Chapter 3

DP-internal functional projections

1. Introductory remarks

In the introduction to Part II, we pointed out that the extended nominal projection contains two major functional fields dominating the lexical domain: (a) a higher functional field, which revolves around D and which is mainly the area where discourse-oriented functions are encoded, and (b) a lower functional field encoding morpho-syntactic/agreement properties. It is this layer where agreement between the various constituents of N is implemented.

In Chapter 1 we reviewed how from the eighties onwards linguists have been seeing D as the nominal counterpart of C or I. We also presented the recent literature on the split CP (Rizzi 1997) according to which the traditional single functional layer CP is articulated (‘split’) into a number of discrete and specialized categories; the highest projection is ForceP; it encodes information linked to the discourse. The lowest projection is FinP, which is directly related to the inflectional properties of the verb. In between, we find a Focus Phrase and one or more Topic Phrases. In Chapter 1 we also examined how hypotheses about a more detailed articulation of the clausal system could be ‘transferred’ to the DP, exploring for instance the parallelism between clausal and nominal Foci and Topics. We also proposed a lowest functional projection in the (split) DP domain, which parallels the clausal FinP in that both are orientated ‘downwards’ in the inflectional domain, a point which we will return to in this chapter.

In the present chapter we will further assess the issue of the presence of inflectional categories intervening between DP and NP. The area between DP and NP in the nominal projection corresponds to the domain often referred to as ‘IP’ in the clause. For IP too, there have been proposals to the effect that the head I can be decomposed into several projections including Mood, Aspect, Agreement and Tense (Ouhalla 1988; Pollock 1989, 1997; Cinque 1999 etc.). Research on the noun phrase has given rise to questions similar to those being asked about the number, the types and the role of functional projections in the IP. The properties of agreement projections in
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the clause, which are essentially related to the IP domain, are connected with the operation of movement of V. We will therefore discuss whether and how the nominal counterparts of these projections interact with DP-internal movement of the noun itself or maximal projections. The core data we will be focusing on here concern the distribution of nouns in Semitic DPs, in particular the construction that has come to be known as the construct state (Borer 1988; Ritter 1987; Siloni 1991), noun-initial nominal projections in Italian (Longobardi 1994, 1996), and the distribution of the noun with respect to adjectival modifiers in Romance (cf. Ritter 1991; Valois 1991; Cinque 1993; Bernstein 1993; Fassi-Fehri 1993, among many others).

Two provisos are in order here. First we would like to make a general point concerning the goal of this chapter. This chapter will not offer a definitive answer to the question of how much functional structure should be postulated for the DP. Put differently: there will not be at the end of the chapter a definitive inventory of all the functional projections with their hierarchical organization. Our goal is mainly to illustrate and evaluate the types of arguments that have been provided for postulating functional structure. Indeed the question about the nature of functional projections is one that is not confined to the DP and is a pervasive issue in the framework we have adopted. Secondly, in this chapter we survey some of the earlier discussions of the functional structure associated with the nominal projection. The evidence advanced in those accounts has sometimes been challenged by later accounts, both on theoretical grounds and on empirical evidence. Challenges to the accounts presented here will also be presented in later areas of this book. In particular the proposal that the Romance noun-adjective order is derived by N-movement triggered by gender morphology (Bernstein 1993) can be (and has been) challenged. However, in spite of the shortcomings of the N-movement, the hypothesis as such, the assumption that the nominal projection contains functional structure can be maintained.

In order to motivate postulating functional projections two types of evidence can be advanced. One concerns the way(s) inflectional categories, such as number and gender for the noun, are overtly realized in individual languages. We discuss this type of evidence in sections 2 and 3. Further evidence for the existence of functional projections comes from the observed movement of constituents within a projection. In particular we will see in section 4 that in a number of languages nouns do not seem to occupy the position corresponding to what would be their base position, the head of the lexical projection, NP, but they seem to occur in a position somewhere to the left of their base position. In order to account for such patterns, move-
ment of N to a higher, c-commanding head position has been proposed, thus implying the existence of higher functional heads. This type of evidence is discussed in section 4. Section 5 is more speculative. It presents some additional evidence for functional heads on the basis of the availability in the nominal projection of what seems to be verb-related inflectional marking such as aspect and tense. Section 6 is a brief summary.

2. Number and NumP

Since it is generally assumed that head movement is triggered by some c-commanding element, the question concerning the availability of functional heads in the nominal projection and that of N movement are intimately related. If there are functional heads in the nominal domain, these are likely to encode features which may trigger movement. Conversely, if there is movement of N to a higher position, this must be triggered by a feature of a higher head, so we need to assume a functional projection. By analogy with the hypothesis that V movement to I in the clause is triggered by inflectional features associated with V, a similar line of reasoning has been explored to account for the movement of N in the nominal domain. One of the issues raised below is which features can arguably constitute triggers for N movement. Obvious candidates are the typically nominal inflectional features such as number and gender.

In addition to the question whether N-movement applies in the nominal domain in a way similar to V-movement in the clause, and the question whether nominal features such as number and gender can constitute the trigger of such movement, the discussion in this chapter will also be concerned with the more general question of the status of inflectional features. In particular, we will be concerned with the opposition between intrinsic and optional features (Chomsky 1995: 235–241). Intrinsic features are taken to be those features that are an inherent, and thus inseparable, part of a lexical item. Optional features are those features that can be chosen and this choice is made via the operation of numeration (see Introduction sections 2.3 and 2.5.2.1). For instance, as we will see in detail further below, gender is an intrinsic feature: the gender of a noun is inherently associated with the noun, and cannot be changed.1 Number is an optional feature: Number is a category, the values of which (singular/plural or other) can be chosen, or,

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1 Obviously the idea of gender being a fixed property of words is not new: it goes back at least to Hockett (1958) and Greenberg (1978).
put differently, are varied. In order to be varied, a feature must be non-intrinsic (De Vincenzi & Di Domenico 1999). When discussing the impact of these features we will bear in mind the theoretical claim within the general Minimalist framework that semantic features that are interpretable are encoded on designated heads. As we will see below, the head number may be such a head; gender is not such a head. Non-interpretable features (called unvalued by Chomsky 1998) can also be found on other heads (through agreement, for example).

After these introductory remarks, let us examine in some more detail the impact the primarily semantic concepts number and gender have on syntax.

Number first and foremost represents a semantic category at the conceptual intensional level. It signals that a set of entities has a cardinality; in other words that it has a certain number of elements. In this way number is a means to “atomize a set and provide access to individuals” (Bouchard 2002: 41). We can use an illuminating passage from Bouchard as an illustration of this:

The property of a common noun is not atomized, i.e. it does not define the quantity of individuals to which it may be applied, and is thus seen as a mass: it applies in an undifferentiated way to all individuals of the set, to the set itself and to all its subsets. (…) So a ‘signifiant’ for TOMATO at this level of grammaticalization does not distinguish between a tomato, the tomato, some tomatoes, the tomatoes or tomato as a mass. Given the usefulness of such distinctions in identifying more precisely the participants in the event, the languages have a second level of grammaticalization regarding the means to ‘atomize’ the set defined by a common noun.

(Bouchard 2002: 40)

Like the abstract meaning TOMATO, CAT expresses a property – a property which is true of anything that is a ‘cat’. ‘Cat’ has the semantics of Kind (see chapter 2 on generic nouns), and at this level singulars and plurals are not distinguished. In other words, the property ‘cat’ as expressed by the N cat applies to all the individuals of the relevant set.

As Bouchard notes in the extract cited above, there are various ways for a set to be atomized and these ways vary across languages. Some languages (like Chinese or Vietnamese) use classifier systems (Cheng & Sybesma 1999, see Chapter 2, section 3.1.4). Others, like Greek or French or English, exploit features of number, definiteness or specificity, as we have seen (Chapter 1). Referentiality of N is linked to one of these features (or even a combination of them). The same point is also made by Aboh (2004) who gives examples from Gungbe that show that a bare noun may be interpreted
as definite, indefinite or generic depending on the context (1a), but that a noun marked by the number marker \( l \) is necessarily interpreted as [+definite, +plural] (1b).

(1) a. Mi sà àkwékwè àt n ná mi
    2pt. sell banana five for 1SG
    (from Aboh 2004: 5, his (9))
    ‘Sell me five bananas.’

b. Mi sà àkwékwè àt n l ś ná mi
    2pt. sell banana five Numb for 1SG
    ‘Sell me the five bananas.’

In (1b) the sequence àkwékwè àt n l ś (‘the five bananas’) refers to a predefined set of five bananas. Crucially, for Aboh, the number morpheme is a definite marker at the same time. It is also worth mentioning here that in some languages bare plurals (as opposed to bare countable singulars) can function as arguments (see chapter 2); this also suggests that at least one value of the category number, namely ‘plural’, is directly linked to reference and argumenthood. The facts in (1) illustrate clearly that given the relation between number and extensity, what determines the extensity of the nominal expression falls under the scope of number (Bouchard 2002: 172).

Summing up, number can be seen to contribute directly to the referentiality of a noun: it turns the noun into an argument of the verb. When a noun has number marked on it, it can count as an argument. CAT ceases to be a kind-denoting noun once it is atomized – i.e. when marking of number is added to the relevant noun word.

The crucial question now is how number is ‘realized’ linguistically and, more concretely, how it is syntactically represented (if it is at all).\(^2\) Let us see what cross-linguistic variation shows us here.

In English, nouns are partly inflected for number: plural nouns regularly take the plural ending -s (2a). However, plural number can also be carried through allomorphy (i.e. alternation of part of the root/stem) as in (2b):

(2) a. cat                 cats
    b. mouse              mice
                                man     men

\(^2\) This is a question that does not pertain to Number alone; it pervades the whole generative literature, from the eighties onwards: under what conditions is a non-lexical category to be projected syntactically (see also Introduction, section 2.3).
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English singular nouns are not marked for number. This may explain why singular nouns in English do not as a rule function as arguments (see Chapter 2). In French too, number is overtly marked on the plural noun and is not marked on the singular:

(2) c. chat \(\rightarrow\) chats (French)
cat \(\rightarrow\) cat-PL
d. ami \(\rightarrow\) amis
friend \(\rightarrow\) friend-PL

On the other hand, the definite determiner in English is not marked for number. In French, in contrast, number is encoded at the phrasal level on articles themselves, as in (3):

(3) a. l’ami (French)
the-SING friend
b. les amis
the-PL friend-PL

In other words, in French, in contrast with English, the article is declined for number:\(^3\) *le, la, les.* Concerning the forms *le* and *les,* it can be said that the absence of the marker -s for plurality signals singular: singular is the default number.

The same situation is observed in Greek:

(4) a. to ghatí (Greek)
the-neut SG kitten (neut SG)
b. ta ghatí-a
the-neut PL kitten-PL (neut PL)

Notice that in Greek, unlike what was just said for French, the article bears both singular and plural morphology to the effect that no form can be singled out as the ‘marked’ case.

Crucially, in French and in Greek Number is marked twice: on the article itself and on the noun. Moreover, concerning Greek and French, it is also the case that an adjective intervening between the noun and the article

\(^3\) The article is also inflected for gender: *le* is masculine, *la* is feminine.
also bears number markings, to the effect that number may be marked three times\(^4\) in a single DP:

\[(5)\]
\[
\begin{array}{ll}
\text{a. to } & \text{oreo ghati} \\
& \text{the-NEUT SG nice- NEUT SG kitten- NEUT SG}
\end{array}
\]

\[
\begin{array}{ll}
\text{b. ta } & \text{orea ghatia} \\
& \text{the- NEUT PL nice- NEUT PL kitten- NEUT PL}
\end{array}
\]

The general assumption is that number comes out on the adjective as a result of agreement. Underlying this assumption is the idea that number is only interpreted once in the nominal projection. Apart from the one interpretable occurrence (to which we return) all additional markings of number are uninterpretable. With respect to the mechanisms of number agreement, the question arises as to where number originates. One possibility is that number starts as an (uninterpretable feature) on the noun and then the other constituents acquire the relevant number feature by agreement. Alternatively, number may be taken to start from the article with the noun and the adjective(s) then agreeing with that. Yet a third option is that number resides on a separate designated head. The question is not trivial and one should find appropriate empirical evidence in order to determine which element carries number in a semantically relevant way, in which case it is an interpretable feature, and which element(s) can encode number as an uninterpretable feature. Bouchard (2002: 42–43) discusses evidence to show that number is on the noun in English but on the article in French. The most important of relevant facts is given below and is taken from Longobardi (1994).\(^5\)

\[(6)\]
\[
\begin{array}{ll}
\text{a. The secretary of John and collaborator of Paul is/*are at the station.} \\
& \text{La secretaire de Jean et collaboratrice de Paul est/*sont à la gare.} \\
& \text{(French)}
\end{array}
\]

In (6a) the subject consists of a coordination of two nominal constituents \textit{secretary of John} and \textit{collaborator of Paul}, with a single article \textit{the}. The verb in this case can be plural. Similarly, in French (6b) there is one article, \textit{la} (‘the’) and there are two nominal constituents, \textit{sécrétaire de Jean} (‘the

\(^{4}\) Or more, if there are more adjectives.

\(^{5}\) See Chapter 1, section 2.3 and Chapter 2, section 3.2.2., where a similar example (62c) is discussed from a slightly different point of view.
secretary of John’) and collaboratrice de Paul (‘collaborator of Paul’). However in French the verb est (‘is’) is singular. The reason why in the presence of a single article, the plural verb is possible in English is due to number being encoded on the noun. Since N encodes Number, which allows each of the two nouns to have a minimal atomization, each noun can denote an individual. In contrast, in French plurality of reference is impossible due to the fact that number is on the article and not on the noun (Bouchard 2002: 43). In (6b) the article is singular.

If we then assume that inflectional morphology must be represented structurally, as seems to be the consensus in generative theory, and if interpretable features must appear on designated heads, then the previous discussion and the relevant data would justify postulating a projection of number, NumP. Number, being an interpretable feature on nouns, must be situated on an appropriate designated head, this is the head of NumP. In the early nineties, this projection was thought of as playing an important part in the nominal architecture and in the interpretation of the noun phrase. It was thus one of the first inflectional categories to be established in the DP (Ritter 1991, 1993).

An important theoretical assumption is that a head carrying an uninterpretable semantic feature must c-command the head carrying the interpretable counterpart of that feature. If number on D is non-interpretable, then this would automatically force the Num head to project lower than D (see also Panagiotidis 2002). By analogy with the position of IP in the clausal domain, the structure in (7) has been proposed:

(7) DP
    NumP
    ————
    ————
    NP

6 However, Bouchard (2002: 44–45) himself challenges this assumption. According to him, what is universal is not syntax, not c-selection, but the s-selection that underlies it, s-selection itself deriving from C(onceptual)I(ntentionsal) properties which are logically anterior to linguistic theory, such as identification of actants in the present case. (Bouchard 2002: 45)

7 Given the intimate relation between number (atomization) and argumenthood/referentiality, one can understand why in the very early days of the DP hypothesis number features were thought of as residing with D.
An alternative to number being syntactically projected would be for number to be added on noun heads in the course of numeration, without postulating a separate Num head.\(^8\) There are reasons why this alternative is not optimal. First, if number was added optionally on noun heads, there would be nothing to prevent it from being added also on any other head in the extended nominal projection, e.g. on D, or on A, but this is not possible in all languages (Panagiotidis 2002: 21).

Second, Hebrew provides a strong argument in favor of a separate Num projection (see also section 4.1 below). According to Ritter, the affixation of plural marking on nouns is similar to the affixation of tense and agreement affixes on the verb (cf. (8)):

\[(8)\] Nominal inflection in Hebrew (Ritter 1991)

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feminine</td>
<td>-et, -it, -at</td>
<td>-ot</td>
</tr>
<tr>
<td>Masculine</td>
<td>-im</td>
<td></td>
</tr>
</tbody>
</table>

More telling support for the postulation of a Number Phrase is provided by the relationship between the ‘construct state’ and the ‘free state’ structures in Hebrew, an issue to which we turn below. Before doing so, we first turn to the representation of the category gender. We will show that the syntactic representation of gender differs from that of number.\(^9\)

3. Gender, Word Marker and ‘Gender Phrase’

3.1. What determines Gender?

Questions pertaining to the grammatical category of Gender are many and varied. They include: what is the origin of Gender,\(^10\) what is the relation-
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ship between natural gender (sex) and grammatical gender, what is the role of gender in the grammatical systems of languages, given that Gender is not manifested in every language, is Gender a universal category or a language specific category, and how regular or predictable is the coding of gender on nouns and/or other modifying elements of noun phrases. In this section we are concerned with the latter two questions, though, unfortunately, we will not be able to provide a satisfying and definitive answer to them.

In many languages, especially and primarily the inflectional (fusional) ones, the category gender plays a prominent part in the nominal morphological system, in that it is marked on the noun itself, quite independently of its marking on D or any other head in the nominal projection. In Slavic languages, for example, or in Latin, there is no definite article, but nouns are marked for Gender. There is a striking difference between number and gender: while the values of number (singular, plural, other) may be chosen, the values of gender cannot; they come as part of the lexical entry of a noun. Gender features of the noun are to a large extent arbitrary and therefore have to be learnt by the child as an integral part of the lexical meaning of every noun. Ritter (1993) makes this clear:

Since part of knowing a noun is knowing its gender in all the languages considered here (Hebrew and Romance – A-H-S), I assume that gender must be recorded in the lexical representation of nouns for both types of languages. Thus, the difference between them is not whether gender is represented in the lexical entry (…). (Ritter 1993: 795)


Apart from the impact of the feature [animate] on gender, a point we come back to below, gender features are not predictable from some independent semantic property of the noun. Why is the noun for ‘table’ in French ((la) table) feminine, for example, while the equivalent word in

more familiar and traditional use of the term where it is applied to distinctions related to sex (physical gender). The reader is referred to Corbett (1991) for data and discussion on a broad typological base. Another relevant point made by Panagiotidis (2002: 25) is that gender, unlike case, for instance, is always semantically relevant: “There are no languages attested with Gender systems of a purely formal nature (…)”.

Greek is neuter ((to) trapezi) and that in West Flemish ((den) toafel) is masculine? Why is the form for ‘banana’ feminine in one dialect of Flemish (West Flemish (de) benane) while it is masculine in an adjacent dialect (East Flemish (den) benan)? Observe also that when a word is borrowed from one language into another its gender may change. West Flemish has borrowed the word kreem (‘cream’) from French (crème), but while the word is masculine in Flemish its French source is feminine. In Greek, names of car brands are either feminine or neuter, with no obvious way to predict which gender value comes with which car type: Mercedes and BMW, for example, are feminine when used as names of cars, while Opel and Volkswagen are uniformly neuter. We conclude thus that there seems to be no way for any specific gender value to be predicted/computed semantically. The anecdotal evidence above illustrates this point.

On the other hand, there are phonological cues which can be used up to a certain extent to derive the gender values. For instance, consider the following examples from Greek. Pateras is a masculine noun meaning ‘father’, xara is a feminine noun meaning ‘joy’. As we will see in more detail below, their respective declensional systems give the language learner cues for their difference in Gender. Cf. (9) and see also Panagiotidis (2002: 25) for more on this (also in the work by Ralli referred to above):

\[
\begin{array}{cccc}
\text{NOMIN} & \text{MASC} & \text{FEM} \\
patera-s (‘father’) & xara (‘joy’) \\
\text{GENIT} & patera & xara-s \\
\end{array}
\]

Notice that gender co-varies with case, so that it can be said that the phonological form of the ending can contribute to the specification of gender. Whereas in the nominative masculine nouns typically end in -s and feminine nouns have apparently a zero ending, in the genitive masculine have a zero ending and feminine end in -s. Likewise, nouns ending in [-o-s] (in the nominative) are for the most part masculine, those that end in [-i] are feminine. However, this situation does not apply across the board, and there are so many exceptions\(^\text{11}\) that the correlation between phonological form and gender is also seriously undermined.

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\(^{11}\) For instance, many neuter nouns also end in [-i] (pedh-i, ‘child’), while some neuter nouns end in [-ox] (dhaus-os, ‘forest’). Things become more complicated when cases other than nominative and number other than singular are taken into consideration.
With respect for the correlation between phonological form and gender, Romance languages such as Spanish and Italian present a more transparent system than Greek. For Spanish Harris (1991) has described the system underlying the connection between gender and its (phonological) expression in detail. Both these languages show a correspondence between the form of the N and its gender, and this correspondence is more robust than in Greek: typically the vowel which marks the right edge of the stem correlates with masculine: the vowel -o- correlates with masculine gender and the vowel -a- with feminine. Such phonological expressions of gender are called inflectional or word-class markers, because they mark the (morphological or declension) class a noun belongs to. In fact -o- and -a- mark also the end of the (phonological) word in the sense that the only suffix that may follow the gender related vowel is the plural -s marker (Bernstein 1993: 117; also Harris 1991).

Harris does not identify the formal endings which correspond to word (declension)-class with the category Gender as such, and this for two reasons (see also Ralli 2003:71 for the same claim for Greek. See also below).

(i) While the word-class is an indication of the gender, there is not always a perfect match between the two. Harris distinguishes three types of Ns: inner core Ns, outer core Ns and the residue. The form and gender of the so-called ‘inner core’ noun converge: the word marker -o correlates with masculine, the word marker -a with feminine. The following examples are from Spanish:

(10) a. hijo ‘son’ (Spanish)
    b. hija ‘daughter’

The so-called ‘outer core’ nouns do not contain word-markers but still have lexical Gender:

(10) c. madre ‘mother’ feminine
d. col ‘cabbage’ feminine
e. padre ‘father’ masculine
f. sol ‘sun’ masculine

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12 In West Flemish the schwa ending is typical of feminine nouns: thus benane (‘banana’), with the relevant ending, is feminine and kreem (‘cream’), without it, is not.
What Harris calls the ‘residue’ consists of idiosyncratic terms among which masculine terms in *a* such as *programa* (‘program’) and feminine nouns not ending in *-a*, such as *mano* (‘hand’).

(ii) As shown by (11), Spanish adverbs may display word markers, and surely gender cannot be associated with them:

(11) a. *dentro* ‘inside’
   b. *fuera* ‘outside’

To summarize the discussion up to now: On the one hand, gender values (masculine, feminine, neuter), unlike number values, are not chosen/predictable on the basis of some semantic feature or property of the noun, e.g. sex. They are largely arbitrary. By the same token they could be said to be uninterpretable. On the other hand, the presence of the category gender on nouns/noun forms in inflectional/fusional languages seems to be only partly determined by its phonological exponence.

In the following sections we will briefly review accounts that link gender to syntax (as a separate projection), to morphology (inflection class) and to semantics (in particular the feature [animacy]).

### 3.2. Gender in the syntax?

From our point of view in this book, the important question can be formulated as whether gender relates to syntax, and, if it does, how can this relationship be expressed?

We mentioned at the beginning of the chapter that semantic features which are interpretable are encoded on designated heads. We provided some arguments for postulating the head number as such a designated head. Non-interpretable features on the other hand do not project corresponding heads. By this reasoning, and given what has been said so far about the non-interpretability of gender, we cannot postulate a designated head Gender. However, at least for some languages, there seems to be a relatively systematic link between the form of the noun and its gender. In this subsection we will see in some more detail how gender can be related to syntax.

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13 Tsimpli (2003), based on data from second language acquisition (L2 Greek, L1 Georgian), argues that gender cannot easily be classified as either interpretable or as non-interpretable.
In order to formalize a link between the form and the gender of the noun, Bernstein (1993) proposed that the stem of a noun should be decomposed into N and the Word Marker (WM), and that Word Marker projects a separate projection: Word Marker Phrase. Other linguists (for example, Piccallo 1991) use the label Gender and Gender Phrase. As gender is taken to be an inherent property of N, as we pointed out, GenP is taken to be more closely associated with N. This closeness is reflected on its structural position, Gen being right above N (also Ritter 1993: 799):

\[(12) \text{DP} > \text{NumP} > \text{GenP} > \text{NP}\]

Bernstein (1993) uses the presence of the WM/Gen head to motivate N-movement which gives rise to N-A order (see Chapter 2 and Chapter 1 of Part III). Postulating a syntactic projection for gender creates a way to account for Gender agreement between the noun and the adjective. As we will see more extensively in Chapter 1 of Part III, adjectives (more accurately adjective phrases) are commonly assumed to occupy specifier positions of designated functional categories. By assuming a Gender Phrase in the nominal projection, adjectives can find a host from which they enter into an agreement relationship with the noun in a specifier-head configuration. Notice at this point that N-movement to the head Gen (and possibly further to Num) is contingent on the structural position adjectives are supposed to occupy (see Part III, Chapter 1).

But Bernstein’s proposal has certain shortcomings, as recent discussion on the projection of gender in Panagiotidis (2002) and Alexiadou (2004b) among others, primarily for Greek, reveals (cf. also the contributions in Müller et al. 2004). Both, Panagiotidis and Alexiadou, argue against the presence of GenP in the nominal syntax of Greek mainly on the basis of the fact that gender is an intrinsic part of the noun (stem) blended inextricably with word-class features and their realizations (see section 4.6. below). This means that gender is to be learned by the child along with the lexical meaning of the noun, as mentioned above. Crucially, since gender specification is part of the first segment, the noun stem, the noun cannot be decomposed the way Bernstein proposes. Not less importantly, the component of N referred to as WM is related to gender in rather complex ways. Take for example the case of Greek illustrated in (8); specifically, Panagiotidis (2002: 27) points out:

\[
\text{even though both nouns in the table belong to the same declension class, in which occasions the final -s actually occurs reduces to the Gender of the noun. In order to correctly inflect the noun for case, information both about}
\]
class and Gender are required. On fairly standard assumptions about morphosyntax, one might want to assume that these two kinds of features are encoded on the same head, N, and have to be learned to a large extent.

This can be paraphrased as follows: even if one knows that xara is feminine, one would not be able to decline the noun correctly unless one also knew that it belongs to a specific declension class (Ralli 1994, 1997, 2003; see also section 4.6 below). And, conversely, xara and pateras have different gender, feminine and masculine respectively, though they traditionally are taken to belong to the same declension class. So, in Greek, phonology per se cannot fully determine the value of gender, the segmentation into a nominal root and an inflectional suffix which are going to be combined in a single noun form in the syntax is to a large extent arbitrary and can only operate at the cost of plausibility since it will require highly complex interactions between morphology and phonology (see also section 4.6 for a relevant proposal).

There is, however, one empirical domain in which gender specification seems to be guided by the syntax. We have pointed out that a gender value is an integral part of the nominal stem, part of the meaning of the noun. Moreover, gender does not particularly encode features of sex. There are, nevertheless, cases where this is not quite so. Take, for instance, the Greek word dhikigoros (‘lawyer’). This noun can be either masculine or feminine. The same applies to jatros (‘doctor’), along with several other animate human nouns. This strongly suggests that the feature [+animate] triggers variation in the values of gender. Ralli (2003) takes these examples to suggest that here the phonological form does not correlate with gender and that animate nouns are underspecified for gender. The question then is this: If gender in such cases is not visible on the noun itself, where is its expression? Ralli claims that underspecification of such cases is solved at the syntactic level: when these nouns are preceded by the article, their gender gets fixed:

(13)  a. o jatros
      the-MASC doctor-MASC

       b. i jatros
      the-FEM doctor-FEM

Incidentally, but quite interestingly, the facts depicted in (13) corroborate the claim discussed in Chapter 1 that the definite article is a carrier of grammatical features. In fact, gender specification is implemented more generally through (extensive) agreement, as shown by the following data.
Part II – The functional make up of the noun phrase

(13) c. Ine kali jatros.
    is good-FEM doctor-FEM
    ‘S/he is a good doctor.’

d. O Petros ine jatros.
    the-MASC Peter-MASC is doctor-MASC
    ‘Peter is doctor.’

In (13c) no article is present, as the noun phrase jatros (‘doctor’) is used here predicatively (see Chapter 2). The gender of the noun jatros is determined via agreement with the adjective kali (‘good’). In (13d) there is neither an article nor an adjective, and the resolution of gender on the noun jatros is performed syntactically via subject-predicate agreement: the DP O Petros is the subject and jatros is the predicate; the subject is valued masculine and so is the predicate (see Spyropoulos 2005 for an analysis of predicative structures containing a nominal predicate).

Notice next cases in Italian like those discussed by Di Domenico (1997) and De Vincenzi & Di Domenico (1999). The noun ragazzino (‘boy’) is masculine and its feminine counterpart is ragazza (‘girl’). These correspond to Harris’s ‘inner core’ nouns in Spanish (see above); the two nouns have distinct forms. Di Domenico distinguishes between two gender types: i) a non-intrinsic gender which is variable and necessarily [+interpretable] and ii) an intrinsic gender which is invariable. The latter is unpredictable, while the former is related to animacy. Consider the following table from De Vincenzi & Di Domenico (1999):

<table>
<thead>
<tr>
<th>NOUN</th>
<th>Interpretability</th>
<th>Variability</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ragazza</td>
<td>‘girl’</td>
<td>+</td>
</tr>
<tr>
<td>b. donna</td>
<td>‘woman’</td>
<td>+</td>
</tr>
<tr>
<td>c. sedia</td>
<td>‘chair’</td>
<td>–</td>
</tr>
</tbody>
</table>

In (14) there are three nouns, ragazza, donna and sedia. All of them are singular and feminine. The gender of these nouns differs with respect to the properties identified above. While the gender of (14a) ragazza is variable (ragazza (‘girl’) is opposed to ragazzo (‘boy’)) and interpretable, the gender

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14 This in fact is an intricate case, as Ralli generally assumes that all the phi-feature attributes on adjectives are underspecified and get their values via agreement with the noun. Here it seems the reverse situation holds – the noun gets its gender value from the adjective. We leave discussion of this particular point aside.
of (14b) is interpretable but cannot be varied, and the gender of (14c) is not contentful and cannot be varied. We conclude that an interpretable feature can be non-intrinsic (hence variable), but that a non-interpretable feature must be non-intrinsic.

Concerning the syntactic representation of the category Gender, Di Domenico (1997) proposes that, universally, variable (i.e. interpretable) gender is located on Num, being thus parasitic on the category number, and that invariable (i.e. uninterpretable) Gender is located on N itself. In other words, for Di Domenico, neither interpretable (variable) nor uninterpretable (invariable) Gender type qualifies as projecting its own functional projection. In order to capture the relation between varied gender and animacy of the referent of the noun, Di Domenico (1995, 1997) proposes that animacy is an inherent feature of those nouns that are animate; e.g. actor/actress, king/queen, duke/duchess, usher/usherette, horse/mare, fox/vixen, in English, or ragazzo/ragazza (‘boy’/’girl’), gatto/gatta (‘male cat’/’female cat’) in Italian carry the feature [+ Animate]. In this case, Gender is assigned to the noun as it enters the numeration, a procedure assumed by Chomsky (1995) for non-intrinsic features (De Vincenzi & Di Domenico 1999).

The assumption that (some type of) Gender is associated with number has also been argued for by Ritter (1993), for independent reasons. Ritter adopts a unified treatment for Number: Number is an independent syntactic head in the languages she studies (Hebrew and Romance). On the other hand, Ritter proposes a non-unified treatment of gender: Gender is not the head of an independent projection; it is hosted by Num in Romance and it is hosted by N in Modern Hebrew. The main reason for the latter assumption is that “Gender switching in this language is a fairly productive strategy for deriving new nouns from existing nouns.” (Ritter 1993: 796). Gender is derivational in Modern Hebrew:

(15) a. maxsan MASC ‘warehouse’ maxsan-it FEM ‘magazine’
    b. amud MASC ‘page’ amud-a FEM ‘column’
        amud-im MASC PL ‘pages’ amud-ot FEM PL ‘columns’

________

These pairs are not all that common, and to the extent the job actually survives (usherettes belong to the 1950s and early 1960s, for example) most of the explicitly ‘female’ forms denoting jobs/professions (e.g. actress, authoress) are now systematically avoided as patronising and/or redundant.
Examples like those in (15) can be found in other languages too. In English, as we saw above, gender variation reflecting sex is coded either in different lexical items (mare/horse) (suppletion) or in forms like actor/actress, lion/lioness, where the feminine form can be considered as derived from the masculine via suffixation. In Greek too there are cases in which a new feminine noun is derived through the addition of a derivational suffix (marked as feminine by Ralli 200316) to the stem of an existing noun – masculine or neuter:

(16) a. jitonissa = jiton-iss-a
   neighbour (FEM) neighbour (MASC) + suffix (FEM)

b. provatina = provat+in-a
   sheep (FEM) sheep (NEUT) + suffix (FEM)

(from Ralli 2003: 62)

The derivational function of gender switching is also observed in Spanish (see Harris 1991). Although, as noted, in Greek and in Spanish the derivational strategy is confined primarily to animate entities (human and non-human), the phenomenon is nevertheless observed in pairs of inanimate nouns:

(17) a. cerezo MASC ‘cherry tree’ cereza FEM ‘cherry’ (Spanish)

b. kerasia FEM ‘cherry tree’ kerasi NEUT ‘cherry’ (Greek)

At this point a question arises. Recall that Ritter proposed that gender is on N in Hebrew because it is derivational (15). She also proposed that it is on Num in Romance languages. However, we see that in Spanish too, after all a Romance language, gender switching occurs (17a). So, why, according to Ritter, is the role of Gender different in Modern Hebrew and in Romance (and in Greek for that matter)? The reason is the high degree of productivity of this strategy in Modern Hebrew. Whereas gender switching is productive and regular in Modern Hebrew, it is constrained by other semantic features (animacy, humanness) in the Romance languages and in Greek. Cf.: “Like Number, Gender is purely an inflectional feature of Spanish nouns, and hence unavailable as a derivational strategy.” (Ritter 1993: 799).

We have already provided evidence from our own research and from the literature that in Greek (and in Romance) gender should be considered as

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16 Notice that the ending of these nouns is feminine (-a), so that it can plausibly be assumed that the derivational affix itself has a gender feature so as to trigger feminine gender on the derived noun.
an inherent part of nouns. In particular, Ralli (2003) makes the explicit claim that Greek gender is not exclusively inflectional; rather it participates to both inflection and derivation. But in either case it is a lexical feature, part of the nominal stem, independently of whether this is derived or non-derived, declinable or not.

In cases in which gender seems to be freely assigned, one could make a point that we are dealing with two different lexical items (mare/horse, lion/lioness). Panagiotidis (2002) illustrates this point with the French nouns *poste* (MASC) ‘TV/radio set’ and *poste* (FEM) meaning ‘post’. He proposes that these can be taken to be an instance of homonymy involving two different lexical entries. The point is given an interesting illustration also from Greek, where free choice of gender results not just in a different noun semantically, but also in a noun that has a different ‘coding’ of gender, i.e. a different word marker. For example, *trapeza* (FEM) means ‘bank’ and *trapezi* (NEUT) means ‘table’. The two words belong to different ‘paradigms’. It is hard to see how a separate GenP could be relevant either syntactically or semantically.

It is further interesting to note that there is psycholinguistic evidence for keeping Gender and Number distinct. Based on relevant experiments they have conducted, De Vincenzi & Di Domenico (1999) formulate the following conclusions:

The Italian experiments show that number information is used earlier than gender information in the retrieval of pronoun antecedents and this is true with different types of pronouns, such as clitics and non-clitics. (...) The fact that there is no language-specific difference suggests that the different use of the two kinds of information is not related to the way in which this information is superficially expressed. Other psycholinguistic data, (...), suggest that Number and Gender are used differently not only in comprehension but also in production.

The processing differences correspond to a linguistic difference among the two types of features: while number is to be considered a syntactic head, separately represented in the lexicon and with its own syntactic projection, this is not the case for gender, which is a parasitic feature in the syntax, i.e. a feature that does not project.

Given a parsing model which initially computes a syntactic structure representation of a sentence, using only phrase structure information (...), the difference in timing in the use of number and gender information is easily explainable, given that only number is a syntactic head and therefore only number information will be readily available in the initial stage of syntactic parsing”.

(De Vincenzi & Di Domenico 1999: 25–26)
And they add: “This difference in timing suggests that number information is used in initial parsing stages together with syntactic information, while gender information patterns more like lexical, semantic information” (De Vincenzi & Di Domenico 1999: 21).

3.3. Summary: Gender and syntax

Let us summarize the discussion in section 3. There is rather conclusive cross-linguistic evidence for the semantic category Number constituting a syntactic head, which projects a Number Phrase. Number is an interpretable feature on nouns (and by virtue of agreement also on other modifiers of nouns), the values of which can be chosen.

In contrast, there is meager evidence for postulating a category Gender as a functional head in the syntax. Gender is predetermined on nouns, it is arbitrary, and, as a consequence, it is uninterpretable. Gender in general can neither vary nor be chosen, apart from the cases in which it is driven by the feature [animate]. It is an inherent part of the lexical entry of each noun and is to be learnt along with the noun itself.

4. Distributional evidence for functional projections

In the preceding sections we have used morphological evidence in support of postulating functional projections, the background assumption being that if a category is overtly realized/expressed in a language this realization has a syntactic reflex in that language. In this section we will consider how syntactic operations may be appealed as additional evidence for the existence of functional categories. In particular, we will consider the arguments that have been put forward in favor of the hypothesis that just like clauses display V-movement, nominal projections may display Noun movement, in which a nominal head moves from N to a higher functional head. In later chapters (mainly Chapter 1 of Part III) we will cast doubt on the validity of an operation such as N-movement as outlined here. This conclusion will not invalidate the argumentation in favor of postulating functional heads,

17 Once more, then, the crucial question is if projections for which there is morphological evidence in some languages, but crucially not all, are universally projected. If they are, one has to assume that variation across languages lies in the way these projections are ‘lexicalized’, ultimately in the domain of the morphology/lexicon.
though, since we will argue that in some cases a projection of N, rather than N itself, moves. Such an analysis will again imply that there must be a higher functional projection that is targeted by the moved constituent (see also Chapter 1, Part III for more on this).

As we already mentioned in Chapter 1, section 3.1.3., the noun can only leave its basic position in the NP for a higher position if there are good reasons for doing so, or, to put it technically, movement takes place only when there is a trigger for movement. One way of making this precise is the following. Let us assume a particular feature of the noun, say number, qualifies for being located on an inflectional syntactic head which is represented independently in the lexicon. In this case the relevant feature will act as a trigger for movement because it will have to be associated with the noun in the syntax as a result of the movement of the noun itself into the head position where the particular feature is located. Note that this type of argumentation is not easily recast in minimalist terms, where the noun (like any other lexical category) is assumed to enter the syntax fully inflected. In order to capture the dependency between the noun head and a higher functional head with a particular feature it is assumed that interpretable phi features associated with N may have to be checked against a syntactic head that bears a matching uninterpretable phi feature, so that the uninterpretable phi features on the functional head are eliminated by the moment the syntactic product enters PF.\(^{18}\) Thus, again, the features on the functional head will trigger N-movement.

In either conception of the system sketched above, the noun head is supposed to raise and move upwards (viz. leftwards). Moreover, the noun, as a head, can only move to an adjacent head position: it cannot skip head positions (cf. the Head Movement Constraint, see Introduction). Below we will discuss in more detail possible triggers for N movement, and in the next chapters we will elaborate more on these triggers. In Chapter 1 of Part III we will see how this operation interacts with the distribution of adjectives and in Chapter 1 of Part IV we will see how it interacts with the distribution of the possessor.

### 4.1. Noun Movement I: the construct state

An important line of inquiry in the structure of the DP has been developed on the basis of the alternation between two possessive constructions in Se-
mitic languages: the ‘free state’ and the ‘construct state’. Let us begin by describing the relevant patterns. Consider (18a,b) from Hebrew and (18c,d) from Standard Arabic (Siloni 1997a: 21, 46). (18a) is referred to in the literature as the ‘free state’, (18b) as the ‘construct state’. (18c,d) are examples of the construct state from Standard Arabic.

(18) a. ha-bayit ha-gadol *(šel) ha-‘iš
   the-house the-big of the-man
   ‘the man’s big house’

b. beyt *(šel) ha-‘iš ha-gadol
   house the-man the-big
   ‘the man’s big house’

c. bayt-u rajul-i-n
   house-NOM man-GEN-a
   ‘a man’s house’

d. bayt-r rajul-i
   house-NOM the man-GEN
   ‘the man’s house’

The free state differs from the construct state in a number of respects:

(i) The head N in the construct state is unstressed, the stress falls on the genitive, and the head noun is subject to a contraction rule typical of a non-stressed environment. Thus in (18b) and in (18c,d) beyt and bayt are unstressed, the stress falling on ha-‘iš and on rajul (‘the man’).

(ii) The possessor in the free state, ha-‘iš in (18a) is the complement of a preposition šel (‘of’); the genitive in the construct state cannot be associated with this preposition.

(iii) The head noun in the free state, bayit in (18a), is preceded by the definite article ha, an uninflected prefix. In the construct state, the head noun (beyt in (18b) and bayt in (18c,d) is not preceded by an article. The [+/- definite] interpretation of a construct state DP is determined by the genitive: in (18b) the genitive is definite hence the interpretation of the whole DP is definite. Standard Arabic has both a definite and an indefinite article. What we see in (18c,d) is that the indefiniteness of the phrase is determined by the indefiniteness of the possessor, while the head noun itself does not bear any article.
(iv) In the free state the adjective (gadol, ‘big’ in (18a)) follows the noun it modifies, and it precedes the genitive. In the construct state, the adjective modifying the noun (ha-gadol (‘the big’) in (18b)) must appear after the genitive. Note also that in the latter case adjectives are associated with a definiteness article. We return to this phenomenon (referred to as determiner spreading) in Chapter 1 of Part III.

We see that in the construct state the head N lacks a determiner and we also observe that in that construction the head N occupies the initial position. This word order suggests that in the construct state N undergoes movement to D. It has been proposed (Fassi-Fehri 1999; Ritter 1987; Siloni 1991) that D is the source of the prepositionless genitive case in the construct state. In particular, Ritter (1991) takes the simple CS as evidence that the noun moves to D. According to (19a) (Ritter’s (4)), the possessor occupies the specifier position of the lexical projection NP and receives case under government from D.\footnote{Observe that there is an asymmetric relation between the possessor DP, in SpecNP and the complement DP of the N which would be a sister of N and dominated by N’. For evidence for this asymmetry see, for instance, Siloni (1997b: 175). See also Part IV, Chapter 1.}

\begin{verbatim}
19
(19) a. DP
     \hline
     D'     D
     \hline
     NP
     \hline
     DP     N'
     \hline
     ha-'iš  beyt
\end{verbatim}

According to Ritter, head movement applies in the CS for the following reasons. CS contains an empty determiner which assigns genitive case to the noun phrase on its right. In order to assign case, D has to be visible. Movement of N to D serves to identify the functional head of the noun phrase, which would not be visible otherwise. As a result of movement N
occupies the initial position. Given that N only moves because D is empty, we predict correctly that N does not associate with a determiner.

Concerning the definiteness specification in the construct state, Ritter suggests that the head noun becomes definite under Spec-head agreement in its base position. When the possessor is definite, N will be definite; when it is indefinite, N will be indefinite. Subsequent movement to D conveys this specification to the head of the DP.

However, Ritter shows that (19) is too simple and gives rise to problems. In particular she points out that the assumption that D selects NP as its complement would be problematic when we want to assign a structure to the free state in (18a). Let us assume that ha in (18a) occupies the D position. As (18a) shows, in the free state adjectives modifying the noun appear between the head noun and the genitive. ha-gadol (‘the big’) follows ha-bayit (‘the house’) and precedes ha-iš (‘the man’). Let us assume that the possessor ha-iš is in Spec NP and that adjectives are NP-adjoined. Assuming that N moves leftward, this gives us the correct order for the free state, where adjectives precede the genitive.

But this hypothesis also means that (19) cannot be right. If in the construct state the possessor did remain in its NP-internal thematic position, SpecNP (see also Chapter 1, Part IV), this would lead us to expect it to also follow NP-adjoined adjectives, as is the case in the free state. This prediction is incorrect. The logical conclusion is that in the construct state the possessor must have moved leftward out of the SpecNP and that there is a landing site for the possessor which is outside NP and right-adjacent to D. If case is assigned or checked in A-positions, the landing site of the possessor must be an A-position (see Chapter 2 of Part IV; also Haegeman 2004a). On the basis of such distributional evidence, (19) has to be expanded and we are led to postulate a functional projection, FP, whose (A-) specifier hosts the possessor. FP hosts agreement features: it is the projection Ritter (1991) labels NumP (see above), and which Siloni (1997a,b) labels AgrP, pointing out that

I label the Agr projection AgrgenP, but this notation is only mnemonic: it is an AgrP where structural Case is checked in the noun phrase. …the noun is inserted with Agrgen features that must be checked with Agrgen.

(Siloni 1997b: 182–183)

In (20a) we provisionally adjoin the AP to NP; we reconsider this in Chapter 1, Part III.
Note that a theoretical problem might arise for (19) in terms of analyses in which case is taken to be assigned/licensed in specifier head relations, as proposed in some of the Minimalist literature: in (19) case is assigned under government, a concept which itself has been challenged in Minimalist approaches. This problem does not arise for (20a) in which the possessor is found in a specifier-head relation with the head $F$. (According to Siloni the relevant feature is Agrgen (see above).) If case is a function of a specifier head relation, $F$ would be responsible for the case assignment to the possessor. On the other hand, more recent versions of Minimalism do not require that agreement relations be instantiated through specifier head relations and rely more on c-command relations between a probe and its goal. In this conception (19) would again fare better, because $D$ could be a probe whose goal is the possessor.\footnote{See Part I (Introduction) section 2.5.2.1 for the concepts probe and goal.}

For the sake of completeness, let us return to a brief discussion of the free state construction. While in the construct state the possessor moves to a higher position in the free state it remains lower. In addition, in the former there is no case-marking preposition associated with the possessor and in the latter there is. The fact that the possessor remains to the right of the
adjective in (18a) is related to the fact that it is the complement of the case-marking preposition sel. In the construct state, the possessor moves to the specifier of FP (NumP/AgrP) for case reasons. If movement is always triggered by some requirement (‘Last Resort’), then we are led to the conclusion that in the free state, there is no motivation for moving the possessor, which receives case from sel. Possessor movement is not necessary hence it is impossible. Based on (20a), a first representation for the free state construction is given in (20b).

In (20b) the head noun ha-bayit moves to D. Siloni’s own analysis (1997b) of the free state was slightly different from that sketched above. Recall that for her FP is an agreement projection hosting a genitive feature (Agr_{gen}). Observe that in our (20b), FP seems to be playing no role any more. Crucially, we cannot assume that F has the genitive case feature, since if it did, it would trigger the movement of the possessor to its specifier. For Siloni (1997b), since the possessor is not inserted with genitive features, Agr_{gen} is actually not present in a free state construction, and the possessor receives case from the preposition (see Siloni 1997b: 179, her (34)).
In the free state the head noun is accompanied by a definite article (cf. *[ha-bayit]*) in the construct state it is not ([*beyt]*) In order to account for the presence of the definite article in the free state and its absence in the construct state, Siloni (1997b) proposes the following:

The noun in (20a) cannot realize its article [i.e. *[ha*, A-H-S]] because it is in the construct state. A noun can either be inserted with *Agrgen* features, which results in a construct state, or with its [+definite] feature (the article), but not with both. There is some basic incompatibility between *Agrgen* features and an intrinsic definiteness specification. (Siloni 1997b: 183–4)

See Longobardi (1996) for an account of this incompatibility extended to English.  

4.2. Noun Movement II: N-to-D movement

The discussion of the construct state has revealed that N does not necessarily remain in the lexical projection where it starts off. N-to-D movement is postulated to account for the fact that N precedes the prenominal possessor and also prenominal adjectives.

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21 It should be noted that in recent literature the construct state has been re-analysed as involving XP-movement (see Shlonsky 2004). See Pereltsvaig (2006) and Shlonsky (2006) and references therein for arguments in favor of and against the X° status of the movement involved within the Semitic DP. See the discussion in Chapter I of Part III.
N-to-D movement has also been argued for Italian, as already mentioned earlier (chapter 2) (Longobardi 1994, 1996). Consider the following data:

(21) a. La mia casa è bella.  (Italian)
   the-FEM-SG my-FEM-SG house be-3SG beautiful-FEM-SG
   b. Casa mia è bella.
   c. *La casa mia è bella.
   d. *Casa la mia è bella.
   ‘My house is beautiful.’

(21a) contains a straightforward example of an Italian DP, la mia casa. The article la occupies D. Let us assume, as a first approximation, that the possessor mia (‘my’) occupies the specifier of the NumP (or AGRP). This is indeed Piccallo’s analysis (1991) for the Catalan data in (22):

(22) a. la seva traducció d’aquesta novella.  (Catalan)
   the POSS-FEM-SG translation of this novel
   ‘his/her/their translation of this novel’
   b. [DP la [NumP seva [Num traducció] [GenP t, [NP t, d’aquesta novell,la]]]]

In the Italian example (21b), the head noun casa (‘house’) precedes the possessor mia and the determiner la can no longer appear overtly (21c,d). This is very much reminiscent of the pattern found in the construct state in (18b)–(18d). In line with the discussion in the previous section, we can account for the data by proposing, along with Longobardi, that the head noun casa in (21b) has moved to D.

(23) [DP [D casa] [NumP mia [NP [N t,]]]]

In Italian, N-to-D movement is not generally available, as we saw in the previous chapter: it is lexically restricted: it applies to proper names (24a) and to kinship names (24b) only:

(24) a. Gianni mio è simpatico.  (Italian)
   Gianni my is nice
   ‘My Gianni is nice.’
   b. Zio mio è venuto.
   uncle my is come
   ‘My uncle has come.’
(25) *Treno mio è partito.
    train my is gone

Other instances of N-to-D movement have been reported for the Scandinavian languages (Taraldsen 1990) and for Romanian (Grosu 1991), in which the N can be taken to left-adjoin to the article, the latter being a bound morpheme (Longobardi 1994, 1996; Giusti 1996).

(26) a. lupu-l Mariei      (Romanian)
    wolf the Maria’s

b. lupi-i Mariei
    wolves-the Maria’s

Though the data discussed so far clearly point to an operation of ‘N-to-D raising’ in Italian and in the other languages mentioned in this section, our analysis remains incomplete in that it does not give a trigger for this movement. In the discussion of N movement in the construct state we tried to motivate movement on the basis of case theoretic considerations.

One option put forward by Longobardi (1994) to account for N-to-D movement in Italian is that the reference of an argument DP is sanctioned in the D-position (see Chapter 2). Longobardi proposes that D must contain an operator (see also preceding Chapter), which must bind a variable. N-to-D movement creates the operator (=N-D) – variable (=trace of N) relation. Since N-to-D movement serves to create a semantic relation that must be invariant across languages, the movement of N to D is taken to be universal (see also Chapter 2). In line with Longobardi’s proposals for Italian, Borer (1999) then proposes that N movement in the Semitic construct state is necessary in order to render it definite.

We have seen in this subsection that the fact that the noun may in some languages precede constituents that are held to occupy high positions in the nominal domain – including D itself – provides evidence for its displacement. If the noun moves to a different position, then we need to postulate a host for the moved element; this entails postulating functional material in the DP.

In the first Chapter of Part III we will deal in some detail with the operation of noun movement. We will see how the relative position of adjective(s) with respect to the noun can also provide support for the operation of N movement, and thus further justification for inflectional categories.
4.3. How morphology comes into play

4.3.1. Nominal agreement

We noticed above (cf. examples (4)–(5)), that in Greek and in French the article and the adjective, as constituents of the noun phrase, agree with the head noun. The same is observed for Italian in (21). An important observation here is that this agreement is overt; in particular it is instantiated by suffixes which encode gender and number and in Greek also case. Overt agreement contrasts with abstract or non-overt agreement as illustrated in English. The contrast between overt and covert agreement has been correlated with noun movement, but it is also in itself a challenging arena for both morphologists and syntacticians. One assumption is that N-movement is related to strength of agreement in the nominal system in the same way that V-movement has been related to the relative strength of verbal agreement.

The important question is: how can one pin down the notion ‘strength’ (of agreement)? On this issue, see Alexiadou & Fanselow (2002) and Bobaljik (2003). One way of looking at things is to compare the paradigm of articles, adjectives and perhaps nouns in the relevant languages. As shown in the paradigms in (27), both Italian and French show gender variation in N, A and D, while gender has no reflex in N, A or D in English. In addition, articles and determiners show overt number agreement in Italian and in French, while again in English the definite article and adjectives are invariant for number and gender.

(27)  

<table>
<thead>
<tr>
<th>Italian</th>
<th>French</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. il primo capitolo</td>
<td>masculine singular</td>
</tr>
<tr>
<td>the first chapter</td>
<td></td>
</tr>
<tr>
<td>b. la prima descrizione</td>
<td>feminine singular</td>
</tr>
<tr>
<td>the first description</td>
<td></td>
</tr>
<tr>
<td>c. i primi capitoli</td>
<td>masculine plural</td>
</tr>
<tr>
<td>the first chapters</td>
<td></td>
</tr>
<tr>
<td>d. le prime descrizioni</td>
<td>feminine plural</td>
</tr>
<tr>
<td>the first descriptions</td>
<td></td>
</tr>
</tbody>
</table>

Intuitively, we might say that the difference in the overt number and gender (agreement) morphology on articles and adjectives suggests that nominal agreement is stronger in Italian and in French than it is in English. However, the precise formulation of the link between the presence of overt agreement
morphology and N-movement is not straightforward.\footnote{Just as it is not simple to pin down the link between V-movement and verbal agreement (cf. Vikner 1997 and the references cited there).} The trigger for the movement of N cannot be expressed in terms of the mere presence vs. absence of agreement morphology on adjectives and determiners. For instance in German, in spite of the presence of overt agreement inflection in five out of six forms of the adjective \textit{frisch}, (28b–f), N movement across the adjective does not take place.

\begin{itemize}
  \item[(28)]
    \begin{itemize}
      \item a. das frische Brot \hspace{1cm} \text{neuter singular}
      \item b. die frischen Brote \hspace{1cm} \text{neuter plural}
      \item c. die frische Blume \hspace{1cm} \text{feminine singular}
      \item d. die frischen Blumen \hspace{1cm} \text{feminine plural}
      \item e. der frische Kuchen \hspace{1cm} \text{masculine singular}
      \item f. die frischen Kuchen \hspace{1cm} \text{masculine plural}
    \end{itemize}
\end{itemize}

Possibly, we might propose that German nominal agreement is ‘weaker’ than that in the Romance languages cited above in that nominal agreement does not cut across all the components of the paradigm. For instance, the determiner \textit{die} and the adjective \textit{frischen} are used for all the forms of the plural: neuter plural (28b), feminine plural (28d) and masculine plural (28f). French and Italian adjectival agreement could be said to be strong enough to trigger movement of the head N, and nominal agreement is not strong in English or in German.

A similar problem arises with respect to Greek, in which both the determiner and adjective agree with the head noun in gender and number (as well as case) and in which the nominal suffix marks gender/number/case. This is shown in (29) and in (30). Again, the head noun remains to the right of the adjectives (31) (see also Chapter 1, Part III).

\begin{itemize}
  \item[(29)]
    \begin{itemize}
      \item a. το άριστο έλατο \hspace{1cm} \text{masculine singular}
      \item b. τα άριστα έλατα \hspace{1cm} \text{masculine plural}
      \item c. τη άριστη ανθοδέσμη \hspace{1cm} \text{feminine singular}
      \item d. τις άριστες ανθοδέσμες \hspace{1cm} \text{feminine plural}
      \item e. το άριστο κέρας \hspace{1cm} \text{masculine singular}
      \item f. τα άριστα κέρατα \hspace{1cm} \text{masculine plural}
    \end{itemize}
\end{itemize}
258  Part II – The functional make up of the noun phrase

(29) to  evjenik-o pedh-i/mor-o
      the-NEUT:SG:NOM/AC polite-NEUT:SG:NOM/AC kid/baby-
      NEUT:SG:NOM/AC

(30) ti(n)  evjen-i jinek-a/fil-i

(31) *to moro evjeniko
      the baby kind

4.3.2. Gender as trigger for N-movement (Bernstein 1993)

If there is a good reason for the noun to move higher in the nominal projection, morphological properties of nouns provide a fruitful ground for speculation in this respect: the bound nature of the various inflectional morphemes in at least some of the well-known Indo-European languages would seem to constitute good motivation for the movement of the noun. Bernstein (1993) tries to implement this and to relate it explicitly to gender marking in the nominal system. In section 3 we mentioned that Bernstein (1993) assumes that the N-stem is decomposed into N and a separate head which she labels Word Marker (WM), and for which the label Gen has been used by others. We use the label GenP here.

(32) DP > NumP > GenP > NP

Bernstein proposes that GenP (i.e. WMP in her terms) is not universal. In particular, only in languages in which the N stem contains a word-marker which directly reflects gender, will N be decomposed into N and GEN. For the Romance languages, she assumes N moves to Num via Gen, crossing adjectives. For the Germanic languages, on the other hand, she postulates that the projection Gen is absent and that, as a result, N will not cross adjectives. In the next section we will see how Bernstein tries to reconcile this hypothesis with the fact that German has overt gender marking (cf. (32)).

According to Bernstein, the availability of the projection of Gen also determines the possibility of noun ellipsis. Consider the contrast in (33) between Spanish and Italian, on the one hand, in which N-ellipsis is possible, and English (33c), on the other, in which it is not:
(33) a. uno pequeño
   a-MASC-SG small-MASC-SG (one)
b. uno piccolo
   a-MASC-SG small-MASC-SG (one)
c. *a small

In Spanish, the form of the masculine singular indefinite article varies depending on the presence or absence of the head N: when the head N is present the article always has the form un; when the noun is absent it takes the form uno:

(34) a. un libro grande está encima de la mesa
   a big book is on the table
b. *uno libro grande está encima la mesa
c. uno grande está encima la mesa

Bernstein proposes that in the case of N-ellipsis, Gen (her WM) moves to D and the indefinite article, which starts out as a specifier of NumP, adjoins to it. (35) is the relevant structure (Bernstein 1993: 129, her (41), slightly simplified for expository reasons and with Gen replacing WM).

(35)

Bernstein links the availability of the projection GenP to the overt Gender-related terminal vowel in nouns. The terminal vowel is clearly present in most nouns in Spanish (see section 3 above) and in Italian. Simplifying for the sake of brevity, recall that typically masculine nouns end in -o and feminine nouns end in -a.
French raises a problem, however, as it does not offer the same compelling evidence for postulating WM/Gen: there is no such systematic correlation between noun endings and their gender. Concerning this issue, Bernstein (1993) says that French does not exhibit the robust system of terminal vowels that characterize Spanish and Italian. Like nouns in all Romance languages, French nouns have gender, but they do not exhibit the declension class markers we observed for Italian and Spanish. In fact, with some notable exceptions, French nouns resemble their English counterparts: their morphological appearance is rather varied and plurality is indicated by word-final -s, whose phonetic realization is limited to contexts of liaison.

Like Italian and Spanish, however, and unlike English, French admits (indefinite) elliptical nominal constructions.23

(36) a. Un cube rouge est sur le coin gauche de cette table. (French)
   a red cube is on the left corner of this table.
   un bleu est sur le coin droit.
   a blue is on the right corner
   ‘There is a red cube on the left hand corner of this table and a blue one on the right hand corner.’

   a very big dog lives in this house-here. a small lives in that there
   ‘A very big dog is living in this house and a small one in that one over there.’

According to Bernstein, although French nouns do not display word markers in the robust Spanish/Italian manner, there are masculine/feminine alternations in the language which do not seem to be the result of derivational processes. Consider (37), for which she assumes that the masculine/feminine alternations involve inflectional morphology (but see section 3 above, where it was pointed out that according to several researchers such cases involve derivation rather than inflection):

(37) a. voisin-voisine (‘neighbour’)
   b. cousin-cousine (‘cousin’)
   c. chat-chatte (‘cat’)

23 In Bernstein’s general framework, omission of the noun in an indefinite DP is accounted for by assuming that the omitted noun is governed by the head of the WM, while the omission of a noun in a definite DP is explained by assuming the omitted noun is governed by the the definite article.
Bernstein accounts for the difference in the masculine forms by positing a language-specific PF rule in French which deletes the final consonant of masculine nouns. The final vowel of the feminine form corresponds to the Word Marker, but the only overt reflex of the vowel in French is the realization of the preceding consonant. In the majority of cases in French, the word marker must be taken to be abstract.

By postulating an abstract WM, i.e. Gen, for French, Bernstein maintains the correlation between the presence of WM/Gen, N-movement past A and N-ellipsis (see also section 4.6 below).

4.4. The Germanic languages

4.4.1. German

According to Bernstein, Romance word markers are the spell-out of the head Gender (WM), which she takes to be specified in the lexicon. The nominal projection is dominated by the projection of this head (Gender/WM), which hosts the terminal vowel associated with gender. The Romance N-stem raises to Gen and merges with its terminal vowel and it is this way that Gender can be spelled out. English lacks grammatical gender and the Gender-related terminal vowels. Bernstein proposes that English lacks the projection of Gender, hence N-movement to its head is not triggered.

Bernstein (1993) extends the contrast between English, a Germanic language without Gen(P), (i.e. WM(P)), and Romance languages like Spanish, with GenP, to apply it to other languages. Recall from the examples in (28) that in German N-movement does not take place, in spite of the fact that adjectives and determiners manifest overt gender marking. Bernstein argues that the distinct behavior of German is due to the different nature of its gender. In a language like Spanish, gender is consistently spelled out in the form of overt word markers, corresponding to the terminal vowel endings. In German, on the other hand, gender is not spelled out on nouns (1993: 121), in that a noun’s phonological appearance provides no indication of its gender. Unlike what we find in Spanish or in Italian, German does not display a system of terminal vowels. German therefore lacks GenP (WMP) and it patterns like English in that noun movement is absent and adjectives are characteristically prenominal. The German facts actually argue against the assumption that gender must always correspond to a syntactic category. If gender were systematically represented in the syntax, German N-stems...
should raise to merge with Gender, deriving a postnominal position for adjectives. This is not what we find (1993: 190).

Though it is true that nouns do not precede adjectives in German, Bernstein’s argumentation is questionable. Recall that she relates the presence of Gen/WM to N<A order in the DP and to the possibility of indefinite N ellipsis. The correlation between the three components breaks down in German, in which N follows adjectives, but in which indefinite N-ellipsis is possible.

(38) a. Er hat ein neues Buch gekauft.  
   he has a new book bought  
   ‘He has bought a new book.’

b. Er hat ein neues gekauft.  
   he has a new bought  
   ‘He has bought a new one.’

(39) provides a schematic representation of the core cross-linguistic facts discussed so far:

<table>
<thead>
<tr>
<th>Language</th>
<th>Indefinite ellipsis</th>
<th>N-Adjective order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Italian</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>French</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>English</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>German</td>
<td>+</td>
<td>–</td>
</tr>
</tbody>
</table>

4.4.2. West Flemish

WF, a Dutch dialect, also offers a challenge to Bernstein’s relation between terminal vowel, Gen, and N-movement. WF word order is very similar to that of German. Specifically, there seems to be no N-movement: adjectives precede their head nouns.

(40) a. een zwarte katte  
   a black cat

b. *een katte zwarte
WF articles and adjectives differ morphologically depending on Gender variation. (41) provides the paradigm for a number of prenominal modifiers and function words. The slashes associated with the definite article (column 2), the indefinite article (column 3), the possessive pronoun (column 3) and the demonstrative (column 4) are meant to represent the fact that definite article *den* does not co-occur with the indefinite *nen* etc.

(41) **Gender in WF**

<table>
<thead>
<tr>
<th></th>
<th>def. article/</th>
<th>indef. article/</th>
<th>possessive pronoun/</th>
<th>demonstr.</th>
<th>adjective</th>
<th>noun</th>
<th>translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>MASC SG</td>
<td>Den</td>
<td>Nen</td>
<td>Menen</td>
<td>Dienen</td>
<td>Nieuwen</td>
<td>Pot</td>
<td>'pot'</td>
</tr>
<tr>
<td>FEM SG</td>
<td>De</td>
<td>En</td>
<td>Men</td>
<td>Die</td>
<td>Nieuwe</td>
<td>Panne</td>
<td>'pan'</td>
</tr>
<tr>
<td>NEUT SG</td>
<td>Et</td>
<td>En</td>
<td>Men</td>
<td>Da</td>
<td>Nieuw</td>
<td>Blad</td>
<td>'page'</td>
</tr>
<tr>
<td>PL</td>
<td>De</td>
<td>Men</td>
<td>Nieuwe</td>
<td>Die</td>
<td>Nieuwe</td>
<td>Potten</td>
<td>'pots'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pannen</td>
<td>'pans'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bloaren</td>
<td>'pages'</td>
</tr>
</tbody>
</table>

Like German, WF has indefinite N-ellipsis:

(42) Marie eet een zwarte katte en ik een een witte.

Marie has a black cat and I have a white.

‘Marie has a black cat and I have a white one.’

In addition, WF gender is also sometimes realized overtly by a terminal vowel on N: in particular WF feminine words nearly always end in schwa. There are plenty of minimal pairs in WF in which an N with terminal *-e* is feminine and a corresponding N without *-e* is either masculine or neuter. This holds both for names of persons (43a) and for non-human nouns (43b). For more examples see Haegeman (2000a, 2002a); for a comparison between two Flemish dialects see Haegeman and Van Peteghem (2002).

(43) a. **Minimal pairs: [+human] nouns**

<table>
<thead>
<tr>
<th>Deugniet</th>
<th>Masculine</th>
<th>Naughty male person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deugniete</td>
<td>Feminine</td>
<td>Naughty female person</td>
</tr>
<tr>
<td>Zot</td>
<td>Masculine</td>
<td>Madman</td>
</tr>
<tr>
<td>Zotte</td>
<td>Feminine</td>
<td>Madwoman</td>
</tr>
</tbody>
</table>
b. Minimal pairs: [–human] nouns

<table>
<thead>
<tr>
<th>Bar</th>
<th>Masculine</th>
<th>Bar, snackbar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barre</td>
<td>Feminine</td>
<td></td>
</tr>
<tr>
<td>Bom</td>
<td>Masculine</td>
<td>Bottom</td>
</tr>
<tr>
<td>Bomme</td>
<td>Feminine</td>
<td>Bomb</td>
</tr>
<tr>
<td>Eerd</td>
<td>Masculine</td>
<td>Hearth</td>
</tr>
<tr>
<td>Eerde</td>
<td>Feminine</td>
<td>Earth</td>
</tr>
<tr>
<td>Kriek</td>
<td>Masculine</td>
<td>Kind of beer</td>
</tr>
<tr>
<td>Kriekie</td>
<td>Feminine</td>
<td>Cherry</td>
</tr>
<tr>
<td>Lis</td>
<td>Neuter</td>
<td>Reed</td>
</tr>
<tr>
<td>Lisse</td>
<td>Feminine</td>
<td>Lead, whip</td>
</tr>
<tr>
<td>Moat</td>
<td>Masculine</td>
<td>Mate</td>
</tr>
<tr>
<td>Moate</td>
<td>Feminine</td>
<td>Measure, size</td>
</tr>
<tr>
<td>Pad</td>
<td>Neuter</td>
<td>Path</td>
</tr>
<tr>
<td>Padde</td>
<td>Feminine</td>
<td>Toad</td>
</tr>
<tr>
<td>Spek</td>
<td>Neuter</td>
<td>Bacon</td>
</tr>
<tr>
<td>Spekke</td>
<td>Feminine</td>
<td>Sweet</td>
</tr>
<tr>
<td>Val</td>
<td>Masculine</td>
<td>Fall</td>
</tr>
<tr>
<td>Valle</td>
<td>Feminine</td>
<td>Trap</td>
</tr>
<tr>
<td>Vet</td>
<td>Neuter</td>
<td>Grease, fat</td>
</tr>
<tr>
<td>Vette</td>
<td>Feminine</td>
<td>Manure</td>
</tr>
<tr>
<td>Week</td>
<td>Masculine</td>
<td>Soaking (de-verbal N)</td>
</tr>
<tr>
<td>Weke</td>
<td>Feminine</td>
<td>Week</td>
</tr>
<tr>
<td>Zoad</td>
<td>Neuter</td>
<td>Seed</td>
</tr>
<tr>
<td>Zoate</td>
<td>Feminine</td>
<td>Seat</td>
</tr>
</tbody>
</table>

The regularity of the ending on feminine words is enough of a basis for the hypothesis that WF has Gen (or WM), realized as -e (i.e. schwa) in feminine N and by an abstract morpheme in masculine or neuter nouns. As was the case in Romance, this terminal vowel -e is not exclusive to the N-system. The terminal -e is also found on a subset of predicative adjectives, as shown by schuone in (44a) and troage in (44b).

---

24 For an interesting discussion of gender systems in Flemish see Rooryck (2001).
(44) a. Dienen boek is schuone/*schuon.  
that book is beautiful  
b. J’is te troage/*troag.  
he is too slow  

In their adverbial use, these adjectives also end in -e:

(45) a. G’eet da schuone/*schuon vermoakt.  
you have that beautifully repaired  
b. J’e da troage/*troag gedoan.  
he has that slowly done

As can be seen, then, there are plausible grounds for assuming that WF not only has gender and number marking on adjectives and determiners, but it also provides evidence for the terminal vowel on the noun, hence for postulating GenP (or WMP). Yet there is no evidence for N-movement as it is found in Romance.  

4.5. Greek

In Greek no noun movement seems to take place: the head noun always follows the adjectives that modify it, independently of the adjective type involved. The relevant contrast is repeated in (46):

(46) a. *to spiti meghalo/paljo/oro  
the   house big/old/nice  
b. to meghalo/paljo/oro spiti  
the  big/old/nice        house

Nevertheless, Greek nouns seem to manifest a ‘rich’ system of terminal vowels, hence we would be led to postulate GenP/WMP (see also section 3 above):

(47) a. to evjenik-o  
the-NEUT:SG:NOM/ACC polite-NEUT:SG:NOM/ACC  
pedh-i/mor-o  
kid/baby-NEUT:SG:NOM/ACC  

Bernstein (1991) discusses data from Walloon, a Romance language spoken in Belgium, which show that in this language there is no N-movement to Num (see also Ritter 1993 on this).
b. ti(n) evjenik-i jinek-a/fil-i

(47) is revealing: (a) Greek has several WMs, by which we mean here endings which classify nouns into ‘declension’ classes. According to Ralli (2000, 2003) declension (or, synonymously, inflection) class marker is the morphological exponent of the set of forms that constitute the paradigm of a word. Ralli has proposed eight declension classes for Greek. (b) There is no isomorphism between gender and its phonological expression (WM), as a particular gender may be instantiated by two or more different WMs (for instance, classes 5–8 comprise neuter nouns, whereas class 1 comprises both masculine and feminine nouns). Finally, (c) agreement between noun and adjective relies on gender (only accidentally on the WM as well), as shown in (47).

Another crucial fact about Greek nouns is that they inflect for number, gender and case at the same time, while their Romance counterparts inflect only for number and gender. Thus, in (47) the nouns are marked for either nominative or accusative (or vocative). Moreover, the crucial factor distinguishing subclasses in a single declension class is case: both xara (‘joy’) and timi (‘honor/price’) belong to the same class (class 3 according to Ralli); it is the different suffixes (in the singular) which encode case – as well as gender and number – that sets them apart.

As already pointed out, in Greek gender is taken to be inherent to the noun stem and triggers agreement with adjectives, quantifiers and determiners. In contrast, number is a feature of the inflectional suffix alone, and inflection class (WM) is a feature that is shared by both the suffix and the stem. Under this view, gender is an abstract feature not represented syntactically (cf. Aronoff 1994 for arguments in favor of a complete separation of gender from its phonological expression). The WM may be considered as a ‘theme-vowel’, an integral part of the realization of the noun-stem, which functions as an ‘inflection class’ (or paradigm) trigger in that it attracts a particular ending-type for each declensional class (Aronoff 1994). According to Ralli (1994, 2000, 2003), the WM is not actually part of the phonological word: it is represented by the feature attribute ‘Inflectional Class’ on both the suffix and the nominal stem; it then takes up values which correspond to the eight classes Ralli assumes for Greek. The matching of the values on the...
both the stem and the suffix thus guarantees the choice of the correct ending for each nominal stem.

As an illustration of Ralli’s basic claims concerning nominal inflection, let us take the noun kip-’os (‘garden’): the stem kip- carries the feature specification [+MASC, α case, [Inflection]C(lass) 1], the relevant suffix-realized phonologically as -’os- is also specified in the lexicon as: [case=NOM, num=SING, IC1]. Notice that gender is not included in the feature matrix of the inflectional affix – it only forms part of the noun stem (see Ralli 2000 for details).

Recall that Spanish nouns inflect for gender and number, and this marking is clearly visible by two morphemes that surface independently from one another. The number affix follows the gender/WM morpheme-crucially, the WM may not be followed by any other morpheme:

(48) muchach-0(-s) ‘boys’ muchach-a(-s) ‘girls’

On the other hand in Greek, as already illustrated, gender marking can never be clearly dissociated from number or, for this matter, case marking – Greek being a highly fusional language:

(49) a. anthrop-0s
  man-MS:SG:NOM

b. anthrop-i
  man-MS:PL:NOM

c. anthrop-on
  man-MS:PL:GEN

Obviously, then, the WM category has a different status in Spanish and in Greek. In Spanish it marks the right edge of an infecltionally complete word (Harris 1991), in the sense that nothing is required to follow the WM; it is a discrete morpheme which has a status in its own right (48). In Greek on the other hand the WM, depending on the analysis adopted, is either part of the stem (i.e. a thematic vowel), hence necessarily followed by the ending which ‘closes off’ the word collapsing number and case, or it is part of

---

27 See Delfitto & Schroten (1992) for an account of the emergence of number and gender morphemes in Spanish.

28 If one takes the view of the WM as a thematic vowel, one has to allow for zero morphemes (for cases like jineka-0 woman-FEM.SG.ACC/nom, pedhi-0 child-NEUT.SG.ACC/NOM, etc), as does Ralli (2000, 2003). This issue is complicated and tackling it here would take us too far into the details of Greek.
the ending itself, which realizes jointly number and case (49). Independently of whether the Greek WM is perceived as part of the stem or of the ending, what is of importance for our discussion is the fact that in any case it is not a discrete morpheme (phonological segment). Crucially, this high degree of amalgamation makes it almost impossible in Greek to segment noun words in such a way as to obtain ‘pure’ morphemes, which could then be identified as a ‘root’ and an ending.

To summarize, the Spanish nominal paradigm differs from that found in Greek/German/Russian in the following way: gender and number marking in Spanish is clearly visible on two discrete morphemes that surface independently from one another. In contrast, in Greek, gender and number are never realized as discrete segments. In the light of the above facts, Greek nouns differ significantly from Spanish nouns: in Spanish the WM may arguably be adjoined to the nominal stem syntactically, through head movement of the noun to the WM phrase. In Greek, nominal inflection surfaces in the form of ‘portmanteau’ morphemes, which encode number and gender as well as case, and whose attachment on the noun cannot be the result of syntactic head movement.

How can we account for the rich inflectional system of Greek and the absence of any observed N-movement? One possibility is to cast such an account in the Distributed Morphology framework (Halle & Marantz 1993). A proposal along these lines has been put forward by Alexiadou & Stavrou (1998c) (see Alexiadou & Müller, to appear, and also Ralli, 1994, 1997 for a percolation analysis of nominal inflection) and we briefly sketch it here. This proposal assumes first that number and case endings are the result of the fusion of two terminal nodes, as illustrated in (50):

\[
\begin{array}{c}
\text{DP} \\
\text{D} \\
\text{F} \rightarrow \text{Merger} \\
\text{FP} \\
\text{NP} \\
\text{case/number} \\
\text{N} + \text{F} \\
\end{array}
\]

The fact that the nominal and verbal inflectional system of Greek is entirely based on such portmanteau morphemes is what has always classified Greek (along with Latin, Russian, Serbo-Croatian, etc.) as a Word & Paradigm language.

For more discussion of this framework see Chapter 2 of Part IV.
The functional head F is the locus of a fused case/number affix. F heads an agreement-type projection independently argued for (Stavrou 1996, 1999; Alexiadou & Stavrou 1998a, b), primarily hosting number. Recall that number is justified as a syntactic head. Secondly, the relevant phi-features on F0 (case/number) merge with the noun stem post-syntactically via morphological merger at the level of Morphological Structure. However, by that time it is not clear which lexical entry, i.e. ending, will be appropriate for insertion after merge of F with N. What is needed is a feature which will ensure the correct matching of nominal stem and ending. This can be ensured by the insertion of the feature ‘inflectional class’ achieving the correct matching required for morphological well-formedness. Crucially, the addition of this feature takes place late, immediately before lexical insertion, and after the insertion of the feature ‘agreement’, as it is a purely morphological/classificatory feature without any import to either agreement or meaning (LF). The feature ‘inflectional class’ will further lead to the phonological realization/insertion of the correct vocabulary item (under F0).

As mentioned above, Bernstein correlates the presence of WM with N-movement and noun ellipsis (33b). Interestingly enough, Greek, German, and WF, (as well as Bulgarian and perhaps also Russian for that matter) lack N-movement, yet they all clearly manifest (indefinite) N-ellipsis, much like Spanish, showing that Bernstein’s correlation breaks down once again.31

Cf. (51b–e):

(51) a. uno pequeño
   a small  (Spanish)

b. ein neues
   a new  (German)

c. ena kenurio
   a new  (Greek)

d. K’een een zwarte katte en zie eet en grysde.
   I have a black cat and she has a grey  (WF)

e. Kupix cisto nova kola, a Maria kupi stara.
   I bought a brand new car and Mary bought an old  (Bulgarian)

To account for this fact, we appeal to those analyses of noun ellipsis that crucially rely on the presence of adjectival morphology as a licenser of the

31 See also Bouchard (2002, Ch. 4) for a criticism of Bernstein’s approach to noun ellipsis and Corver and Van Koppen (2006) for an analysis of N-ellipsis in relation to focus.
omitted noun (see, e.g., Barbiers 1990; Kester 1996; Sleeman 1996; Snyder 1995; Giannakidou & Stavrou (G&S) 1999; Panagiotidis 2002, among others, but see also Corver and Van Koppen 2006 for an alternative approach).

The descriptive significance behind this is that the formal (phi-) features of the missing noun can be retrieved through the suffix on an adjective, a quantifier or a numeral, and in general on any modifier situated in a specifier position in the extended nominal projection, all of which crucially involve case/number and gender markings.\(^{32}\) The missing noun always carries the same morpho-syntactic features as the overt specifier (the ‘remnant’) in the elliptical part (52).

\[(52)\]

a. I Maria exi polus filus (Greek) the Mary has many-MASC ACC PL friends-MASC ACC PL
   eno i adherfi tis lighus [filus].
   while the sister-her few-MASC ACC PL [friends-MASC ACC PL]
   ‘Mary has many friends, while her sister has few.’

b. An psaxnis ja tenia, exo na su protino mia
   if look-2SG for film, have-1SG to you propose-1SG a
   kal-i [teni-a].
   good-FEM SG ACC [film- FEM SG ACC]
   'If you are looking for a film, I have a good one to propose to you.'

In the light of (52), it appears that it is the presence of gender, case and number marking on the adjective that licenses (gapped) ellipsis, and not the presence vs. absence of the WM. G&S assume that the structural implementation of the role of agreement in licensing ellipsis proceeds through

\(^{32}\) It is important to note, even in a footnote, that the discussion here regards only the morphosyntactic licensing of the omission of the noun. From the semantics point of view the crucial condition for licensing the omission of the noun is the presence of contrastive focus (see Rooth 1992; Giannakidou & Stavrou 1999; Ntelitheos 2004, Corver and Van Koppen 2006, among others):

(i) Mary has got a grey cat and Electra has got a white/*grey one.

The same effect is seen in the examples in (52). Or, more generally, in order for the semantic content of the omitted noun to be recovered, there must be a salient context:

(ii) salesperson: Would you like the red umbrella or the blue?

(iii) customer: I’ll take the red, please.

(Bernstein 1993; also Bouchard 2002: 226)
the spec-head configuration, under the assumption that adjectives, as well as quantifiers (like many, few, some, etc.) are specifiers of the relevant (functional) categories in the extended nominal projection.\footnote{33}

In West-Flemish, as in German, adjectives also inflect for gender. Hence the presence of inflection is sufficient to license ellipsis.

(West Flemish)

(53) I een een rooijen oto en Valère ee nen groenen [\textit{groenen}].
I have a red-MASC car and Valère has a green-MASC

Further supportive evidence for our assumption that adjectival inflection licenses noun ellipsis is provided by Dutch, cf. (54) (examples based on Sleeman 1996). In (54a) the terminal vowel (schwa) on the adjective \textit{oude} is compatible with ellipsis, whether this be of a masculine singular noun (say \textit{tekst} (`text')) or a feminine singular noun (say \textit{deur} (`door')) or a plural noun (say \textit{teksten} (`texts')). When the N is overt the adjective would also appear with the ending (54b). (54c) shows that in the case of indefinite DPs with a neuter noun, there is no ending on the adjective. In such a case ellipsis is not possible, as shown in (54d).

(54) a. Ik neem de oude.
I take the old

b. Ik neem de oude tekst/deur/teksten.
I take the old text/door/texts

c. Ik heb liever een oud huis.
I have preferably an old house

‘I prefer an old house.’

d. *Ik heb liever een oud
I have preferably an old

We conclude that in Greek and in WF, much like in Dutch, noun omission is allowed because the features of the missing noun can be recovered through the adjectival inflection. It thus appears that the presence/absence of N-movement is orthogonal to the licensing of noun ellipsis.

\footnote{33 The essence of the argument concerning the significance of overt adjectival inflection as a licenser of noun ellipsis would not be affected if some of the pronominal agreeing elements, e.g. quantifiers, were assumed to be heads. In that case agreement could proceed through the head-head relationship between the quantifier and the missing noun.}
A final remark concerns the contrast between German and English with respect to noun ellipsis. These two languages behave alike as regards N-movement. However, while in German ellipsis is possible because of the presence of morphology on the adjective, in English the morpheme *one* is required.\(^{34}\) Crucially, adjectives in English do not bear any morphology. Of course, this contrast between German and English lies at the heart of our point concerning the relevance of adjectival inflection for allowing noun ellipsis and the need—on both empirical and theoretical grounds—for the dissociation of the existence of Word Markers and noun ellipsis as well as noun movement in a given language.

Having started our discussion in this chapter with a discussion on the category of number, it is appropriate to close off this section with a mention of Bouchard (2002), according to whom the cross-linguistic differences as regards the omissibility of the noun in a DP are directly related not with the expression of gender but with the expression of number (see Lobeck 1991 for a full analysis of nominal ellipsis in English). For the link between noun omissibility and the existence in a language of the grammatical category Number, Bouchard (2002) says:

> Given the role of Number in atomization it should be fairly easy to omit N from syntactic entities that identify an actant in French, since the Number on Det allows the entity to satisfy the interpretive requirement. On the other hand, omitting N from these syntactic entities should be highly restricted in English, since the absence of N implies an absence of Number: only entities which contain other means of identifying actants should be licit.

(Bouchard 2002: 219)

Since noun omission/ellipsis is not in itself a subject of our discussion, we will not pursue it more here.

### 4.6. Conclusion: Terminal vowels, N-movement and Ellipsis

The data discussed so far do not allow us to endorse Bernstein’s proposal that the presence of a Gender category in syntax is determined by the presence of a terminal vowel on a noun and that languages with Gen(P) have N-
movement and indefinite N ellipsis. Both German and WF have definite N-ellipsis without there being N-movement past adjectives, and WF has a terminal vowel related to feminine gender which would lead one to postulate Gen(P). For further discussion the reader is referred to Alexiadou, Haegeman & Stavrou (2001) and Alexiadou (2004b), Alexiadou & Müller (to appear).

In Chapter 1, Part III we will cast further doubt on the N-movement hypothesis as a way of accounting for the Noun-adjective order.

5. Speculations on other functional categories in the DP

In this more speculative section we discuss arguments advanced in favor of postulating an aspectual projection and a tense projection in the DP-domain. As before, the arguments for postulating such projections are semantic, morphological and distributional.

5.1. Voice and Aspect

A subset of nouns can be related to verbs. For instance the noun *examination* and its shortened form *exam* seem both to be related somehow to the verb *examine*. A distinction is made between so-called event nominals (or process nominals) and result nominals (for discussion see Chapter 2, section 3.4 of Part IV). The noun *examination* can be used to denote the event of examining as well as its result; the shortened form *exam* is only used to refer to the result. The contrast bears, among other things, on aspectual distinctions. For instance, the two classes differ in their compatibility with an aspectual modifier such as *in an hour, for six weeks*. Event nominals allow the same aspectual modifiers as their verbal counterparts, result nominals do not admit these modifiers. (55) illustrates English: the verb *examine* is compatible with the modifier *in three hours*, and so is the noun *examination*, in its event reading. On the other hand, the result nominal *exam* is not compatible with such a modifier. (56) illustrates the same patterns in Greek.

(55)

a. The teacher examined the papers in three hours.

b. The examination of the papers in three hours is impossible.

c. *The exam in three hours is impossible."

The terms event and result nominals are here used as in Grimshaw (1990). The issue will be taken up in detail in Chapter 1, Part IV.
Part II – The functional make up of the noun phrase

(56)  
\[ \text{a. } i \text{ eksetasi tu Jani epi mia ora} \]  
\[ \text{the examination the John-GEN for one hour} \]  
\[ \text{‘the examination of John for an hour’} \]  
\[ \text{b. } * \text{to dhiaghonisma tu Jani epi mia ora} \]  
\[ \text{the exam the John-GEN for one hour} \]  
\[ \text{‘the exam of John for an hour’} \]  

Moreover, in some languages event nominals are compatible with manner adverbs and with aspectual adverbs, while result nominals are not. Greek is a case in point:

(57)  
\[ \text{a. } i \text{ katastrofi ton stixion prosektika} \]  
\[ \text{(Greek)} \]  
\[ \text{the destruction the evidence-GEN carefully} \]  
\[ \text{b. } * \text{to kolibi tu Jani me epitixia} \]  
\[ \text{the swim the Jani-GEN with success} \]  

(58)  
\[ \text{a. } i \text{ katastrofi ton stixion kathimerina} \]  
\[ \text{the destruction the evidence-GEN daily} \]  
\[ \text{b. } * \text{to kolibi tu Jani ja dio ores} \]  
\[ \text{the swim the Jani-GEN for two hours} \]  

According to a lot of recent work (Alexiadou 1997; Cinque 1999, among others), adverbial elements are licensed as specifiers of specialized projections; notably manner adverbials are related to the projection VoiceP and aspectual adverbials to the projection AspP. If this licensing mechanism is generalized over nominal projections then at least event nominals must be able to project VoiceP and AspP.

In certain languages nominals have a morphological reflex of voice or aspectual features. Turkish action nominals, for instance, may inflect for voice in the same way as finite verbs, as shown in (59a). In Greek, certain process nominals include the suffix ‘m’, which seems to be parallel to the non-active voice morphology in the verb system as shown in the passive participle (59b) and the process nominal (59c). The Greek process nominal in (59c) exhibits the -s suffix typical of perfective stems of its verbal counterpart in (59d).\(^{36}\)

\(^{36}\) But see Horrocks & Stavrou (2000) for a different view of the -s-suffix based on diachronic evidence.
(59) a. mektub -un yaz -il-ma-si (Turkish) 
    letter-GEN write-PASS-VN - its
b. diavas-men-os (Greek) 
    read-PAST-PASS-MASC-SING
c. diava -s m -a 
    read-PERFECT PASS-NEUTER
d. diava-s -a 
    read-PERFECT -1SG

(60) shows how the opposition between perfective and imperfective aspect in the verbal system of Polish is also found in the nominal system:

(60) a. ocenienie studentow przez nauczycieli (Polish) 
    evaluation-PF the students-GEN by teachers
b. ocenianie studentow przez nauczycieli 
    evaluation-IMPF the students by teachers

Recall (Introduction section 2.4) that VoiceP is often equated to vP, i.e. the V-related layer whose specifier hosts the agent in the active voice. If the semantic and morphological evidence presented above is taken at its face value, then we must propose that the DP also contains the projections VoiceP and AspP. We return to this issue in Chapter 2, Part IV.

5.2. Tense

5.2.1. Semantic considerations

At first sight it might appear as if the notion Tense, which is intimately felt to be linked to verbs, would have no place inside a nominal, certainly not in nominals which are not related to verbs. If, as is proposed in Chomsky (1995), the requirement that all clauses have a subject, i.e. the so-called EPP effect, is due to Tense, then the absence of the EPP effect in nominals could be made to follow from the absence of Tense (Alexiadou 2001a).

However, even at the interpretational level the absence of tense in the DP can be challenged. Consider (61):

(61) Every fugitive is now in jail.
This sentence is an assertion about past fugitives who are in jail at present. The temporal span of the referents of the DP being fugitives crucially does not coincide with that of them being in jail: when they are in jail, they cannot be said to be fugitives any more. This suggests that DPs are given a temporal reading independently of that of the clause in which they appear (Enç 1987).

The independent temporal interpretation of DPs is constrained by syntactic factors, as shown by Musan (1995). In (62) the NP students can only be assigned a dependent reading, i.e. one in which the interval of the referents’ being students coincides with that of their being sick.

(62) There were three students sick.

With respect to temporal readings, DPs seem to behave like embedded clauses in that they may be dependent (63a) or independent (63b) from the tense of the higher clause. Temporal dependence of clauses is usually referred to as the ‘sequence of tenses’ (see Enç 1987; also Haegeman and Guéron 1999: 532–536, for some introductory discussion).

(63) a. Mary said she would come.
    b. Mary said she will come.

If the temporal interpretation of a clause is encoded in a specialized projection, TP, then by analogy one might well wish to postulate that the temporal interpretation of the nominal also be related to TP. In the more familiar languages such as English, French, Dutch, German, Italian, Spanish, Greek, etc., this TP would not have any morphological reflex.

5.2.2. Morphological considerations

In some languages, nominal tense seems to have an overt morphological reflex. We will first illustrate some cases and then discuss the case of Somali in some detail.

Burton (1997) shows that Halkomelem, a Salishan language spoken on the Northwest Coast of North America, has overt past tense marking on nouns. The tense marker on nouns is the same as that on verbs. With verbs the past tense marker occurs on a pre-verbal auxiliary, as illustrated in (64):
(64) I-lh ímex tel sí:le. (Halkomelem)
   `My grandfather walked.'

The same past tense marker lh is also found on Ns as illustrated in (65a,b):

(65) a. tel sí:le tel sí:lalh
    `my grandfather' `my late grandfather'

b. tel xeltel tel xeltel-élh
    `my pencil' `the pencil which was mine' (and which I lost))
    OR `my broken pencil'

As shown by the translations, the Ns with past tense marking mean one of three things: (i) death (65a, b), (ii) loss of possession (65b), (iii) destruction (65b). See also Wiltschko (2003) on Halkomelem Salish.

The same kind of inflectional endings are mentioned by Hockett (1958: 238) as cited by Alexiadou (1997: 207) for Potawatomi, for the Wakashan languages Nootka, Kawkuitl (Lecarme 1998: note 1), for the Salishan languages St’a’mcets (Demirdache 1996; Lecarme 1998: note 1) and for the Australian languages Kayardild and Jingulu (Evans 1996; Pensalfini 1997; Lecarme 1998: note 1) as well as for Somali (Lecarme 1996, 1998), which we will discuss in more detail. One point should be made, though: the goal of our discussion is not to offer detailed analyses of Somali. Rather we wish to show how specific data can be used to argue for functional projections in the DP. For discussion of Somali see also Lecarme (2004).

In Somali, a Cushitic (Afro-Asiatic) language, the tense morpheme attaches to definite determiners, providing yet again morphological evidence for a DP-internal TP. According to Lecarme (1998), nominal tense is a property of any DP (common noun phrase). Tense morphology affixes to D, i.e. the definite article -k (masculine)/-t (feminine), encoding a [+past] opposition and the demonstrative enclitic are in complementary distribution with the tense morpheme (Lecarme 1998: 2). The DP-tense is independent of the predicate-tense: nominal tense and verbal tense may coincide or differ:
Part II – The functional make up of the noun phrase

(66) a. Dhibaata-dii Khalij-ku waa dhammaataay. (Somali) 
‘The Gulf problem has ended.’

b. Arday-da baan kasin. 
students-DetF[-PAST] F+NEG understood [+PAST] 
‘The students (who are present, who I am telling you about) did not understand your question’

c. Arday-dii waa joogaa. 
students-DetF+[PAST] F+3P are-present[-PAST] 
‘The students (the students I told you about) are present.’

As was the case in Halkomelem, the past tense marking on the Somali DP may indicate that the referent no longer exists. In (67) the past tense indicates that the speaker believes the exhibition is closed, the non-past that he believes it is still running.

(67) Bandhig-ga/-gii maaad daawatay? (Somali) 
exhibition-DetM[-PAST]/det M[+PAST] Q+2s saw [+PAST] 
‘Who saw the exhibition?’

The relation between D and T is not very clear. Lecarme (1996) suggests that the tense morpheme is attached outside the Determiner morpheme. For instance in (66a) she takes d to be the reflex of D and -ii to be the reflex of tense. If the linear order of the morphemes correlates with the syntactic hierarchy of the heads (Baker 1988 – the Mirror Principle), we would expect TP to dominate DP. However, Lecarme proposes that DP dominates TP and that the overt Tense morpheme is actually a specifier of TP which then cliticizes to D. In later work (1998) she says:

I take the [+PAST ] morpheme to be syncretic with the definite determiner morpheme, …While both D and T specifications are normally expressed by a single, syncretic head and thus project only a single maximal projection, DP is obligatorily split when enclitic possessive pronouns or other material are realized. (Lecarme 1998: note 6)

We will turn to the latter case now, i.e. examples in which the tense morpheme is not on the same head as the Determiner. (68) is a case in point:

(68) Khalij-ka dhibaata-d-iis-ii (waa dhammataatatay) (Somali) 
gulf-detM problem-detF+poss3M-[+PAST] 
‘The Gulf problem (has ended).’
If the suffix $d$ is indeed Det, and if the sequencing of the morphemes corresponds closely to the morphological array of endings, this would suggest the following hierarchy of projections:

(69) \[ TP > PossP > DP \]

In (68), the possessor *khalíij-ka* precedes N *dhibaatá-d-iis-ii*. If the overt tense marking suggests N-to-T movement in Somali, then we conclude that the possessor has moved to a higher position, notably to SpecTP. This suggests that nominal tense has a crucial role in the licensing of the possessor (see also Lecarme 1998).

5.2.3. Nominal tense and possessors

In Somali, the availability of an overt possessor morpheme suggests that a specialized projection PossP can be postulated. Because *iis* is sandwiched between the Tense morpheme and what Lecarme considers to be Det, we arrive as a first analysis at the hierarchy in (69) (in which PossP dominates DP). If PossP in (69) corresponds to AgrP, then the hierarchy we end up with is the reverse of that which we have been assuming before, in which agreement projections were lower than DP.

But the situation is clearly more complicated than this. When the possessor morpheme *iis* is not projected in Somali, the nominative possessor remains to the right of the possessed N as in (66a), repeated here as (70):


Recall from previous discussion (chapter 1, section 5) that we also find a nominative possessor in Hungarian, which was taken to follow D. Schematically, (71) suggests a hierarchy in which the projection reserved for nominative possessors is AgrP, originally postulated for the nominative possessor in Hungarian:

(71) \[ TP > DP > AgrP > NP \]

The above contrast may suggest that possessor relations can be captured in two ways. If AgrP is projected then it triggers movement of the possessor to its specifier, giving rise to a post-nominal possessor. If AgrP is not pro-
jected, the possessor must be checked by an alternative licenser, and a higher projection is activated and attracts the possessor to its specifier.

The higher position of the Somali possessor would find a parallel in the dative possessor in Hungarian.

(72) a. a Mari kalap-ja
     the Mari-NOMINATIVE hat-3SG
     b. Mari-nak a kalap-ja
        Mari-DATIVE the hat-3SG
     ‘Mary’s hat’

At first sight, the lower AgrP seems independent of nominal Tense in Somali, but Lecarme shows that this cannot be true. Indefinite DPs cannot have overt Tense, and they are incompatible with a possessor:

(73) búug (*Maryan)
     a book (of Maryan)

These data are taken to mean that Tense licenses both the prenominal and the postnominal possessor. Concerning the higher position of the possessor in (72b), we can propose that the possessor moves to SpecTP. For the lower AgrP we may propose that the relation T-Agr is established by N-to-T movement.

Let us for a moment speculate on the relation between tense and possessor. We can assume that interpretively the nominal tense is related to the reference of the DP. In terms of a Reichenbachian approach to tense we could say that the nominal Tense establishes a Reference time rather than an Event time. It has been proposed in the literature that the temporal anchoring of tense to the reference time in the clause is achieved in C (Enç 1987), which hosts what is also called ‘Topic Time’. This suggestion is in line with our general proposal that DP (and the projections that dominate it) by and large parallels the clausal CP.

What could the link be between possessor and Tense? One could investigate here whether a link can be established between the person features of possessors and nominal Tense. It has been argued in the literature, see e.g. Davis (1998), that the person features of the DP are licensed by Tense. The licensing is compared to the tense anchoring of embedded clauses. Possessors have a person feature. We might therefore say that the person feature of the possessor must be licensed by being anchored to the nominal Tense.
See di Domenico (2004) for further arguments that there is a link between Tense and Person.

As pointed out before, the discussion in this section remains speculative. Our goal was to illustrate the argumentation invoked to postulate functional categories in the inflectional domain of the DP, rather than to provide a fully fledged analysis or to provide a complete inventory of all functional categories in the inflectional domain of the DP. For further discussion of the status of Tense in nominals see Lecarme (2004) and for more general discussion of the nominal T see also Pesetsky and Torrego (2004: 518–523). For different views on Tense and nominals see also Matthewson (2005).

We return to possessors in Chapter 2, Part IV.

6. Summary

Based on semantic, morphological and distributional criteria we have postulated that what was originally labeled NP is in fact an extended projection of N, i.e. an NP augmented with the following projections:

(74) (i) DP
(ii) GenP, NumP
(iii) vP/VoiceP, AspP (for event nouns)
(iv) TP
(v) Poss P (which may have varying positions and licensing properties)
(vi) TopicP, FocusP

The question that remains open – here as well as in the vast literature on DP in general – is how best to express the relation between semantic-syntactic features and their realization (morphological/phonological). Or, put slightly differently, what is the exact role/necessity of the functional projections postulated on semantic, syntactic and distributional criteria within the DP. This issue is not clear cut and hinges also on more general theoretical assumptions about the framework. Hopefully future research will lead to more definitive answers to this question; and, equally hopefully, this chapter, along with the previous ones, can constitute a base for forthcoming investigations.

In Part III we will turn to the issue of modification in the DP. This discussion will reveal more evidence for movement operations in the nominal
domain and thus will provide us with a good testing ground for some of the projections we have talked about in Part II.
Part III

Modification relations inside the DP

This part of the book deals with DP-internal modification relations. Chapter 1 is concerned with adjectival modifiers in the nominal projection. It investigates the factors determining the distribution of adjectives within the nominal projection (NP/DP), that is, whether they occur to the right or to the left of the head noun, and it also examines to what extent a difference in distribution may correlate with a difference in interpretation. We will provide a survey of some of the literature. One issue that will come up is whether there might be motivation for postulating that all adjectival modifiers are merged in the same type of base position – for instance they are all prenominal modifiers in the functional domain of DP – and that variations in word order, i.e. whether the adjective is prenominal or postnominal, can be derived by movement. As an alternative it could be argued that the difference between prenominal and postnominal adjectives is basic and that it correlates with semantic properties of the two positions. Another, and related issue, is whether adjectival modifiers in the DP should be derived from more extensive structures. For instance, it has been claimed that rather than being simply extended projections of the adjective which are merged in the functional domain of the DP, such modifiers are in fact reduced relative clauses (obviously with a lot of abstract functional structure) whose position is derived by various applications of movement. On the basis of cross-linguistic evidence, we will opt for a mixed approach whereby certain adjective classes are derived through a clausal structure, and others are merged directly in the functional domain of the DP.

Chapter 2 concerns the distinction between functional heads/categories and lexical heads/categories (see Introduction section 2.3.). It is a standard assumption that an opposition exists between functional heads and lexical heads. However, the question arises whether a clear-cut dichotomy is tenable and, if it is not, how to handle ‘hybrid’ categories which are semi-lexical/semi-functional (see van Riemsdijk 1998; Corver and van Riemsdijk 2001 for discussion and references). Chapter 2 will deal with two constructions that involve so-called semi-functional (or semi-lexical) categories in the domain of the nominal projection: the N-of-N construction and the pseudo-partitive construction. Building on van Riemsdijk (1998), we will discuss the evidence in favor of the presence of such categories within the DP and we will offer a survey of the various analyses of the two constructions that have been proposed.
Chapter 1

Adjectives in the DP.
Problems of distribution and interpretation

1. Introduction

1.1. Scope and organization of the chapter

In this chapter we examine aspects of the syntax of DP-internal adjectives. This area of investigation is vast and we will not be able to cover all the theoretical proposals or all the empirical phenomena treated in the literature. Rather, we will select a few areas for which current developments in generative approaches to the syntax of the DP seem particularly promising. What we will try to do is to review older accounts and show how old problems may be given different solutions by adopting novel theoretical insights or, even by combining them. Our major concern will be to explore the extent to which the interpretation of an adjective-noun combination is a reflex of the distribution of the adjective in the nominal phrase.

One of the theoretical issues raised in this chapter is to what extent DP-internal movements of NP or of AP, which are taken to match VP movement or AdvP movement in the clause, can lead to analyses for deriving the postnominal and the prenominal position of adjectives.

The discussion takes as a starting point English data, as these have by now been studied in quite some detail and can form a basis for comparative considerations. However, as the discussion proceeds we will draw upon other languages to elaborate on some novel proposals.

The chapter is organized as follows: in the remainder of this section we present our primary cross-linguistic data and formulate the questions that emerge out of this comparative examination. In section 2 we deal with the problem of the derivation of the prenominal position of English attributive adjectives as discussed in the older literature and we present the problems that the older account entailed – both for English but also for other languages. In order to be able to present a clear picture of the English data, we will also survey a number of proposals concerning the classification of ad-
jectives. This classification will also play a part in the later discussion. In section 3 we present the ordering restrictions holding among adjectival modifiers in the DP. Two issues will be shown to be relevant, (i) the relative distance of an adjective from the modified noun, and (ii) the relative order of the adjectives themselves. In section 4 we address our central topic, which is how to formulate an account for the distribution of adjectives in the DP which is valid cross-linguistically, and which captures the fundamental interpretational effects. This section introduces some of the main approaches to the analysis of DP-internal adjectives. The starting point of the inquiry is the fact that attributive adjectives that are normally prenominal in the Germanic languages, surface in a postnominal position in Romance. The operation of DP-internal noun movement is discussed, along with the problems it raises. In section 5 the so-called antisymmetric analysis of adjectival modification will be discussed with special reference to Kayne’s D-complementation hypothesis. According to this analysis prenominal adjectives are derived from postnominal ones by predicate fronting. This section reveals that prenominal adjectives should not be treated uniformly: some are amenable to the predicate fronting analysis, others are probably better taken to be base-generated prenominally; this basic idea will be further discussed in Section 9. Section 6 discusses DP-internal movement of maximal projections, and illustrates this by presenting the phenomenon of Determiner Spreading, i.e. the occurrence of multiple determiners in a single DP in Greek. Because the relevant determiners are definite in Greek, the phenomenon is also referred to as ‘polydefiniteness’.¹ Section 7 examines the question of how to derive the fact that in some languages the order of adjectives is the mirror image of that found in English. Here the mechanism of roll-up or snowball movement is introduced. Section 8 deals with Bouchard’s (2002) theory, currently the main representative of the ‘separationist’ approach to adjective distribution. Section 9 brings together various strands of the preceding discussion and proposes a non-uniform analysis for pre- and postnominal adjectives. Section 10 concludes the chapter.

1.2. Setting the scene: Cross-linguistic asymmetries

Consider the cross-linguistic distribution of adjective-noun combinations in (1):

(1) a. i griza gata  
    the grey cat  
    i omorfi gata  
    the beautiful cat  
    ilektriki enerjia  
    electric power  
    o ipotithemenos klecis  
    the alleged thief  
    i viei epithesi  
    the brutal attack  

    (Greek)  

b. the grey cat  
    the beautiful girl  
    electric power  
    the alleged thief  
    the brutal attack  

    (English)  

c. le chat gris  
    the cat gray  
    un chat doux  
    a cat sweet  
    la belle fille  
    the beautiful girl  
   nergie electrique  
    power electric  
    presupme voleur  
    alleged thief  

    (French)  

d. el sombrero redondo  
    the hat round  
    la chica guepa  
    the girl beautiful  
    los frecuentes viajes  
    the frequent journeys  

    (Spanish)  

e. l’ invasione brutale  
    la brutale invasione  
    ‘the brutal invasion’  
    la camici azzurra  
    the shirt blue  

    (Italian)
In the examples above we see that, depending on the language, what looks like the same adjective appears in a different position relative to the noun it modifies: for instance, while grey precedes the noun it modifies in English (and so does its equivalent in Modern Greek), gris ('grey') follows the head noun in French (and so do its equivalents in Spanish and Italian). On the basis of the data some generalizations seem to emerge which will need to be refined later on. One generalization seems to be that in Greek and English adjective precede nouns, whereas in the Romance languages as a rule adjectives follow nouns. However, this generalization is not completely adequate since a limited set of cases also exists in the Romance languages in which adjectives can precede nouns. In fact, for Greek and for English, given the data in (1b) and the Greek data in (1f) below, a second (and stronger) generalization might be proposed: in both English and Greek the adjective might seem to never be able to follow the noun.

(1)  f. *i ghata griza  
    *i ghata omorfi  
    *i enerjia elektriki  
    *i epithesi viei  
    the cat grey  
    the cat beautiful  
    the energy electric  
    the attack brutal  

However, this generalization is again not quite accurate, in view of the fact that examples such as those in (2) are possible in English, but not in Greek (3). The fact that the adjective in (2) is linked with a particular interpretation is an issue which we will come back to as our discussion unfolds:

(2)  the rivers navigable  
    Only the students present may vote for their unions.  
    the stars visible include…  
    the kids afraid of the dark  

(3)  *i potami ploti  
    the rivers navigable  
    *Monon i fitites parontes borun na psifisun.  
    only the students present can vote  
    *i asterismi orati  
    the stars visible  

*
We conclude that the data are fairly complex: different languages manifest linearly different adjective-noun sequences. More importantly, different languages encode the same combinations of an adjective and a noun by means of different linear orders. Greek patterns more like English than like the Romance languages, but Greek is not identical to English. In particular, Greek appears to be a language that at first sight (but see section 6.1) never allows postnominal adjectives. English does allow for some classes of adjectives to follow the noun. Conversely, in Romance languages such as French and Spanish, postnominal adjectives are the rule rather than the exception. But these languages also do allow some classes of adjectives to precede the noun. Several questions arise at this point.

1. Do these different distributional patterns of adjective-noun combinations have an impact on the interpretational possibilities they receive?

2. Why is it that the same categories (adjectives, nouns) are distributed differently in different languages?

3. Why is it the case that certain orders are disallowed in some languages but allowed in others?

The discussion that follows relies heavily on cross-linguistic data. Our survey of these issues will show that:

- The position an adjective occupies relative to the modified noun reflects on the way the adjective is interpreted. The generalization holds that, in the languages that systematically use both prenominal and postnominal adjectives, a postnominal adjective assigns a property to the referent of the noun (Bolinger 1967), or to what the noun denotes as a whole (Bouchard 2002), while a prenominal adjective modifies part of the sense (or reference) of the noun. The Romance languages illustrate this correlation between position and interpretation.

- For the languages that systematically use both prenominal and postnominal adjectives: if one and the same adjective shows up in both positions it is given two different interpretations — one for each position.

- In English, where as a rule adjectives precede the noun, and in Greek, where they exclusively precede it, prenominal adjectives, apart from the interpretation typically associated with the prenominal position, also take over the kind of interpretation that in the Romance languages is conveyed only by postnominal adjectives. As a result, in English and in Greek, (prenominal) adjectives give rise to ambiguity. Ambiguity is much more restricted in French.
Our main conclusion, based on the languages discussed here, will be that:
- Each position of the adjective (to the left/right of the noun) should be accounted for independently, primarily on the grounds of the impact it has on the interpretation of the adjective+noun combination. Crucially, the different positions reflect different (underlying) structures.

2. DP-internal adjectives in English

2.1. The problem

Let us begin with a discussion of the distribution of adjectives in English. Consider the following data:

(4) a. The student is [AP very kind to her neighbors].
   b. The problem is [AP interesting].
   c. The student is [AP proud of her work].
   d. The student was [AP present].
   e. The student is [AP responsible for the accounts].
   f. The student is [AP aware of the problems].

(5) a. a very kind student[^2]
   b. the interesting problem
   c. the proud student
   d. the present situation
   e. the former policeman
   f. a mere detail
   g. nuclear energy

(6) a. a person [AP kind to her neighbors]
   b. a student [AP proud of her work]
   c. the students [AP present at the meeting]
   d. the student [AP aware of the problems]

Adjectives have three main uses: (i) they may be used as the complement of a copula (4), they may be used as prenominal modifiers of a N (5) and they may be used as postnominal modifiers of a N (6). At first sight, the

[^2]: Given the various proposals to derive prenominal adjectives we refrain from providing brackets at this point. See the discussion in section 2.3.
interpretation of the adjectives is rather similar: put very informally, in all the examples the adjectives denote a property associated with an entity denoted by a noun or by the nominal constituent. Given that the adjectives in the three sets of examples seem to have some degree of commonality, the following questions arise. Are the prenominal adjectives in (5) syntactically related to the postnominal adjectives in (6)? Are both related to the postcopular adjectives in (4)? More specifically, could one argue that the different patterns in (5) and (6) are simply variants of each other? Does the different distribution of the adjectives in (5) and (6) correlate with any difference in interpretation?

The main question here concerns the position of the adjectives in (5) and in (6): is there a derivational relationship between the two adjective positions, i.e. can one position be derived from the other? In the generative literature two answers have been given: both derivational and non-derivational analyses of these patterns have been proposed. We will refer to the derivational proposals as ‘reductionist’ and to non-derivational proposals as ‘separationist’. Reductionist proposals reduce two different superficial positions of the adjectives, prenominal and postnominal, to a single underlying position, deriving the variation in position by movement. Reductionist proposals are found in Smith (1964), Lakoff (1971), Chomsky (1965), Bowers (1975), Kayne (1994) and Cinque (2005), among others. Separationist proposals assume different underlying positions at the basis of the different surface positions of the adjectives. Representatives of the separationist view are, among others, Bolinger (1967), Lamarche (1991), Sproat & Shih (1987, 1991), Bouchard (1998, 2002).

Before we discuss these lines of argumentation in detail, we will first introduce one basic partition of adjectival usage: the attributive-predicative distinction. This will play a role in the later discussion.

2.2. The attributive-predicative dichotomy

The English examples in (4) and (5) represent the two core uses of adjectives. (4) illustrates what is called the ‘predicative’ use of adjectives: the adjective heads an AP, which constitutes the predicate of the clause, taking the nominal phrase as its (external) subject. Crucially, the clause here contains

3 This is a gross simplification, as we will see below.

4 We borrow the terms from morphological theory. See Aronoff (1994), Spencer & Zwicky (1998).
an overt copula. (5) illustrates what is often called the ‘attributive’ use, i.e.
the use of the adjective as a noun modifier located within the boundaries of
a nominal phrase.

Two provisos are important here with respect to the use of the terms ‘at-
tributive’ and ‘predicative’. In English most attributive occurrences of the
adjective are prenominal. However, it is important to point out that the term
‘attributive’ does not necessarily bear on the positioning of the adjective
with respect to the modified noun, as we will see. The term ‘predicative’
may lead to confusion, as it is used by different authors with slightly different
interpretation. In addition to its use to refer to examples like those in
(4), the term ‘predicative’ is also often used for DP-internal adjectives with
a particular type of interpretation. This is illustrated by examples such as
those in (6) and some of those in (5), though, as our discussion unfolds, it
will become clear that, with respect to DP-internal adjectives, the term
‘predicative’ is appropriately used only for cases like those in (6). The rea-
son for this second use of the term ‘predicative’ is the observation that a
DP-internal adjective can be paraphrased by means of a clause containing
an overt copula and the adjective in predicative position, i.e. adjectives oc-
cupying prenominal (5) or postnominal (6) positions can sometimes be
paraphrased with a copular construction (4). From a syntactic point of view
this type of paraphrasability has been taken to constitute an operative test
when a decision must be taken as to the attributive or predicative status
of the adjective. If an adjective modifier does not allow the paraphrase with a
copular construction, it is termed ‘attributive’; if it does allow it, it is called
‘predicative’. The application of the test can be illustrated for the examples
in (5). In (5a–c) the adjectives can be used in a copular clause:

(5) a. The student is very kind.
    b. The problem is interesting.
    c. The student is proud.

Accordingly, the adjectives in (5a–c) are termed predicative. In contrast to
this, the adjectives in (5d–g) cannot be so used:

(5) d. *The situation is present.
    e. *The detail is mere.

Because of the non-paraphrasability with a copular construction, adjectives
such as present in (5d) and mere in (5e), along with many others, see be-
low, are called non-predicative (or attributive). The term ‘predicative’ has
thus been used in an ambivalent way: on the one hand predicative is restricted to the use of adjectives in copular constructions and is opposed to the term ‘adnominal’. On the other hand, ‘predicative’ has been used in contrast to ‘attributive’ and this contrast is primarily related to the non-paraphrasability vs. paraphrasability of a DP-internal adjective as a syntactic predicate within a copular clause.

As we will show later, ideally it should be possible to collapse the two uses of the term ‘predicative’. In fact this will be shown to be the case in the Romance languages, in which DP-internal prenominal adjectives are typically attributive and postnominal adjectives are typically predicative. That is to say: postnominal adjectives in the Romance languages allow for the paraphrase with the copular construction while prenominal adjectives do not. The fact that DP-internal adjectives can be either predicative or attributive is obscured in English and in Greek, in which adjectives are mainly prenominal and in which, according to the paraphrasibility test, a prenominal DP-internal adjective may be either attributive or predicative. This identity of function of certain adjectives in English and in Greek (and in other languages surely) is an artifact of (a number of) syntactic constraints on adjective placement existing independently.

2.3. The reductionist view

2.3.1. Introducing the reductionist hypothesis

The reasoning of the reductionist view of adnominal adjectives is as follows: the fact that DP-internal adjectives have attributive and predicative interpretations does not prevent a unified analysis of all adnominal adjectives. The analysis is based on the assumption that an adjective is a one-place predicate that is true of things (e.g. interesting (x)). The same observation holds of bare nouns – they too are predicates that are true of things (e.g. problem (x)). For the interpretation of the sequence adjective + noun in examples such as (7) these two predicates are conjoined Jackendoff (1997: 62) calls the relevant interpretational process ‘predicate conjunction’:

(7)  a. an interesting cat
     interesting (x) & cat (x)
     b. a very kind student
     very kind (x) & student (x)

Thus the interpretation of (8a) is as in (8b):
(8) a. Oscar is an interesting cat.
   b. Oscar is a cat and Oscar is interesting.

Adjective modification can thus be viewed as a conjunction of properties.

In one particular implementation of this idea, due to Higginbotham (1985: 563–567), modification of nouns by adjectives amounts to the process of theta identification, a special type of thematic discharge, whereby, being one-place predicates, both the adjective and the noun have an open position (x). The empty position associated with the adjective and that associated with the noun are identified with each other. Conjunction of properties as illustrated in (7) is also called ‘intersectiveness’: the set of the entities denoted by the noun and the set of properties denoted by the adjective intersect. The complex nominal expression ‘interesting cat’ is found at the intersection of the set (or denotation) of CAT and that of INTERESTING. This is why adjectives like red, wooden, kind are standardly also termed intersective. In section 2.6 we will come back to intersectiveness.

In the reductionist view prenominal attributive modifiers like those in (5) above are derived from postnominal predicative modifiers, like those in (6) above, by a fronting operation (Chomsky 1957, 1965; Smith 1961; Lakoff 1971; Jacobs and Rosenbaum 1968; and Kayne 1994 for the same basic idea implemented in different terms). In particular, prenominal attributive adjectives were analyzed in the older generative tradition as resulting from leftward movement of adjectives generated to the right of the N. (9) is a schematic representation of this process:

(9) a. [\[AP_i\] very proud] woman t_i]

Assuming that postnominal adjectives are in essence predicative, a general application of the derivation in (9) to all prenominal adjectives would analyze all prenominal adjectives as fronted predicative adjectives. In arguing in favor of such a link between predicative (4) and prenominal attributive

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5 Cf.: “Modification of one predicative expression by another can occasionally be taken as expressing conjunction” (Higginbotham 1985: 562).

6 Note that below we will revise this common view by asserting that adjectives such as nice, kind, comfortable and the like are in fact non-intersective, also called subsective for this reason (see Siegel (1976) who was one of the first linguists to argue for the intersective/subsective distinction with direct reference to Russian adjectives).

7 For the concept ‘subsective’ see section 3.2.
Part III – Modification relations inside the DP

...adjective in (5) above, the postnominal position of the adjective in (6) can be considered as providing an intermediate derivational step between the predicative relative clause (10) and the prenominal position (5). The examples with postnominal adjectives in (6) could be paraphrased as in (10), containing a relative clause with the verb be in which the adjective is predicated of the head noun. In these paraphrases the postnominal APs of (6) function as predicative APs on a par with those in (4):

(10) a. a person kind to her neighbors
    = a person [CP who is kind to her neighbors]
    b. a student proud of her work
    = a student [CP who is proud of her work]
    c. the students present at the meeting
    = the students [CP who were present at the meeting]
    d. the student aware of the problems
    = the student [CP who is aware of the problems]

According to the reductionist hypothesis, the overall derivation consists of the steps illustrated in (11): (i) the adjectival projection is the predicate within a relative clause (11a), (ii) the relative clause is ‘reduced’ (11b), (iii) predicate fronting places the adjectival predicate to the left of the noun (11c).

(11) a. the man who is old
     b. the man old
     c. the old man

The fact that many adjectives that appear before the noun in (5) can be paraphrased by means of a be-relative clause is one argument in favor of the claim that (5) and (6) are related derivationally.

(12) a. Peter has a cat that is really smart.
    b. Peter has a really smart cat.

We will see below that there are many adjectives for which this analysis, which is based on the integration of the notions of predicativity and attribution, cannot be maintained. Adjectives such as former, present, fake, alleged, but also, and more importantly, good in good tax payer, and nuclear in nuclear energy, are not predicative adjectives, neither are they intersective. We discuss complications such as this in the next section.

8 For a discussion of the interpretation of good see section 2.6 and also section 3.2.
2.3.2. Some complications for the reductionist view

The predicate fronting analysis represented in (11) immediately raises a number of questions. As mentioned, not every prenominal adjective in English can be used predicatively. For instance, so-called intensional adjectives such as former, present, alleged, and also denominal classifying adjectives like nuclear, medical, electrical etc. (see section 3.3), resist predicative use altogether. Intensional adjectives, not being used predicatively, also lack the postnominal use. Assuming the reductionist derivation of prenominal adjectives outlined above, it is not clear how the leftward fronting of the adjective can be enforced here.

(13) a. *the situation is present vs. the present situation
   b. *the policeman is former vs. the former policeman
   c. *the energy is nuclear vs. nuclear energy

A second problem is that the reductionist approach would also have to constrain (11) so that it fails to apply with adjectives that never surface prenominally. Adjectives that have to appear postnominally in English belong to the following classes: (a) adjectives formed with the aspectual prefix a- (akimbo, alive, asleep, ashamed, akin, afraid, etc.) and (b) adjectives that are accompanied by their own complement:

(14) a. any child afraid/asleep
    *any afraid/asleep child
    vs. any frightened child
   b. *a [kind to her neighbors] person
      a person kind to her neighbors
   c. *a [proud of her work] student
      a student proud of her work

From the reductionist approach, it is not obvious how the derivation in (11) can be blocked from deriving the illicit prenominal adjectives in (14).

Other adjectives can occupy either a prenominal or a postnominal position but with a different interpretation. For instance, in (15), the adjective present has a different interpretation depending on its position.

9 In fact, Bolinger (1967) was the first linguist to cast doubts on such a 'derivation'.

10 The suffix a- is historically related to the preposition at.
(15) a. The present president voted against the proposal the former president approved.
b. The president was present at the meeting.
c. The students present voted against the proposal.

In (15a) present is a temporal adjective; it means ‘actual’, ‘current’. The ‘present president’ is the person who is president at the present moment, the person who is ‘presently’ president. It contrasts, for instance, with the former president, the person who was formerly president. In (15b) the predicative AP present at the meeting means something like ‘attending the meeting’. The postnominal adjective in (15c) also has the latter meaning. The adjective present cannot routinely be used postnominally with the meaning ‘current’. Interpretive effects such as these strongly suggest that in English postnominal adjectives have a predicative use, but that this is not necessarily the case for prenominal adjectives. Given the reductionist line of thinking, it is not clear how to associate a change in interpretation with the fronting of the adjective. In the next section we consider the interpretation of adjectives in more detail.

2.4. Interpretive contrasts between prenominal and postnominal adjectives

Let us take a closer look at some postnominal adjectives, which, in English, are the marked case. Such adjectives constitute a well-defined class. One group of postnominal adjectives are those in (14), which can never occur prenominally. A second group of adjectives can appear postnominally in English: they are either morphologically derived from verbs by means of the suffix –al-ible, or they are participles used as adjectives:

(16) the (visible) stars visible
    the (explorable) rivers explorable
    the (stolen) jewels stolen
    the (present) cats present

In his seminal 1967 paper on attributive and predicative adjectives in English, Bolinger suggests that the directionality in the positioning of adjectives with respect to the noun they modify correlates with a basic interpretational dif-

11 Except in coordination:
   (i) Presidents past and present were at the meeting.
   We will leave aside this case.
ference: in prenominal position the adjective attributes a permanent, enduring or characteristic property of the entity denoted by the noun, whereas in postnominal position the adjective refers to a transient, temporary and certainly not typical property of the denotation of the noun; it modifies the referent (or extension) of the noun ‘river’ at a given point as a whole. Alongside the case in (16) above, consider further the following examples (from Larson & Marušič 2004: 269):

(17) a. The rivers navigable include the Amazon, the Nile, the Danube, the X.

b. The navigable rivers include the Amazon, the Nile, the Danube, the X.

Let us assume river X is not in general navigable but it has become so recently because, let’s say, it has flooded due to a large amount of rain. Under this scenario, only sentence (17a) is true, whereas (17b) is false. This is so because the prenominal adjective in (17b) attributes a permanent, intrinsic property to the reference of the head noun, rivers — the collocation ‘navigable rivers’ refers to the set of rivers that are by their nature navigable. However, in the scenario sketched above, river X is not generally navigable; it may not always be navigable. The individual rivers listed in (17b) constitute the extension of ‘navigable river’. On the other hand, the individual rivers listed in (17a) constitute the extension of ‘river’ not of navigable river. Bolinger argues that the prenominal adjective navigable modifies the reference of the noun. This is why the temporary or occasional navigability of river X falsifies the content of the whole sentence involving permanently navigable rivers. This is further seen in the following contrast (adapted from Larson & Marušič 2004: 274):

(18) a. #List all the rivers navigable whether they can be used for trade or not.

b. List all the navigable rivers whether they can be used for trade or not.

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12 See below section 8 for Bouchard’s distinction between an adjective cutting off part of the (sense of the) noun, as is the case with (17b), and the whole of the noun, as is the case with (17a)).

13 (18a) is infelicitous (#) because the concept ‘listing’ implies that we are talking about concepts with one or more permanent properties, while the postnominal adjective indicates a temporary property.
The distinction reference modification vs. referent modification – or, synonymously, permanent/temporary property – has been re-stated by Larson (1999) in terms of the Individual-Level vs. Stage-Level contrast (Carlson 1977; Higginbotham 1983), in the sense that the permanent or salient property assigned by a (prenominal) adjective applies on the individual-level, whereas the temporary or transitory property assigned by a (prenominal or postnominal) adjective is a stage-level property. In contrast with Bolinger, Larson shows that this semantic difference is not one of directonality of adjective placement (i.e. whether an adjective is pre- or postnominal) but rather of relative closeness of the adjective to N. Consider (18c–d):

(18) c. The visible stars visible include Capella.
    d. The visible visible stars include Capella.

(18c) is understood as meaning that the inherently visible stars (those whose brightness makes them visible to the unaided eye) that happen to be visible at the moment of utterance include Capella. The same is true for (18d), “with the added intuition that the occurrence of visible closest to N is what predicates inherent, i-level visibility” (Parsons 1990: 12). The adjective visible that is found closest to the noun in (18d) is the individual-level one, the one found farther from it is the stage-level one. However, to do justice to Bolinger, it is only fair to note that, as shown by (18c), the prenominal occurrence can have the individual-level reading, while the postnominal adjective is stage-level. (18) is also interesting because it reveals the ambiguity of the term predicative as described in section 2.2.1 above: in (18c) the postnominal occurrence of visible is predicative and thus contrasts with the prenominal occurrence, which is attributive. In (18d), of the two prenominal adjectives, the individual-level is again attributive and the stage-level (the leftmost) predicative; in the latter case however the predicative adjective is also prenominal. In later sections (7 and 9) we will review, and also propose, ways that capture the fact that in English the same adjective is found both in prenominal and in postnominal position (18c), and potentially giving rise to ambiguity. We will also see that it is empirically correct to assume that a single notion of predicativity is involved in the relevant cases (cf. section 2.2).

As we will see below (section 4.2), in Romance too postnominal adjectives express a stage-level property.

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14 In Chapter 2, section 2.3.1 we have shown that the contrast individual-level vs. stage-level predicate is also relevant in connection with generic nominals.
2.5. One more dichotomy: intensional-extensional, or intersective-non-intersective adjectives

To complete the discussion above we add some observations concerning the interrelated terminological distinctions 'intensional vs. extensional' and 'intersective vs. non-intersective' as applied to adjectives. Clarifying these concepts will help us understand the difficulty of associating the two occurrences of adjectives in (4) and (5).

Unlike what could be taken as a ‘typical’ instance of adjectival modification, intensional (or, almost synonymously, reference modifying or non-intersective) adjectives do not map sets with sets but properties with properties. Adjectives interpreted intensionally modify not the extension or denotation of the noun but its sense or intension – the attribute of the noun (Bolinger 1967; Higginbotham 1985; Demonte 1999: 58). Such adjectives modify something ‘internal to the noun’ (Dimitrova-Vulchanova 2003: 95), not external to it. For this to be possible the sense of a noun has to be taken to be a network consisting of a set of simultaneously interacting components – the elements that make up the overall semantic constitution of the noun. These are called qualia (of the noun) by Pustejovsky (1995). See also Jackendoff (1997), especially his sections 3.4 and 3.5.15

Let us take a closer look at how intensional adjectives are interpreted in combination with the noun they modify. Crucially, if an adjective is intensional this means that the combination of the adjective with a co-extensive common noun does not necessarily yield a co-extensive modified nominal expression. This applies very clearly to adjectives like present in the present president (meaning ‘the one who is currently president’, and not the ‘president who is present’), and to adjectives like former, alleged, mere, etc.

15 In a recent account, Bouchard (2002: 7–8) takes the relevant interacting components to be:
   – the characteristic function f which provides the very property according to which the noun is interpreted,
   – a specification for a time interval t, at which f is supposed to hold,
   – an indication of the possible world w, which provides the means for knowing whether f holds in this or another possible world,
   – a variable assignment function g, which determines the truth value of the final formula.

Bouchard further argues that an intensional adjective does not modify the whole network of these elements – i.e. not the whole sense of the noun – but it only selects one or more subparts of these elements.
For instance, an alleged murderer may turn out not to be a murderer. Alleged gives some information about the characteristic function \( f \): as Bouchard (2002: 66) points out, the property of (being a) ‘murderer’ is alleged to apply to some person \( x \) (Campbell 1996 calls such adjectives them propositional adjectives). Likewise a fake gun is clearly not a gun. In the case of gun, fake targets the characteristic function \( f \) of a gun. Some object \( x \) is wrongly taken to be a gun – there is no actually ‘real’ gun (cf. also the truth of the sentence: this fake gun is not a gun). Higginbotham writes characteristically: “A fake or toy pistol not only may, but must fail to be a pistol” (1985: 567). Likewise Jackendoff (1997: 64) gives the following paraphrases for (a) fake gun and (b) toy horse: (a) something that is intended to make people think it is a gun, (b) something whose function in play is to simulate a horse. Jackendoff further points out with respect to such cases that

What is important is that the noun itself does not appear in the usual frame ‘something that is an N and…’, but rather inside a clause whose content is determined by the adjective.

\[ \text{(Jackendoff 1997: 64)} \]

Adjectives such as fake and alleged are typical examples of intensional adjectives. But other adjectives too have this type of interpretation. Siegel (1976) mentions (19), with the adjective good, which we might consider an ordinary descriptive adjective and one which at first sight might have appeared to be non-intensional:

19. a. Mary is a good lutenist.
   b. Mary is a guitarist.
   c. Mary is a good guitarist.

Consider the interpretation of the two examples in (19). From (19a) we deduce that Mary is a lutenist and (19b) says that she is also a guitarist. From (19a) we also deduce that Mary is a good lutenist, but the fact that Mary is a good lutenist does not logically imply that she is a good guitarist (19c). Indeed as a guitarist she may be a novice or just bad. If someone is a good X, and if that same person is also a Y, it does not follow that someone is also a good Y. Good can only be construed in construction with a particular noun – one is good as an actor, as a pianist, as a teacher, etc.\(^{16}\)

\(^{16}\) Cf. in this connection an illuminating extract from Vendler’s pioneering article On the semantics of Goodness (1962): “In order to define the connection between the adjective good and the subject to which it is ascribed, I have to raise the general
What is interesting about (19) is that what we just said about adjectives like alleged, supposed, fake, present and the like, in fact extends to ordinary descriptive adjectives such as good, clever, skilful, etc – i.e. adjectives that express an evaluative judgment on part of the speaker (see also section 3.2). At least in one (and probably the most common) of their readings, such adjectives target some, crucially not all, of the sense subcomponents of the noun. So adjectives such as good, clever, skilful, smart at least in one of their modes of interpretation, behave like intensional adjectives such as supposed, alleged, fake, and present in so far as they too turn out to be non-intersective/intensional.

An adjective that is not intensional is extensional – it modifies the x that falls in the extension of the noun. Extensional adjectives “help to determine the particular individual which is the intended referent of the description in which the adjective occurs” (Kamp 1975: 153). Consider the interpretation of the adjective aged in (20):

(20) a. Mary is an aged lutenist.
   b. Mary is a guitarist.
   c. Mary is an aged guitarist.

According to (20a) Mary is a lutenist and Mary is aged. According to (20b) Mary is a guitarist. But if Mary is an aged lutenist, and if Mary is also a guitarist, then it does follow that Mary is an aged guitarist (20c). If someone is an aged X, and if the same person is also Y, then it follows that this person will be an aged Y in any case. The adjective aged is not intrinsically construed with the noun it modifies, it can be dissociated from this noun and indeed it can be used in isolation. Such an adjective can be used predicatively. In Bouchard’s terms, aged is compatible with the whole network of the sense of the noun, not just some subparts of it.

(20) d. Mary is aged.

Observe, in line with what we just said, that though the adjective good can indeed also appear in the pattern in (19d), its interpretation requires some extra restriction:

question: what are the ways in which adjectives can be tied to subjects? (…) there are many such ways, moreover, it will turn out that for each adjective only some of these are open. This fact affords us a principle of classification for adjectives in general and a method of discriminating between the various kinds of use a single adjective may have” (Vendler 1967: 173). For discussion see also section 3.2.
(19)  d. Mary is good.

In (19d) the adjective *good* must be interpreted relative to some other property of Mary’s: for instance Mary is good as a lutenist, or she is good as a guitarist, or perhaps she is good as a human being in general. So (19d) will be interpreted like (19e):

(19)  e. Mary is a good N.

But no such restriction is required for *aged*, nor could it indeed be made.

So although *good* can be used predicatively, its interpretation still requires reference to some other concept (see discussion in 3.1). If no particular concept is available/ possible in the context, then (19d) will be interpreted as if Mary were good in every possible respect – she is probably the perfect individual. In this case *good* is interpreted as an extensional/intersective adjective. However, we will qualify this conclusion somewhat in section 3.2.

2.6. Non-intersective adjectives and deverbal nouns

Consider now the adjective *beautiful* used as a modifier of a deverbal noun, that is a noun which is morphologically related to a verb. In (21a) the adjective *beautiful* may either indicate a property attributed directly to Olga (21b), or it may refer to a property attributed to Olga in her capacities as a dancer (21c) (see Vendler 1967; Siegel 1976; Larson and Segal 1995; Larson 1998, 1999):

(21)  a. Olga is a beautiful dancer.
    b. Olga is a dancer and [Olga] is beautiful.
    c. Olga is beautiful as a dancer.

In the first reading the adjective is intersective. Here the adjective *beautiful* is ultimately predicated of the referent of the (proper) noun – i.e. of Olga; Olga herself is beautiful, even if her dancing may be awkward. In the second reading, the adjective is non-intersective. Here, the adjective *beautiful* applies to Olga *qua* dancer. Olga’s dancing is beautiful even if she herself may be unattractive. The contrast sketched here is almost identical to that between the intensional and the extensional interpretation, or to that between reference modifying and referent modifying adjectives. When *beautiful* applies directly to Olga it modifies the referent of the noun *dancer*; that
is, Olga herself, so intersective here coincides with ‘referent modifying’. When the same adjective is non-intersective and applies to the way Olga dances, it is reference-modifying.

As Vendler (1967: 177) points out, in the non-intersective use the adjective is not tied to the subject by the copula, but by another verb – here *dance*. In the second reading (21c) the sentence is assigned the interpretation in (22):

(22) Olga is a dancer who dances beautifully.

The majority of adjectives that appear in combination with a deverbal noun can have either an intersective or a non-intersective reading. To account for these two interpretations, Larson (1995, 1999) proposes that a noun like *dancer* includes two arguments in its semantic structure.17

(a) an event argument (e) which ranges over events and states;
(b) an argument (x) which is a variable ranging over entities.

This way, the semantics of a common noun (*dancer*) is relativized to events. With respect to the noun *dancer* (21a), (e) is the event ‘dancing’ and (x) is Olga. The adjective *beautiful* – a predicate – can be predicated either of the event argument (e), in which case we obtain the non-intersective reading, or of the external argument (x), in which case the intersective reading is ensured. Crucially, for Larson, the intersective/non-intersective ambiguity arises not from the semantics of the adjective itself but from the semantic structure of the noun. (23) is one more example that illustrates this contrast:

(23) Peter is an old friend.
   a. Peter is old.
   b. The friendship is old.

In (23a) the adjective is intersective: modifies the argument x, namely Peter. In (23b) the adjective is non-intersective: it modifies e, the event argument.

17 In the same spirit Demonte (1999) claims that whereas all adjectives are mostly predicates, those related to prenominal position can be either predicates of existence or predicates of events and those related to postnominal position are only predicates of property. She further assumes (1999: 49) that adjectives that modify a deverbal noun, which she calls ‘circumstantial’, “bind a spatio-temporal position (an e argument) in the theta-grid of Ns.” Both Larson and Demonte echo Higginbotham (1985), who relates the adjective *alleged* to the verb *allege* “in a way that should be revealed in the theory of its construction” (1985: 565).
of friend. The semantic representation of (23a) is given in (23c) and that of (23b) is given in (23d):

\[(23)\]
\[
c. \exists e [\text{friendship}(e) \land \text{Theme}(\text{Peter}, e) \land \text{old}(\text{Peter})]
\]
\[
d. \exists e [\text{friendship}(e) \land \text{Theme}(\text{Peter}, e) \land \text{old}(e)]
\]

It is clear now why many adjectives such as beautiful, old, intelligent, difficult are ambiguous between an intersective and a non-intersective reading: they can be applied to the noun in two ways: they are applied either to the event argument of the noun or to the external (non-event) argument of a noun. Other adjectives such as aged can be applied only to non-events and a final group can be applied only to event arguments: this is the case for the adjective occasional in an occasional client. We come back to occasional below.

(24a) illustrates a slightly different case: the adjective former. (24a) is not ambiguous in the way (23) is: the sentence can only have a paraphrase in which the adjective gives rise to an adverb lexically related to it (24c):

\[(24)\]
\[
a. \text{Marya is a former dancer.}
\]
\[
b. \#\text{Marya is former, and Marya is a dancer.}
\]
\[
c. \text{Marya was formerly a dancer.}
\]

Larson (1999) points out that there are cases that do not entirely fit in the pattern outlined for (21a) and (23). For instance, according to our previous discussion, adjectives such as utter, complete, mere, and the like are non-predicative, non-intersective and intensional. But it is not obvious that they can be said to modify an event predicate. Consider also the following example. The adjective true, like former, behaves adverbially, but in this case its semantics is more like that of a degree modifier (Larson 1999: 10).

\[(25)\]
\[
a. \text{John is a true linguist.}
\]
\[
b. \#\text{John is a linguist and John is true.}
\]
\[
c. \text{John is truly a linguist.}
\]

Finally, consider (26). The adjective occasional is an intensional, non-intersective adjective. The adjective is paraphrasable by a lexically related adverb. Again, though, it has to be treated differently from adjectives such as former or ‘degree’ adjectives such as true. Larson (1999: 7, also referring

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18 Friendship follows from the semantics of the noun (friend~friendship).
to Bolinger 1967) refers to the reading paraphrased in (26a) as an ‘external’ reading: the adverbial which is related to the adjective occasional seems to correspond to an adverbial which modifies the VP of the sentence. He refers to the reading (26b) as the ‘internal’ reading, as here the occasional modifies its sister nominal customer. 19

(26) Mary saw an occasional customer.
   a. Occasionally, Mary saw a person who came in to buy goods.
   b. Mary saw a person who occasionally came in to buy goods.

As mentioned above, non-intersective adjectives do not have the predicative use in (4) and (6). From this it follows that in (27) beautiful, which appears after the copula, can only have the intersective reading: (28) with non-intersective true in a postcopular position is unacceptable because in that position non-intersective adjectives are excluded:

(27) This dancer is beautiful.
(28) *This linguist is true. 20

2.7. Semantic classes and syntactic positions

In section 2.6 we have identified certain adjective types. The criteria for adjectival categorization advanced so far seem to be mainly semantic in nature: we made distinctions such as predicative vs. attributive, intersective vs. non-intersective, intensional vs. extensional, reference modifying vs. referent modifying. These distinctions are relevant to the way the adjective+noun combination is interpreted.

19 Similar cases probably involve the adjective possible in (i)a with the reading in (i)b:
   (i) a. This is a possible reaction.
     b. They will possibly react in this way.

   We will not dwell on such cases of adjective modification any longer. The interested reader is referred to Larson (1999) for more discussion concerning data like (27).

20 In (i) true roughly means ‘faithful’:
   (i) a. This linguist is true to himself.
     b. A linguist true to himself would not write such things.
A distinction that is syntactic in nature is the distinction between the prenominal position and the postnominal position of the adjective. Some adjectives are exclusively prenominal, others are exclusively postnominal, others again may be found in either position.

With respect to correlations between the semantic and the syntactic distinctions, the data from English suggest that whereas both attributive (i.e. non-predicative) and predicative adjectives are found in prenominal position, only predicative adjectives can occur in postnominal positions. Later on we will see that the prenominal-postnominal opposition in Romance languages can be correlated more systematically with the distinction attributive-predicative and, therefore, with the parallel distinctions reference/referent modification, intersectivity/non-intersectivity, intensional/extensional adjectives.

Returning to the reductionist approach to adjectival positions, the fact that some adjectives may be tied to a particular position or that a certain interpretation may be tied to a particular position poses problems: in particular if all prenominal adjectives did derive from (postnominal) relative clause with a predicative adjective (see (11) above), one would have to assume that this is also true for what are essentially non-predicative adjectives, and moreover the preposing of the adjective would have to be enforced. Secondly, the reductionist approach would also have to constrain (11) so that it fails to apply to adjectives that never surface prenominally. Finally, since prenominal and postnominal adjectives are supposed to have the same (postnominal predicative) source, it would be hard to account for cases in which prenominal adjectives differ in interpretation from their postnominal analogies.

2.8. Evidence from other languages

We concluded above that the reductionist-inspired derivation in (11) gives rise to three problems: (i) it cannot enforce the prenominal position of those adjectives that resist predicative use. (ii) Nor does the reductionist approach account for those cases in which prenominal adjectives differ in interpretation from their postnominal analogies. (iii) Finally, it is not clear how such an approach can block the leftward movement of APs that cannot surface prenominally at all.

The empirical difficulties that arise when one assumes that prenominal adjectives in English are derived from their postnominal counterpart become all the more obvious when data from other languages are brought into play.
In section 4.2 below we will discuss data from Romance languages pointing to the same conclusion: pre- and postnominal adjectives are associated with quite disparate interpretations suggesting the need for different accounts for each class.

In addition to the problems raised above for English, cross-linguistic agreement facts also may seem to pose problems for a standard reductionist account. In certain languages, prenominal attributive adjectives differ from predicative adjectives in terms of the realization of agreement. Consider the West Flemish examples in (29) and (30). In (29) the adjective *groen* (‘green’) is a predicate of a copular sentence, in (30) the same adjective is prenominal. When used predicatively as in (30), the adjective *groen* is invariant for gender/number marking. On the other hand, the prenominal attributive adjectives in (30) are inflected for Gender/number.

(29) a. Dienen buom is groen. 
   that tree is green
   (West Flemish)
   
   b. De brouwerye is groen. 
     the brewery is green
   
   c. Dat us is groen. 
     that house is green
   
   d. Die uzen zyn groen. 
     those houses are green

(30) a. dienen groenen buom 
    that green-MASC tree

   b. de groene brouwerye 
      the green-FEM brewery

   c. dat groen us 
     that green house

   d. die groene uzen 
     those green-PL houses

A similar pattern is found in German. Prenominal adjectives in German have two inflectional paradigms. The ‘strong’ paradigm of the adjective *groß* is found after the indefinite article, it has a three-way gender distinction (*großer, große, großes*). The ‘weak’ paradigm is that found after the definite determiner and displays no gender distinction (*große*). On the other hand, in the same language the predicative adjective is the uninflected form of the adjective, *groß*.
(31) a. Der Mann ist groß/* groß e/* groß er.
   the man is big
   b. der groß e/* er Mann
      the big-WEAK/*STRONG man
   c. ein groß er/* e Mann
      a big-STRONG/*WEAK man

(32) a. Die Frau ist groß/*große.
   the woman is big
   b. die große Frau
      the big woman
   c. eine große Frau

(33) a. Das Kind ist groß/*große/*großer.
   the child is big
   b. das große/*s Kind
      the big-WEAK/*STRONG child
   c. ein großes/*e Kind
      a big-STRONG/*WEAK child

A reductionist derivation, which derives prenominal adjectives in the Germanic languages from postnominal predicative adjectives by a fronting operation (11), would need to be supplemented with a mechanism to ensure that the prenominal adjective acquires the correct agreement morphology. Though this may appear a drawback, it is not an insurmountable one.

First, observe that data from other languages show that the agreement pattern as displayed by West Flemish and by German is not cross-linguistically uniform. For instance, it is not the case that predicative adjectives never agree with the DP they are predicated of. In Greek (34) and in French ((35)–(36)) predicative adjectives do agree with the DP they are predicated of and the agreement is the same as that for prenominal attributive adjectives:

(34) a. i griza ghata
   the grey cat
   b. I ghata ine griza.
      the cat is grey
The same applies for French:

(35) a. le petit garçon
    the small boy
b. Le garçon est petit.
    the boy is small
c. les petits garçons
    the small-PL boys
d. Les garçons sont petits.
    the boys are small-PL

(36) a. la petite maison
    the small-FEM house
b. La maison est petite.
    the house is small-FEM
c. les petites maisons
    the small-FEM-PL houses
d. Les maisons sont petites.
    the houses are small-FEM-PL

The agreement data of French and Greek (see also Part II, Chapter 3) do not pose any particular problem for the reductionist analysis in (11). In the light of this point, it might be possible to also capture the Germanic data above. It is sometimes assumed that agreement may be a reflex of a spec-head relation (cf. section 4.3). That is, an element in a specifier position enters into an agreement relation with the element that heads the projection on which the designated specifier appears. If we were to assume that prenominal adjectives occupy specifier positions within the extended projection of the noun, this would enable us to express the agreement between the prenominal adjective and the head straightforwardly in terms of a specifier-head relation. This account might then be extended to the agreement data of the Germanic languages: it would suffice to say that movement to the prenominal position targets a specifier position and hence triggers agreement.

At this point we conclude that though attractive, the predicate-fronting analysis (11), which dates from the earliest days of the generative approach

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21 Note though that in French adjectives are typically postnominal. We come back to this later.
and is a way of relating postnominal and prenominal adjectives in English, raises a number of empirical problems mainly relating to the differing status of pre- and postnominal adjectives. In the following sections we will survey more recent alternative accounts for the derivation of the various positions of adjectives. In section 5 we will come back to the reductionist approach and will propose ways to overcome the problems mentioned above. We will see then that with certain ramifications the attractive elements of the original account can be preserved.

In the following section we will address the issue of the linear order of a series of adjectives. What generalizations can be drawn when more than one adjective modifies a noun? What can the ordering restrictions observed in a sequence of adjectives tell us about the way adjectives are organized around the noun?

3. Sequencing of adjectives

In this section we turn to the hierarchical relation between DP-internal adjectives. When a DP contains just one adjective we obviously cannot really say much about its position within an adjectival hierarchy. In the next section we will see that adjectives modifying a noun can be hierarchically ranked, and this ranking plays a crucial role in determining the relative closeness of an adjective to the noun. We will conclude that the position of the adjective in the hierarchy determines its position in the DP.

3.1. Hierarchical orders

Multiple adjectival modifiers typically observe strict ordering restrictions. Prenominal adjectives in English and other languages follow an ordering which is often stated in terms of hierarchically organized semantic classes of adjectives (37a) (Sproat and Shih 1987, 1991). Adjectival sequences respecting the hierarchy in (37a) are given in (37b) and (37c).

(37) a. quantification < quality < size < shape/color < provenance
   b. numerous/three beautiful big grey Persian cats
   c. lovely little round Greek cats

Arguments have been put forward for additional internal hierarchical orderings among adjectives that belong to one category in (37a). Scott (1998: 67),
for instance, provides the more refined ordering in (38a), where subjective comment, evidential corresponds to quality in (37a).

Sproat & Shih (1987, 1991) claim that the adjective ordering should be stated not as a linear ordering among various types of adjectives but rather as their relative linear proximity (or, conversely, distance from) to the head noun.

(38) a. ordinal > cardinal > subjective comment > evidential > size >
    length > height > speed > depth > width > temperature > wetness >
    age > shape > color > nationality/origin > material

b. beautiful big red ball
   comfortable red chair

c. bella granda balla rossa
    (Italian)

d. mooie grote rode bal
    (Dutch)

(a,c,d from Cinque 1994: 181, his (39))

e. suuri vanha musta englantiliainen koira
   big old black English dog

f. idiók akaan ndaidat ñfong
    ugly old red dress

(g–k from Scott 2002: 99)

g. etAk ekara okpokoro
    small round table

h. la maravillosa larga jornada
    the wonderful long day

The ordering statements reflect a broader distinction between absolute and non-absolute (or relative) adjectives. Absolute adjectives, which denote properties inherent to the referent of the noun, are found in a position closer to the noun than relative adjectives, which denote subjective properties, i.e. properties not inherent to the referent of the head noun (see below for details). Let us also recall that with respect to the examples in (17)–(18) Larson relates the semantic difference between stage-level and individual-level adjectives to their relative closeness to (or distance from) N (see Larson 1999, 2000 for more discussion and a proposal to capture this interpretational difference). At the same time, and quite importantly from our point of view, the orderings in (37)–(38a) have been taken by a number of linguists to be mapped onto the syntax in terms of a matching set of functional
projections which are hierarchically structured in such a way as to give rise to a configuration that “can serve as a basis for computing adjective scope properties in terms of (c-)command relations” (Laenzlinger 2005: 635).

The basis of such ordering constraints is in general not quite settled (see Sproat & Shih 1987, 1991). Vendler (1967), referring back to Zif, writes that a possible account for this order should rely on the “greater privilege of occurrences” (Vendler 1967: 174) of good relative to red, in the sense that good occurs much more often than red (as in good red apple). Vendler himself believes, like Larson more recently, that proximity to the noun is what counts and that the degree of proximity reflects the degree of ‘intimacy’ between the adjective and the noun – cf.: “red, for instance, comes closer to the noun than comfortable because it joins the noun in a more direct and immediate manner” (Vendler 1967: 175), as in comfortable red chair (38b). Sproat and Shih rely on the notion of ‘apparentness’, whereby an ‘apparent’ adjective requires fewer computations in order to be processed than a less apparent one. Thus ‘red’ is cognitively more apparent than ‘good’, as its processing is based on the reflection of an object’s surface, whereas ‘good’ presupposes a scale or comparison class, something that makes it more difficult to assign an interpretation. For Sproat & Shih then there is a ‘cognitive and semantic basis’ for the ordering or ‘hierarchy’ in (37a) and (38a), i.e. they assume that the source for ordering restrictions should not be seen as part of the syntax of adjectives or NPs as such (Sproat & Shih 1987, 1991). Other linguists want to claim that adjectival sequences, even if not based directly on syntax, are at least accounted for syntactically, as just said. Below we will survey ways that have been proposed in order to capture these constraints.

Crucially, hierarchies such as those in (37a) and (38a) reflect, among other things, the absolute-non-absolute (relative) distinction: absolute adjectives, which denote properties inherent to the referent of the noun or physical properties (‘apparent’ in Sproat & Shih’s terms, as we just mentioned), are found closer to the noun than relative adjectives, adjectives denoting less or non-physical or ‘apparent’ properties – i.e. properties not inherent to the referent of the head noun. In section 3.2 we take up the absolute/non-absolute adjective distinction.

Laenzlinger (2005) also assumes that the relevant hierarchies are originally semantic in nature.

22
3.2. Absolute vs. non-absolute [or objective vs. subjective] adjectives

In the hierarchies above, adjectives that are higher in the hierarchy are also found at a greater distance from the noun than those lower in the hierarchy. For instance, adjectives of subjective comment and quality are found at a greater distance than those of size, age and shape. From a syntactic point of view, what is interesting about these hierarchies, is the fact that the less concrete or objective property an adjective denotes, the more distanced it is from the noun it modifies. This is thus a good point to introduce another dichotomy which will play a leading role in the issues that follow, namely that between absolute (or objective) adjectives and non-absolute (or subjective) adjectives.

Absolute or objective adjectives denote concrete properties, which are inherent to the referent of the noun, the ‘object’, hence they are ‘objective’. Objective adjectives denote ‘natural’ properties—properties that “make up the thing itself” (Vendler 1967: 173). These include adjectives of nationality or origin more generally, color, material, form, shape (cf. (37a) and (38a)). In general, objective adjectives denote those properties which in combination with the noun may denote ‘natural kinds’. Objective adjectives are not gradable—they do not display different degrees of the property they denote (cf. more rectangular, more woolen) – a fact which is also explicitly acknowledged in traditional grammars. Very often ‘absolute’ adjectives are morphologically (etymologically) related to nouns (Levi 1978): we can think of examples such as wool-woolen, rectangle-rectangular (see also section 3.3 below).

Non-absolute/subjective adjectives denote ‘non-natural’ qualities—they have a less intimate or more remote relationship with the noun, and this is also reflected in their position: non-absolute/subjective adjectives are literally further away from the noun. In contrast to an adjective like red, which is objective and denotes a substantial part of the object referred to by the noun, the adjective good is subjective. Good does not denote an objective property, “goodness is a predicate that attaches to the thing already complete” (Vendler 1967: 173, referring to G.E. Moore).

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23 As the reader may infer, the whole issue touched upon here is very subtle as it involves both metaphysical and ontological considerations concerning objects and their properties which lie well beyond the subject of this book. See Vendler (1967) and references therein; Hoepelman (1983) and references therein.

24 Bouchard (2002) somehow refutes this difference between objective and subjective adjectives by pointing out that in a square face, square does not denote the
tives are ‘subjective’, they are commonly understood as expressing an evaluation on the part of the speaker/evaluator – hence they are often also called ‘evaluative’. Examples include adjectives such as marvellous, appalling, interesting, etc. As Vendler points out, adjectives like good or comfortable or interesting, indirectly modify the noun, because they are attributed to it “only with respect to an appropriate action involving that thing” (Vendler 1967: 175). For instance, a comfortable chair is a chair that is comfortable to sit in, a good knife is a knife that cuts things efficiently (see also Jackendoff 1997: 62–63). Even when ‘good’ does not in any obvious way relate to a verbal structure (see section 2.6), it still requires an ‘understood’ noun next to it. In (39) below good cannot be interpreted in a vacuum, but only in connection with a noun (see also Bouchard 2002 for extensive discussion): same quality as in a square table. This observation pertains to his general claim that all intersective adjectives are contextually ‘calibrated’. We ignore this point here, to come back to Bouchard’s theory in a later section. On the other hand, Bouchard’s own fundamental distinction between adjectives modifying the noun already ‘made up’ and those modifying something internal to it is very close in spirit to the passage by Vendler cited in the text (cf: “already complete”). See also the discussion above concerning the subsective character of certain adjectives in section 2.6.

26 Such adjectives are assumed by Vendler to relate to a verbal structure.

27 There is an interesting fact concerning the use of good in cases like (i):

(i) He is a good president/ father/man/person.

When the noun carries enough descriptive information, ‘good’ is more prone to the non-intersective – or subsective – interpretation (‘good as a father, a president...’). When a less ‘informative’ noun is used, such as man, person and the like, the intersective reading is accessed. Because the latter type of noun has minimal descriptive content, the adjective good will be have to denote a property attributed to the referent of the noun and hence it can be understood as intersective.

28 “(...) Yet he [G.E. Moore – A-H-S] compares good with yellow, and he says that they both denote simple and unanalysable qualities, obviously overlooking the enormous differences between them. The temptation to assimilate good to yellow, simply because they are both adjectives, is quickly overcome as soon as we reflect upon the fact that while a person can be good at something, and a thing can be good for something, nothing or nobody can be yellow at or for anything; that while a good thief can be a bad citizen, a yellow rose cannot be a non-yellow flower, and so on. That, in other words, while good is essentially attributed to a thing with respect to what it does or what can be done with it, yellow is not”. (Vendler 1967: 31)
(39) a. He is good.
   b. He is good as a president/father/man.

For the interpretation of the adjective *good* we have to appeal to a contextual operator (cf. the discussion about the examples in section 2.6) which is provided by the speaker. It is for this reason that non-absolute adjectives are also called ‘subjective’.

In further support of these proposals, consider the following examples cited by Hoepelman (1983), also Klein (1980, 1981), which have undergone conjunction reduction – the nouns have been omitted and only conjoined adjectives are kept; it appears that adjectives have to be understood as modifying a noun:

(40) a. John is a good dentist but a bad tax payer.
   b. *John is good but bad.

(41) a. John is a bad player and a bad loser.
   b. *John is bad and bad.

One is *good (or bad) at something*, not in any absolute sense or *in abstractum*. Thus, although *John is good* is a grammatically well-formed sentence, displaying the predicative use of an apparently predicative adjective, the ungrammaticality of (40b) and (41b) suggests that *John is good* actually must be construed by supplying something that John is good (or bad) at. (40b) is ungrammatical because it is contradictory (Bouchard 2002: 90). In the absence of a specific overt restriction of the scope of the adjective *good*, the interpretation of (40b) must be that ‘John is bad in general as an individual’, but notice that even in this case something is provided against which *good* can be evaluated: here a descriptively poor noun such as ‘individual’ or ‘person’ can serve this function (see note 27). Likewise, in the absence of an overt restriction of the scope of the interpretation of *bad* the second half of (40b) is interpreted to mean that ‘John is bad in general as an individual’. Very similar remarks are made for (41).

The same interpretive effect is found with adjectives like *happy*. If one asks somebody “Are you happy?”, this is bound to mean “are you happy in general, in terms of the quality of your life”, for instance. But if the intention is to ask about happiness in some more concrete sense, then this limitation has to be made explicit: “Are you happy as a teacher/father/husband?”

In other words, adjectives like *good, bad, happy* are interpreted in direct connection with some sub-component of the meaning of the noun. In this sense they are called subjective – they don’t intersect with the whole network
of the meaning of the noun but with subparts (‘subsections’). Examples like (40) and (41), show that the underlying structure of adjectives in predicative position is more complex than their surface realization reveals: they are ultimately construed as part of a predicate nominal phrase whose head noun may be omitted or implicit. This noun may be minimally construed in terms of a general cover noun such as individual, person, thing and the like (note 27). These examples show that, in Bouchard’s wording, non-absolute adjectives (i.e. subjective/evaluative adjectives) target part of the sense of the noun, not the whole network of its meaning subcomponents. They are subjective and are brought close to intensional adjectives, which are, as we saw, modifiers of some subelement of the sense of the noun.

Observe that evaluative adjectives are gradable: they have the property of being modifiable by degree words/adverbials and can form a comparative and a superlative:

(42)  a. very good, relatively good, quite good
     b. better, worse

Gradable adjectives are also called scalar adjectives.

Size-denoting adjectives, which appear to the right of quality/subjective comment adjectives in (38a), are also gradable/scalar: they also allow for degree words and can also form a comparative and a superlative:

(43)  a. very big, relatively small, quite narrow
     b. wider, bigger, smaller

Such size denoting adjectives share many of the properties of the evaluative adjectives discussed above. The literature on these is in fact very rich, in both the philosophical and the linguistic tradition. For such adjectives it has been noted that they are computed against a comparison class. The property which they assign to the noun is not assigned in any absolute terms, it is interpreted with respect to a certain standard. Entities are not small in general absolute terms, but they are small in comparison with other items of the same class. There is an implied standard that varies depending on the entities we are referring to. A classic example is the use of big in expressions such as a big butterfly and a big elephant. A big butterfly denotes an entity that is big ‘for a butterfly’, and not an entity that is big in any abstract or absolute sense. A big elephant denotes an elephant that is judged as big only when compared to other elephants – i.e. to members of the same class. “Adjectives grade things along dimensions that are partially context-
tually filled in…” (Higginbotham 1985: 563). This is what allows us to process statements like: the biggest butterfly is smaller than the smallest elephant. Size-denoting adjectives are in this sense similar to other evaluative/quality-denoting adjectives, in as much as these too are interpreted relative to something – here relative to the characteristic function of the noun they modify, as we have said.\textsuperscript{29,30}

To account for the interpretation of size-denoting adjectives, Larson (1999) and Larson and Segal (1995) posit the notion of ‘comparison class’ represented by a contextual variable in the adjective’s lexical structure (instantiated by a for-PP: ‘a small elephant is small for an elephant but big when compared to a butterfly’).

Going back to the absolute-non-absolute dichotomy, there is a syntactic correlate to the semantic distinction between objective adjectives and those that are labeled subjective, evaluative or speaker-oriented. The latter group always precede objective adjectives and hence – linearly – are not as close to N as objective ones. Absolute/objective modifiers are typically adjacent or very close to the noun they modify:

\begin{enumerate}
\item a French car
\item a round table
\item a wonderful car
\item a wonderful French car
\item *a French wonderful car
\end{enumerate}

Moreover, in contrast with evaluative and size adjectives, objective adjectives are not gradable, so they do not normally allow for any kind of modification.

\textsuperscript{29} However, for Larson this kind of relativity of such adjectives does not cancel their basic intersectivity. In much the same spirit, Higginbotham (1985) said that modification by these ‘relative’ adjectives can still amount to simple conjunction (of properties), as, in context, these adjectives have ‘standard’ interpretations – e.g. we know that butterflies are little things, whereas elephants are big creatures, so there is no need for the speaker to assert the comparison class ‘for X’ every time he says something about a butterfly. A different view (or rather the same basic view, but expressed in different terms) is Bouchard’s who claims that all intersective adjectives are context-dependent (see also note 24).

\textsuperscript{30} Cf. also: “When an adjective combines with an N to form a complex N’, as in tall man, big butterfly (…), then it is taken as grading with respect to the attribute given in the N.” (Higginbotham 1985: 563).
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(44)  a. *a relatively French car
     b. *a very round table
     c. a truly wonderful French car
     d. the most wonderful French car (I ever had)

Different proposals have been made by linguists to capture the ordering restrictions among a series of adjectives as well as the proximity of absolute adjectives to the noun. In what follows we will discuss some of the most articulated of such proposals.

A final observation concerning the distinction absolute/objective and subjective/evaluative adjectives and which will be helpful in the following discussion is that adjectives of the same degree of objectivity enjoy freedom with respect to the ordering constraints holding for a number of adjectives (see Sproat & Shih 1987, 1991, for discussion).

3.3. Classifying adjectives

Before closing this subsection, let us focus on another function of absolute adjectives, namely the classifying function.

In (44a) apart from assigning a property regarding origin to a specific car, French car may also be used to denote a particular kind or type of car, a general concept, as it were:

(44)  f. I like French cars.

Similarly, in (44b) round table may denote a type of table: round tables as opposed to square tables, for instance. Classifying adjectives such as French in (44a) or round in (44b) subcategorize the denotation of the noun: they create a subset of the set denoted by the noun.

Absolute intersective adjectives (those denoting color, material and the like) are commonly used to subclassify or categorize the noun they modify; they are natural subclassifiers of the noun, and they build up taxonomies. This is due to the fact that they denote concrete properties which render the intended referent of the noun cognitively salient and easy to pick out and identify amongst other referents (see Sleman 1993; Bosque & Picallo 1996 for detailed discussion and syntactic account of classifying adjectives; Stavrou 1999, among others). Consider (44a–b) again: we could almost say that the adjective+noun combination identifies a ‘natural class’, in this par-
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In English such classifying adjectives are found prenominally, but in the Romance languages they only occur postnominally.

The classificatory role is also associated with another subset of (absolute) adjectives which are commonly called relational. Relational adjectives are denominal, that is, they are etymologically/derivationally related to nouns, for instance the adjective nuclear is related to the noun nucleus, the adjective Italian is related to the noun Italy.

Relational adjectives are used to relate two domains of entities: the domain created by the denotation of the noun and the domain of the adjective itself. In Italian invasion a relation is established between invasion and Italy, in nuclear energy a relation is made between the denotation of the noun energy and the noun nucleus, which underlies the adjective nuclear (Levi 1978; see also (62)). The relationship may be thematic/argumental (e.g. Italian invasion), but it may also be also modifying (nuclear energy).

In English relational adjectives appear closest to the noun. This means that in terms of the hierarchy in (38a) they are located at the far right of the scale, they are lower than all other adjectives. Absolute adjectives are not modified by degree words, they are simply heads (cf. *very nuclear energy). Thus a relational adjective, a zero level category, will be adjacent to a noun, also a zero level category. Because of their adjacency to the noun, the two (zero level) categories, A and N, can ‘fuse’ or ‘merge’ together giving a complex noun head (the A+N combination). This resulting complex noun semantically denotes a unitary concept (e.g. nuclear energy) (see also the discussion of Ralli and Stavrou’s (1997) analysis of classifying adjectives in the general spirit of Borer’s analysis of construct-state nominals in Hebrew (Borer 1988) in section 9.2).

Non-absolute adjectives, on the other hand, are less likely to have a classificatory role. For instance, a wonderful car does not pick out a natural class of ‘wonderful cars’. Wonderful is a ‘subjective’ adjective; more specifically it is evaluative or speaker-oriented; and as such it can hardly be used as a classifier. Similarly, size adjectives tend not to be classificatory, though as Sleeman (1996: 16) points out, in certain contexts even adjectives

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31 See Sleeman (1996) for particular instantiations of classifying adjectives, as a broader class comprising objective predicative adjectives, color, shape, material), ordinals and also adjectives like preceding, following, same, only, which all share the feature of partitivity, capable of licensing noun ellipsis. See also Chapter 3 of Part II. We also refer to Bouchard (2002: chapter 4) on the topic of N omissibility with special reference to Sleeman’s work.
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like ‘big’ and ‘small’ may be classifying, if they are taken as providing a basis (admittedly a biased one) for a contrast:

(45) Of these dogs I prefer the big (one). (from Sleeman 1996: 16)

3.4 Patterns of adjectival modification

According to the hierarchies listed in (37a) and (38a) DP-internal adjectives have a specific order: this is shown in (46a) below in which the size adjective big precedes the color adjective grey.

Deviations from the ordering suggested by the hierarchies in (37a) and (38a) can lead to ungrammaticality, as is illustrated in (46b) below. But it is also true that deviations from the order in (37a) are in fact attested: in such cases the deviation of the universal order will correlate with either phonological or semantic differences. For example, if two or more APs are realized as separate prosodic units (i.e. separated by comma intonation), they may escape from the strict ordering (46c,d). Secondly, focusing the initial adjective in the deviant sequence (46b) will give rise to a contrastive reading of grey, cf. (46d,e), distinct from the neutral reading associated with (46a). Focus licenses movement of the stressed adjective to a focus position (in the DP) (Dimitrova-Vulchanova & Giusti 1998; Giusti 2002).

(46) a. the big grey cat
b. *the grey big cat
c. the dark, grey, incredibly big cat
d. She loves all those Oriental, orange, wonderful ivories.

(from Sproat & Shih 1991: 578)
e. ?the GREY big cat (as opposed to the WHITE big cat)

According to Sproat & Shih, adnominal modification is not a unitary syntactic phenomenon. Rather they propose that there are subtypes of attributive modifiers. Various languages exploit one of these subtypes or a combination of them. We will briefly discuss these subtypes.

3.4.1 Direct vs. indirect modification

A first distinction is the contrast between direct and indirect modification. In direct modification the adjective modifies the noun directly. The hierarchical scales in (37a) and (38a) only govern the ordering of multiple adjectives

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that are syntactically integrated via direct modification. Sproat & Shih adopt Higginbotham’s hypothesis about theta identification, whereby the theta positions of the adjective and the noun as predicative categories are identified. Crucially, theta identification is intersective. Direct modifiers are APS attached in one way or another to a projection of N. In indirect modification, on the other hand, the adjective ‘indirectly’ modifies the noun, meaning that it forms part of a relative clause. From its position within the relative clause the adjective assigns a theta role to an empty category which occupies the subject position of the relative clause via predication. This empty category in turn is bound by an operator in the relative clause co-indexed with the head of the noun phrase. This process is parallel to the formation of the English construction in (47):

(47) man [e] who [e] walks

The authors discuss the syntactic reflexes of the distinction between direct/indirect modification with respect to Mandarin Chinese. In that language, in the unmarked case adjectives modifying nouns (direct modification) must obey the ordering hierarchies in (37a)–(38a) as shown by the contrast between (48a) and (48b). These examples illustrate direct modification. Multiple APs can violate (38a), but only when accompanied by the particle de (48c,d). This is what is called indirect modification.

(48) a. xiâo lü huâping  
   small green vase
b. *lü xiâo huâping  
   green small vase
   c. xiâo-de lü-de huâping  
   small-DE green-DE vase
   small green vase
d. lü-de xiâo-de huâping  
   green-DE small-DE vase

The particle de is also a relative clause marker. This supports Sproat & Shih’s claim that indirect modification is modification by relative clauses:

32 Cinque (1993) collapses direct modification with the notion of attributive modification.
(49) fēi-de niāo  
fly-DE bird  
‘the birds which are flying’

De-modifiers are constrained in that they may only contain predicative adjectives (Sproat and Shih 1987: 476–477). If direct modification is identified with attributive-type modifiers and indirect modification with predicative modifiers, then the former are and the latter are not subject to the ordering restrictions. We will see in later sections that polydefinite DPs in Greek match de-modification in Mandarin Chinese, and also that the current determiner complementation hypothesis (Kayne’s relative clause hypothesis) or Larson’s D vs. N adjective modification are in fact very close in spirit and implementation to Sproat & Shih’s indirect modification.

3.4.2. Parallel vs. hierarchical modification

Direct modification involving more than two adjectives is further subdivided into two subtypes: hierarchical (or scopal) and parallel modification. In the former type, the noun together with its adjacent adjective functions as a unit, which is modified successively by each preceding adjective, so that in effect each adjective to the left takes scope over the constituent that follows it. This pattern can be schematically represented as \((A + (A + (A + N)))\). In parallel modification, each adjective modifies the noun directly, without necessarily also modifying the intervening adjective+noun cluster(s). In other words, in this pattern, each adjective does not have scope over the following adjective+noun meaningful unit. This can be schematically represented by: \((A + A + A + N)\). In parallel modification each adjective constitutes a separate phonological phrase. This ‘frees’ the adjectives involved from the hierarchical ordering.

Parallel modification can be seen as an instance of loose or asyndetic coordination of adjectives, i.e. of coordination among a series of adjectives without the presence of and. Some adjective-noun combinations are more likely to be subject to the scope interpretation, others enter more easily into the parallel modification structure, still others are ambiguous between the two types of modification.

If a DP contains multiple adjectives of the same type, they are freely interchangeable, being interpreted ‘in parallel’. For instance, adjectives of color, size, material and origin do not take scope over members of the same class (of objective adjectives) and the same holds of qualitative adjectives
(nice, interesting, clever, handy, tasty, etc.): when they co-occur such adjectives can modify a noun under parallel modification only. Consider for a moment (50a) from Demonte (1999: 54–55). In (50a) the qualitative adjectives cannot be interpreted in a scope relation, only a parallel reading is available (i.e. with a pause in between the first two adjectives): each adjective modifies the noun on an equal footing. The asterisk refers to the impossibility of establishing a scope relation between alta and delgada in (50a).

(50) a. *la delgada alta señora / *la alta delgada señora (Spanish)

the thin tall woman / the tall thin woman

In (50b) (from Ferris 1993: 127), the order dark<threatening is not the expected order according to the hierarchy (38a). The assumption here too is that parallel modification is involved.

(50) b. The dark threatening clouds lay behind them.

Demonte observes a difference between qualitative or descriptive adjectives like those in (50a) and modal/speaker-oriented ones; the latter can combine with the former in a sequence that can be assigned a scopal interpretation:

(50) c. la maravillosa larga jornada (Spanish)

the wonderful long day

Classifying adjectives of the relational kind participate in the hierarchical pattern, and so do combinations of descriptive and classifying adjectives. (51a) illustrates the scope reading of the two classifying adjectives. In the first example, we are talking about athletic centers, distinguishing ‘urban’ from others, say ‘rural’ athletic centers. In the second examples we are talking about institutes that are diagnostic, distinguishing such medical institutes from others. The order among the classifying adjectives in (51a) can be reversed, with the expected meaning shift (athletic urban center). However, the order between the descriptive and the classifying adjective in (51b) cannot be changed (*her woolen new shirt), unless woolen is focused and stressed (cf. (46e)).

(51) a. [urban [athletic center]]

[medical [diagnostic institute]]

b. her new woolen shirt

((new (woolen shirt)) or ((new) (woolen) shirt))
3.5. Hierarchical orders involving a finer subclassification of adjectives

Things become considerably more complicated once more fine-grained distinctions in adjective classification are taken into consideration.

It has been observed that in a DP headed by a deverbal noun, the order of prenominal adjectives typically matches that of the adverbs in a clause headed by the corresponding verb. One hierarchy that has been proposed for the clause is given in (52a) and it is illustrated in the examples in (52b–f) (Valois 1991a,b; Cinque 1999; Alexiadou 1997).

(52) a. speaker-oriented > subject-oriented > frequency > completion > manner
    b. He probably quickly left. speaker-oriented > manner
    c. He cleverly always leaves on time. subject-oriented > aspect
    d. He probably cleverly left on time. speaker-oriented > subject-oriented
    e. He probably completely changed his mind. speaker-oriented > aspect
    f. He often completely changed his mind. frequency > completion

The hierarchy found among adverbial adjuncts in the clauses in (52) can be seen to be replicated for adjectives in the DP in (53):

(53) a. his probable quick departure
    b. his probable complete change of mind
    c. his clever complete change of mind
    d. his probable quick change of mind

These observations have led a number of researchers to assume that adjectives are integrated syntactically in the nominal domain in the same way that adverbs are integrated in the clause. For instance, generalizing the adunction analysis, both preverbal adverbial modifiers such as *frequently* and *viciously* (54a) and prenominal adjectival modifiers such as *frequent* and *vicious* in (54b), are taken to be adjoined to a maximal projection (see section 4).

(54) a. [Mary [vP frequently [vP viciously [vP criticised John]]]]
    b. [DP Mary’s [NP frequent [NP vicious [NP criticism of John]]]]

According to Demonte’s analysis of adjectives in Spanish, adjectives that modify an eventive (deverbal) noun fall into four major classes:
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(a) modal epistemic (possible (‘possible’), presumible (‘probable’));
(b) intensional (evaluative, intensifying) (completo (‘complete’), simple (‘simple’), unico (‘unique’), falso (‘false’));
(c) circumstantial (antiguo (‘old’), frecuente (‘frequent’));
(d) non-restrictive qualitative (alegre (‘cheerful’), prudente (‘careful’)).

Demonte further provides evidence that, cross-linguistically, adjectives which seem to appear to the far left in the NP are modal epistemic, like probable or certain (55). This class can precede intensional adjectives, completo (‘complete’) in (55):

(55)  a. Me preocupa el probable completo fracaso de la obra.
       me-DAT worries the probable complete failure of the play
       ‘The probable complete failure of the play worries me.’
   b. *Me preocupa el completo probable fracaso de la obra.
       (Demonte1999: 52)

Otherwise, intensionally oriented adjectives such as unica (‘unique’) may precede or follow qualitative ones such as divertida (‘funny’); circumstantial adjectives (e.g. manner and temporal adjectives) manifest free word order when they co-occur, with the expected interpretational difference resulting from the change of scope:

(56)  a. mi unica divertida colega-mi divertida unica colega
       my only funny colleague-my funny only colleague
   b. sus frecuentes furtivas entradas
       sus furtivas frecuentes entradas
       his/her frequent furtive entrances
       his/her furtive frequent entrances
       (Demonte 1999: 51)

Adjectives belonging to the modal/epistemic class do not observe a rigid order when they co-occur, but their order will determine their relative scope.

(57)  a. la supuesta falsa declaracion
       the supposed false statement
       ‘the supposedly false statement’
   b. la falsa supuesta declaracion
       the false supposed statement
       (Demonte 1999: 52)
Putting all these remarks together and integrating modal (intensional) adjectives into the hierarchies established in (37–38), we can break down these hierarchies in terms of the adjective’s proximity to N as follows:

(58) modal-epistemic/intensional, qualitative (descriptive) N
    modal-epistemic/intensional absolute/intersective N
    modal-epistemic circumstantial N

(but the reverse order may be observed)

When modal adjectives and intensional adjectives co-occur, they seem to be freely ordered among themselves. As we have seen, this holds more generally when adjectives of the same type are involved. Absence of commas between the various subclasses in (58) indicates a scopal relationship. The comma in the first line of (58) indicates that the two (modal-epistemic/intensional and qualitative) subcategories may change their relative order (Demonte 1999: 52).

Summarizing this subsection, we can say that modal/intensional adjectives can be found at a maximal distance from the noun, preceding all other adjectives.

We conclude that a number of parallelisms seem to hold with respect to the kind of adjectives featuring in the scales in (37–38) and (52) above. Objective/absolute adjectives parallel circumstantial ones in the case of deverbal nouns in that both types are adjacent to the noun. Of course each type modifies a different type of noun: circumstantial adjectives modify deverbal nouns and objective/absolute adjectives modify common nouns. Evaluative or descriptive adjectives match modal epistemic ones – again the former modifying common nouns, the latter both common and deverbal ones.

In the following sections we will use the facts regarding the relative order of sequences of adjectives in order to determine the structural position(s) of adjectives in the DP.

4. **On the syntax of DP-internal adjectives**

4.1. **General remarks**

In contrast to the reductionist approach, many linguists have argued that the use of adjectives illustrated in (5) must be kept apart in a principled way, both syntactically and semantically, from the occurrences of adjectives in (4) and in (6). In this view, the two patterns of modification receive distinct