} (3), giving rise to snowballing effects (i.e. mirror image effect). Pied-piping/snowballing movement is restricted to one step in French, contrary to what Pearson (1998), Aboh (2000) and Shlonsky (2000) propose for Malagasy, Gunbe, Hebrew and

other languages. Finally, adjectives can raise to a prenominal position as an effect of upward reconstruction triggered by interface factors (4).

6. CONCLUSION

The basic assumptions made in this paper are the following: The analysis of the noun phrase adopted here relies on a rich, articulate and complex DP structure. Adjectives, like adverbs, occupy the specifier position of their semantically corresponding projections. As arguments, prepositional phrases occupy positions internal to NP (Spec, Compl); as adjuncts, they occur in the specifier of a functional projection immediately dominating NP. The determiner domain is also quite a complex structure. The lower D layer is associated with the lexical determiner, which undergoes short head-movement to a higher external (deictic) layer. Short D-movement is analogous to the complementizer movement within the Comp-domain in the sense of Rizzi (1997).

The noun raises as a NP to an agreement position labeled FP_{NP} . In very restricted contexts, the noun projection can move as FP_{NP} to the specifier of the closest FP_{NP} , which produces a snowballing effect on the linear order of constituents. NP-movement (and also FP_{NP} -movement) applies cyclically and targets an agreement projection. This movement is realized in syntax in French, but not in English, due to overt agreement (number and gender) of the noun with the determiner and its adjectives. This analysis in terms of NP-movement tentatively dispenses with N-movement (i.e. head movement).

NP-raising also has the effect of postnominalizing the adjectives and preserving their structural order linearly. In contrast, pied-piping/snowballing FP_{NP} -movement gives rise to a mirror image of adjective ordering. NP-raising in French reaches the determiner domain, which implies that all adjectives are postnominal at some step of the derivation. Prenominalization of adjectives is obtained through subsequent $AdjP$ movement to a specific functional projection within the determiner domain. This is a sort of upward reconstruction of adjectival ordering triggered by interface factors. Thus, the weak properties of some short adjectives (*beau, petit, grand*, etc) lead them to occupy a prenominal position, adjacent to the noun, from where they can incorporate into the noun. This analysis finds support in the obligatory liaison in this context. Prenominalization of adjectives can be triggered by other interface factors, such as emphasis, strong subjectivity, speaker-orientation, and also quantification (quantifier scope). Thus, the neutral *une voiture superbe* 'a superb car' can be turned into the emphatic subjective *une SUPERBE voiture*. Likewise, the adjective *nombreuses* is prenominalized in *de nombreuses voitures rouges* 'numerous red cars' due to the scope of the quantifier adjective over *voitures rouges*.

The merger of prepositional phrases within the noun phrase has been considered in the light of an extended NP-shell analysis. The noun can raise with or without its associated PP, depending on whether or not the raised NP contains the prepositional phrase.

The above transformations are subject to a series of constraints. First, the limited number of postnominal adjectives indicates that cyclic NP-movement cannot exceed three or four steps. Further, pied-piping FP_{NP} -movement is restricted to a single step, since the mirror image of adjectival ordering cannot concern more than two adjectives. As for prenominalization of adjectives, it is only possible in particular contexts, namely for incorporation, speaker-orientation, focalization and scope quantification. The co-occurrence of adjectives in the postnominal domain is subject to a constraint according to which the rightmost adjective tends to function as a secondary predicate. The occurrence of the projection $PredP$ in (80) serves to host to DP-final predicative adjectives, and also focussed prepositional phrases. The occurrence of $PredP$ blocks pied-piping/snowballing FP_{NP} -movement and, hence, imposes constraints on the placement of postnominal constituents. For

instance, a prepositional phrase cannot be stranded in a DP-final position in contexts of adjectival predication. In other words, the PP must raise with the noun in the case of PredP occurrence. We have also observed that the prepositional phrase tends to be right-adjacent to the noun when it co-occurs with multiple postnominal adjectives. The adjacency between the noun and the PP is reinforced in the case of collocation. There, the prepositional phrase is merged with the noun, which subsequently raise together by NP-movement.

We hope to have demonstrated in this article that the puzzling observations regarding adjective pre-N/post-N positioning in French, and hopefully in other Romance languages, can be best handled on the basis of a split-DP and split-NP structure. Various types of movement have been postulated in the context of this quite complex nominal structure, for instance NP-movement, FP_{NP}-movement, AdjP-movement and short D-movement.

APPENDIX

As often observed in the literature, French possesses a certain number of homonymous adjectives, such as the ambiguous adjectives *ancien* and *pauvre*. They are ambiguous between a narrow-scope reading (modifying a property internal to the noun) and a wide-scope-reading (modifying the noun as a whole), as noted by Lamarche (1991) and Bouchard (1998). Consider the following pairs of examples.

- (81) a. une église ancienne
 ‘an old church’
 b. une ancienne église
 ‘an old/former church’
 c. une femme pauvre
 ‘a poor woman’ (who is not rich)
 d. une pauvre femme
 ‘a poor woman’
 (ambiguous: ‘a woman who is not rich’ or ‘a woman to complain’)
 e. ce grand homme
 ‘this great man’
 f. cet homme grand
 ‘this tall man’

The adjective *grand* in (81e-f) is a well-known case of attributive adjective homonymy in French. In a prenominal position, as in *ce grand homme* (‘this great man’), the adjective has a moral connotation, whereas it has a physical connotation in a postnominal position, as in *cet homme grand* (‘this tall man’). Lamarche (1991) and Bernstein (1991) propose that the narrow-scope reading is obtained by having the adjectives attached as a head to the noun. Thus, these adjectives occur in an appropriate configuration for modifying some properties internal to the noun. Postnominal adjectives, which must have a wide-scope reading, occur in an XP-position. The crucial observation made by these authors is that these adjectives keep their physical (objective) reading when they occur in a postnominal position. In a prenominal position, some of them can keep the physical/objective reading, while others receive a quantifier-like or an epistemic reading, as shown in (81a-d).

Following the DP-internal functional structure adopted here, ambiguous adjectives receive a different reading according to the adjectival position they occupy. In other words, they are underspecified in the lexicon as to one or the other reading. Consider the structural analysis assigned to the following pair of noun phrases:

- (82) a. une femme seule
 a woman lonely
 ‘a lonely woman’
 b. une seule femme
 a only woman
 ‘only one woman’

The postnominal *seule* in (82a) is an adjective of quality, merged with FP_{quality} as its specifier. The noun raises to $FP_{\text{NPagreement}}$ past the adjective (an instance of NP-movement). As a result, the nominal head precedes the adjective. In (82b) the prenominal adjective is assigned a quantificational (=numeral) value. Therefore, this adjective is merged as the specifier of FP_{quantif} . It is either merged at the root in this position or simply raised to this position.³⁴ As a result, the noun follows the adjective. The two structures are given in (83a) and (83b), respectively.

- (83) a. [DP une [$FP_{\text{(np)agr}}$ [$N_{\text{(P)}}$ femme] [FP_{qual} seule [NP [t]]]]]]
 b. [DP une [FP_{quant} seule [FP_{qual} ([t]) [NP femme]]]]

The same analysis holds for the pairs of homonymous adjectives in (81), when considering their distinct semantic classes.

Another interesting point, which is not unrelated to the above discussion, concerns the semantics of adjectives resulting from their prenominal or postnominal positioning. In English the usual position for attributive adjectives is prenominal. When two adjectives co-occur, the left-hand adjective has scope over the right-hand one. This, in fact, reflects their respective configurational relation: The former c-commands (i.e. has scope over) the latter, as illustrated in (84).

- (84) a. [a [FP_1 big [FP_2 red [balloon]]]]
 b. [a [FP_1 good [FP_2 French [cook]]]]
 c. [the [FP_1 second [FP_2 successful [candidate for this prize]]].

The left-hand adjective has scope over the right-hand adjective, for the former occupies the specifier of a functional projection (FP_1) that dominates the functional projection (FP_2) containing the latter adjective.

French displays similar properties when there are two adjectives in prenominal position: The left-hand adjective has scope over the right-hand adjective. However, the interpretation is more complicated with one adjective in a prenominal position and the other in a postnominal position, as in the nominal constructions in (85) corresponding to the English (84).

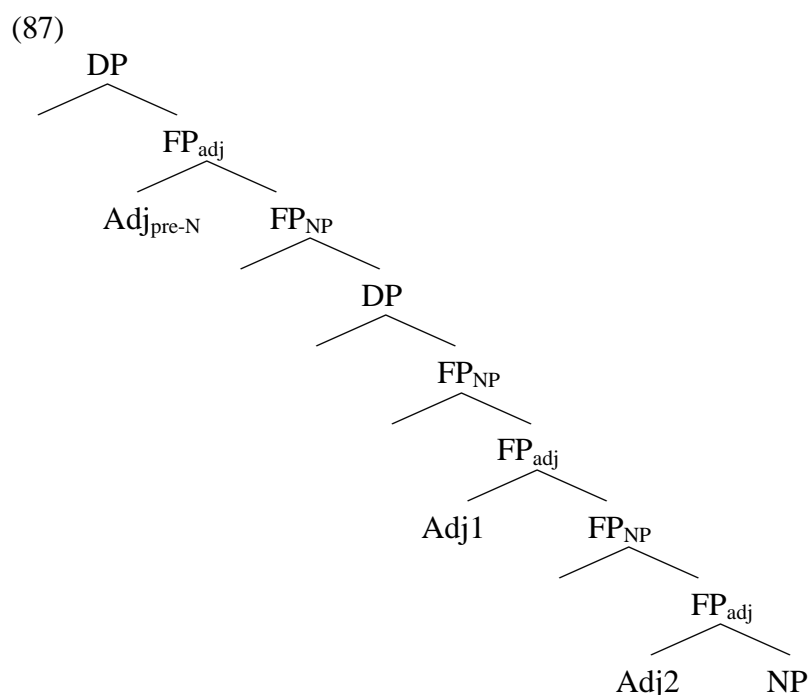
- (85) a. un gros ballon rouge
 b. un bon cuisinier français.
 c. un second candidat gagnant pour ce prix

³⁴ The same question arises with adverbs like *courageusement*, *impoliment*, which can be ambiguous as to whether they have a manner reading or a sentence (factive) reading. There are two possibilities: either there are two lexical entries for these ambivalent adjuncts or there is only one. In the former case, the two adjectival/adverbial forms can be merged separately into a distinct position. In the latter case, the adjective/adverb merges in its lower ‘base’ position and can raise to a higher position. As a matter of fact, the two alternatives result in the same structural analysis on the surface.

In (85a) the adjective of color has scope over the adjective of size. As noted by Bouchard (1998), the reverse scope is also possible in a special reading according to which *gros* and *ballons* constitute a single referential unit. This interpretation is certainly related to the special order in the phrase *some RED big balloons* (cf. Sproat & Shih's (1988) example: *BLACK small dogs*). Scott (1996) observes that the first adjective must bear focus stress, while the noun and the second adjective form a discourse-relevant category (see also Sproat & Shih 1989). In (85b) there is also a scope ambiguity. The referentiality of *French* can apply to the entity *good cook*. Inversely, the quality of *good* can apply to the entity *French cook*. From a configurational point of view, only the reading in which the first adjective has scope over the second adjective is expected. Bouchard (1998) gives two additional examples in which the reverse scope is expressed. In (86), the right-hand adjective may have scope over the left-hand adjective, i.e. [Adj₁ [N [Adj₂]]].

- (86) a. une nouvelle proposition intéressante
 a new proposition interesting
 'a new interesting proposition'
 b. la seule situation financière désastreuse
 the only situation financial disastrous
 'the only disastrous financial situation'

Consider again the relevant part of the DP-structure in (87).

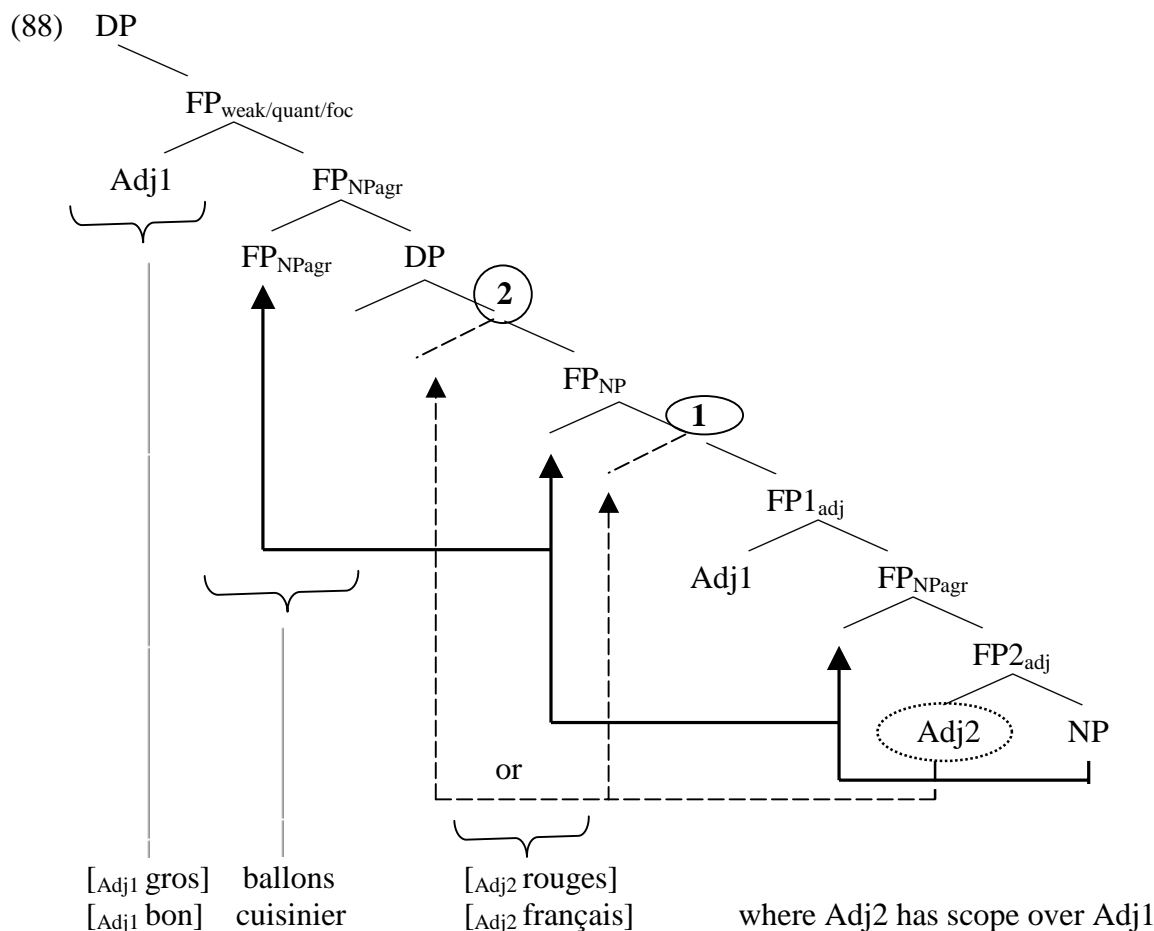


In such a configuration, Adj₁ c-commands Adj₂; hence Adj₁ has scope over Adj₂. Take, for instance, the derivation of (85a): *gros ballon rouge*. We have proposed in this paper that the noun raises as an NP past all the adjectives. The adjective *gros* surfaces in a prenominal position by further raising above the NP for syntactic incorporation into the noun. The English transparent adjective ordering (*big red balloon*) indicates that *gros* is root-merged higher than *rouge*. Only the interpretation in which *gros* has scope over *rouge* is expected from such a configuration. This also holds for (85b) where the adjective of quality *bon* (=Adj₁) can have scope over the adjective *français*. (=Adj₂).

As already mentioned, there is another possible interpretation according to which Adj2 has scope over Adj1, as in (85a-b) and (86a-b). If scope is expressed under (c-)command at some step of the derivation, then Adj2 must occur higher than Adj1 in the course of the derivation. Given the linear order [Adj1 < Adj2], Adj1 is found in a position higher than that of Adj2 at the end of the derivation. We may adopt either the reconstruction approach to scope (under Chomsky's 1995 Copy Theory) or Kayne's (1998) recent assumption that scope is not recoverable by LF-reconstruction, but instead an effect of pre-movement of some phrase. In either approach, the relevant configuration consists of having Adj2 c-commanding Adj1 at some step of the derivation, while having Adj1 preceding Adj2 at Spell-Out.

Consider (87) again. After cyclic NP-movement to FP_{NP} , the order [N < Adj1 < Adj2] is obtained, with Adj1 still c-commanding Adj2. To have Adj2 c-commanding Adj1 (and N), one can take into account the operation of adjective raising suggested in section 6.3. In order for Adj2 to c-command Adj1, Adj2 must raise past Adj1. The landing site of such a movement is not clearly identified yet, but it should be located either immediately above FP_{adj1} or just higher, as indicated by (1) and (2) respectively in (88). Then, Adj1 is prenominalized via raising to FP_{weak} . The whole derivation is represented in (88). The main assumption behind this analysis is that a configuration like [Adj1 N Adj2] showing scope ambiguity involves the kind of prenominal movement proposed for some adjectives in section 6.3. We have illustrated this type of transformation with (strongly) subjective, focalized, weak and quantificational adjectives.³⁵

³⁵ Incorporation of the adjective into the noun is a possible analysis here. Adj1° would be then left-adjoined to N°, as proposed by Lamarche (1991) and Bouchard (1998). However, the analysis of prenominal adjectives as heads has not been adopted in this work. As an alternative, it has been proposed that the category AdjP1 targets the specifier position of a functional projection, vaguely named FP_{weak} , as represented in (88).



It remains to discuss the scope properties of the pair of noun phrases in (84c) and (85c). In English, the quantificational adjective has scope over the adjective of quality. As pointed out by Borer (1999), both the linear order and scope hierarchy can be reversed: *a successful second candidate for this prize* (see also Sproat & Shih 1988, Scott 1998 for similar examples). This scope rearrangement follows from a different structural configuration. Given the basic order *second* > *successful*, we propose by analogy with (85c) that the adjective of quality *successful* moves past *second* and, thus, has scope over it. As expected, the French example is ambiguous. The more natural reading is the one in which the adjective *second* has scope over the adjective *gagnant*. The reverse scope reading is also possible.³⁶ The former reading is obtained at the root, since only the nominal category raises past *brillant*. The latter reading is obtained along the lines of (88). At some step of the derivation, *brillant* c-commands *second*. At a further step of the derivation, the quantifier adjective raises past *second*, which results in the expected linear order [*second* < *brillant*].

³⁶The French examples below are also relevant to the present discussion:

- (i) le deuxième brillant gardien de l'équipe.
- (ii) le brillant deuxième gardien de l'équipe.
- (iii) le deuxième gardien brillant de l'équipe.
'the second brillant goalkeeper of the team'
'the brillant second goalkeeper of the team'

One observes that, contra the natural scope order expressed in (i), the adjective of quality in (ii) has scope over the quantifier adjective. As in (85c), the nominal expression in (iii) is ambiguous.

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