Noun Phrase in the Generative Perspective

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Editors

Jan Koster
Harry van der Hulst
Henk van Riemsdijk

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by

Artemis Alexiadou
Liliane Haegeman
Melita Stavrou

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In memory of Tanya Reinhart

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Preface

Aim of the book

This book is a theoretically oriented, comparative study of the aspects of morphosyntax of what is traditionally called the noun phrase (NP), i.e. the projection of the noun. The goal of the book is to offer a survey of current discussions on a number of key issues that have become prominent in research on the syntax of nominal projections within the generative tradition.

The book is thus primarily intended for linguists interested in some aspect of the structure and morphology of the nominal projection. Although a basic background in the generative tradition is presupposed, any crucial theoretical assumptions adopted in the book will be elaborated at relevant points. Hence the book should be accessible to advanced students as well as to readers who are broadly familiar with generative syntax but who may not be familiar with the precise implementations adopted in the book. As many issues relating to the structure of the nominal domain are also relevant for the analysis of the clause, and since we will often place the discussion against the background of the development of the theory as a whole, the syntactician whose main research interest lies outside the nominal domain will hopefully also find areas of interest in this book.

Syntax of nominal projections and syntax of clauses

All current generative research on the syntax of the nominal projection has been crucially motivated by the emergence of the 'DP-hypothesis', as advanced by the work of Abney (1987). In addition, as in any other area of syntax, research on the nominal projection is obviously also influenced continuously by the theoretical developments within generative grammar. In research into the nominal domain as elaborated during the last twenty years, a number of key areas of interest can be identified; we will briefly introduce these here, though, obviously, the various domains of interest are ultimately related and cannot be kept fully isolated.

The DP hypothesis postulates that, in the same way that the projection of the verb is dominated by functional material, the projection of the noun

is part of a larger functional complex, the DP. One of the central issues with respect to the syntax of DPs arises from the fact that interesting parallelisms can be observed between the nominal domain and the clause, that is, the verbal domain. It is, for instance, tempting to compare the role of the V head in the clausal domain to that of the N head in the nominal domain, and while it is C, the complementiser position, that provides discourse anchoring in the clause, the same role can be argued to be played by D, the determiner, in the nominal domain.

The assumption that what used to be called NP should be reinterpreted in terms of DP, that is a projection of D with a nominal complement, means that the determiner has a central role in the nominal system. This in turn has led to a number of questions concerning the status of the determiner elements found within the DP. In particular, questions have arisen about the position and interpretation of definite and indefinite articles, of demonstrative pronouns and of possessive pronouns in the languages that have them. Equally, given the DP hypothesis and its core assumption that a NP is dominated by a DP, questions arise as to how to analyse nominal projections without an overt determiner.

Another area of study concerns the assumption that in the same way that clauses are basically V projections augmented with functional projections (TP, AGRP, AspP etc), DPs are N projections augmented with functional projections. This leads to obvious questions about the functional layering of the DP: in addition to DP, are there other functional projections, how many such projections are there, how can they be motivated, what are their interpretative properties? Given that functional projections in the clause have been tied in with the availability of morphological markers of Tense, Agreement, Aspect etc, there has also been a renewed interest in the morphological markers of the noun and their relevance for postulating functional projections. Morphological issues related to the status of functional categories include questions concerning the realisation and interpretation of features such as agreement, case, gender (word marker/stem affix/inflection class), in the nominal domain.

In the same way that the syntax of semantics of adverbial modifiers in the VP has given rise to much discussion, the syntactic and semantic relationship of (primarily if not exclusively adjectival) modifiers to the noun has received a lot of attention. This research ties in directly with that concerning the status of functional projections in the NP and the question to what extent the syntax of nominal modifiers (especially adjectives) can be aligned with that of verbal modifiers (especially adverbs). A related question

is also how the relative position of the noun with respect to the modifying adjectives can be derived. For instance, in the same way that some positions of the verb in the clause have been argued to be derived by movement of V to a functional position, it has been argued that the postnominal position of the adjectives is due to N-movement across the adjective. However, the N-movement hypothesis has not gone unchallenged and alternatives have been elaborated. The assumptions that there is a rigid split between lexical categories and functional categories have also come under scrutiny. With respect to the clausal domain there have been proposals that certain verbs belong to hybrid categories with both functional and lexical properties and the same proposals have also been made with respect to the status of certain nouns.

A final area of research is centred on the parallelism between V as the semantic head of the clause and N as the semantic head of the DP. In the same way that lexical verbs have arguments with which they have thematic relations in the clause, nominal heads may also be argued to have arguments, with which they have thematic relations. The assumption that nouns may have arguments seems particularly natural in the case of deverbal nouns. In addition, possessor arguments are also typically found in nominal projections. Assuming there are indeed arguments in the nominal domain, then questions arise also with respect to their distribution, their relation to the structure, in particular whether they have specifier or complement status. It has further been argued that just like clauses (i.e. projections of verbs) instantiate a predication relation, DPs contain evidence for predication relations. This line of enquiry has, among other things, led to new analyses for possessor constructions and for pseudopartitive constructions.

In this book, we want to offer a discussion of the research areas in the domain of the syntax of the nominal projection outlined above, with special attention for the parallelisms between the nominal projection and the clause. In order to achieve this goal we will systematically relate phenomena relevant for the nominal projection to other syntactic phenomena. For instance, the syntax of possessive pronouns in the nominal projection is related to the classification of pronouns which was elaborated to account for their distribution in the clause, N-movement in the nominal domain is compared to V-movement in the clause, the syntax of the genitive construction is related to that of predicate inversion in the clause.

We also want to show how research into the nominal projection is unavoidably determined by developments in the theory. Often, we have at-

tempted to integrate earlier findings on the syntax of nominal projections into newer theoretical proposals, casting new light on the empirical domain at issue. In the various chapters, we will show how recent theoretical proposals (distributed morphology, anti-symmetry, minimalism, cartography) can cast light on aspects of the syntax of the DP and can enrich and refine earlier analyses. We also indicate problems with the analyses that have been proposed, whether they be inherent to the theories as such (e.g. what is the trigger for movement in antisymmetric approaches) or to the particular instantiations. In the discussion of various issues, we apply the framework that is most adequate to deal with problems at hand. We therefore do not use the same theoretical approach throughout the book. As a consequence, at various points in the book we will provide a brief introduction to theoretical proposals which we adopt at that point.

We wish to underline that our book does not aim at providing the definitive analysis of the syntax of noun phrases. We consider that this would not be possible, given the current flux in generative syntax, with many new theoretical proposals being developed and explored in parallel. Our goal is to give the reader the background for research and to show how a number of quite different proposals in the literature have been be applied in an interesting way to the nominal domain. When relevant, we will point to remaining issues for further research. We also point out that, while we have aimed at covering a wide range of areas, the book is not an exhaustive survey of the vast literature on noun phrases. And though proposals in the literature will be discussed when relevant, our aim is not to provide a critical survey of the literature. We feel that such a critical approach to the literature would be guided by general theoretical choices rather than by issues specific to the syntax of nominal constructions, which is the focus of our book. Whenever we introduce proposals from the literature our goal is to use them to cast light on the phenomena discussed.

Organization of the book

The book has four parts, each composed of a number of chapters. **Part I** is a general introduction. **Part II** is concerned with the functional make up of the nominal projection. **Part III** deals with DP internal modification relations. **Part IV** is concerned with the relation between a head N and other DPs within the nominal projection.

Though there are obviously relations between the three parts of the book, and between the various chapters, we have tried to make the main parts as

well as the chapters in them relatively freestanding. Each deals with one specific aspect of the syntax of nominals and can be read on its own.

The book is comparative in its approach: as is standard practice in generative grammar, data from different languages will be examined, including English, and the Germanic languages, the Romance languages, Slavic languages, Semitic languages and modern Greek. We do not systematically examine each of the languages discussed for all of the properties at stake, but rather we will introduce data from those languages that seem particularly telling for the point at issue.

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Part I

Introduction

This book is a theoretically oriented, comparative study of some aspects of the morphosyntax of constituents that have been traditionally referred to as noun phrases. The core empirical data addressed here are fairly straightforward. In the following examples the underlined strings are all noun phrases of one type or another.

(1) a. *Henry* is hungry.
b. There is *a grey cat* waiting outside.
c. *The cat* probably wants to come in.
d. *All our cats* are very independent.
e. *This big grey cat in the corner* is *Nelson*.
f. *The cat's tail* was moving energetically.
g. *Rembrandt's picture of Lulu* was very detailed.
h. *Cats* are *wonderful creatures*.
i. *Topsy* loves *fresh cream*.

The semantic nucleus of the underlined constituents is a noun which may be accompanied by other constituents of various categories. (2) provides a very preliminary inventory of some of the components of the underlined constituents in (1) with provisional category labels.

(2)	Noun (N)	proper name	*Lulu, Henry, Nelson, Rembrandt, Topsy*
		common noun	*cat, corner, creature, cream, picture, tail,*
	Adjective (A)		*fresh, grey, wonderful*
	Determiner (D)	definite	*the*
		indefinite	*a*
	Demonstrative (Dem)		*this*
	Quantifier		*all*

In this book we will be concerned with the distribution and function of the components of nominal projections and with the various relations between the noun and the other constituents in its projection. As a shorthand term the labels Noun Phrase or NP are often used to refer to constituents headed by a noun but, though there is indeed a need for this label to designate the (lexical) projection of N, we will see that technically the underlined constituents in (1) are more than projections of N, i.e. NPs. Following current tradition in the generative framework (see Abney 1987) we will usually refer to constituents such as those underlined in (1) as DPs.

The present chapter is an introduction to the book. We provide a survey of some of the major areas of research in the domain of nominal syntax. One prominent starting point of much research on the nominal projection revolves around the similarities and differences between nominal syntax and verbal syntax. To put it simply, comparisons are made between noun phrases and sentences. As will be shown below, the way this issue is addressed is not independent of theoretical considerations.

In the introduction we provide first a discussion of the way in which the nominal constituents seems to have certain properties in common with clauses. These observations will be a basis for the remainder of the book, in that we will examine to what extent proposals for the analysis of the clause can be carried over to the analysis of the nominal constituent. In the second section of the chapter we introduce the central theoretical concepts which will be used in the book. This section is an introduction to some basic concepts in syntactic literature. Readers familiar with the theoretical models used here, namely the Government and Binding model, the Principles and Parameters model and the recent Minimalist model, will not find much new here and they can skip section 2 of the introduction.

1. Some parallelisms between clauses and nominal projections

1.1. Subjects and genitives

Many discussions concerning constituents headed by nouns will point out, among other things, that in English the prenominal genitive seems to be to the noun phrase what the subject is to the clause. This is especially clear in the case of nominalizations. For instance, just as *Caesar* is the Agent of the action denoted by *destroy* in (3a), it could be argued that the genitive *Caesar's* in (3b) denotes the Agent of the action expressed by *destruction*.

(3) a. Caesar destroyed the city.
b. Caesar's destruction of the city

Similarly, just as in (3c) what was the object of *destroy* has become the subject due to passivization, in (3d) the Theme argument of *destruction* in (3b) is now expressed by the genitive in (3d), suggesting that nominal projections, too, allow for argument changing, just like sentences do.

(3) c. The city was destroyed by Caesar.
d. the city's destruction by Caesar

Finally, just as in (3e) the subject *Caesar* is the antecedent of the reflexive *himself* and cannot be the antecedent of the pronoun *him*, in (3f) the genitive *Caesar's* is the antecedent of *himself* and cannot be the antecedent of *him*:

(3) e. Caesar described himself to him.
f. Caesar's description of himself to him

These various subject-like properties of genitives may be taken as support for postulating a large degree of parallelism between the syntax of noun phrases and that of clauses. In generative approaches to syntax, this particular issue has been on the agenda at least since Chomsky (1970), who focused on the relation between clauses and the related nominalizations. One specific question that arises is whether nominals such as those in (3b), (3d) and (3f) can inherit the argument structure of the verbs they are derived from, and if so, how this is achieved.

1.2. Functional structure: the DP hypothesis

The semantic nucleus of the clause is the verb, the semantic nucleus of the nominal projection is the noun. In the same way that a clause can be shown to be more than a mere projection of a verb, it has been argued that the so-called Noun Phrase is more than the mere projection of a nominal head. Clauses are extended projections (in the sense of Grimshaw 1991) of the verb: the lexical projection, VP, is dominated by a number of functional projections, such as IP and CP, giving rise to the C-I-V hierarchy (Chomsky 1986b). In a similar way it has been proposed that the nominal projection is dominated by functional projections, the first such projection being Determiner Phrase or DP (Abney 1987; Horrocks & Stavrou 1987; among others).

Much work in the late 1980s was devoted to establishing the correctness of the so-called 'DP-hypothesis', i.e. the hypothesis that the determiner heads the Det+Noun constituent, by bringing cross-linguistic facts to bear on the issue. Two types of arguments were prominent in the discussion. On the one hand there were arguments concerning the grammatical and distributional properties of determiners (e.g. Haider 1988 on German, among many others). On the other hand, arguments concerning noun movement can be seen to support postulating at least one functional projection above NP. If one wishes to postulate that the nominal head moves within the projection of N one must assume that there is at least one additional head position which can receive the moved N. The position of the determiner, D, has been identified as just such a position. Consider for instance the distribution of the noun *casa* in the Italian examples in (4) (Longobardi 1994, 1996):

(4) a. La mia casa è bella.
The my house is beautiful
b. Casa mia è bella.
c. *La casa mia è bella.
d. *Casa la mia è bella.

In (4a) the definite article *la* precedes the possessive pronoun *mia*. In (4b) *casa* precedes *mia* and this order is incompatible with the presence of the determiner (4c, d). The N-movement argumentation would go as follows: Leaving aside a detailed analysis of the position of *mia*, one might say that while in (4a) the noun head occupies the head position of the lexical projection of N, and D is the head of a functional projection dominating NP, in (4b) N has moved to the position of the determiner.

(4) e. $[_{DP}\ [_{D}\ casa_n]\ [\ mia\ [_{NP}\ [_{N}\ t_n]]]]$
$\xleftarrow{\qquad\qquad}$

The moved constituent leaves a coindexed trace (t_n) in its original position. In Minimalist literature, such a coindexed trace has been replaced by a copy (see section 2.5.2), so (4e) would be equivalent to (4f), where the crossed out representation ~~*casa*~~ represents the copy of the moved noun *casa*.[1]

[1] In this book we will use both the trace symbol (t) and the copy, but without these notations implying any theoretical difference. When we use the symbol t in a position, for trace, we understand this to mean that the relevant position is occupied by a copy of a moved constituent and that this copy is not pronounced.

(4) f. $[_{DP}\ [_{D}$ casa] [mia $[_{NP}\ [_{N}$ ~~casa~~]]]]

For a number of languages, the distribution of the noun with respect to other constituents of the nominal projection has been interpreted in terms of overt raising of N to D (cf. Delsing 1993a, 1998; Taraldsen 1990 on Scandinavian; Ritter 1991 on Hebrew), an instance of head movement within an extended projection paralleling verb movement to I or C. [2] We return to this issue in section 2.3.

1.3. Survey of this book

The DP-hypothesis has achieved a broad consensus, not least since it allows a conceptual unification of syntactic structure across categories. Without the DP-hypothesis, the by now standard view of the extended projection (Grimshaw 1991) as the basic constructional unit in natural language could not have taken hold. Subsequent attempts to improve our understanding of the D-N extended projection have been concerned with four main issues:

(5) a. the articulation of the D-N extended projection,
b. the status of arguments in DP,
c. the status of modifiers in DP,
d. the effects of head/phrasal movement inside the nominal projection (NP and DP).

The present book offers a survey of some of the literature on the issues listed in (5) The book contains four major parts, which to a large degree can be read independently, though there will obviously be some cross-references. **Part I,** i.e. the current chapter**,** is a general introduction. **Part II** is concerned with the functional make-up of the nominal projection. Chapter 1 of Part II deals with the category D, and will examine both the elements that lexicalize D (in particular, articles and demonstratives) and the semantic categories that D is currently taken to encode (in particular, definiteness and reference). Chapter 2 of Part II surveys some of the various proposals

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We will often prefer the trace notation to symbolize copies simply because using multiple copies often gets in the way of clarity of presentation and 'readability'.

[2] Longobardi (1994) generalizes the proposal by arguing that N-raising to D occurs covertly elsewhere. We discuss his proposal in chapter 2 of part II. See section 2.1. on covert movement.

that have been advanced in order to account for articleless, or determinerless, noun phrases. Chapter 3 of Part II is concerned with functional categories within the nominal projection. **Part III** deals with DP-internal modification relations. Chapter 1 of Part III is concerned with adjectival modifiers in the nominal projection. It investigates the factors determining the distribution of adjectives within the nominal projection (NP/DP) and it also examines to what extent a difference in distribution may correlate with a difference in interpretation. Chapter 2 of Part III deals with two constructions that involve so-called semi-functional (or semi-lexical) categories: the N-*of*-N construction and the pseudo-partitive construction. **Part IV** is concerned with the relation between a head N and other DPs within the nominal projection. Chapter 1 of Part IV takes up the issue of arguments in nominals, while Chapter 2 is concerned with the syntax of possession.

Before turning to the individual chapters Section 2 introduces our basic theoretical background for the discussion to follow. Readers who are familiar with generative literature will probably not find any new material in this section. They can proceed immediately to Part II.

2. The theoretical framework

The book has been written against the background of what is usually referred to as generative syntax, the research program initiated by Noam Chomsky in the 1950s. In particular, we shall be assuming the *Principles and Parameters* framework as elaborated in the *Government and Binding* model of the 1980s (see for instance, Haegeman 1994; Radford 1988) and we will also be referring to theoretical proposals drawn from recent work in syntax including (i) the Minimalist Program (Chomsky 1995; Radford 1997, 2004; Adger 2003; Lasnik, Uriagereka, Boeckx 2005), (ii) the antisymmetry approach to syntax (Kayne 1994), (iii) the Distributed Morphology approach (Halle & Marantz 1993). Since Distributed Morphology will only be relevant for Chapter 1 of Part IV we will not introduce the aspects of the framework relevant for our discussion until section 2.4. of that chapter. In this introductory chapter we will present only the broadest outlines of the first two theories. When relevant, we will elaborate the specific implementations in later chapters as they become relevant for a particular issue or question.

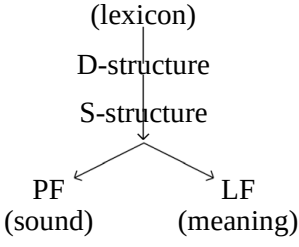
2.1. Levels of representation

A theory of syntax has to assume that language has two basic components, the lexicon, which provides the elementary building blocks of the language, and the syntax, a structure-building system which combines these primitive elements into larger units.

Building on the generative tradition initiated in the 1950s, the *Government and Binding* framework (based on Chomsky 1981) proposes that lexical items are inserted at a particular level of syntactic representation, called D-structure. The syntax operates on this D-structure representation through movement operations, leading to a second level of syntactic representation, called S-structure. S-structure is the basis for both the interpretation of the structure, Logical form (LF), and for its overt realization, Phonetic Form (PF). S-structure results from various movement operations and is reflected in the overt form of the sentence: the moved constituents are displaced. LF is an interpretive level in which non-overt movements may have taken place to encode semantic relations (scope, for instance). It is assumed that any movement that can overtly take place before S-structure may also apply covertly to generate LF-relations.

Thus, we obtain what has been referred to as the T-model of grammar with its three interface levels D-structure, PF and LF. S-structure mediates between these levels. A representation of this model is given in (6a).

(6) a.



The geometrical relations between the various levels represented in (6a) are not accidental. Specifically, because the path between S-structure and PF is different from the path from S-structure to LF, whatever (movement) operations mediate between S-structure and LF will not affect the phonetic form of a structure. Similarly, manipulations of S-structure which apply on the path to PF will not have any impact on the interpretation (LF).

Let us illustrate this point with a very much simplified example. Consider (7a) and (7b):

(7) a. John has met Mary
b. Who has John met?

In (7a) the nominal constituent *Mary* is an argument of the verb *meet*. It occupies the canonical object position. In (7b), on the other hand, the direct object of *meet* is the interrogative pronoun *who*, which does not occupy the canonical object position. However, it is clear that in (7b) too *who* is an argument of *meet*. In order to represent the relation between *meet* and *who* in (7b) we propose that the sentence is derived in two steps: (i) first the object of *meet*, i.e. *who*, is inserted into the VP, and (ii) then undergoes movement to a sentence-initial position. The moved constituent preserves its relation with the original object position, or, to put it differently, in (7b) *who* still counts as the object of *meet*.

In addition to the interrogative pronoun, the inflected auxiliary *has* also moves to a position to the left of the subject. Again we assume it is inserted into the position in which we find the auxiliary in (7a) and then it moves leftrd. To represent this we use the trace[3] notation. The indices *i* and *j* are used to show which trace relates to which moved constituent: t_i is the trace of *who*, t_j is the trace of *has.*

(7) c. [Who$_i$ has$_j$ [John t_j met t_i]]

The question arises why this movement has taken place. Probably the answer must be that to signal interrogative force we need to use the left edge of the clause. We could propose that the left edge of the clause is the area that encodes illocutionary force (among other things). Thus *who* is obliged to move, since, being interrogative, it needs to end up in the layer of the clause that can express interrogative force. On the other hand, not being interrogative, *Mary* has no need to move to that zone. Since there is no reason to move up, the object *Mary* stays where it has been inserted, in the

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[3] As pointed out above, the trace notation has been replaced by the copy notation in the minimalist literature. Thus (7c) would be represented as (i), where the strikethrough notation is used to indicate the copies of moved constituents:

(i) [Who has [John ~~has~~ met ~~who~~]]

In the trace notation, the link between the trace and the moved constituent is indicated by coindexation, as shown in (7c). It is obvious that in the copy notation coindexaion has become superfluous, since from the strikethrough notation it is clear which constituent the copy is related to.

canonical object position. Constituents only move if there is a need for them to move. Or, to put it in technical terms, movement takes place as a last resort.

Now consider the following French examples:

(8) a. Qui as-tu rencontré?
Who have-you met
'Who did you meet?'

b. Tu as rencontré qui?
You have met whom?
'Who did you meet?'

In (8a) the same pattern is to be found as in the English counterpart, again the interrogative pronoun and the auxiliary have moved:

(8) c. [qui$_i$ as$_j$ [tu t$_j$ rencontré t$_i$]]

Now consider (8b). This example has the same interpretation as (8a) it is a question about the object.[4] In this example the object has not moved. However, the object is an interrogative pronoun. If interrogative force is interpreted also on the left edge in French, then we must assume that to be fully interpretable *qui* ('who') in (8b) should actually also end up on the left edge. One proposal that has been adopted is that there IS indeed movement of *qui* to the left edge, but this movement only takes place at the interpretative level. Hence the movement will also lead to a structure such as (8c) above, but the movement to derive this structure will not be associated with a visible displacement. Thus (8d) would be the LF representation of (8b):

(8) d. [qui$_i$ as$_j$ [tu t$_j$ rencontré t$_i$]]

The *Minimalist Program* (Chomsky 1993, 1995, 2000, 2001) reconsiders the role of these levels of representation. It is argued that the only conceptually necessary levels of representation are those related to external systems, i.e. the level which is related to the so called articulatory-perceptual

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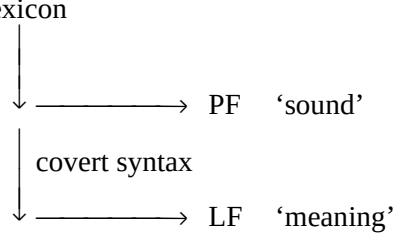
[4] Obviously pairs such as the French examples in (8a) and (8b) pose a problem for the hypothesis that movement is a last resort operation, since the very fact that (8b) is grammatical makes us wonder what could be the motivation for movement in (8a). We will not dwell on this issue here.

system (i.e. the level of 'sound' or PF) and the level which is related to the conceptual-intentional system (i.e. the interpretative level of LF). The levels D-structure and S-structure in (6a) are completely internal to the structure-building system. Since there is no independent direct evidence for their existence, the minimal assumption is that these levels do not exist. Within the Minimalist framework, it is therefore assumed that the only two levels of representation are the interface levels PF and LF. The lexicon is taken to provide the building blocks of the sentence.

The starting point for the construction of a sentence is a set of lexical elements (the so-called *Numeration*). The syntax builds up the structure by combining the elements drawn from the Numeration, according to certain principles and until the Numeration is exhausted. At some point during this derivation the information contained in the structure built up so far and which is relevant to PF is fed to the PF component. This point is called *Spell Out*. All syntactic operations carried out before Spell-Out are reflected in the PF output. After Spell out, additional non-overt processes may apply to the structure to derive the semantic representation (the LF interface). These additional processes, which apply AFTER Spell Out, do not have any repercussion on the overt representation of the sentence. The Minimalist type of grammar can be represented as follows:

(6) b.



Returning to our examples: in English (7b) as well as in French (8a) the movement of the interrogative object (*who, qui*) takes place before Spell-Out, in the overt syntax, thus producing a visible displacement. In (8b) there is no movement of the interrogative constituent before Spell-Out. Movement in (8d) takes place after Spell-Out, in the covert syntax.

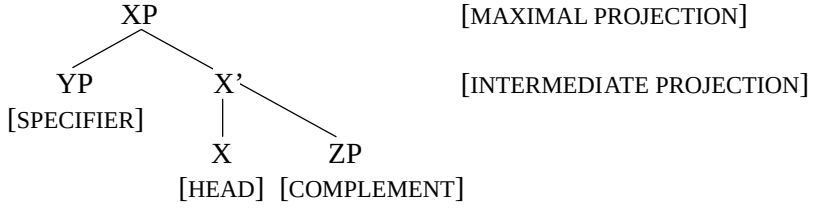
In what follows we outline the internal working of syntax, i.e. the computational system that builds structure. We will be combining Minimalist insights with more traditional insights from the *Government and Binding* tradition. The difference between the two traditions will be highlighted when relevant.

2.2. Syntactic structure: the X-bar format

There are a number of assumptions that seem to be relatively constant across the various incarnations of the generative framework. One is that all syntactic structure is endocentric: syntactic units are organized around a head. Each head, X, projects a larger syntactic unit (a phrase, XP), and each phrase, XP, must have one head. This assumption captures the traditional intuition that the head of a verb phrase, for instance, is a verb.

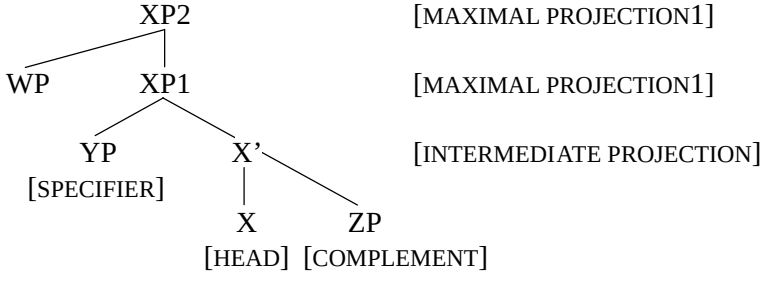
In one precise implementation of this idea, all syntactic constituents have the same format, which can be represented as in (9a) below, where X indicates the head of the constituent XP. The head X combines with a constituent, here ZP, which itself is built according to the format in (9a). ZP is referred to as the complement of X. The combination of X and its complement is referred to as X', the intermediate projection of X. This projection X' combines with another constituent, YP, referred to as a specifier, to form XP, the maximal projection. Again, YP itself is also formed according to (9a).

(9) a. X-bar format



It is sometimes proposed that phrases can be added to XP through what is called adjunction. Adjunction of WP to XP creates an additional projection of the same category. In (9b), the phrase WP is adjoined to the base XP giving rise to another XP projection. The base XP and the XP created by adjunction are sometimes identified by numbers (XP1, XP2)

(9) b. X-bar format with adjunction



However, the concept of XP-adjunction is not generally accepted (cf. Kayne 1994; Cinque 1999).

Observe that both (9a) and (9b) contain only binary branching structures (cf. Kayne 1984), that is to say: from each point there are at most two downward branches. This format is generally assumed in current work in generative syntax both in the Principles and Parameters tradition and in the Minimalist tradition.

The basic structural configurations used to express geometrical relations between different elements in the structure in (9) are dominance and c-command. (i) Dominance refers to a relation in which one node is higher in the structure than another node. XP in (9a), for instance, dominates all the other nodes (YP, X', X and ZP); X' dominates the nodes X and ZP; YP, X and ZP do not dominate any other node. (ii) C-command expresses a relation between a node α and a node β in which the node α does not dominate the node β, but in which every node that dominates α also dominates node β. In (9a), YP c-commands X', X and ZP; X c-commands ZP. In (9b) WP c-commands XP1, X', X, ZP and YP. (9) provides the blueprint for syntactic structure, which is then realized by various categories. We turn to the concrete realization of this format presently.

The format in (9) also constrains movement: basically a constituent of the type head (i.e. X) must move to another position of the type head, while a constituent of the type XP must move to another position of the type XP. In (9a), for instance, we might imagine that ZP moves to the position YP, but not that X moves all by itself to the position YP.

2.3. Lexical categories and functional categories

It is also often assumed that there is a clear-cut distinction between two types of heads: lexical heads and functional heads.[5] Lexical heads are the 'content words' of traditional grammar: they contribute directly to the 'de-

[5] As we will see in Chapter 2 of Part IV, in the recent literature (see e.g. work within the framework of Distributed Morphology and Borer (2005)) this position has been challenged. Several researchers thus claim that sentence elements, such as *noun, verb, adjective* have no universal significance and are essentially derivative from more basic morpheme types. Specifically, the different 'parts of speech' can be defined as Roots which combine with a set of functional heads that determine category. See Embick & Noyer (2004), Embick & Halle (to appear) for further discussion.

scriptive content' of the sentence, i.e. the description of the event or state of affairs expressed in the sentence. Lexical categories 'link' the language with the non-linguistic world, in that they 'denote' entities, properties, activities, etc which are as such non-linguistic. For instance, in (10) the lexical heads are *cat, drink, milk.*

(10) a. The [$_N$ cat] [$_V$ drinks] the [$_N$ milk].

There are four kinds of lexical heads: in addition to N and V, illustrated above, there are adjectives (A) and prepositions (P).

(11) a. The cat is [$_A$ thirsty].
b. The cat is [$_P$ under] the table.

Functional heads do not contribute directly to the description of the event. One of their purposes is to encode grammatical relationships, i.e. relationships among linguistic entities. For instance, functional categories will be involved in expressing the relation of agreement. Consider as an example the agreement between a subject and a verb in English as in (10a): *the cat* is singular and the verb *drinks* has the ending *-s,* which matches the number of the noun. The *-s* morpheme on *drink* is not an inherent part of V. The verb *eat* does not always come with the ending *-s*. Rather, it is a functional morpheme which is added to V for third person singular agreement in the present tense. This agreement morpheme links a singular subject with the verb but it does not modify the event described in the sentence. In a sense, then, the ending *-s* on the verb as such does not contribute to the interpretation of the clause. In Minimalist terms the agreement ending on the verb is said to be [–interpretable].

Now consider (10b):

(10) b The [$_N$ cats] [$_V$ drink] the [$_N$ milk].

Here we find an ending *-s* on the N *cat.* Again the *-s* ending is not an intrinsic part of the noun, in (10b), for instance, there is no such ending. The *-s* ending is added to the noun to encode plural. Though this ending expresses Number, and is a functional element added to the lexical head, the number ending on the N is not uninterpretable: informally speaking, *cat* differs from *cats* in that the former denotes one entity with the relevant properties to qualify as a 'cat' and the latter denotes a plurality of such entities. So

while, in Minimalist terms, the agreement ending on the verb is [–interpretable] that on the N will be [+interpretable].

Functional elements need not be bound morphemes, free morphemes may also be functional. For instance, inserting the modal auxiliary *will* in (10c) also does not modify the event depicted by the sentence.

(10) c. The cat will drink the milk.

The activity referred to in (10c) remains the same as that in (10a). *Will* is a functional element, it does not fundamentally contribute to the description of the state of affairs expressed by the sentence. The function of the auxiliary *will* is to shift the temporal reference of the event into the future. Unlike the case for the agreement morpheme *-s* on the verb in (10a), we cannot say that *will* in (10c) does not contribute to the interpretation of the clause and that it is [-interpretable]. *Will* does have an impact on the temporal interpretation, but it does not alter the state of affairs depicted by the clause. Temporal and modal morphemes are also functional elements because, though certainly not meaningless, they do not have any impact on the event expressed by the sentence.

The third person bound morpheme *-s* in (10a) and the modal *will* in (10c) are functional elements associated with verbs. Extensive research has postulated additional functional categories related to the verb/clause, including a range of aspectual markers, modal markers etc (see Cinque 1999 for a maximally rich array of functional heads associated with the clause).

There also exist functional elements associated with nouns. We have already come across the example of the number ending on N. In the examples above, the functional element *the* is associated with the N *cat* and also with the N *milk*. *The* is a definite article or a definite determiner. Once again, inserting the definite article will not directly contribute to the description of the entity denoted by the nominal constituents: *a cat* and *the cat* both denote a certain type of animal. However, these functional elements, too, are interpretable in that, despite lacking descriptive content, they contribute to the interpretation of the DP. Articles or determiners play a role in the referential properties of the DP: the choice of the definite article in association with an N indicates that we are dealing with entities (‘cat’ on the one hand, ‘milk’ on the other) which are not mentioned for the first time; the definite determiner signals that the referents of the DPs are already accessible in the discourse, we know which cat and which milk we are talking about. By using the indefinite article *a* in (10d) we introduce a novel cat into the discourse.

(10) d. A cat was eating crisps under the table.

Functional categories, whether they are associated with the clause (and ultimately with V) or with the N, share a number of properties (see also Abney 1987: 64f):

(i) They constitute closed classes.
(ii) They are generally phonologically and morphologically dependent, and stressless. Often they are clitics or affixes and sometimes they are phonologically null.
(iii) They are usually inseparable from their complement.
(iv) They lack descriptive content. (See also Ouhalla 1991; Giusti 1997 for further elaboration of these basic properties.)
(v) Functional heads (usually) do not have arguments.

It is a standard assumption that there exists a clear-cut opposition between functional heads and lexical heads and that categories are either lexical or functional. However, as van Riemsdijk has shown (see van Riemsdijk 1998; Corver and van Riemsdijk 2001 for discussion and references), the question arises whether such a clear-cut dichotomy is tenable. In fact, it has been pointed out that in certain cases there seem to be categories which (at least in certain environments/constructions) have properties both of lexical heads and of functional heads (van Riemsdijk 1998).

One case in point concerns motion verbs. Consider for instance the American English use of *go* in (12a) (see among others Jaeggli and Hyams 1993; Pollock 1994):

(12) a. John will go buy bread.

This construction, in which the verb *go* appears followed immediately by a bare infinitive, is subject to a number of restrictions. For instance, the verb may not appear inflected:

(12) b. *John goes buy bread

There is a very restricted number of verbs in English that enter this pattern, namely *come, go, run.* The fact that we are dealing with a closed class may lead us to think that these verbs are functional, rather than lexical. This is confirmed also by the fact that in this use *go* cannot associate with a Goal argument:

(12) c. *John will go to the store buy bread.
d. John will go to the store to buy bread.

Typically, lexical heads are associated with arguments/thematic roles, while functional categories are not associated with thematic roles. Thus it appears as if the verb *go* has two uses in American English: it is either a lexical verb, the 'normal' use, in which case it can take arguments, or it has acquired functional properties, as in the examples illustrated in (12a–c). The analogies of *go* in other languages too, display 'mixed' properties, as shown, for instance, by Haegeman (1990) for West Flemish, by Schoenenberger and Penner (1995) and van Riemsdijk (2002) for Swiss German, and by Cardinaletti and Giusti (2001) for Southern Italian dialects and for Swedish. Elements like *go* illustrated above seem to belong to a hybrid category, in that they are partly lexical and partly functional. Often they are referred to as semi-lexical or semi-functional categories. For further illustration of hybrid categories see also the papers in Corver and van Riemsdijk (2001).

One of the goals of this book is to provide an inventory of the functional categories that have been identified in relation to the nominal domain. We will also examine to what extent they correspond to matching functional categories in the clause. In the next section we survey some of the functional categories associated with the clause level. Once we have established the functional structure of clauses, we can investigate to what extent nominal projections are similar to or different from clauses in the course of this book. Once we decide that clauses contain functional projections such as TP or AspP, we will try to determine to what extent such projections are valid for the nominal projection. This will be discussed in Part II of this book.

Given the evidence for the semi-lexical categories in the clausal domain (see van Riemsdijk 1998, Corver and van Riemsdijk 2001), we may ask ourselves if the same is true for the nominal projection. The answer seems to be positive. Van Riemsdijk (1998), for instance, discusses partitive constructions like (13) from Dutch:

(13) a. een plak kaas
a slice cheese
'a slice of cheese'
b. een snee brood
a slice bread
'a slice of bread'

As the English translations suggest, the two juxtaposed nouns are in a partitive relation. Van Riemsdijk shows that in spite of there being two nouns in the constituent, the behavior of the containing nominal constituent is that of a projection of a single head. In Chapter 2 of Part III we will return to the issue of the presence of semi-lexical heads in the nominal domain, building mainly on van Riemsdijk's work (1998).

2.4. Lexical categories and Argument structure

2.4.1. Verbs and arguments

As mentioned already, lexical heads contribute directly to description of the event or state of affairs expressed in the sentence. Typically, the element which plays the major semantic role in this is the lexical verb. Consider the examples in (14). Depending on the choice of lexical verb, the sentences contain a different number of arguments: (14a) has two arguments, *Topsy* and *the milk*, (14b) has one argument, *Topsy*, and finally (14c) has three arguments, *we, Topsy* and *the milk.* In the traditional literature we will say that *drink* is a transitive or an intransitive verb, *yawn* is an intransitive verb and *give* is a ditransitive verb.

(14) a. Topsy drank the milk
b. Topsy yawned.
c. We gave Topsy the milk.

The number of arguments in a given clause is determined by the type of predicate, here the verb. The predicate (here the verb) assigns a number of thematic roles associated with the participants involved in the event or state described.[6]

There is a one-to-one correspondence between theta roles and arguments within a given clause. In the *Government and Binding* framework, this property of the grammar was expressed in terms of the Theta Criterion, which required that (i) each theta role of a predicate is assigned to one and only one argument, and (ii) each argument is assigned one and only one

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[6] For instance, among transitive verbs some are associated with an Agent and a Theme (ia), others with an Experiencer and a Theme (ib):
(i) a. I picked up the cat.
b. I liked the cat.

theta role. Thus, the Theta Criterion determines the number of arguments which are required and allowed within a clause. For example, the activity described by a verb like *yawn* only involves one participant, the Agent of the action, the verb *yawn* therefore assigns one thematic role and it only requires one argument, in (14b) realized as *Topsy*. The verb *drink* involves two participants, hence it assigns two thematic roles, Agent and Theme, the entity affected by the action. A verb like *drink* therefore requires two arguments. Finally the verb *give* is associated with three participants, the Agent, the Receiver (or Goal), and the Theme.

There is a vast literature on the matching of argument structure with syntactic structure and in this introduction we cannot hope to do justice to all the various approaches. The reader is referred to Baker (1997), Levin & Rappaport Hovav (2005) and Borer (2005) for discussion. We will limit ourselves only to those aspects that will become relevant for the discussion on the presence of argument structure in nominals.

With respect to verb syntax, two approaches to the question of argument structure can be identified. On the one hand, concentrating on the lexical semantics of a verb and the syntactic structures it can occur in, we can discern at least three different levels of representation of the relation between a predicate and its argument(s): (i) a lexical semantic representation, (ii) a lexical syntactic representation, (iii) a syntactic structure representation. The lexical semantic representation of a predicate, often called lexical conceptual structure (LCS), is the 'deep' semantic description, which is probably unique for any particular predicate, or a class of predicates. LCS decomposes the meaning of a verb into structures containing variables and meta-predicates (like CAUSE, BE, etc.). Such a semantic description is mapped onto the lexical syntactic representation, which is often called predicate argument structure or argument structure (AS). AS represents how many arguments a verb requires and to which syntactic argument positions these are linked, for instance by making a distinction between external and internal theta roles (Williams 1981). On this view, the number of arguments a predicate has depends on its meaning. Finally the syntactic representation will articulate argument structure in the extended projection of the predicate. For further discussion of this approach see Alexiadou, Anagnostopoulou & Everaert (2004).

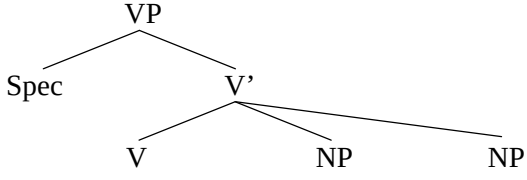
2.4.2. Decomposing the VP

2.4.2.1. Ditransitive verbs and binary branching

The alternative 'decompositional' syntactic approaches to the licensing of arguments are inspired by Larson's (1988) proposals to decompose V.

In a nutshell and simplifying a lot here, Larson's proposal aimed at reconciling the binary branching X-bar format for structure in (9) with the observation that ditransitive verbs have three arguments. Assuming that one of the arguments of the verb could become the subject, the question arose how to deal with the two remaining arguments, which somehow would have to both be internal to the VP. The question is how one VP could contain three arguments. According to the X-bar format, there is one specifier position. If we assume that one argument (the subject) can be associated with the specifier position, then the internal structure of a verb with three arguments would have to be realized by postulating two complements. At first sight one might think of something like (15a):

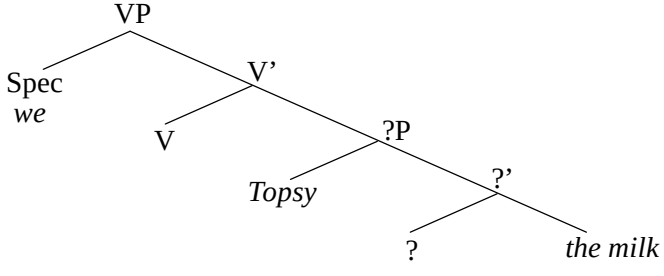
(15) a.



However, (15a) does not respect the binary branching structure since from (V') there are three downward nodes.

In order to overcome this problem, Larson (1988) proposed decomposing the node V and creating layers internal to the projection VP to show internal structural relations between what seem to be two complements. One proposal would be to replace (15a) by (15b) in which the indirect object and the direct object form a constituent, here labelled ?P:

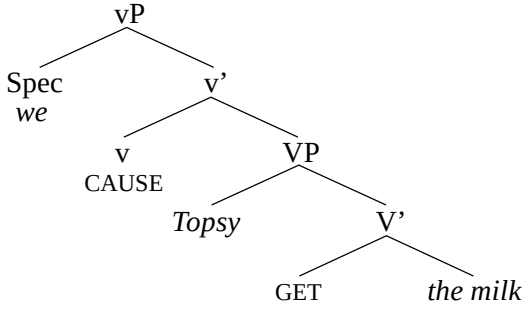
(15) b.



This representation respects the binary branching format. The question arises what label ? corresponds to. One option would be to take into account the interpretation of the verb *give*: 'give' can be compared to 'cause to get': if we give Topsy some milk then we bring it about ('we cause') that Topsy will get some milk. Many verbs can be said to contain such a 'causative' component. It has been proposed that the causative component of a lexical verb be represented by a special symbol, 'v' ('little v'). The causative component of the lexical verb, 'little v', is associated with the Agent role: in (14c) the Agent of the action of giving is *we*. Thus the Agent is represented as the specifier of vP, the projection of causative v.

Between indirect object and direct object there is a possessive relation, brought about by the Agent. The relation between the indirect object and the direct object could be represented by means of the symbol V, and *give* would thus be represented as decomposed into 'cause' and 'get'. CAUSE and GET in (15c) do not stand for verbs that are realized lexically. Rather they represent the semantic primitives that build up the interpretation of the verb *give*.

(15) c.



Observe that in (15c) the indirect object *Topsy* and the direct object *the milk* form one constituent, VP, which excludes the Agent. [7]

There are several other proposals in the literature, but because we will not be dealing in detail with VP syntax we will not go into them. See Baker (1997) and Emonds and Whitney (2006) for recent discussion and evaluation of some proposals.

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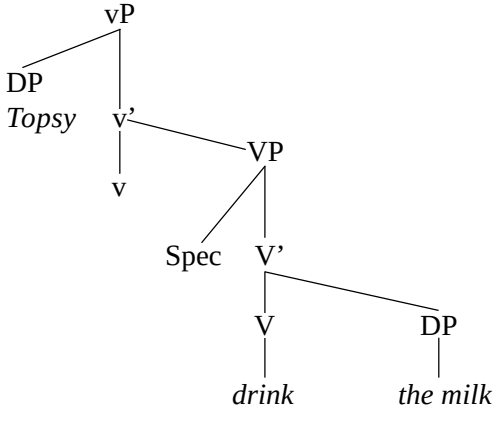
[7] See Part IV Chapter 2, section 3.2. for an implementation of this structure to encode possession in the nominal projection.

2.4.2.2. Extending the proposal

Larson's proposal that V may decompose into different shells (vP and VP in (15c), for instance) has been extremely influential. The layered structure of the VP has been generalized also for the cases in which a verb has only one or two arguments. Hale & Keyser (1993) and Borer (2005) suggest that the syntactic structure gives rise to a template which in turn determines the interpretation of arguments. Essentially, what we could call lexical heads are decomposed and their internal structure encodes the different semantic relations between the various arguments. This view has been adopted in the Minimalist program, leaving the status of the theta-criterion rather unclear. Below we provide a sketch of the motivation for the decompositional approach. For more details the reader is referred to the literature.

Hale & Keyser (1993) generalize Larson's VP-shell analysis to monotransitive verbs such as *drink* and propose that the thematic role of Agent, the entity that initiates the action, is always associated with a separate ('causative') head v ('little v'). The internal argument of a monotransitive verb occupies the complement of the lower VP-shell and the external argument is generated in the specifier position of a higher vP shell. In this view, each thematic role is uniquely related to a head, i.e. the internal theta role is related to the lower V-head and the external theta role to the higher v-head. [8]

(16) a.

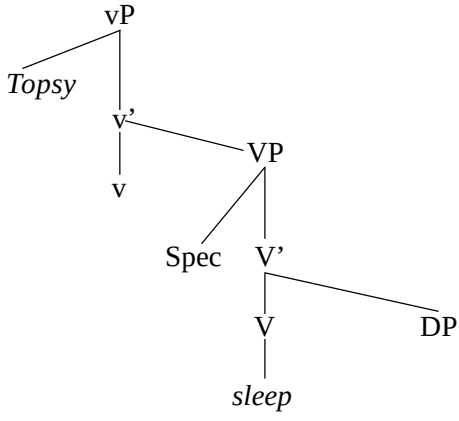


[8] As the reader can observe, the final step in this development would be to decompose the representation of (15c) even further and to also analyse ditransitive verbs in terms of structures involving a separate head for each argument (cf. e.g. Collins 1997: 53ff.; or Marantz 1993: 115ff.). We will not go into this issue here as it will not affect the discussion at this point.

Note that with respect to the functional/lexical divide, the status of 'v', the head which is related to the external argument, is not completely clear. For instance, Chomsky (1995) proposes that v is somehow both lexical and functional. Other labels have also been proposed for the head related to the external theta role, such as Voice (Kratzer 1994), Act(ive) (Holmberg & Platzack 1995) or Tr(ansitivity) (Collins 1997).

The decomposition of V is also extended to one-argument verbs, and is used to draw the distinction between unergative verbs such as *sleep* or *telephone* and ergative verbs such as *arrive, come*. Unergative verbs are treated as concealed transitives in this system in that they have a non-overt (cognate) object, see (16b), while unaccusative verbs either lack vP altogether, or contain one with no projected specifier (Chomsky 1995: 315):

(16) b.



2.4.3. Nouns and arguments

Having established that the argument structure of V determines the presence of a number of other components of a clause, Part IV of this book addresses the question whether the same applies for the relation between N and its projection.

As illustrated in our examples in (3b) above, one might wish to say that nouns too are associated with arguments. In the earlier example the genitive DP *Caesar's* seems to refer to the Agent of *destruction*, in the same way that *Caesar* is the Agent of *destroy* in (3a). Since the NP/DP is a projection of N, a lexical head, the question that arises is that of the licensing and inheritance of argument structure in the nominal domain, which we will ad-

dress in Part IV of this book. As we will show in that chapter, proposals with respect to the argument structure of the nominal head are similar to those that have been put forward with respect to the verbal projection in that again, both semantically based proposals and structurally based proposals have been put forward.

2.5. Functional projections

2.5.1. Evidence for functional projections

In general, three types of evidence are advanced for postulating functional categories/heads: semantic, morphological, and syntactic/distributional. In this section we will show how this evidence has been applied for postulating a head position in the clausal domain and we will further discuss, for each type of evidence, how an analogical reasoning could lead us to postulate a functional head in the DP. It should be emphasized that the three types of evidence cannot always be separated as they are here (for ease of exposition). More often than not, morphological, semantic and distributional evidence will converge to corroborate postulation of a functional category.

(i) Semantic arguments

A first type of evidence for postulating functional projections is semantic. The line of reasoning is roughly as follows. Lexical categories may be taken to express certain concepts, but in the context of clauses, these 'lexical' concepts are associated with additional notions. The idea is then that these additional notions are encoded in functional heads that are associated with the lexical head in question.

For instance, and simplifying a lot here, consider the sentence. It can be said that its semantic core is the verb and that a verb phrase expresses some action or state. However, to describe the meaning of the sentence as a whole, we need to take into account that a sentence adds a temporal dimension to the action/state expressed by the verb. The temporal reference associated with a clause is to some extent independent of the verb in that one may choose one such temporal expression among the various available ones (say past tense vs. future tense) in a given language. Verbs are not tensed 'as such'. The observation that sentences are associated with a temporal reference, and that this is not an inherent property of the predicate (verb or adjective, for instance), may then lead us to postulate a specialized

head to encode temporal reference. The head that encodes temporal reference can be labeled Tense (T); it selects a projection of V as its complement and it projects a TP.

In the nominal system we can apply the same reasoning. Constituents headed by nouns denote entities (persons, things) but they also contain information concerning reference (see section 2.3.). Since such information is not an inherent part of the noun, it is proposed that there is a specialized head D to encode the referential status of the nominal projection. D selects NP as its complement and projects DP. From the early days of the DP-hypothesis, D has been linked with encoding reference. It has also often been observed that projections headed by nouns may function either as arguments or as predicates, in the latter case the constituent is not referential. In a number of languages, an NP used as an argument will obligatorily have to be accompanied by a determiner, while a NP without the determiner may be used as a predicate. Hence, a functional head D has also been postulated to encode argument status.

Nominal projections may refer to one or more entities. This difference concerns number, and again number is not intrinsically part of the N: informally put, we choose the number of the noun depending on the intended interpretation. The fact that a projection of a noun (or, taking into account the functional structure, a DP) can be interpreted as referring to one (singular) or to any number (plural) of entities was taken as evidence that a specialized projection for encoding Number, namely NumP, should be postulated. As we will see in some detail in the first chapter of Part III, for instance, Bouchard (2002), attributes the referring capacity of noun phrases to the properties of the semantic category of Number.

(ii) Morphological evidence

Another type of evidence for postulating functional categories is morphological. In many languages when lexical heads are inserted into a sentence they do not come ‘bare’, that is as mere stems. Rather, they are associated with inflectional morphology. Because morphology is variable (for instance the verb may be associated with a choice of tenses) it is not taken to be an intrinsic part of the lexical head as such, but rather it can be argued that the inflectional morphemes constitute functional heads in the extended projection of the lexical head.

Let us see how the morphosyntactic argument works. The observation that verbs can be associated with inflectional morphemes related to mood, agreement, tense, aspect and voice is invoked as evidence for postulating

the relevant functional heads, such as, for instance, Agr, T, Asp, Voice. Again Ns often inflect for number, which would be taken as evidence for postulating a functional head Num, thus supporting the NumP hypothesis. In a similar vein, many researchers have further postulated a Gender Phrase, based on the fact that at least in some languages nouns are marked for Gender (or Word Class, cf. Picallo 1991; Bernstein 1993). Although an obvious difference between verbs and nouns might seem to be the presence of tense morphology in the former and its absence in the latter, there are languages in which nouns may be argued to be morphologically marked for tense. Thus, at least for these languages the morphological evidence could be said to support postulating a Tense Phrase as a candidate for a functional projection in the nominal domain (see for instance Wiltschko 2003 on Halkomelem Salish, and Matthewson 2005 for a different view). Similarly, in the same way that aspectual projections are postulated for the clause on the basis of the aspectual inflection of the verb, some languages seem to provide morphological evidence for aspectual morphology, hence aspectual projections within the extended projection of N (Alexiadou & Stavrou 1998a; Alexiadou 2001a for Greek).

It is clear that in many cases the semantic argument and the morphological argument will coincide, since a semantic concept will often have a morphological expression, and an inflectional morpheme will usually have some interpretative effect. They are, however, not identical. One case in point has already been mentioned: while in English the *-s* ending on plural nouns may be directly linked to their interpretation, in that it encodes plurality, it is not clear that the third person singular ending on English verbs has a semantic reflex.

The morphological argumentation is often further supported by the observation that a bound inflectional morpheme in one language corresponds to a free morpheme in another language. Since the latter case would motivate postulating a head position, one might invoke a similar position for languages in which there is a bound morpheme. For instance, while English uses a free morpheme (*will*) to express future time, French uses a bound morpheme, the so called future tense. Thus the fact that one needs to postulate a position to host *will* in English could be used in support of postulating a similar head in French. However, this kind of reasoning presupposes that one assumes a universal hierarchy of projections (cf. Cinque 1999).

The universal hierarchy argument could be used in support of postulating a head num within the noun phrase since there are languages such as Gungbe, described by Aboh (1998), in which number is expressed by a separate free morpheme:

(17) távò xóxó dàxó éhè ló lɛ
table old big this the PLURAL
'these big old tables'

Observe that the word order internally to the DP in this language is almost a perfect mirror of that found in English. We will return to this example in section 2.6.3.3.

(iii) Distributional/syntactic evidence

As discussed above, the distribution of the lexical head within the constituent which it heads may also be interpreted as evidence for functional projections. Two types of argumentation are relevant here. These were formulated by Taraldsen (1990). The first type of argument essentially relates to the distribution of heads and is based on three widely accepted axioms of the *Government and Binding* model: (i) a head can only move to a head position; (ii) every head X_0 is the head of maximal projection X_n; and (iii) a moved constituent must c-command its trace (Taraldsen 1990: 85–86). The second type of argument relates more to the distribution of XPs and is based on the premise that every X_n dominates at most one specifier (see Taraldsen 1990 for details). Let us consider some illustrations.

Consider the first type of argumentation. The distribution of the lexical verb with respect to adverbial adjuncts and to markers of sentential negation shows that the verb cannot always be assumed to remain in its base position. This is illustrated by the contrast between English (18a) and French (18b)[9]:

(18) a. Nelson always eats biscuits.
b. Nelson mange toujours des croquettes. (French)
Nelson eats always biscuits

In (18a) the verb *eats* is adjacent to its direct object *biscuits.* We might assume that it occupies its base position in the VP. In the French example (18b), the verb *mange* is separated from its object *des croquettes* ('biscuits') by an adverbial adjunct, *toujours* ('always'). This suggests that in (18b) V is not inside VP but has moved leftward. If V moves then we must conclude that there is a landing site available, i.e. we must postulate a functional head. In English, there is no evidence of this kind, because lexical

[9] See Emonds (1978) for a first discussion.

verbs fail to occupy displaced positions, but auxiliaries seem to be able to occupy different positions, suggesting that they move. Thus in (18c) the non-finite auxiliary *have* occupies a lower position than its finite counterpart in (18d).

(18) c. Nelson will already have eaten the biscuits.
d. Nelson has already eaten the biscuits.

By analogy, evidence that N may occupy more than one position in the nominal constituent could lead us to assume N-movement and hence to postulate specific head positions as landing sites for N. We have already briefly discussed one example of this type in section 1, see the data in (4).

The second line of argumentation concerns the distribution of maximal projections and is invoked when two constituents in an extended projection seem to have specifier properties. Such evidence will lead to postulating two specifiers, hence two heads. In other words, in addition to a lexical head, which can provide one specifier slot, at least one functional head is required in order to provide the second specifier.[10] For instance, it has been observed that in some languages subjects may occupy different positions in the clause. In (19) we illustrate the case of Dutch:

(19) a. Dat er morgen drie studenten vertrekken.
that there tomorrow three students leave
'That there are three students leaving tomorrow.'
b. Dat drie studenten morgen vertrekken
that three students tomorrow leave.
'That three students are leaving tomorrow.'

In (19a) the subject DP *drie studenten* ('three students') is adjacent to the lexical verb *vertrekken* ('leave'); in (19b) it is separated from the verb by the adjunct *morgen* ('tomorrow'). This might lead us to conclude that the maximal projection *drie studenten* has undergone leftward movement. If the movement of the subject in (19b) can be argued to target a specifier position, then we need to postulate at least one functional head whose specifier can host the moved DP. The functional head whose specifier is the

[10] The argumentation is based on the assumption that each projection has just one specifier. See section 2.5.3.2., however, for alternatives which would invalidate this line of argumentation.

canonical VP-external subject position has been identified as AgrS (but see section 2.5.3.1) or as T. A similar point could be made on the basis of the Icelandic examples (19c) and (19d):

(19) c. Hann las ekki baekur. (Icelandic)
he reads not books
'He doesn't read any books.'

d. Hann las baekurnar ekki. (Icelandic)
he read the books not
'He doesn't read the books'

In (19c) the indefinite object DP *baekur* ('books') follows the marker of sentential negation e*kki*, in (19d) the definite object *baekurnar* ('the books') precedes it. The leftward movement of definite object has sometimes been referred to as 'object shift' (Holmberg 1986). If object shift in (19d) can be argued to target a specifier position, then we need to postulate an additional functional head whose specifier can host the moved DP. The functional head whose specifier hosts a moved object has sometimes been identified as AgrO (Belletti 1990; Chomsky 1991, 1995) (but see 2.5.3.1).

Again, if we observe that DP-internally, maximal projections may occupy different positions this can motivate postulating specifier positions, and by implication it provides indirect evidence for functional projections.

As we will also discuss in Chapter 1 of Part III, the position of sentential adverbials has also been interpreted as evidence for postulating functional projections in the clause. It has been proposed that adverbial modifiers are the specifiers of specialized projections. For instance in (20a) the adverbs *frequently* and *viciously* have been argued to be specifiers of functional projections.

(20) a. Mary frequently viciously criticized John.

(20b) is a nominalization related to (20b): the adverbials in (20a) correspond to adjectives (*frequent, vicious*) in (20b):

(20) b. Mary's frequent vicious criticism of John

If adjectival modifiers in the DP are seen as the analogies of adverbial modifiers in the clause, then again the functional projections postulated for hosting adverbial adjuncts in the clause could be replicated in the extended projection of the noun where they would host adjectives.

Using the type of argumentation sketched above, research on the structure of the clausal domain has provided us with a very rich inventory of functional projections.

Initially, standard generative approaches to clause structure propose that in the build-up of the clause three distinct layers can be distinguished. (i) The VP layer is projected around the lexical verb. This layer is the semantic core of the clause: it contains the predicate and its arguments. (ii) The IP layer is projected around the inflectional head (I), which encodes modal, temporal and aspectual properties of the clause. (iii) The CP layer is the interface between the propositional content of the clause and the context: it is projected on the basis of the position C, which hosts, among other things, subordinating conjunctions such as *that* or *if*.[11] The CP layer is often referred to as the 'left periphery'.

It is assumed that the subject originates VP internally (see section 2.4.2). In English the subject moves to the specifier of IP, represented as SpecIP. Originally the requirement that the subject move to the specifier of IP (i.e. SpecIP) was referred to as the 'Extended Projection Principle'. Nowadays in the Minimalist tradition the label EPP is used more widely to refer to the fact that a particular head requires a specifier. Such a head is then said to have an EPP feature. We return to the movement of the subject in section 2.5.2.2.1.

(21a) is a schematic representation. For ease of exposition we do not decompose the transitive VP into vP and VP. We represent nominal projections as 'DP'.

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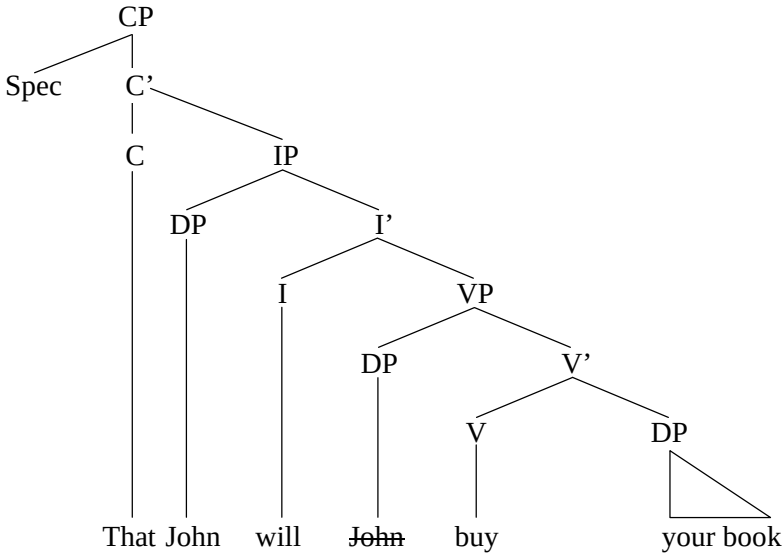
[11] In main clauses C is either non-overt (ia) or it may be filled by the auxiliary in contexts of subject-auxiliary inversion (ib). In (ib) the auxiliary *will* has moved from its position IP to the position C. It leaves a coindexed trace in its original position.

(i) a. $[_{CP}\ [_{IP}$ I will $[_{VP}$ talk to John]]]
b. $[_{CP}$ Will$_i$ $[_{IP}$ you t_i $[_{VP}$ talk to John]]]

As mentioned before, in the representations, the symbol t stands for the 'trace' of the moved constituent, with which it is coindexed. For instance, t_i is the trace of the fronted auxiliary *will* in (ib). (ic) uses the strikethrough notation

(i) c. $[_{CP}$ Will $[_{IP}$ you ~~will~~ $[_{VP}$ talk to John]]]

(21) a.



Later work in the wake of Pollock (1989) suggests that the clause structure is more richly articulated than this. For instance, it has been argued that IP should be decomposed into the components T (tense) and Agr (agreement). We refer the reader to section 2.5.1. for a brief summary of the argumentation. See also Pollock (1989, 1997). For a critical discussion see also Iatridou (1990).

Further comparative research has revealed the need for postulating additional functional nodes in the domain between V and C, e.g. Mood, Aspect and Voice. On the basis of this, we end up with a rich clause structure in which IP is argued to decompose into at least the following projections:

(21) b. MoodP > AgrP > NegP > TP > AspP vP/VoiceP VP

It has also been argued that CP should be decomposed into different functional projections. In particular, on the basis of a range of theoretical and empirical considerations of the same nature as those discussed above, Rizzi (1997) proposes that the head C (cf. (21a)) be decomposed into a number of separate projections. In addition to a Force head, associated with encoding illocutionary force, and a Fin head, which characterizes the morphological properties of the complement clause, the CP domain may also contain a unique Focus projection, FocP, whose specifier hosts the focalized constituent and whose head hosts an abstract Focus-feature, and a recursive

Topic Projection, whose specifier hosts a topicalized constituent and whose head hosts a Top feature.

(21) c. ForceP > TopP* > FocP > TopP* > FinP

Given the discussion above, clauses are interpreted as extended projections of V, i.e. projections of V augmented with a range of functional projections (see Grimshaw 1991 for the notion of extended projection). Obviously, once we assume that there is a wide range of functional projections dominating VP, the question can be raised whether there are also functional projections that dominate NP within the extended projection of N, and whether one can identify the same type of functional projections in the nominal domain. Part II of this book mainly deals with this question.

2.5.2. Functional projections, movement and agreement

2.5.2.1. Features and agreement

Functional projections are projections of functional heads. In the clausal domain, a functional head, say T, will select an extended projection of V as its complement. T, for instance, selects AspP. A functional head can attract a lower head, for instance, T may attract V. As each projection contains a specifier position, these specifiers will provide us with additional positions which are the landing site for movement (see our earlier reference to Taraldsen 1990). For instance, the specifier of TP is available for movement. With respect to the clause, two types of movement have been distinguished in the literature: (i) head movement and (ii) movement of maximal projections. The status of head movement is unclear in current versions of the Minimalist Program. We do not dwell on this very much here. The reader is referred to (Chomsky 2001; Lechner 2005) for extensive discussion.

The Minimalist Program attributes an important role to features in the derivation of the sentence. Features basically drive the concatenations of elements that will build up the sentence. Heads (both lexical and functional) may be associated with features. For instance, as we have seen already, both verbs and nouns may be associated with agreement features such as number. Some features are said to be interpretable or valued, others are not interpretable or unvalued. As discussed above (see the discussion of

(10a, b) in section 2.3.) the feature Number is interpretable (or valued) on nouns, whereas it is uninterpretable (or unvalued) on verbs. Uninterpretable features are not tolerated by the system and must be eliminated by checking. Alternatively, in a system that uses feature valuation, unvalued features must be valued.

In principle, the checking of uninterpretable features – or, in the alternative approach, valuation of unvalued features – can be achieved without movement. Let us briefly outline how both of these systems work. Say a particular functional head contains features that are [–interpretable] or [–valued]. If they remain in the derivation the structure cannot converge. For [–interpretable] features to disappear, they must be matched with corresponding [+interpretable] features. The very presence of uninterpretable features renders them active, so that they can search or 'probe' in their c-command domain for matching interpretable features. Once such features are located on a goal, they are matched with the uninterpretable features of the probe, matching leads to agreement, agreement will check and eliminate an uninterpretable feature.

Observe that the presence of an uninterpretable feature on a probe does not irrevocably lead to movement. Whether or not movement also occurs depends on some other property of the system. For instance, if a head carries an EPP feature, this feature will trigger movement.

In an alternative formulation features are [+/– valued]. [–Valued] features must be valued, that is to say they must receive a value. Again, in order for unvalued features to receive a value they must enter an Agree relation with a suitable goal, which will contain matching valued features. Again, the presence of unvalued features renders them active, so that they probe in their c-command domain for matching features. Once such features are located on a goal, they are matched with those of the probe; matching leads to agreement, and hence valuation of the unvalued feature. Again, whether or not movement also occurs relates to other properties of the system such as the presence of EPP features.[12]

We have already alluded to the contrast between intrinsic features and non intrinsic or optional features. This point will be relevant when we discuss the functional projections in the nominal domain. Intrinsic features are

[12] Whichever system (valuation or checking) is adopted, it is also clear that movement must be triggered. A constituent will not move without such a trigger. As mentioned in section 2.1., movement is a last resort operation.

those features that are an inherent inseparable part of a lexical item. Non-intrinsic or optional features are those features that can be varied. That is to say, their value can be chosen and this choice is made via the Numeration, the set of items which constitute the building blocks for the derivation. For instance, as we will discuss in detail in Part II, Chapter 3, whereas Gender is an intrinsic feature of the nouns, Number is an optional (or non-intrinsic) feature. Number is a category the values of which (singular/plural or other) can be chosen, or put differently, Number features are varied. Gender, as a rule, cannot be chosen: its values form part of the noun itself.

2.5.2.2. Types of movement

In the *Government and Binding* tradition, two types of XP movement are postulated: (i) A-movement and (ii) A'-movement. For discussion of the contrast we refer to standard textbook introductions such as Haegeman (1994) and Radford (1998). The contrast between the two types of movement has so far been maintained in the Minimalist tradition. We give a brief overview of how movement operates. Observe, though, that the discussion below is a simplification and that there are many different implementations of the fundamental ideas.

2.5.2.2.1. A *movement*

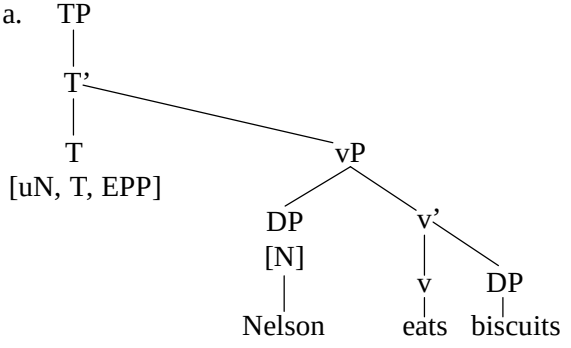
It is assumed that the clausal subject DP originates in a VP-internal position. For transitive verbs this is the specifier position of vP. However, it is clear that the subject DP, *Nelson* in (18a) for instance, does not remain VP-internally. If it did, we would expect it to be adjacent to the lexical verb *eats*. In order to account for the fact that the subject is separated from the VP domain and ends up in the canonical subject position, SpecTP (or SpecIP), it is assumed that the subject has to undergo leftward A-movement.

If the subject moves to SpecTP then we can assume that the trigger for the movement is an uninterpretable feature located on T. What could this feature be? We have proposed that nominal projections have interpretable [Number] features, while the Number features associated with verbs are uninterpretable. Observe that Number inflection on verbs is also a function of finiteness: in English and in French only tensed verbs can be associated with Number. Let us assume that the uninterpretable Number feature of the verb is encoded on Tense. Thus for the derivation to converge we must eliminate this uninterpretable feature on T. Recall that the presence of unin-

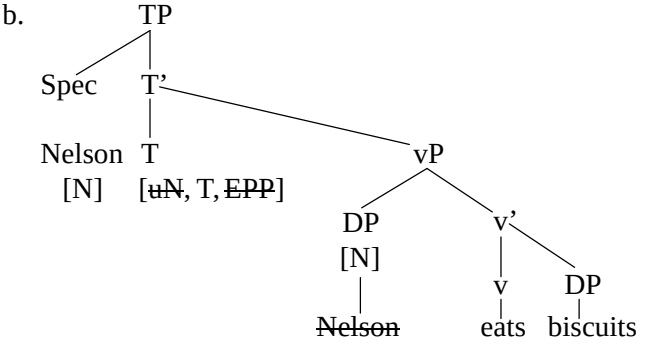
terpretable features renders them active, so that they probe for matching features in their c-command domain. So the uninterpretable number feature on T will search for a goal with a matching feature in the clause. The subject DP, in SpecvP, is such a goal. Once the matching interpretable feature is located on the goal, it is matched with that of the probe, matching leads to agreement and leads to the elimination of the uninterpretable Number feature.

Observe that the subject DP does not move to SpecTP because of the presence of the uninterpretable number feature. Rather it is assumed that T has a so-called EPP feature, and it is this feature which requires the filling of the specifier of T. (22) summarizes the derivation:

(22) a.



b.



The moved DP *Nelson* leaves a copy in its original position: this is represented by strikethrough in (22b).[13]

[13] Recall that in the Minimalist tradition, copies replace the earlier concept of traces (see section 1).

In (23) we illustrate A' movement. A constituent of the clause has moved to the left periphery: the leftward movement of interrogative constituents *how important* in (23a), and *what* in (23b), marks the clauses as questions.

(23) a. [$_{CP}$ [$_{DP}$ What] will [$_{IP}$ the cat ~~will~~ eat ~~what~~]]?
b. [$_{CP}$ [$_{DP}$ How important] will
[$_{IP}$ the movement ~~will~~ become ~~how important~~]]?

The system elaborated above will also be implemented to account for A' movement. In particular, for movement of interrogative constituents it could be assumed, for instance, that their interpretable [WH] feature can check the uninterpretable [WH] feature on C. Once again, movement as such will be triggered by an additional EPP feature on C.

2.5.2.3. Features and movement in the nominal projection

If we assume the mechanisms for movement outlined above for the clause then the question will arise whether they are also applicable in the nominal projection. We will return to the concept of head movement in Part II, Chapter 1 and in Part III, Chapter 1. At various points in the book we will also turn to the issue of DP movement within the nominal projection.

2.5.3. Challenging functional projections

2.5.3.1. AgrP

In section 2.5.1. we saw that morphological evidence has been used to postulate functional projections. By this reasoning, the fact that verbs are inflected for agreement had led to the assumption that the functional domain of the clause contains an Agreement projection, AgrP (see (21b), Pollock 1989; Chomsky 1991). Initially, support for AgrP was also provided on the basis of the distribution of finite verbs. For instance, based on the contrast between the finite verb and the infinitive in French, Pollock (1989) concludes that IP must be split into at least two projections, which he labels TP and AgrP. The data are provided in (24):

(24) a. Jean ne mange pas souvent de chocolat.
Jean NEG eats not often chocolate
'Jean doesn't often eat any chocolate.'

b. Ne pas souvent manger de chocolat, c'est triste.
NEG not often eat chocolate, it is sad.
'Not often eating chocolate is sad.'

c. Ne pas manger souvent de chocolat, c'est triste.
NEG not eat often chocolate, it is sad.
'Not often eating chocolate is sad.'

We see that in (24a) the finite verb *mange* ('eats') precedes the marker of sentential negation *pas* as well as the adverb of frequency *souvent* ('often'). This order can be derived if we assume that the verb moves from its base position to a higher functional head. In (24b) the infinitive *manger* ('eat') is adjacent to its object *de chocolat* ('chocolate') and follows the adverb *souvent.* Arguably it occupies a position in the VP. But in (24c) the infinitive is found between *pas* and *souvent:* this suggests that it is not VP internal, neither does it occupy the functional head position which it occupies in (24a). We conclude that there must be another landing site for V, between the negation marker and the adverb. In other words, IP decomposes in at least two projections. Pollock (1989) proposes that TP dominates AgrP. Based on morphological evidence, however, Belletti (1990) proposes that AgrP dominates TP (see also Pollock 1997 for a refutation).

However, consider what it would mean to assume a projection AgrP in terms of the checking theory we have outlined above. Assuming that AgrP dominates TP, we would assume that the subject DP ends up in SpecAgrP, that 'verbal' agreement features on Agr, such as Number, are [–interpretable] (or unvalued) and that the agreement features on the noun (Number, say) are [+interpretable] (or valued). The [–interpretable] features on Agr will be a probe searching for a matching interpretable feature in the c-command domain: this search will locate such features on the subject DP in SpecvP and by agreement the uninterpretable features on Agr will be checked and deleted. As a result, though, Agr, which by hypothesis only contains uninterpretable agreement features, would really have no features left any more.

In early versions of Minimalism (Chomsky 1991), uninterpretable features, such as agreement features associated with the verb, were taken to be able to project their own functional category. This view has subsequently been called into question (Chomsky 1995: Chapter 3) and such features are

now often taken to be licit only when associated with heads that also have interpretable features. So, for instance, the uninterpretable agreement features associated with the verb are located on Tense, which itself also has the interpretable Tense feature.[14]

2.5.3.2. Multiple specifiers

We have also seen that the distribution of maximal projections can be the basis for postulating functional heads. For instance, we may observe that there is a need for two specifier positions in a particular domain. Assuming that a lexical head can have only one specifier, then, if there is a second specifier position, we are led to assume that there will be a second functional head. However, this argumentation can also be challenged. In particular the restriction that each head has one specifier is not universally accepted and it has been proposed that a head might have more than one specifier. For instance, Koizumi (1995: 141) proposes that the CP domain contains one functional projection PolP, 'Polarity Phrase'. Pol selects IP as its complement; the head Pol can host a number of different features. Each feature requires checking and if each feature is associated with the EPP property, then this leads to multiple movement and to multiple specifiers. The checking features of Pol are hierarchically ordered: the focus-feature or the wh-feature is checked in the inner specifier and the topic feature is checked in the outer specifier. In (25a) the complementizer *che* ('that') is followed first by a topicalized constituent *a Gianni* ('to Gianni'), which is followed by a focused constituent, *il tuo libro* ('your book') and followed by an adjunct of time *domani* ('tomorrow'). It could be argued that a head Pol takes IP as its complement and that this head hosts the relevant features (FOCUS, TOPIC etc) to attract the constituents in the left periphery. Similarly, in French (25b) the topicalized constituent *ce livre-là* ('that book') precedes the focused interrogative constituent *quand* ('when'). Again Pol could be argued to have a TOPIC feature and a FOCUS feature. Thus in both (25a) and (25b) Pol would have multiple specifiers.

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[14] The question whether clausal agreement projections should be admitted has not been given a final answer. For arguments in favor of agreement projections see also Belletti (2001), Guasti and Rizzi (2002), Neidle and MacLaughlin (2002), Pollock (2006: 644, note 25).

(25) a. Dicono che a Gianni IL TUO LIBRO domani gli dovremmo dare (Italian)
they say that to Gianni YOUR BOOK tomorrow him we-should give
'They say that tomorrow YOUR BOOK we should give to Gianni.'

b. Ce livre-là, quand l'as-tu acheté ? (French)
This book there, when it have you bought
'This book, when did you buy it?'

In this way the system ensures that more than one maximal projection is associated with the CP domain without associating each moved constituent with a separate head. Rather than having an array of functional projections in the CP domain, as proposed by Rizzi (1997), and summarized in (21c) above, there is just one single head with multiple specifiers. The hierarchical organization of feature checking in the C-domain mimics the hierarchy of the functional projections postulated above.

2.6. Deriving variations in linear order

2.6.1. Cross-linguistic variation in linear order

So far we have mainly used data from English and French in which typically the head precedes the complement. For instance, a verb precedes the direct object. However, it is well known that languages vary with respect to the relative positions of heads and their complements. We have already discussed the difference in word order between languages and to account for that we have used head movement (see (18)). Observe that apart from differing in V-movement, English and French are similar in the unmarked positions of subject (*Nelson*, object (*biscuits*, *des croquettes*), and the frequency adverb (*toujours, always*). The unmarked order is always subject >adverb>object. The unmarked order is also that in which the verb (and the VP) follows the auxiliary:

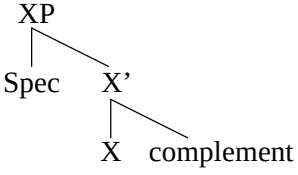
(26) a. Nelson has always eaten biscuits.
b. Nelson a toujours mangé des croquettes. (French)
Nelson has always eaten biscuits

However, other languages display other orders. For instance, Dutch embedded clauses display the order object-verb, and the auxiliary may also follow the verb:

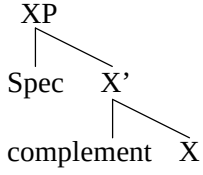
(26) c. Dat Nelson altijd koekjes gegeten heeft
that Nelson always biscuits eaten has
'That Nelson has always eaten biscuits.'

One approach to such cross-linguistic variation has been to propose that there is parametric variation in the directionality of the projection schema and that the structure of Dutch is to some extent the mirror image of English and French. More precisely, it has been proposed that the X-bar schema as elaborated in section 2.2. (see (9)) only specifies hierarchical relations, and that it does not provide information concerning linearity. Thus the schema in (9), should in fact be read as allowing both specifier-head order and head-specifier order, and as allowing both head-complement order and complement-head order. It is proposed that the ordering variation is a matter of parameter setting. Thus it could be said that in English specifiers consistently precede their heads, complements consistently follow them and that in Dutch there is some variation: while C, D and P, for instance, precede their complements, I and V follow them.[15]

(27) a. English; Dutch CP, DP,PP:



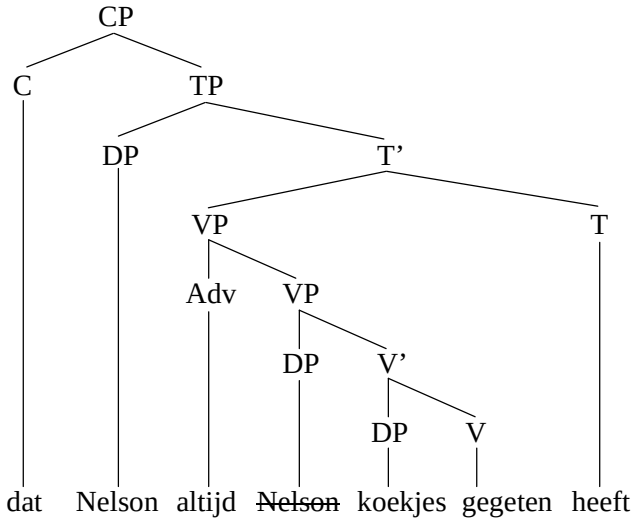
b. Dutch IP and VP:



Implementing this variation on the structure of the clause, for instance, we could then end up with the structure in (27c) for Dutch. (27c) is very sketchy. In particular we leave aside all articulation in the TP domain, we leave aside VP-shells, we insert the auxiliary in T and we adjoin the adverb to VP.

[15] Needless to say, the fact that one has to stipulate which projections are head initial and which are head final is not attractive.

(27) c.



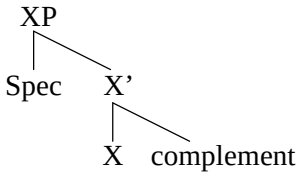
Consider now the Malagasy examples (28a), taken from Pearson (1998: 2), his (8), and (28b) taken from Rackowski & Travis (2000: 120), their (6):

(28) a. Nijinja vary tsara ny mpamboly.
past-cut rice well det farmer
'The farmer harvested rice well.'

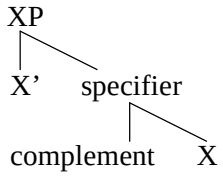
b. Manasa lamba tsara Rakoto.
wash clothes well Rakoto
'Rakoto washes clothes well.'

What is striking about these examples is that the verbs (*nijinja* ('cut'), *manassa* ('wash')) are sentence-initial and that we find the order object-adverb-subject. We might wish to derive the Malagasy examples by V-movement. However, simple verb movement is not sufficient since this will not give us the right ordering of object-adverb-subject. In fact, with respect to the relative order of the non-verbal constituents in the clause, Malagasy presents the mirror image of English and French. One might once again propose that there is parametric variation in the directionality of the projection schema and that the structure of Malagasy is the perfect mirror image of English and French. Thus while English (and French) have the ordering in (29a), Malagasy would have (29b):

(29) a.

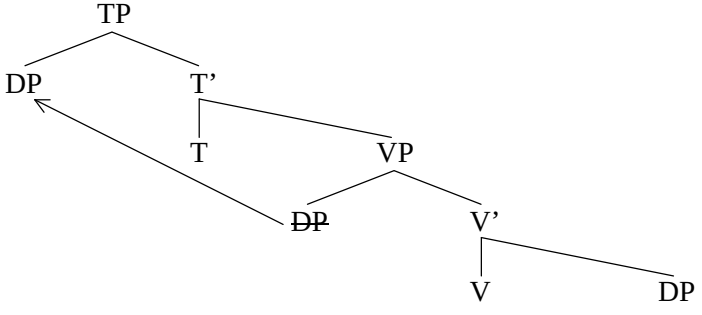


b.

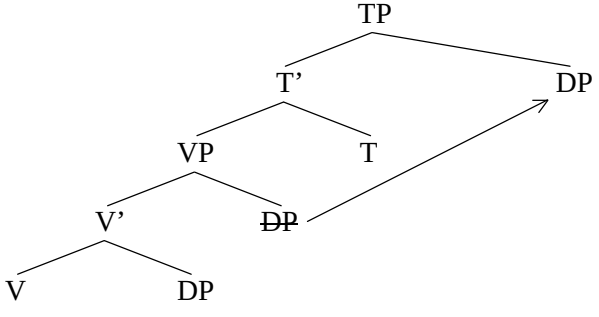


Implementing this variation on the structure of IP, for instance, we end up with the structure in (30a) for a consistently right-branching language, and with that in (30b) for a consistently left branching language. We simplify the structure by ignoring the split IP and VP-shells.

(30) a.



b.



If we also assume that the Malagasy subject DP moves rightward, from SpecvP into SpecTP then example (30a) would fit the right-branching structure in (30b).

2.6.2. Antisymmetry and linear order

As an alternative to the directionality parameter to account for linearization differences between languages, Kayne (1994) proposes the universal base

hypothesis, the proposal that the system builds up identical structures across languages and that the universal schema is the X-bar format presented in section 2.2. (9).[16] All variation in linear order is derived by movement. Let us first briefly summarize the essence of his proposal.

2.6.2.1. Antisymmetry

Kayne proposes that linear ordering is fully determined by structural hierarchy. His Linear Correspondence Axiom (LCA) states that only antisymmetric relations are admitted between nodes in a structure, hence the label 'antisymmetry'. This means that if a node α c-commands node β then β must not c-command α.[17] Mutual c-command between two nodes is symmetric, violating antisymmetry. Structural c-command maps into a left-right linear ordering. Hence, specifier head and head complement are the only possible base orders, and all variation in which, say, a head precedes a specifier and a complement precedes a head are derived by movement. Moreover, since a moved element targets a c-commanding position, all movement is to the left. Thus neither the base structure in (30b) nor the required rightward movement of the subject would be admitted under his view (for discussion see Beerman et al 1997). The derivation of the English pattern is not problematic, nor is that of French, in which we continue to assume that V moves to an inflectional head.

2.6.2.2. Deriving OV-orders

Assuming the X-bar framework as in (9) above for Dutch has the advantage that we no longer need to stipulate which projections are head initial (CP, DP, PP) and which are head final (IP, VP): all projections are head initial. However, how would we derive the order of Dutch embedded clauses in which the object precedes the verb? There have been a number of proposals in the literature, and for reasons of space we cannot elaborate them all. Here we will just look at the derivation of the OV order.

One proposal is that the OV order in Dutch (and German) is derived by the movement of the object to the right. One implementation of this idea is to propose that the object DP moves to the outer specifier of vP. Thus in

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[16] Kayne does not allow for adjunction or for multiple specifiers.

[17] For the concept 'c-command' see section 2.2.

(31a), the direct object *koekjes* ('biscuits') originates to the right of V and moves leftward, as schematically presented in (31b). Observe that the sentence-final position of the verb suggests that it remains VP-internal (see Zwart 1993, 1996, 1997 for detailed proposals):

(31) a. Dat Nelson altijd koekjes eet.
that Nelson always biscuits eats
b. [$_{CP}$ dat [$_{TP}$ Nelson [$_{vP}$ altijd [$_{vP}$ koekjes [$_{vP}$ ~~Nelson~~ eet [~~koekjes~~]]]]]]

In independent work, Hinterhölzl (2000), Pearson (1998, 2000), Koopman and Szabolcsi (2001) and Haegeman (2000, 2001) have elaborated an alternative proposal to derive the OV order in Dutch and German. The accounts involve a double movement. Rather than assuming that SOV orders reflect a low V-position with movement of the complement to a leftward position, they propose that the OV order is derived by

(i) movement of the finite verb to a functional head in the I domain
(ii) 'remnant' movement of the (extended) projection of V to a specifier position

The second step of the derivation is called 'remnant movement' because the movement affects a 'remnant', i.e. it affects a projection from which a constituent (here the head V) has been moved first. Below is a schematic representation. The structure is simplified for expository reasons. In (31c) V *eet* moves to F, a functional head in the IP domain. In (31d) the remnant projection moves to the specifier position of the inflectional projection headed by F. Continuing to assume for expository reasons that adverbials may adjoin to vP, we label the remnant projection vP. Furthermore, the subject DP *Nelson* will have to move to a higher position. This is shown in (31e).

(31) c. dat [$_{FP}$ [$_{F}$ eet]
[$_{vP}$ altijd [$_{vP}$ Nelson [$_{V}$ ~~eet~~] koekjes]]]
d. dat [$_{FP}$ [$_{vP}$ *altijd* [$_{vP}$ Nelson [$_{V}$ ~~eet~~] *koekjes*]] [$_{F}$ eet]
[$_{vP}$ ~~altijd~~ [$_{vP}$ ~~Nelson [eet] koekjes~~]]]
e. dat [Nelson [$_{FP}$ [$_{vP}$ *altijd* [$_{vP}$ ~~Nelson~~ [$_{V}$ ~~eet~~ *koekjes*]] [$_{F}$ eet]
[$_{vP}$ ~~altijd~~ [$_{vP}$ ~~Nelson [eet] koekjes~~]]]]

How can we derive the word order pattern in a language like Malagasy, illustrated in (28)? Recall that in this language the line-up of the constituents

of the clause is the mirror image of that found in English. We will not provide a precise or detailed analysis, here, but we will simply show the spirit of an analysis in terms of Kayne's antisymmetry.

We assume the X-bar format in (9a), with all projections head-initial, and with specifiers to the left of the X' constituent. If for Malagasy we adopt the English type of derivation with the subject moving to the highest A-position, the specifier of TP, and the verb remaining in V, then we would end up with the order in (32a), clearly not what we want.

(32) a. *[$_{TP}$ Ny mpamboly [$_{vP}$ tsara [$_{vP}$ ~~ny mpamboly~~ nijinja vary]]]
the farmer well cut rice

If in addition to moving the subject to the higher specifier position, we also move the verb to the highest inflectional head, as happens in French (see example (18b)), we get (32b), also not the desired order.

(32) b. *[$_{TP}$ Ny mpamboly [$_{T}$ nijinja] [$_{vP}$ tsara [$_{vP}$ ~~ny mpamboly~~ ~~nijinja~~ vary]]]

As a third alternative, we might propose that V moves while the subject DP remains VP-internal, but then we get the order in (32c).

(32) c. *[$_{TP}$ [$_{T}$ Nijinja] [$_{vP}$ tsara [$_{vP}$ ny mpamboly ~~nijinja~~ vary]]]

Again, though the verb is now indeed initial, this derivation does not produce the desired order, notably, the subject *ny mpamboly* now incorrectly precedes the object *vary*, and the object incorrectly follows the adjunct *tsara*. One option would be to propose that the object *vary* first moves to a position to the left of the adjunct *tsara*.

(32) d. [$_{TP}$ [$_{I}$ Nijinja] [vary [$_{vP}$ tsara [$_{vP}$ ny mpamboly ~~nijinja vary~~]]]]

This movement of the object might at first sight be argued to instantiate object shift as also found in Icelandic and illustrated in (19c,d), repeated here in (33).

(33) a. Hann las ekki baekur. (Icelandic)
he reads not books
'He doesn't read any books.'

b. Hann las baekurnar ekki. (Icelandic)
he read the books not
'He doesn't read the books'

However, there is a problem with the proposal that the Malagasy object undergoes object shift. In the Malagasy example, object shift of *vary* ('rice') would have to move an indefinite object past the manner adverb *tsara* ('well'). In languages exhibiting object shift, such as Icelandic, it is typically the definite object which undergoes object shift, as shown by the contrast in (33): in (33a) the indefinite object *baekur* ('books') remains to the right of the sentential negator *ekki.*

Indeed, the proposed movement of the indefinite object in Malagasy (32d) becomes even more questionable when we compare this example with (34), in which the object *ny vary* ('the rice') is definite. As can be seen, the definite object *ny vary* occupies a position to the left of the subject and to the right of the manner adverb *tsara*.

(34) a. Nijinja tsara ny vary my mpamboly. (Pearson 1998: 3)
cut well the rice the farmer

In our derivation, this would have to mean that the definite object has moved to a position to the immediate left of the subject and to the right of the manner adverb:

(34) b. $[_{TP}\ [_{I}$ Nijinja$]\ [_{vP}$ tsara $[_{vP}$ ny vary $[_{vP}$ ny mpamboly ~~nijinja ny vary~~$]]]]$

While this derivation does produce the desired order, it goes against most assumptions as to the motives for object shift. As shown by the contrast in (19c,d) repeated here in (33), in general, in languages with object shift, indefinite objects occupy a lower position (33a) than definite objects (33b). This is usually related to their interpretation, definite objects expressing some 'given' entity (Diesing 1996, 1997). We will not elaborate the details of the analyses of this phenomenon here. Again then, we should say that somehow object shift in Malagasy is the mirror image of object shift in Icelandic.

If we continue to assume with Kayne (1994) that only left branching is possible, further examination of additional examples raises more problems.

Suppose we take a sentence with two adverbials in the TP domain between subject and verb. In French the unmarked order of such adverbials is that the frequency adverbial *toujours* ('always') precedes the manner adverb *bien* ('well') and this pattern is generally the unmarked case. For extensive discussion of adverbial order see Alexiadou (1997) and Cinque (1999).

(35) a. Le paysan coupe toujours bien le riz.
the farmer cuts always well the rice

The Malagasy example (35b) seems to present the mirror image of French (35a).

(35) b. Nijinja vary tsara foana ny mpamboly.
cut rice well always the farmer (Pearson 1998: 27)

In Malagasy, the frequency adverbial *foana* ('always') follows the manner adverbial *tsara* ('well'). It is hard to see how this order can also be derived. Suppose, following proposals by Alexiadou (1997) and Cinque (1999), that adverbials are not simply vP adjoined, as we have been implying so far, but that they are associated with specific functional projections. Let us say that the adverbial of frequency is associated with an aspectual projection and that the manner adverbial is associated with a manner projection (or, possibly, with VoiceP/vP). Using the mechanism which successfully derived (32d) we would still end up with the reverse order, as shown in (35c).

(35) c. *[$_{TP}$ [$_{T}$ Nijinja] [vary [$_{AspP}$ foana
[$_{vP}$ tsara [$_{vP}$ ny mpamboly ~~nijinja~~ ~~vary~~]]]]]

To derive the desired pattern and assuming that adjuncts display a universal hierarchy which is reflected by their position as specifiers of functional heads, we would now have to propose that *tsara*, the manner adverb, also moves leftward, to a position lower than the moved indefinite object.

(35) d. *[$_{TP}$ [$_{I}$ Nijinja] [vary [tsara [$_{AspP}$ foana [vP ~~tsara~~
$\leftarrow$
[$_{vP}$ ny mpamboly ~~nijinja~~ ~~vary~~]]]]]]

Indeed, from the consideration of additional empirical data it turns out that we have somehow always to reorder all clausal constituents in Malagasy.

For instance, in the double object construction associated with ditransitive verbs such as *give*, the indirect object DP usually precedes the direct object DP as shown by the examples in (36). As shown by (37), Malagasy again exhibits the opposite order:

(36) a. English John gave Nelson biscuits.
b. Dutch Jan gaf Nelson koekjes.
John gave Nelson biscuits

(37) Nanolotra ny dite ny vahiny ny zazavavy. (Pearson 1998: 2, his (2a))
PAST-offer the tea the guest the girl

Again, to derive (37) we will have to assume that the direct object DP is obliged to move past the indirect object DP, a pattern which is again most unusual.

In the various proposals above we have applied the two types of movement; (i) head movement affecting V and (ii) XP movement affecting a constituent of VP or of the clause, such as an object DP, or an adjunct or a subject. A combination of such movements was also often used. Though we were able to derive the correct linear orders, each derivation presented us with an exceptional situation. Notably, definite objects have to remain lower than indefinite ones, adverbs reorder with respect to each other, and direct objects must move higher than indirect objects. This type of derivation does have the advantage of preserving the universal base hypothesis, but it is unsatisfactory because we require a whole range of unexpected additional movements.

Pearson (1998, 2000), Rackowski & Travis (2000) and Travis (2006) propose an alternative derivation for the Malagasy data. We will present the spirit of their analyses here. Observe that the presentation below does not correspond to the exact analyses cited. What we want to do is to merely illustrate in broad lines the alternative proposal as introduced in the papers referred to. For the detailed and accurate implementation elaborated by the authors we refer to their own papers. What we need to achieve is that the verb is in initial position and that all constituents end up in the reverse pattern. Leaving out details which would complicate the picture somewhat, the essence of Pearson's proposal is that the initial V-position is not derived by head movement of V, but rather that the pattern in Malagasy is derived by the movement of maximal projections, that is VP and extended projections of VP.

Let us start from a schematic structure as (38a).

(38) a. [$_{vP}$ subject [$_{VP}$ verb object]]

Suppose that Malagasy lacks V-to-I movement. To get V to end up in the leftmost position, we move (extended) projections of V. First VP, comprising V and the object, moves to the left, past the subject DP, to the specifier of a functional projection FP1. This leads to a linear order – verb-object-subject as in (38b).

(38) b. [$_{FP1}$ [$_{VP}$ verb object] [$_{vP}$ subject [$_{VP}$ ~~verb object~~]]]
$\leftarrow$

Then we add the projection whose specifier hosts the manner adverb 'MannerP'.

(38) c. [$_{ManP}$ adverb [$_{FP1}$ [$_{VP}$ verb object] [$_{vP}$ subject [$_{VP}$ ~~verb object~~]]]]

The projection FP1, whose specifier hosts the moved VP, moves past the manner adverb to a specifier position of a higher functional projection FP2. This movement will also take along vP with the subject. The output is (38d).

(38) d. [$_{FP2}$ [$_{FP1}$ [$_{VP}$ verb object] [$_{vP}$ subject [$_{VP}$ ~~VP~~]]] [$_{ManP}$ adverb [$_{FP1}$~~FP1~~]]]
$\leftarrow$

To avoid overly complex representations we will not represent the lexical elements contained in the copy: thus, for instance, while in (38b) we do signal the copy of VP by ~~verb object~~, in (38d) we simply signal the relevant copy by ~~VP~~, and we represent the copy of the moved FP1 by ~~FP1~~.

We will assume that the subject moves to the specifier of an inflectional projection, represented here as TP. This results in the order subject-verb-object-adverb (38e).

(38) e. [$_{TP}$ subject [$_{FP2}$ [$_{FP1}$ [$_{VP}$ verb object] [$_{vP}$ ~~subject~~ [$_{VP}$ ~~VP~~]]]
$\leftarrow$ [$_{ManP}$ adverb [$_{FP1}$ ~~FP1~~]]]]

Finally the projection FP2, whose specifier hosts the moved extended VP (FP1), moves again as a whole past the subject to a higher functional projection (38f).

(38) f $[_{FP3}\ [_{FP2}\ [_{FP1}\ [_{VP}$ verb object] $[_{vP}$ ~~subject~~ $[_{VP}$ ~~VP~~]]]
$[_{ManP}$ adverb $[_{FP1}$ ~~FP1~~]]] $[_{TP}$ subject] $[_{FP2}$ FP2]]

This derivation gives the desired output verb-object-manner adverb-subject. In the derivation proposed there is no instance of V-movement. Instead, we repeatedly apply what we could call a snowballing XP movement[18], where one projection, say VP in (38a), moves into the specifier of a higher projection, FP1 in (38b). Next, the entire projection whose specifier has just been targeted by XP-movement, i.e. FP2, itself moves on, etc. As a result of this snowballing movement operation we end up with a mirror image pattern, where English has Su-adverb-V-O and Malagasy has V-O-Adv-Su.

Obviously, the analysis outlined above is presented in a schematic way and it raises many questions, which we will not address here. It succeeds in deriving a word-order pattern that is the mirror image of that found in English. The central question is what motivates the movement of the extended VP in the derivation. What would be, for instance, the trigger for the movement of VP into [SpecFP1], of FP1 into [SpecFP2] and of FP2 into [SpecFP3]?

2.6.3.3. Snowballing in the nominal projection?

With respect to word order patterns in the nominal domain, too, we find languages displaying a pattern that is the mirror image of the English pattern. Aboh (1998) gives example (39a) from Gungbe. Again we find the reverse ordering of that found in English (39b):

(39) a. távò xóxó dàxó éhè ló lɛ
table old big this the PLURAL
'these big old tables'

b. these big old tables

Aboh proposes that the Gungbe order in (39a) is derived by an application of snowballing movement in the DP. We will come back to this issue and to other proposals for snowballing movement in Part III, Chapter 1.

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[18] The term is due to Chris Collins.

3. Summary

In this chapter we have touched upon several issues that pertain to the syntax of clauses, that is extended projections of verbs. In particular we have discussed the contrast between functional head/projection and lexical projection, the motivation for postulating functional projection (and for postulating movement), concepts such as head movement, XP movement, snowballing movement, and feature valuation as a trigger for movement. We have also briefly hinted at the fact that these issues are equally relevant for the syntax of extended projections of nouns. In the remainder of this book we will return to these issues in more detail and offer precise implementations and more fully elaborated analyses.

Part II

The functional make up of the noun phrase

Part II is concerned with the categories that form part of the extended projection of the noun. Linguistic research over the last years has shown that the sentence can be partitioned into three domains: the discourse domain (built around C), which is the syntactic encoding of discourse-related information, the agreement domain (containing various verb-related functional projections, such as agreement projections, e.g. IP and/or TP), and the thematic domain which is built around VP-shells (Larson 1988) and encodes thematic information.

Another, by now well-established, hypothesis is that the structure of the nominal functional domain can be conceived of as paralleling the structure of the clausal domain, in that specific types of information are typically encoded in specific areas of the extended projection of the noun and that the structuring of this information is like that in the clause. It is proposed that the nominal domain consists of a *determination* area, which can encode discourse-relevant information, a functional 'middle' *morphosyntactic* area, in which, among other things, the agreement of the various modifiers with the head noun is encoded, and a still lower area in which *thematic relations* are established/licensed, the so-called Theta domain which is built around NP in the narrow sense, that is, the projection of the lexical head. In this part of the book, we will take up each of the first two areas in turn; we will return to the Theta Domain in Part IV.

In the first chapter of Part II we consider the functions of the determination area, which is headed by the determiner, D, as well as the way(s) it parallels particular areas in the clause, notably the CP area, and to some extent also the IP area. We will take a closer look at the semantic import of D, its status across languages, and we will examine the particular morphemes that are associated with it, articles and demonstratives being the most prominent among them. In addition, we will examine to what extent the domain headed by D can encode discourse-related concepts like Topic and Focus, thus bringing it in line with the C-related area in the clause. In the literature the category D has been associated with a number of diverse properties. Among others, it has been considered as (a) the locus of the semantic-pragmatic notion of (in)definiteness, (b) the natural host of the definite article, (c) the part of the extended projection of N which is responsible for turning a predicate, i.e. a noun, into a syntactic argument by anchoring it to the extralinguistic context, (d) a case assigner. We will survey the main arguments for each of these properties (a)–(d). The picture that will emerge from the various discussions is in fact one that fails to distinguish the concept D as a syntactic position or as a syntactic category, from the morpheme for the (definite) article which most fre-

quently realizes it in many languages. The (definite) article itself has a privileged position among determiners as the occupant *par excellence* of the position D, as there undoubtedly exists a strong link between D and the article. This is the main reason why in the vast literature on 'DP' it is often so difficult to tell whether (a)–(d) are taken to be inherent properties of D as a position or a category, or of the article itself. In this chapter we will also discuss the structures that have been proposed as an articulation of the relation between D and the article. We will further compare the definite article with demonstratives in order to be able to assess the proposals made with respect to the syntactic representation of the latter and we will evaluate the claim made in the literature (Giusti 1997, 2002; Campbell 1996) that it is the D(P) category that is semantically interpreted.

The examination of properties (a)–(d) will inevitably take us to an important issue and one that has been occupying the literature for quite a while now: the issue of articleless noun phrases as well as of articleless languages. We consider this issue in Chapter 2. More precisely, the question that will emerge is the following: if it is the definite article as such (rather than the syntactic category D) that is invested with the various properties listed in (a)–(d), how do we account for the interpretation of 'bare' nouns or 'bare' noun phrases in languages that have articles, or, equally, and perhaps more importantly, in languages that lack an article altogether, such as, e.g., Latin and Russian? Our survey of the proposals that have been put forward to explain how the nominal phrase receives its interpretation in the absence of the article will bring us in line with those who believe that the article has a purely grammatical function to fulfil, while it is the properties of D that impart such semantic notions as referentiality and definiteness to the interpretation of the whole constituent. Crucially, we will arrive at the conclusion that semantic rules apply to the DP area to interpret the nominal phrase, not simply to the overt material under it.

The properties of the intermediate morphosyntactic or agreement area dominated by DP and dominating the thematic domain, NP, will be the topic of Chapter 3. We will review the evidence that has been adduced in support of inflectional projections like NumberP, GenderP, WordMarkerP, but also of other functional categories that are more 'verb-like', such as Tense, Aspect and Voice. These categories will be further dealt with in more detail with particular reference to adjectives in Part III.

Chapter 1

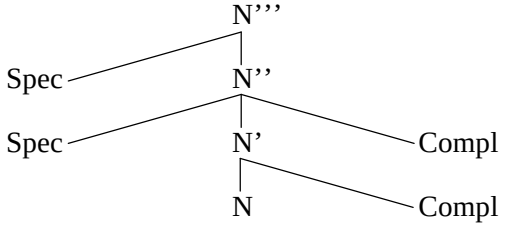
The emergence and the structure of DP. Articles and demonstratives

1. Introduction

In the Introduction to the book we mentioned in a preliminary way that DP is the extended projection of N, in the sense of Grimshaw (1991). D is a functional head; it is regularly occupied by the definite article. D selects as its complement a (possibly extended, see below) projection of N. DP and CP are similar in that both are projections that link their complements to the discourse context or to the non-linguistic context. This parallelism has been argued for since the eighties by, among others, Szabolcsi (1983, 1987, 1994), Fukui & Speas (1986), Abney (1987), Horrocks & Stavrou (1987), Loebel (1989), Stowell (1989, 1991), Olsen (1991), and Longobardi (1994).[1] Adopting the hypothesis that nominal projections are NPs dominated by DP, we will from now on use the label DP to refer to the full nominal projection. We will systematically reserve the label NP for the lexical projection contained within DP.

In the Introduction we have already introduced a number of problems that the older, and original, X' theory was faced with in relation to the syntactic representation of the article. Recall that in Jackendoff's (1977) X'-theory, the projection of the NP was not dominated by any functional projection.

(1) a.



[1] For a comprehensive survey of the literature on determination and nominal projection, with special reference to English, French and German, see also Kolde (1996).

The NP was a single endocentric projection, i.e. it had a unique head, N, and the other components of the NP occupied either the complement position(s) or the specifier position(s). Hence, the article was represented as being an integral part of the projection of N: specifically it occupied the highest specifier position of the NP. But the concept 'specifier' and its relation to the projection was quite different from what it is nowadays. In particular, while currently it is often assumed that there is one specifier to a projection, in Jackendoff's system, there was more than one specifier to a projection and specifiers of NP were distributed over two bar levels, in particular they were sisters of N''' and sisters of N'' (Jackendoff 1977: 104). In the earlier representations the term specifier was used essentially as a cover term to designate a constituent that appeared to the left of the head (at any bar level in principle), so it was the position of an element *vis-à-vis* the head that determined whether it was a specifier or not. There was unclarity as regards the question whether a specifier could be a phrase or just a word.[2] The following extract from Jackendoff (1977: 37) shows the uncertainty surrounding the nature of 'specifier':

> Chomsky considers specifier to represent a syntactic category, but complement is simply an abbreviatory term for some concatenation of ordinary syntactic categories. However, there is to my knowledge no evidence that either complements or specifiers function as constituents – they do not move or delete as units, and unlike normal constituents, no part can be designated as a head.

Although Jackendoff drew attention to the difficulty in correlating semantic regularities with syntactic positions (1977: 103), he did distinguish (intuitively) among two major semantic roles that can be performed by the occupants of the specifier system of the noun: he draws a distinction between the so-called *demonstratives* and the *quantifiers* (Jackendoff 1977: 104). These semantic roles were realized by the two different fillers: *demonstratives* are determiner-like constituents, such as definite (and possibly indefinite) articles and demonstratives in the narrow sense, but also interrogative elements such as *which* and *what*, and *quantifiers* groups what are traditionally referred to as existential quantifiers and numerals. In the current chapter we will be concerned with articles and with demonstratives.

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[2] For instance, the quantificational phrase *a bunch* in *a bunch of people* – i.e. the Pseudopartitive Construction that we are going to discuss in detail in Part III, Chapter 2, according to Jackendoff occupied the SpecN' position.

Jackendoff identifies the N''' specifier as follows: "The N''' specifier is the position where genitive NPs occur in complementary distribution with demonstratives." (1977: 104). However, we already pointed out in the Introduction that prenominal possessive (or genitive) phrases are not on a par with articles and demonstratives. For one thing, the latter form closed classes, while the former are an open class. In Part IV we will discuss possessive DPs. At this point we also draw attention to the fact that, though articles and demonstratives belong to closed-class elements and are usually taken to be both functional elements, articles and demonstratives do not form a completely homogeneous class. In section 4 of this Chapter we will discuss the differences between these two classes of functional elements and we will propose ways to implement these differences in terms of the internal structure of the DP. Before that, however, we will go over the role(s) that have been attributed to the article. Importantly, right away we will see that the concept of definiteness has been seen as connected intimately with the definite article and as a consequence with the interpretation of the entire DP.

2. The role(s) of the article

In the (re)formulation of the nominal projection in terms of the DP hypothesis, the contribution of the definite article to the nominal projection has played a substantial role. It has long been known that the article is not an 'optional' element of the noun phrase, as envisaged in Jackendoff's original proposal, in which it was one among several possible specifiers among the class of *demonstratives* (Jackendoff 1977: 104). The article somehow stands out as the determiner *par excellence* of the noun phrase. The exact role of the category 'article' and its import to the interpretation of the whole projection it participates in is an issue that is much discussed in relation to the 'DP Hypothesis'. The discussion concerns both syntax and semantics. All of the following views are represented in the relevant literature:

The article is:

(i) a grammatical category which in some languages grammaticalizes the semantico-pragmatic notion of definiteness (Lyons 1999);
(ii) a subordinator assigning argumental status to its NP complement (Abney 1987; Stowell 1989, 1991; Szabolcsi 1994: 181);
(iii) the 'natural' bearer of referentiality (Loebel 1989; Longobardi 1994, 1996);

(iv) a purely grammatical morpheme whose primary role is to assign case to its complement NP (Giusti 1993, 1997, 2002).

If we assume that argumenthood and referentiality are closely related, (ii) and (iii) can be collapsed. (ii) and (iv) can also be related if it is assumed that an NP is turned to an argument if it is assigned case, and vice versa, if it is assumed that when a nominal phrase is assigned case then it can function as argument. (i) makes a different claim: here the function of the article appears to be primarily semantic/pragmatic. (iv) devoids the article of any semantic content limiting it to just a grammatical formative. Under this view, the functions summarized in (i), (ii) and (iii) are assumed to be associated with the category D, which, according to most current approaches, is the natural host of the article. The question then arises whether the functions listed in (i), (ii) and (iii) are related directly to the definite article as such or whether they are related to the category/structural slot D, and only indirectly to the article, the natural filler of D. In what follows we will try to sketch a tentative answer to this question, but we will unfortunately not be able to provide anything like a definitive statement.

2.1. "Definiteness"

Since the relationship between (in)definiteness and the presence/absence of the (definite) article has always been taken as obvious, some notes are in order at this point to illustrate how this 'link' is established. So in this subsection we will take a quick look at what is usually meant by the term definiteness, how it is syntactically reflected on the article, and what the feature [+/-Def], which is standardly connected with D, amounts to. Although a detailed account of definiteness falls outside the immediate goals of this book, a brief survey of the essential points at issue will hopefully help the reader to understand the syntax of D.

Accounts of definiteness abound, in the linguistics literature and in the pragmatics-philosophy literature; the reader is referred to Christophersen (1939); Krámský (1972); J. Lyons (1977); Loebner (1985); Chesterman (1991) and C. Lyons (1999), and the references cited there for full details concerning the many approaches to the concept of definiteness.

Let us start by considering the following examples:

(2) a. *The cat* ran quickly after the mouse.
b. Someone left *the cat* on my doorstep this morning.
c. *The cat* was chosen by his wife.

Clearly, the underlined DPs in the examples in (2) are interpreted differently from their indefinite counterparts in (2').[3] The DP *the cat* is definite, while *a cat* is indefinite. Put in a simplistic way, by using the indefinite DPs in (2') a referent is introduced into the universe of discourse for the first time; in (2), the use of the definite DPs implies that reference is being made to an entity which is accessible because it has already been "introduced". So, in a sense we could say that the sentences in (2') are prior to those in (2).

(2') a. *A cat* immediately chased the mouse.
b. Someone left *a cat* on my doorstep this morning.
c. *A Persian cat* was chosen.

A this point, we can quote Simon Dik, who illustrates this state-of-affairs in a very clear manner: "The construction of referents is typically achieved through indefinite specific terms, as in *Yesterday in the park I saw a black cat*; the retrieval of referents is typically guided by definite terms, as in *Yesterday in the park I saw the/that black cat again.*" (Dik 1987: 3).

A number of questions arise at this point: what does the concept of (in)-definiteness amount to? Is it primarily a semantic notion or is it a grammatical notion? What is the relationship between the morpheme realizing the (in)definite article and the semantic notion of (in)definiteness? Crucially, is the semantic concept (in)definiteness a universal property? If it is, is it expressed uniformly across languages?

In relation to the above questions two views have been advanced independently, though no doubt they are ultimately interrelated. In both, definiteness is a semantic entity which can be represented as a feature [DEF]. (a) For some, the feature [DEF], which plays an important role in the syntax of DP, invariably represents a particular semantic-pragmatic[4] concept,

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[3] In the discussion we will not deal with the indefinite article, an equally important issue, as this article does not directly bear on the formation of the DP-hypothesis.

[4] We use the opposition semantic-pragmatic in the current context rather loosely. The concepts that will be discussed below are mainly pragmatically grounded in that they rely on coordinates of utterance (speaker, hearer, familiarity, context, etc.), but above all on identifiability. On the other hand, there is also a logical-philosophical, or formal semantic (Lyons 1999: 258), account of definiteness, which goes back to Frege (1892) and Russell (1905), and, much more recently Strawson (1952), who responded to both his predecessors, and in particular to claims made concerning the sense-reference distinction. According to this logico-philosophical tradition, the key concepts in the notion definiteness are the notion of inclusiveness and the related concept of uniqueness. The classical example

namely 'definiteness'. This concept, however, is not uniformly realized across languages, since many languages lack a definite article. (b) In another view, the feature [DEF] is a purely grammatical feature whose relation to one or more semantic concepts varies from language to language (Lyons 1999).

In order to better appreciate these two positions, we will first try to clarify certain pragmatic notions primarily involved in definiteness. The quintessential property of definiteness is taken to be *identifiability* (subsuming *familiarity*), a concept which is tightly interwoven with *inclusiveness*.

Identifiability implies that the speaker signals that the hearer is able to locate a referent for a particular DP. Concretely, this means that in (2) the referent of the DPs *the cat* is identifiable. Along with identifiability, another related interpretative component of definite DPs in (2) is *familiarity*. The entity 'the cat' referred to by the definite DPs, *the cat*, in (2), is assumed by the speaker to be familiar to the hearer; to put this differently: what the DP refers to, is part of the knowledge shared by the speaker and the hearer. If the hearer happens not to know or be able to locate what the speaker is talking about, the natural response would be 'which cat (do you mean)?'

In the examples in (2') the use of the indefinite DP, *a cat*, implies that no such familiarity can be presupposed. Here, the speaker may be the only one to know what the DP refers to, that is to identify the entity in question. Familiarity[5] and, more generally, identifiability, is a property of such uses of the definite article as the situational use in (3-4), general knowledge use in (5), anaphoric use in (6) and associative use in (7):

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much discussed in this tradition is the sentence *The King of France is bald*, which contains the singular definite expression *The King of France*. This sentence encapsulates the proposition 'There is only one King of France' – along two additional propositions, the existential presupposition ('There is a king of France'), and the main assertion of the sentence in question (viz. that the particular individual is bald). It is the uniqueness component of definiteness, as encoded in such definite descriptions, that is replaced in many current accounts by the concept of familiarity or identifiability. See Lyons (1999, ch. 7) for a concise informative summary of the logical origins of definiteness.

5 Familiarity is usually opposed to novelty which involves primarily indefinite noun phrases. See Lyons (1999), section 7.1 in particular, where he gives a concise account of Jespersen's (1924) degrees of familiarity and where he also provides other relevant references.

(3) Sit in *the* hand basin just before your human intends to shave.

(4) Did you see *the* fat cat just running in?

(5) *The* sun is burning hot today.

(6) A kitten was sleeping under the tree. A cat then appeared and sat next to *the* kitten. She must be his mother.

(7) I met with Artemis outside *the* opera at 11.00 p.m. *The* tickets for tonight's performance had to be bought by early afternoon.

In all of these examples "the hearer is invited to match the referent of the definite noun phrase with some real-world entity which he knows to exist because he can see it, has heard of it, or infers its existence from something else he has heard" (Lyons 1999: 6). Nevertheless, as is pointed out in the literature on definiteness, identifiability, let alone familiarity, does not account for every use of the definite article. As Lyons (1999) points out, associative/situational uses of the definite article pose problems for identifiability. Consider the following example:

(8) I've just come back from a wedding. The bride was wearing red.

In (8) the use of the indefinite article with the N *wedding* indicates that the speaker does not presuppose familiarity on the part of the hearer. However, if the hearer is not familiar with the 'wedding' as introduced in the first sentence, one can hardly imagine that he or she is familiar with the referent of the definite DP *the bride* in the second sentence. The hearer very likely will not be able to identify the referent of the definite noun phrase *the bride* in any real sense. He or she may not know who the bride was or in fact anything else about her.

The concept which seems to be at work in the case of examples like (8) is that of *uniqueness*. The definite article signals that "there is just one entity satisfying the description used. (…). This description is generally not absolute, but is to be understood relative to a particular context" (Lyons 1999: 8). Since at every wedding there is by definition a bride, and since there is normally only one bride, the use of the definite DP *the bride* is warranted. However, uniqueness itself raises an immediate problem since it seems to leave unexplained cases involving plural (9a,b) and mass (9c) nouns:

(9) a. John was looking for *the cats* (that lived in his garden).
b. I've just come back from a wedding. *The bridesmaids* were wearing red.
c. *The wine* you bought needs to be chilled.

If the definite articles in the underlined DPs in (9) can still be thought of as encoding uniqueness, uniqueness must be taken to concern whole sets and masses rather than single entities or individuals (Lyons 1999: 11). In addition, we understand (9a) to mean that John was looking for all the cats that used to live in his garden, not just some of them; and from (9b) we will conclude that all the bridesmaids were wearing red. Definiteness here implies reference to the totality of the entities that satisfy the description (Lyons 1999: 11). Such a use of the definite article with the implication of 'totality' is considered as a special case of uniqueness. It is often referred to as *inclusiveness*, a term which, as Lyons (1999: 11) points out, is due to Hawkins (1978). In the case of plural nouns the definite article functions like the universal quantifier *all*. The (near) identity of (9a,b) to (9'a,b) shows this function of the article with a plural noun:

(9') a. John was looking for *all the cats* (that live in his garden).
b. I've just come back from a wedding. *All the bridesmaids* were wearing red.

If there were any cats that used to live in his garden and John was in fact not looking for them, both (9a,b) and (9'a,b) are equally false. In this case a response like (9''a) would be appropriate:

(9'') a. No, he was already holding one in his hands.

Similarly, if any of the bridesmaids at the wedding were not wearing red, then both (9b) and (9'b) would be false and a response like (9''b) would be appropriate:

(9'') b. No, one of them was wearing green.

Lyons further suggests that uniqueness can be assimilated to inclusiveness. "When the noun phrase is singular, inclusiveness turns out to be the same as uniqueness, because the totality of the objects satisfying the description is just one." (Lyons 1999: 13).

Mass nouns lead to the same inclusiveness interpretation. Consider (10a):

(10) a. I've just come back from a wedding. The wine was awful.

Once again the definiteness of the DP *the wine* cannot be due to familiarity on the part of the hearer, as shown by the fact that the DP *a wedding* is indefinite, indicating no familiarity is presupposed. Again the DP *the wine* seems to imply totality: (10a) is equivalent to (10b):

(10) b. I've just come back from a wedding. All the wine was awful.

If some of the wine served at the wedding was actually good, then both (10a) and (10b) are false and (10c) would be an appropriate continuation:

(10) c. Actually, that's not true. The dessert wine was very good.

It should also be pointed out here, as is done by Lyons (1999: 158ff), that the manifestations of definiteness mentioned so far fall into two major types according to whether the context appealed to is linguistic or non-linguistic. With respect to the anaphoric use of the definite article (cf. examples in (2), (2') and (6)) the context in which the referent is found is linguistic. All the other uses relate to extra-linguistic contexts which crucially involve general/encyclopedic knowledge or knowledge of the situation related to the utterance. In this connection it is further interesting to note that some languages only have an anaphoric (definite) article, while some others distinguish between an anaphoric definite article and a non-anaphoric definite article (Lyons 1999: 158–159).

The following question emerges from the preceding discussion: is definiteness a single, unified phenomenon or is it possible that what is commonly called definiteness amounts to more than one semantic-pragmatic category, which in some languages happens to have a unique morphological realization? There is no simple answer to this question and any serious account would inevitably takes us too far afield. For our needs here suffice it to say that in the examples (3)–(7) above the DPs marked as definite in English can apparently be used in order to convey a number of distinct semantic-pragmatic notions, such as anaphoricity, familiarity, general knowledge, situation, etc. In this context, definiteness appears to be taken as a superordinate term comprising these distinct semantic/pragmatic concepts associated with it. Lyons (1999) discusses at length cross-linguistic evidence that shows that none of these various ingredients of definiteness is completely reducible to the other, although in many instances one may follow or be implied by the other. Hence, a theory relying on identifiability will

make different predictions from a theory relying on inclusiveness, while at the same time identifiability includes/entails familiarity. As just said, there exist languages in which these different 'ingredients' of definiteness are realized by distinct articles (see Lyons 1999, especially in section 2.2, for relevant data and discussion).

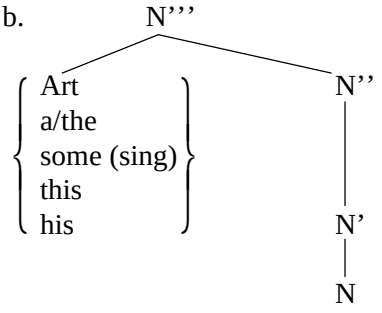
We can summarize what we have said so far by outlining a proposal by Lyons (1999), whose work constitutes the most recent detailed cross-linguistic exploration of definiteness. According to Lyons, what is universal is semantic or pragmatic definiteness, while the grammatical realization of definiteness is a language specific property (see also Felix 1988 for a similar view). In particular, Lyons claims that what is realized 'prototypically' is identifiability itself, an interpretational element of all languages, but it is realized by the definite article ('grammaticalized') in only some of them. In any way, identifiability, as a property of information/discourse structure, has a role to play in every language. Under the assumption that the definite article is one realization ('grammaticalization' in Lyons's own terms) of the semantic and pragmatic concept of definiteness, in languages that do not grammaticalize definiteness, interpreting a given item as either definite or indefinite relies on discourse organization, in particular on identifiability (see the discussion in the next chapter).

With respect to the question whether there is one or several instantiations of definiteness, Lyons's answer is that despite the range of linguistic variation as to exactly which components of definiteness may be encoded by the definite article (or an equivalent form), there is always a large core of uses of the article that are transparently relatable to identifiability and inclusiveness. This approach to definiteness is thus on a par with the standard approaches to (nearly) all other grammatical categories, such as aspect, C/case, Tense, etc., as we will have the opportunity to discuss further in subsequent chapters. With these categories too, a distinction has to be drawn between abstract, semantic categories and their linguistic or syntactic realization (as concrete morphemes/words).

2.2. The article as a subordinator

As we said above, in Jackendoff's (1977) approach to the structure of the NP, articles occupied the specifier position of the maximal projection of N (i.e. the third bar level). The tree diagram below illustrates Jackendoff's NP claim:

(1) b.



Being specifiers, articles were seen as optional elements of the nominal projection. However, it doesn't take long to realize that optionality cannot be taken for granted, as the ungrammaticality of the bare singular countable noun in the following examples strongly suggests:

(11) a. *He found *cat* on *doorstep*.
vs He found *a/the cat* on his/the doorstep.

b. **Cat* arrived last night.
vs *A/the cat* arrived last night.

c. *Vrice *ghata* sto katofli tu.
vs Vrice *mia/ti ghata* sto katofli tu. (Greek)
found-3SG cat at the doorstep his
found-3SG a/the cat a the doorstep his
'He/she found a/the cat at his doorstep.'

(11) shows that singular count nouns cannot routinely occupy thematic positions (e.g. be subjects or objects of verbs)[6] unless they are subordinated under the article. So, in view of these facts the presence of an article appears to be indispensable with noun phrases that function as arguments of verbs. But here a question naturally arises: if the article is obligatory for a noun to assume argumental status, how can 'bare' nouns be arguments in languages that have no (definite) article, such as Latin, Russian, Polish and so many others? Not less importantly, how can bare NPs ever be arguments in languages with articles, i.e. how can one explain the fact that the English sentences below are grammatical despite the fact that no article accompanies the noun that is the object and the subject of the verb?

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[6] See the next chapter for more on bare singulars and bare nominals.

(12) a. I am going to get *wine and beer* for the party.
b. Topsy hates *cheese.*
c. Ilektra bought *flowers* for Orestes's party.
d. *Cats* are cute creatures.

We observe that in (12a) and (12b) *wine, beer* and *cheese* belong to the subclass of mass nouns; in (12c,d) *flowers* and *cats* are plural nouns. Note in passing that in (12d) the plural *cats* refers to the 'genus' of cats, or to cats as a species, i.e. it has a *generic* interpretation.[7] We can thus say that mass nouns and so-called 'bare plurals' seem to be able to function as arguments without the presence of the article. We will see further below that in languages lacking a definite article, bare nouns or noun phrases can indeed be arguments. We will address the issue of lack or omission of the article in Chapter 2.

In any case, the ability of nominals to occur 'bare' as arguments (of verbs) is quite restricted; indeed in English it is confined essentially to cases like those illustrated in (12). Leaving aside this 'peculiarity' of certain types of nominals for the moment, and concentrating on the subordinating role of the article, the core idea behind the 'DP-Hypothesis' relies on the data in (11). Let us describe the function of the article in (11). *Cat* as such is a predicate, it denotes what is 'true of all cats'. The DP *the cat* refers to an individual, a particular cat; *the cat* refers to an entity in the world. Thus, in a sense, the article saturates the predicate 'cat': it combines with a predicate (*cat* in (11a,b) and turns it into an individual (expressed by the phrase *the cat*). Using a more technical language, predicates are of the semantic type <e,t>, individuals are of the type <e>. Articles (and more generally determiners) are of the semantic type <<e,t>,e>: they are 'functions' that take a predicate, which is of the semantic type <e,t>, and yield an individual, which is of type <e> (Heim & Kratzer 1998: 52–53). It is along these lines that one can understand the often used metaphor that articles are what links language to extra-linguistic reality: articles (like all other determiners for that matter) anchor linguistic entities to the real world. "A 'nominal expression' is an argument only if it is introduced by a category D." (Longobardi 1994: 620).

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[7] Genericity is a complex notion and has given rise to an abundant literature in the domain of semantics, which we will not go into here. For some discussion see the papers in Carlson and Pelletier (1995) and also Oosterhof (2006a).

For Higginbotham (1985), there is a relation between the article and the noun that runs in parallel to the relation between a verb and its (thematic) object: the relation of thematic role saturation or thematic discharge. The article serves the role of saturating the open place that every common noun has and by virtue of which it 'denotes'. This open position is parallel to the theta grid verbs have. For instance, the noun *dog* denotes each of the various dogs that exist and this is due to the open position this noun possesses as part of its lexical entry (Higginbotham 1985: 560). The article binds this open position of the noun, or, putting it differently, it closes off the nominal structure with respect to the noun's open position. Higginbotham (1985: 560) calls this process, which is a process of thematic discharge, *theta-binding*. He considers it parallel to *theta marking* of arguments by verbs. Moreover, there must be a binder to bind the noun's open position, and, as Higginbotham points out, there cannot be two. This explains why there is only one article per nominal projection, i.e.; there is only one 'binder' (**every the dog*). The biuniqueness of theta binding in the nominal domain aligns the nominal domain to the sentential domain (see also section 5): in the verbal domain too each argument can only receive one thematic role from the verb and the verb can only assign one thematic role to each one of its arguments.

All this said, some parallelisms suggest themselves here. The anchoring function of the article in the DP is also seen as similar to that of tense in a clause: tense anchors the eventuality denoted by the verb (phrase) to the non-linguistic reality (Abney 1987; Olsen 1991; Loebel 1989). A further similarity is that between D and C, the complementizer: only DPs and CPs can function as arguments. It has therefore been argued by Szabolcsi (1983, 1987, 1994), Stowell (1989, 1991) and Horrocks & Stavrou (1987) that the definite article is to the nominal projection what the complementizer (C) is to the clause : both turn a non-argumental category into an argument.[8] In sections 3 and 5 below, we will come back to the specifics of Szabolcsi's and Horrocks & Stavrou's proposals concerning the structural representation of the parallelism(s) holding between the complementizer and the article.

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[8] This idea of N(P) being embedded under DP goes back to Brame (1982). He said: "(…) Since DET is the head-selector of DET(N), (…) it would be better to abbreviate DET(N) as DP, not as NP, and to speak of determiner phrases, rather than noun phrases." (Brame 1982: 325).

2.3. The article and the concept of referentiality

From what we have said so far, it has become clear that referentiality and argumenthood are related: argumenthood is the syntactic reflex of the concept of referentiality.[9]

Apart from the situation illustrated in (11), we may ask ourselves if there is additional evidence that the presence of the article and the subordination of a noun (or nominal expression) to it brings about a shift of a purely linguistic entity into something that is 'closer' to the external world, i.e., of a predicative category to an argumental one? The answer to this question is positive. Consider the following data from Italian (Longobardi 1994: 620), French and Greek:

(13) a. La mia segretaria e tua collaboratrice sta/*stanno uscendo. (Italian)
the my secretary and your collaborator is/are leaving
'My secretary and your collaborator is about to leave.'

a'. La mia segretaria e la tua collaboratrice stanno /*sta uscendo.
the my secretary and the your collaborator is/are leaving
'My secretary and your collaborator are about to leave.'

b. La secrétaire de Jean et collaboratrice de Paul est/*sont à la gare.
(French) (Bouchard 2002: 43)
the secretary of John and collaborator of Paul is/are at the station
'The secretary of John and collaborator of Paul is at the station.'

b'. La secrétaire de Jean et la collaboratrice de Paul *est/sont à la gare.
the secretary of John and the collaborator of Paul is/are at the station
'The secretary of John and the collaborator of Paul are at the station.'

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[9] Though there is no a priori or logical connection between argumenthood and referentiality, it nevertheless seems to be the case that the two concepts fall together – and are even often fused-as far as the realization of the article is concerned. This seems to be an immediate consequence of the DP hypothesis. The relations can be expressed in a number of ways. Szabolcsi (1994) speaks primarily of NP subordination (to D) in relation to argumenthood. She says: "Both the complementizer and the article are subordinators in the sense that they enable the clause or noun phrase to act as arguments" (1994: 214), whereas Stowell (1991) and Longobardi (1994) rather explicitly relate argumenthood with referentiality (in the same spirit cf. also Chomsky 1995: 337).

For a general discussion of the relation between referentiality, definiteness and argumenthood see also Öztürk (2005).

In all the examples in (13) two nominal phrases are coordinated with the equivalent of English 'and' but for the coordinated pairs in the non-primed examples there is only one article. As a consequence, the coordinated string refers to a single referent. This is immediately obvious in the Italian example (13a) and in French (13b) because in both cases a plural form of the finite verb is excluded. In other words, despite the presence of two descriptive nouns, *segretaria* ('secretary') and *collaboratrice* ('collaborator') in (13a) and *sécrétaire* ('secretary') and *collaboratrice* ('collaborator') in (13b), only one individual is involved/referred to. This is related to the fact that there is only one article (*la*).[10] On the other hand, the corresponding primed examples (13a') and (13b') contain two articles. In this case there are two referents and the finite verbs must be plural. From this evidence we conclude that it is the article that makes a noun refer to entities (outside the linguistic context). Modern Greek (13c) displays a similar effect: in (13c) the coordinated DP refers to one referent, in (13c') there are two referents. (13c') with the verb in the singular may in fact be grammatical for independent reasons: in Greek, when two singular DPs are coordinated, the verb may be in the singular too:

(13) c. Irth-e/*-an o antiprosopos tis dikasticis arçis.
came.3SG/PL the delegate of.the court
ce proedhros tis eforefticis epitropis. (Greek)
and chair of the elective committee
'The representative of the court and chair of the elective committee has arrived.'

[10] Bouchard (2002) explains these facts along the lines of number being realized on Det in French to the effect that each N in (13b,b') cannot have a minimal atomization, hence it cannot have referential capacity by itself. Things are a bit more complicated in the case of English, as a single determiner may yield an ambiguous sentence as regards the number of referents involved. Bouchard assumes that Number is realized on N in English. Detailed discussion in this chapter would take us a little further afield than planned. See Part III, Chapter 1, section 7, for Bouchard's approach to the category number, and also Chapter 3 in this Part for a discussion on variable number realization in different languages. The interested reader is further referred to Longobardi (1994: 622) and Bouchard (2002) for interesting detailed discussion.

c'. Irth-an/*-e o antiprosopos tis dikasticis arçis
came.3PL the friend my and the close collaborator my
ce o proedhros tis eforefticis epitropis.
and the chair of the elective committee
'The representative of the court and the chair of the elective committee have arrived.'

On the basis of data like those discussed above, Longobardi (1994: 621) concludes:

> In other words, irrespective of the cardinality of head nouns present, a single singular determiner is sufficient to impose singular designation on the entire expression, whereas the sum of two singular determiners automatically imposes plural designation.

To put this more simply, there is one referent for each determiner and vice versa. This one-to-one relation between determiner and referent is apparently restricted to argumental DPs. In (13d) the predicate contains two coordinated DPs, each with its own article. However, the result of that coordination does not imply plural reference. In this case the person referred to as 'Maria' is both the secretary and collaborator of the speaker.

(13) d. Maria è la mia segretaria e la tua collaboratrice.
(Longobardi 1994: 621)
Maria is the my secretary and the your collaborator
Mary is my secretary and your collaborator.

Examples such as (14) suggest that nouns, alongside verbs, adjectives and prepositions can function as predicative heads (Stowell 1991) in that they too can assign theta-roles:

(14) a. The students elected John *president* (of the union).
b. Gianni è *tenente*. (Italian)
John is [a] lieutenant
'John is a lieutenant.'
c. O Petros ine *jatros* (Greek)
the Peter is doctor
'Peter is a doctor.'

Leaving theoretical complications concerning theta role assignment aside, we can say that the noun *president* in (14a) assigns a theta role (theme) to *John*.

Likewise, *tenente* ('lieutenant') in (14b) and *jatros* ('doctor') in (14c) assign the theme role to *Gianni* and *Petros* respectively. *President*, *tenente* and *jatros* are predicative heads and are not as a rule accompanied by an article.[11] These examples show that singular countable nouns used as predicates do not necessarily need an article. As arguments, though, singular countable nouns do require an article. Contrast English (14a) with (15), in which the omission of the article results in ungrammaticality (and see also (11) above):

(15) *Students elected John president (of the union).

In the light of the data discussed here, linguists have postulated that the referential capacity of the noun derives form the nature of the (definite) article (Stowell 1989). Abney (1987: 77) says:

> The function of the determiner is to specify the reference of a noun phrase. The noun provides a predicate, and the determiner picks out a particular number of that predicate's extention". Apparently, the (definite) article enjoys a privileged position among all those elements that constitute the class of determiners, as we shall see shortly. However, the key question is how from this fact, namely the ability of the article to pass referentiality onto the noun it modifies, the conception of the category DP, as a superordinate category to NP, emerged.

For the sake of completeness, we add here that indefinite DPs can function as arguments and as predicates:

(16) a. John is a doctor.
b. They called Mary a thief.

In particular, we refer to Stowell (1989, 1991) and to Higginbotham (1985) for the discussion of data which show that nominal predicates can, and, in some cases, even must, be preceded by the indefinite article and for a number of explanations. The existence of such cases is shown by these authors not to invalidate the general claim that noun predicates do not need the article, rather the presence of the (indefinite) article with such nouns is accounted for on independent principles/grounds.

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[11] There seems to be variation across languages as to the type of noun phrases that are permitted as the complements of copulas. In English the counterparts of (14b–c) are ungrammatical. See the contributions in Zamparelli (2004) for a discussion of relevant data and explanations.

As already alluded to at the beginning of section 2.2, the obligatory character of the determiner together with its semantic impact have led to promoting it from the status of being a mere specifier within the NP, the projection of the lexical head N, to being the head of a functional projection. This projection has been variably labeled Article Phrase (Horrocks & Stavrou 1987) and Determiner Phrase (Abney 1987 and subsequent literature). In sections 3 and 5 we will discuss in more detail how this functional category is articulated. For the moment suffice it to say that the head D hosts the definite article and that it selects as its complement the lexical NP. Thus the resulting complex of NP dominated by DP replaces what in Jackendoff's framework was the NP, a category with a unique head, N. DP is thus considered as the extended projection of N.

The point is put in a simple way by Stowell (1991: 46):

> Thus it seems possible to claim that, at least at the level of L[ogical]F[orm], all NP-type of arguments are referential expressions of one sort or another. It is plausible to suppose that all of these expressions [i.e., quantifier phrases, demonstratives, proper names and pronouns – A-H-S] derive their referential status from their heads, since their distinctive referential properties correlate with the type of element occurring in the head D position.

To recapitulate the main points covered in sections 2.2 and 2.3 we can further cite Longobardi (1994), whose work has been seminal in bringing out the direct relevance of D to argumenthood/referentiality of nouns:

> A "nominal expression" is an argument only if it is introduced by a category D. DP can be an argument, NP cannot. (Longobardi 1994: 628).

In section 3 below we will attempt an answer to the key question: apart from its role in creating an argument out of an NP, is there any independent support for this new DP category? In the next chapter we will go back to Longobardi's work centered around the role of D in licensing argumenthood.

2.4. Summary: the functions of the definite article

So far we have presented a relatively simple picture of the structure of the nominal phrase and the role of the article. The article is conceived of as a subordinator, on a par with complementizers, which can turn a projection of a noun into a referential expression, which can then be used as an argument of a verb (or a preposition). In addition, the article conveys – or grammati-

calizes – the semantic-pragmatic concept of definiteness, the latter primarily manifesting uniqueness and identifiability. The article thus can be seen to perform specific syntactic and semantic functions. Given its central role in the form and interpretation of the noun phrase, it is analyzed as a head that projects its own (functional) category DP.

However, at this point the complications of this proposal reveal themselves: what is the exact relationship between the article which exists as a specific morpheme in some, but not all, languages, and the category of definiteness (with all the interrelated notions it brings about)? Are all the semantic and syntactic functions we have isolated above (lexical) properties of the morpheme of the article itself, or are they to be attributed to something else, something abstract, behind or above the article itself? For instance, could the semantic-syntactic category D be the vehicle of definiteness rather than any one of its realizations? In Chapter 2 we will review some of the responses to these questions. For instance, according to some researchers, e.g. Giusti (1993, 1997, 2002) the article by itself is nothing more than a grammatical morpheme responsible for assigning case to the noun – point (iv) under 2 above. Under such a view, the article is devoid of any semantic or descriptive content. We turn to this particular view in 2.5.

2.5. The article as a grammatical morpheme

In the introduction we provided the list of diagnostic properties of functional categories, as originally drawn up in Abney (1987: 64f). On the basis of Abney's inventory, Giusti (1993, 1997: 102–107, 2002) concludes that (a) among determiners only articles are functional heads, and (b) in some languages a definite article is inserted on syntactic grounds regardless of the referential/semantic properties of the noun phrase.[12] Giusti's (2002) arguments for these claims are the following:

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[12] Giusti's fundamental claim about the 'grammatical' character of the definite article in a sense echoes Krámský's (1972) claims about the definite article in French as an indicator of gender and number and in certain cases in German as marking case. Krámský, however, points out (1972: 28–29) that there is only a very restricted overlap between what the article designates in different languages. He further says that to give "a precise definition of the article which would be valid for all languages that posess an article in some or other form, would be, in the present state of research on this problem, a very difficult if not impossible task" (1972: 29).

First, articles, even those that are free morphemes, are phonologically and morphologically dependent on the lexical category they come with. In some languages such as Italian, for example, the form of the article is adjusted to the initial sound of the following word. We observe that in this case the article displays a series of allomorphs:

(17) il ragazzo lo scolaro l'amico (Italian; Giusti 1997: 102)
the boy-MASC the student-MASC the friend-MASC

The dependency of the article on some lexical category is all the more obvious in languages where the article is enclitic. In those languages, the article can be suffixed not only on the noun, as illustrated in (18a), (18b), (18c) and (18d) but it can also be suffixed on the adjective, if that is the initial constituent of the projection, as shown in the Bulgarian example in (18e).

(18) a. băiat*ul* frumos (Romanian)
boy-the nice
b. djal*i* i mirë (Albanian)
boy-the ARTgood
c. hus*et* mitt (Norwegian)
house-the my
d. hestur-in (Icelandic)
stallion-the
e. goljamo*to* momče (Bulgarian)
big-the boy

In such patterns, the article seems to play the role of an inflectional ending spelling out φ-features rather than expressing semantic categories such as definiteness (see also (25) below).

More revealingly, in Bulgarian the form of the article depends on the word class to which the noun belongs. This is shown in (19):

(19) a. momce-*te*
boys-the
b. xora-*ta*
people-the

Both *momce* ('boys') and *xora* ('people') are masculine plural nouns but they belong to different word/conjugation classes. In the light of examples

such as (18) and (19) Giusti claims that the enclitic article is devoid of descriptive content and is just an inflectional ending of the noun (cf. also example (29 below)).

In addition to the observation that the article may be enclitic on other heads than on nouns, Giusti's claim that the article is devoid of descriptive content is based on instances of noun phrases containing more than one manifestation of the definite article. This phenomenon is referred to as determiner spreading or double definiteness (see Part III, Chapter 1, section 6, for data and possible analyses) and is illustrated in the following examples (from Giusti 2002: 61–62):

(20) a. to oreo to vivlio / to vivlio to oreo (Greek)
the good the book / the book the good
the good book

b. djal*i i* mire / *i* mir*i* djalë[13] (Albanian)
boy-the the-good / the good-the boy
the good boy

c. băiat*ul* (*cel*) frumos / frumos*ul* băiat (Romanian)
boy-the (the) good / good-the boy
the good boy

Similar cases are found among others, in Hebrew and in certain Scandinavian languages (Swedish, Norwegian). These examples suggest that the definite article does not encode definiteness as such: despite multiple manifestations of the definite article[14] in all of these examples there is just one referent. In other words, the proposal made in 2.3 above, that for each article there is one referent cannot be maintained. This has led some researchers to refer to the use of the definite article in determining spreading constructions as an expletive use of the definite article, i.e. a use in which the definite article lacks interpretative substance, in the same way that the definite article associated with proper names is considered as an expletive (for proper names see also section 2.3.3. of Chapter 2, for general discussion of the notion 'expletive article' see section 2.3.4. Chapter 2). (For details on

[13] The morpheme *i* in Albanian marks the adjectival class and is not relevant to the definiteness of the noun phrase. It is a purely morphological entity. See Giusti (1993) and (2002) for details about the morphological character of the enclitic articles in Albanian and Romanian.

[14] We ignore details having to do with different realizations of the definite article in some languages, which do not affect Giusti's argument here.

the Greek construction, see also Androutsopoulou 1994 and 1996.) Giusti proposes that in these constructions the 'definite' article serves a purely grammatical role, in particular it encodes agreement between the noun and its modifier(s) by bearing phi- and case features.

On the other hand, it is clear that Giusti's claim that the definite article does not have any semantic import encounters difficulties with respect to data like those in (13) above, in which the coordination of two DPs each with their own determiner implied that there were two referents, while the coordination of two NPs with one determiner implied there was a single referent. In relation to this issue, Giusti (2002) signals that in Romanian, the co-occurrence of two definite articles in one DP does not produce a two-referent interpretation effect. This is because in Romanian the article is suffixed and cannot be omitted. Consider the following examples from Giusti (2002:62) and compare them with the data in (13) above:

(21) a. Directorul de departament si presidentele de facultate a/au venit aici.
director-the of department and president-the of faculty has arrived here
'The head of the department and chair of the faculty is here.'

b. *Directorul de departament si presidente de facultate a/au venit aici.
director-the of department and president of faculty has arrived here.

(21a) is ambiguous between the readings in which the coordinated DP has one or two referents. On the other hand, even when there is just one referent, example (21b), with one enclitic article, is ungrammatical. This effect is due to the fact that in Romanian the article is suffixed and cannot be omitted. One way to solve this complication would be to say that the properties of free morpheme-articles (such as those in Italian or Greek, for instance) are distinct from those of suffixed articles (such as those in Romanian). But, unfortunately, this solution, as Giusti herself notes, is rather *ad hoc* and overshadows the fact that despite their different morphological status free and suffixed articles share a number of commonalities. In order to overcome this problem, Giusti puts forward a rather complex explanation for the Romanian facts, which we will not go into here (see Giusti 2002 for detailed discussion).

That the presence of an article does not always imply referentiality is also shown by examples such as (22) in which the (in)definite noun phrase *la/una segretaria di un onorevole* is interpreted as non-referential, as shown by the subjunctive mood in the relative clause:

(22) Scommetto che non troverai mai [$_{FP}$ *la/una* segretaria
bet-PRES-1SG that *non* find-FUT-2SG never the/a secretary-FEM
[$_{PP}$ di un onorevole che sia disposta a testimoniare contro di lui]].
of a deputee that be-SUBJ-3SG disposed to testify against of him
'I bet you'll never find the/a secretary of a deputee who is-SUBJ willing to witness against him.' (Italian; Giusti 2002: 63)

So once again, referentiality and the presence of the definite article do not appear to be isomorphic.[15]

Among the items often listed under the heading 'determiners', we also typically find demonstratives (see below, section 4.1). Giusti distinguishes between articles and demonstratives and based on a comparison with the data she has first provided in order to show the genuine functional/grammatical behavior of the definite article, she contrasts this behavior to that displayed by demonstratives. For instance, demonstratives are not morphologically dependent on the head noun, they may even be used independently.

(23) a. Il ragazzo è partito.
the boy is left
'The boy has left.'
b. *Il è partito.

(24) a. Questo ragazzo è già partito.
that boy is already left
'That boy has already left.'
b. Questo è già partito.
that is already gone
'That one has already left.'

The demonstrative also makes quite a different contribution to the interpretation of the DP. Compare (22) above with example (25) from Giusti (2002: 64) in which there is a demonstrative to introduce a complex noun phrase which contains a subjunctive clause.

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[15] Though, of course, one might try to maintain the isomorphism, and attribute the apparent lack of a strict relationship between the definite article and referentiality to independent factors, such as the nature of the predicate, negation and/or the subjunctive.

(25) *Scommetto che non troverai mai [$_{FP}$ *questa/quella* segretaria
bet-pres-1sg that non find-fut-2sg never this/that secretary-FEM
[$_{PP}$ di un onorevole che sia disposta a testimoniare contro di lui]].
of a deputy that be-SUBJ-3SG disposed to testify against of him

As can be seen, the demonstrative cannot replace the determiner: this is because the subjunctive is incompatible with a referential interpretation of the DP while, by virtue of the demonstrative, the NP *questa/quella segregaria* must be referential. Because of this conflict, the sentence is ungrammatical. This evidence then supports Giusti's hypothesis that the definite article does not invariably imply referentiality. Conversely, the demonstrative does imply referentiality.

Serious doubts on the role of the article as a definiteness/referentiality marker arise when we further consider the fact that it co-occurs with proper names as well as the fact that in some languages the definite article co-occurs with constituents which themselves encode referentiality, such as demonstratives. Consider the following examples from Greek and Italian (see the following chapter for more discussion).

(26) a. I Topsy irthe. (Greek)
the Topsy came
'Topsy came.'

b. Il mio Gianni (Italian)
the my Giani
'my Gianni'

c. afti i ghata (Greek)
this the cat
'this cat'

Being 'rigid designators' (Kripke 1972), proper names are inherently referential. Proper names can directly pick out a particular individual in the world. In the examples (26a) and in (26b), the proper names are accompanied by a definite article. Since proper names as such are already referential, the definite article clearly does not itself contribute to the referentiality or definiteness of the noun phrase. For this reason, the article which (necessarily) accompanies proper names in some languages (such as Greek) is sometimes referred to as expletive or dummy. We will come back to expletive articles with proper names in Chapter 2 section 2.3.3.

If, as we have just shown, the demonstrative itself implies definiteness (see example (25) above), then in (26c) definiteness is conveyed by the de-

monstrative *afti* ('this') and hence the definite article in (26c) cannot be responsible for contributing definiteness.

Further support for the fact that the definite article can be devoid of semantic (referential) content is suggested by those examples in which it seems to merely be used as a grammatical device to realize nominal φ-features such as gender, number and case. Consider the German examples in (27). With the genitive N *Kaffees* in (27a) and with the dative N *Tee* in (27b) the determiner is required, while with the accusative N *Kaffee* in (27b) and in (27c) it is not. There is no obvious difference in the referential status of the nominal projection in these examples. On the basis of these data, Giusti proposes that the realization of the article is required here simply by the need to express genitive or dative case.

(27) a. die Zubereitung *(*des*) Kaffees (German)
the preparation of *(the-GEN) coffee
'the preparation of coffee'

b. Ich ziehe (**den*) Kaffee *(*dem*) Tee vor.
I draw (*the-ACC) coffee *(the-DAT) tea for
'I prefer coffee to tea.'

c. Ich trinke gerne (**den*) Kaffee.
I drink gladly (*the-ACC) coffee
'I enjoy drinking coffee.'

In addition, Giusti points out that in several languages the enclitic article appears with the function of realizing nominal features. In the following examples from Romanian (Giusti 2002: 64) the bound morpheme *-ul* which is suffixed to nouns (or adjectives) in definite noun phrases, is also used as the ending of indefinite pronouns and quantifiers. In this usage *-ul* is a feature marker for gender (here masculine), parallel to Italian *-o*, and for case (here nominative):

(28)

Romanian	*Italian*	
un(**ul*) băiat	un(**o*) ragazzo	'a boy'
nici un(**ul*) băiat	nessun(**o*) ragazzo	'no boy'
am văzut pe un*(*ul*	(ne) ho visto un*(*o*)	'I saw one.'
N-am văzut pe niciun*(*ul*)	non (ne) ho visto nessun*(*o*)	'I saw no one.'
un*(*ul)* a spus că	un*(*o*) ha detto che	'Somebody said that…'
Nici un*(*ul*) a spus că …	un*(*o*) ha detto che	'Nobody said that…'

In Albanian the presence of articles suffixed on adjectives depends only on the type of adjective stem: in (29a) there is a suffixed article *i* associated with the adjective *mire* ('good'), in (29b) there is no suffixed article associated with the adjective *besnik* ('faithful'). In (29a) the morpheme *i* is part of the adjectival root and does not bear on the definiteness of the noun phrase.

(29) a. një djalë i mire, b. një djalë besnik (Albanian)
a boy the good a boy faithful (Giusti 1997: 104)

As shown by the English gloss of (29a), an indefinite article (*nje*) and a definite article (*i*) co-occur in a single noun phrase, without giving rise to any conflict in interpretation. This suggests that the definite article in this example does not contribute 'definiteness'.

By way of concluding this subsection we cite the following passage from Giusti (2002: 65):

> The definite article is neither sufficient nor necessary to trigger referential interpretation on the noun phrase. This implies that the article is not the element which carries the referential index of the noun phrase at all. This is not an unwelcome result since it is well-known that the distribution of articles is highly language-specific, while the distribution of semantic indexicals and operators such as demonstratives or quantifiers is rather uniform across languages.

In section 6 we will discuss in some detail Giusti's (1993) proposal that the definite article should be seen as an alternative way of expressing case morphology – under the general assumption that D is the locus of case, and within a conceptual framework according to which case distinctions in several languages approximate the definite-indefinite distinction. See Lyons (1999), especially Chapter 9, for a survey of the literature on the historical emergence of definite articles as the result of the loss of case marking on nouns.

As a final comment on this extract, let us notice that Giusti's claims (cf. (iv) above) imply that there should be made a clear point on the distinction between D as a structural position on the one hand and its realization by the definite article on the other. Not all researchers adopt such a clear-cut distinction, with the result of D, as structural position, being rather regularly confused with its primary occupant, the definite article, as has been pointed out before.

3. The DP hypothesis

3.1. Motivating 'DP'

In section 2 we examined some of the basic semantic and syntactic properties that have been associated with the definite article. Though there seems to be some relation between the presence of the definite article and referentiality of the DP, as well as its capacity to function as argument, we have shown that this relation is by no means universal or absolute.

Nonetheless, in recent generative work the article is standardly taken to be located in D, the functional head of the nominal projection. And if the article itself is not to be taken as responsible for the encoding of referentiality (or similar semantic notions), then the conclusion might be that it is D, the syntactic category realized by the article that is responsible for that part of the semantic interpretation of noun phrases. Such a conclusion would relate one or more semantic properties to a specific syntactic position, D, and would hence tie in directly with the DP hypothesis. In this section we review some of the evidence for the DP hypothesis.

In the Introduction to the book we mentioned that usually three types of evidence are used to identify the presence of a functional head: semantic evidence, morphological evidence and syntactic/distributional evidence. The evidence we have provided in sections 2.2 and 2.3 in support of the head D (and the related projection DP) was primarily semantic: given that the article, as the typical filler of D, does not unequivocally encode definiteness or related semantic notions, these properties must be derived from another source; arguably that source is the functional head D itself.

In this section we will be concerned with syntactic/distributional evidence for postulating the functional head D and the functional projection DP. In Chapter 3 we will provide morphological evidence in order to establish that there are actually more functional heads within the extended nominal projection. To anticipate these discussions: the core idea behind the various types of motivation of the category DP is simple: in order to be able to accommodate facts which were not given due attention some thirty years ago, we need to postulate more positions, or a richer structure.

3.1.1. Phrasal movement inside the nominal projection

One type of evidence corroborating the need to expand the nominal structure is the observed parallelism in the behavior of focused constituents on the level of the sentence and on the level of the nominal domain: in both

cases such constituents can be fronted (Horrocks & Stavrou 1987: 86). Sentential focusing in Greek is illustrated in the examples in (30b) and (30c), in which boldface signals contrastive stress:

(30) a. Edhose to vravio tis Afrodhitis.
gave-3SG the prize the-GEN Aphrodite-GEN
'He gave the prize to Aphrodite.'

b. **Tis Afrodhitis** edhose to vravio.
the-GEN Aphrodite-GEN gave-3SG the prize
'To Aphrodite he gave the prize.'

c. **To vravio** edhose tis Afrodhitis.
the prize gave-3SG the-GEN Aphrodite-GEN
'The prize he gave to Aphrodite.'

As can be seen, the indirect object *tis Afrodhitis* ('Aphrodite') in (30b) and the direct object *to vravio* ('the book') in (30c) can be fronted for focalizing effects. Horrocks & Stavrou (1987) show that focalization in the clause has the properties of A'-movement. We can assume that the fronted constituent is moved to the CP domain.

Now consider the word order in the nominal projections in (31), comparing the position of the boldfaced constituent in the primed examples with its position in the non-primed examples:

(31) a. to vivlio afto
the book this
'this book'

a'. **afto** to vivlio

b. to vivlio tu Chomsky
the book the-GEN Chomsky
'Chomsky's book'

b'. **tu Chomsky** to vivlio

c. i kritiki tu vivliu
the review the-GEN book-GEN
'the review of the book'

c'. **tu vivliu** i kritiki

d. to endhiaferon ja to arthro afto
the interest about the article this
'the interest in this article'

d'. **ja to arthro afto** to endhiaferon

In (31) the constituent following the head N in the non-primed examples has been fronted to a pre-N position in the primed examples. The interpretative effect of such fronting is that of focalizing. Horrocks & Stavrou (1987: 86) say: "All this is obviously reminiscent of the fronting of constituents that takes place in sentences for the purpose of bringing a particular constituent into prominence."

In (31) focalization takes place within the nominal projection. If the fronted constituents in the examples in (30) occupy SpecCP, then in the light of examples in (31), we can plausibly assume that the noun phrase must have a similar peripheral position to host focus-moved constituents. Notice crucially that the focused constituent in the nominal projections in (31) is found to the left of the article. This means that the moved constituent targets a position to the left of the position of the article. By analogy to what happens in the clause, this position can be argued to be a specifier position. If there is a specifier position to the left of the article, then it is plausible that the article is the relevant head. Thus the article would be in D and the fronted constituent in SpecDP. This makes SpecDP parallel to SpecCP: DP is to NP what CP is to VP.

The parallelism between interrogative clauses and interrogative DPs in Greek strengthens the hypothesis that DP is to NP what CP is to VP. (32a) is an echo question: the *wh*-constituent *ti* ('what') does not move to the sentence-initial position. In (32b) the *wh*-constituent is fronted (all examples from Horrocks & Stavrou 1987).

(32) a. Ekane ti?
did-3SG what
'He did what?'

b. Ti ekane?
what did-3SG
'What did he do?'

The same pattern is again found DP-internally (33):

(33) a. to vivlio tinos?
the book who-GEN
'whose book?'

b. tinos to vivlio?
who-GEN the book
'whose book?'

(34), from Horrocks & Stavrou (1987: 89, their (14)), illustrates the interaction between *wh*-movement at the clausal level and DP-internal *wh*-movement. (34a) corresponds most closely to a sentence with minimal movement; in (34b) the interrogative genitive *tinos* ('whose') has been fronted DP-internally. Following standard practice at the time that Horrocks and Stavrou wrote their paper, we use the symbol 't' for trace to indicate its original position. In (34c) and in (34d) *wh*-movement affects the object DP. We assume that it transits through the lower SpecCP, in which it leaves a trace (t), to reach the higher SpecCP. In the former case, *wh*-movement does not apply DP internally, and the interrogative genitive *tinos* ('whose') follows the head noun *vivlio* ('book'); in the latter case, the interrogative pronoun *tinos* has fronted DP-internally and precedes the definite article *to* and the head noun *vivlio*. In (34e) the interrogative pronoun *tinos* ('whose') is fronted all by itself to the matrix SpecCP. [16]

(34) a. Mu ipes [$_{CP}$ pos dhjavases [$_{DP}$ to vivlio tinos]]?
me-GEN said-2SG that read-2SG the book who-GEN
'You told me you read whose book?'
b. Mu ipes [$_{CP}$ pos dhjavases [tinos to vivlio t]]?
c. [$_{CP}$ [To vivlio tinos] mu ipes [$_{CP}$ t pos dhjavases t]?
d. [$_{CP}$ [Tinos to vivlio t] mu ipes [$_{CP}$ t pos dhjavases [t] ?
e. [$_{CP}$ [Tinos] mu ipes [$_{CP}$ t pos dhjavases [t to vivlio t]] ?

Let us dwell on the derivation of (34e) for a moment. With respect to A'-movement in the clausal domain, it is generally assumed that a lower SpecCP serves as an escape hatch for A'-movement to a higher clause, i.e. SpecCP is the position from which a focalized phrase or a *wh*-phrase may be extracted from the clause. This step-by-step derivation follows from considerations of economy: whatever the precise formulation, it is generally assumed that movement to a particular position takes place via intermediate landing sites (for formal discussion see Chomsky 1986; Rizzi 1991; Chomsky 1993, 1995; for an informal introduction see Haegeman and Guéron 1999; Haegeman 2006). In (34c,d) the trace in the intermediate SpecCP signals this intermediate step in the movement.[17] Since we postulate that DP parallels CP, we assume that in (34e) *tinos* ('whose') has moved via the intermediate A'-positions, i.e. SpecDP and the lower SpecCP.

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[16] We use traces here, following Horrocks and Stavrou's own practice. In Minimalist annotation traces are replaced by copies of the moved constituents. In this book, we sometimes use traces for reasons of clarity.

Note that the extraction of *tinos* from the DP in the Greek example (34e) may at first appear surprising: ever since the late 1960s it has been assumed (Ross 1967; Chomsky 1977) that the nominal projection as such tends to disallow extraction.[17] This generalization has become known as the Complex NP Constraint. It is illustrated in the English examples (35a) and (35b).

(35) a. *To whom did you like [the book that your brother gave]?
b. *To whom did you repeat [the story that your brother had given a book]?

In (35a) *to whom* is extracted from the NP *the book that your brother gave*, which contains a relative clause, and the result is ungrammatical. In (35b) the *wh*-phrase *whom* is extracted from a clausal complement of a nominal head, *story*, again leading to ungrammatical results.

However, Greek patterns differently in this respect. Consider the following Greek examples:

(36) a. Akuses [ti fimi oti o Petros ce i Maria xorisan]? (Greek)
heard-2SG the rumor that the Peter and the Maria separate-3PL?
'Did you hear the rumor that Peter and Maria got separated?'
b. Pji akuses [ti fimi oti xorisan]?
who heard-2SG the rumor that separated-3PL?

In (36a) the sequence *ti fimi oti o Petros ce i Maria xorisan (*'the rumor that Peter and Maria got separated') contains a nominal head *fimi* ('rumor') which takes a clause as its complement. However, in (36b) *pji* 'who') is extracted from that clause. This is predicted to be banned by the complex NP constraint. And yet, though judgments are subtle here, (36b) is grammatical in Greek.[18] This leads Horrocks & Stavrou (1987) to conclude that there must be a position in the noun phrase which can be used as an escape hatch for movement. They propose that the specifier position of D is the relevant escape hatch.[19]

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[17] See Corver (1990), Gavruseva (2000), Haegeman (2004), and also the discussion of Bošković (2005) in Chapter 2, section 3.3.2.

[18] See Horrocks & Stavrou for discussion about the subtlety of judgments about such cases and also for why extraction is altogether excluded out of (restrictive) relative clauses, which are also complex noun phrases.

[19] See Horrocks & Stavrou for extended account of these and related contrasts in terms of subjacency: they assume that in English IP/DP are bounding nodes, while in Greek, IP and DP may not be bounding nodes.

Additional justification for the SpecDP position as an A'-position in the nominal projection comes from English examples such as (37):

(37) a. [$_{AP}$ How important] is this decision?
b. [$_{DP}$ [$_{AP}$ How important] a decision] is this?
c. This is [$_{DP}$ a [$_{AP}$ very important] decision].

(37a) illustrates a root *wh*-question formed by A'-movement of the *wh*-phrase, *how important*, and I-to-C movement of the auxiliary. (37b) is also a root *wh*-question, in which the preposed constituent is a DP, *how important a decision*. Within the DP *how important a decision*, the adjectival *wh*-phrase *how important* precedes the indefinite article *a*.[20] The pre-article position of the adjective *important* is not the usual position of an adjective, as shown by (37c). We assume that (37b) illustrates a DP-internal application of *wh*-movement. At first sight, the moved AP in (37b) occupies the specifier position of DP. This again suggests an analogy between the specifier of DP and the specifier of CP.

All in all then, extraction data suggest that there is a need for a specifier position to host constituents that undergo movement inside (and out of) the nominal projection. Typically, such a specifier position will be related to a functional head. The appropriate type of a specifier becomes available if we assume there is a functional projection dominating NP; this projection is the functional projection of the head D, DP. Below we will consider in detail the properties of the specifier position of DP. The hypothesis that NP is dominated by a functional projection DP is referred to as the 'DP-hypothesis'.

3.1.2. PRO and the nominal projection (see also section 5.2)

A different type of syntactic evidence for the 'DP hypothesis' is discussed by Abney (1987, section 4 of Chapter 2 in Part II) and in the same spirit (with minor differences) by Stowell (1991). This evidence involves the distribution and interpretation of PRO, a pronominal anaphoric non-overt category which, in the Principles and Parameters model, is taken to be ungoverned. Consider the following data with derived nominals (from Stowell 1991: 43):

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[20] It must be noted that the phenomenon is restricted to singular only, **how important (some) decisions are these?* being ungrammatical.

(38) a. John$_i$ needs [a PRO$_i$ good talking to t$_i$].
b. The government condemns [the (PRO-arb$_i$) destruction of private property (PRO$_i$) to make a political statement].

The bracketed NPs in the examples above are the complements of the verbs *need* and *condemn* respectively. The relevant objects receive a theta role from these verbs. Hence, in terms of the *Barriers* model (Chomsky 1986), these constituents would be lexically marked. According to the *Barriers* model, a maximal projection can be a barrier if it fails to be lexically marked, that is, if it is an adjunct/modifier or if it is the complement of a functional category such as C. Such a barrier may block government. If the objects of the verbs *need* and *condemn* were simple NPs, these NPs would be lexically marked and hence could not constitute a barrier for outside government. This means that the constituent PRO would be governed because there would be no barrier to block government by the verbs. Embedding the lexical NP under the functional category D as its complement ensures that it will serve as a barrier.[21] So on these grounds, the category DP can be justified on independent principles or subtheories of the grammar.

3.1.3. Head movement inside the nominal projection

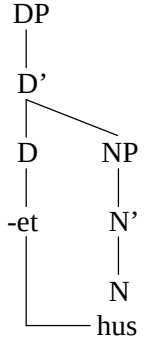
Since the late eighties, the hypothesis has been advanced that in certain languages the noun moves from its base position in the lexical domain to a higher functional position within the extended projection of N. The earliest such accounts include Dobrovie-Sorin (1987), Grosu (1988), Taraldsen (1991), Ritter (1991), Longobardi (1994), among others. Evidence for such an operation was provided by strings such as those in (39) in which the head N appears to precede constituents that it tends to follow in other languages:

(39) a. gutt-en, hus-et (Norwegian)
boy-the, house-the
b. portretul (Romanian)
portait-the

[21] To be precise: both NP and DP will block government of PRO by the higher verb, because NP is a blocking category; DP is also a barrier because it immediately dominates a blocking category (Stowell 1991: 43).

In all the examples in (39) the noun precedes the article, which is suffixed onto it. Since articles typically occupy a position at the left edge of the nominal phrase, it was then assumed that the noun moved to a higher position attracted by the article. In particular, the assumption was that movement was triggered by to the enclitic nature of the article which made it a bound morpheme. The position to which the N is moved was identified as a head position (D) under the independent principle that a head can only move to a head position. The process of N-movement (which is discussed in more detail and also evaluated critically in Chapter 3 and also in Chapter 1 of Part III) is illustrated in (39c):

(39) c.



Raising of N is also observed in languages without enclitic articles. Cf. the following noun phrases from Italian:

(40) a. il mio Gianni
'the my John

b. Gianni mio
John my
'my John'

In (40a) the article *il* ('the') and the proper name *Gianni* co-occur, the possessive adjective *mio* ('my') intervening between the two. However, in (40b) there is no definite article and the noun *Gianni* appears to the left of the possessive adjective *mio*. As the ungrammaticality of (40c) shows, an initial N is incompatible with a definite article. These data lead to the hypothesis that the initial N in (40b) in fact occupies the position of the article in (40a):

(40) c. *mio (il) Gianni

The generalization Longobardi (1994: 623) draws from all these and related data is that in the absence of the article, D still exists but it is phonologically empty. The proper name then obligatorily moves to the head D in order to fill this empty position and for the whole nominal projection to be interpreted (under the assumption that semantic rules 'see' primarily D). In Chapter 2 we will have more to say about why D must not be empty. In Chapter 3 we will see that in addition to moving to the functional head D, there also seems to be evidence for the hypothesis that N moves to functional heads lower than D, which will lead us to postulate additional functional heads.

N-to-D-movement has so far been proposed for two kinds of evidence: morphological evidence, as is illustrated by the existence of enclitic articles, and syntactic, as is illustrated by those Italian patterns in which proper names appear at the left edge of the noun phrase.[22] In either case, the result is a welcome one: the functional head D is justified, in fact it is necessary.

In section 4 below we will examine further how all the observations made above and hypotheses based on them can be implemented in terms of DP structure.

3.1.4. DP and the concept of definiteness

Before closing this subsection, it would be useful to turn to a point we made at the beginning of the chapter, namely the linguistic realization of the concept of definiteness. Recent research in the generative framework – both semantic and syntactic – has reached the unanimous conclusion that grammaticalization of definiteness implicates D (see also next chapter). On the other hand, it becomes obvious when one goes through the relevant literature that what is 'translated' syntactically through D is reference/referentiality. It thus appears that the other concepts related to definiteness are not

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[22] But it must be pointed out here already that the hypothesis about the raising of N to the higher head D, or in fact to intermediate head positions in the extended projection of N, has been challenged more recently and that in the light of new theoretical findings and more empirical evidence (Giusti 1994a, 1994b, 2002; Alexiadou, Stavrou & Haegeman 2001; Bouchard 2002; Shlonsky 2004; Cinque 2005; Laenzlinger 2005, among others), it has eventually been abandoned by many authors, at least for some languages. This issue is to be further discussed in Chapter 3 and also in Part III, Chapter 1.

immediately linked to D/DP, unless it turns out to be the case that referentiality can be argued to subsume all other concepts.

Lyons (1999) claims that D itself is basically the vehicle of semantic definiteness, which is syntactically encoded as the (grammatical) feature [+/–DEF]. The relation of [+DEF] to meaning can vary from language to language.[23]

> Thus for languages in general there is a range of noun phrase uses which can in principle be characterized as definite, because they can be described in terms of identifiability or inclusiveness. These uses represent "semantic definiteness" *but this is not what articles encode*. A given language need not treat the full range of these uses as grammatically definite; so the feature specification [+DEF] can segment the semantic field at different points in different languages, its range in a particular language being shown by which uses require the presence of the definite article or other definiteness marker.
>
> (Lyons 1999: 159, italics A-H-S)

Lyons accordingly assumes that DP is in fact a definiteness phrase. He writes:

> it is reasonable to suggest that only definite determiners are associated with D and its projection DP. (..) D is definiteness (..) and DP is a definiteness phrase. So the grammatical category which I have claimed definiteness is has its representation in syntax in the form of this functional head. This claim fits in well with the fact that nearly all other proposed functional heads correspond to grammatical or semantic categories rather than to word classes. (Lyons 1999: 298–299)

Lyons makes quite explicit a hypothesis that remains implicit in standard analyses and which is a crucial underpinning of the DP-hypothesis: that DP is the locus of definiteness. In particular, Lyons claims (1999: 301) that, like all free form articles, the definite article in English, occupies the specifier position of DP. If we assume that the free definite article occupies a specifier position and if modifiers also are taken to occupy a specifier position,

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[23] Since the definite article as such does not encode definiteness, the latter being a property of D, it can be argued that the definite article is a mere filler for SpecDP and as such is like the filler for the subject position in (i):

(i) It is likely that Mary won't be on time.

In this sense the definite article is an expletive, i.e. a meaningless filler for SpecDP. See also the discussion in Chapter 2, section 2.3.4.

the free definite article is similar to a modifier.[24] Affixal articles, on the other hand, would be taken by Lyons to occupy the D position.

3.2. Some challenges for the DP-Hypothesis

Before closing this section, we will briefly return to some of the earlier arguments which have been formulated against the DP-hypothesis.[25]

3.2.1. N incorporation

On the basis of evidence from incorporating languages (see Baker 1988; Payne 1993), Payne (1993) casts doubts on the correctness of the hypothesis that the noun phrase is not a single-headed endocentric projection but that it can be split into a functional domain (DP) and a lexical domain (NP). In incorporating languages, object noun phrases can incorporate into the verb, as in the following examples (from Payne 1993: 123, with reference to Baker 1988: 94):

(41) a. Wisi seuan-in bi-mŭ -ban.
two man-PL I.SG-see-PAST
'I saw two men.'

b. Wisi bi-seuan- mŭ -ban.
two I.SG-man-see –PAST
'I saw two men.'

The representation of the resulting incorporation is given in (42) (from Payne 1993: 123, slightly adapted):[26]

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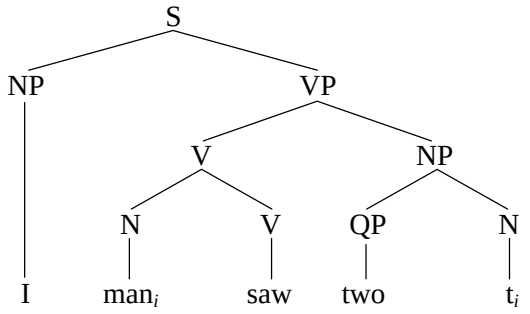
[24] Modifiers are, for instance, treated as specifiers in recent proposals by Cinque with respect to the distribution of adverbial and adjectival modifiers (1994, 1999, 2005). Kolliakou (1997) also assumes that the definite article in Greek, as a marker of definiteness, is an adjunct because it functions like a modifier in that it restricts the reference of the noun.

[25] See also Lyons (1999, paragraph 8.2.3) who points to a couple of weaknesses of the DP analysis.

[26] Payne uses English morphs in the diagrams he reproduces from Baker.

(42)



To account for this pattern we may formulate the hypothesis that the noun raises and adjoins to V. It leaves a trace. The assumption is that traces have to be either lexically governed or antecedent-governed. In the incorporation structures, the moved N can antecedent-govern its trace. As Payne points out, antecedent-government can only hold if there is no intervening head, such as, for instance, a Quantifier, to block the government relation. But in a conception of the nominal phrase in which NP is dominated by one or more functional categories, a problem emerges. The intervening functional heads would in principle block the movement of the noun since they would present an obstacle to the requirement of antecedent-government. For one account for this problem, Payne refers to Baker & Halle (1990). Baker & Halle (1990) draw a distinction between a functional and a lexical head as far as their potential for antecedent-government is concerned. Functional heads (Q, for example) cannot themselves antecedent-govern a lexical trace and, not being potential antecedent-governors, they do not create a minimality effect, and furthermore the noun is permitted to incorporate into a verb even with a QP intervening.

3.2.2. D incorporation to N

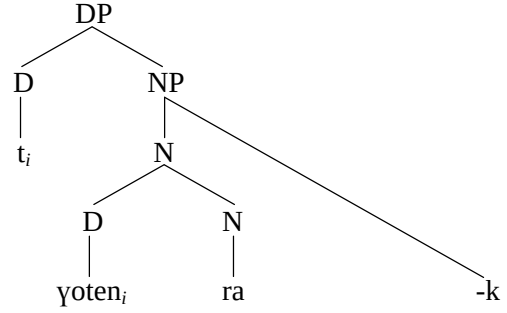
As a further problem for the DP analysis, Payne cites languages in which any noun modifier (adjectives, quantifiers, demonstratives, numerals) can incorporate into the noun itself. The following example is from a dialect of Koryak, attributed by Payne to Žukova (1980):

(43) a. Yoten-ra -k (Koryak)
this house-LOC
'in this house'

b. Ɣəmək -ra -k
my house -LOC
'in my house'

Payne argues that such cases pose a serious problem for an analysis according to which the demonstrative (or the possessor) heads a different projection than the one that N is in. The representation of the structure after incorporation would be as follows (Payne 1993: 127):

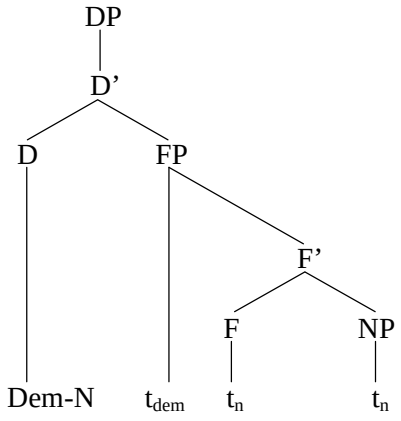
(44) a.



(44) requires lowering of the demonstrative onto the noun. From its new position the demonstrative does not antecedent-govern its trace, in fact the reverse is the case: the trace governs the demonstrative, an improper situation altogether. According to Payne, the same problem would arise after numeral incorporation into the noun.

However, it is obvious that the structure above is not the only conceivable one. We outline just one possible alternative among many. Assuming that the demonstrative originates in a position lower than D (see below for discussion) the derivation might not require reference to lowering. It is, for instance, conceivable for N to move to a higher functional head, say D, and that from a lower position the demonstrative incorporates into the noun in that functional head.

(44) b.



Though obviously this analysis would have to be motivated independently, it is clear that there might be a way of solving the problem raised by Payne's example above.

3.2.3. Agreement in the extended projection of N

As a third problem for the DP hypothesis, Payne points to problems related to the phenomenon of extended agreement between the noun and its modifiers which is found in a number of languages (see, for example the case of polydefiniteness in Greek discussed in Chapter 1 of Part III). The evidence that Payne focuses on concerns the scrambling of the nominal projection around the noun, which according to Payne shows that the noun has a special status within the noun phrase.

Payne's initial assumption is that the base position of nominal modifiers is prenominal. The modifiers "occur in a fixed order, and a single person, number and gender marker is postposed to the whole noun phrase" (Payne 1993: 133). Modifiers appearing to the right of the noun must hence have been postposed. In other words they no longer occupy their base position to the left of the noun. This reordering has an effect on the morphological properties of the modifiers. When postposed, each modifier bears its own person, number and case marking. Payne interprets the structures in which the noun is the first constituent having its own person-gender-number marking in which it is followed by one or more agreeing modifiers as appositional.

The status of Payne's counterevidence is not quite clear: it seems to be dependent on the hypothesis that all 'traditional' nominal modifiers such as adjectives, numerals and quantifiers, must be heads in the extended nominal

projection. However, this is not necessarily the case. In fact, as we shall further discuss in Chapter 3 and also in Chapter 1 of Part III, rather than being heads selecting for this NP themselves, at least certain (classes of) adjectives can plausibly be argued to occupy the specifier position of functional projections dominating the lexical NP. Agreement between the various modifiers does not entail that they are heads. Agreement can, for instance, be ensured in terms of specifier head relations between the agreeing modifiers in the specifier positions of functional projections intervening between NP and DP and the heads of these functional projections. In Chapter 3 we will see that at least one interpretation of these functional projections is to interpret them as agreement projections.

The DP-hypothesis, the idea that the nominal projection is selected by a functional head D, is based on the grounds we saw earlier on in this chapter and does not obligatorily entail head status for adjectives, or for any other prenominal modifiers for that matter. The status of such elements should be considered on independent grounds (see Chapter 1 of Part III for discussion on this issue).

Payne's objections to the DP hypothesis seem to be motivated by his assumption that N has a pivotal role in the nominal projection. However, this hypothesis is not incompatible with the DP hypothesis. Given Grimshaw's (1991) hypothesis about Extended Projection, whereby all the projections within the DP are necessarily of nominal nature, in the same way that all the projections in the clausal domain are of verbal nature, the pivotal role of N is maintained. (See also Chapter 2 of Part III for the same idea implemented in terms of the categorial features by Riemsdijk 1998).

4. Determiners, demonstratives and DP

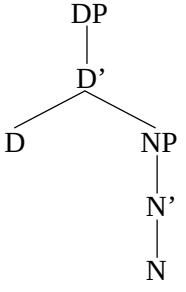
4.1. The interpretation of demonstratives

In this section we turn to demonstratives. According to the earlier proposals, in which demonstratives and articles are taken to occupy the same position, they would have the same syntactic status. Concretely, this means that in earlier accounts articles and demonstratives could be argued to occupy the specifier of NP; in the more recent accounts both could be argued to occupy the D position. Whichever account is chosen, if articles and demonstratives occupy the same slot, they should have the same distribution. This prediction is correct for English. However, comparative evidence shows that demonstratives and articles do not always compete for the same position. In

some languages demonstratives may co-occur with the definite article, while in other languages demonstratives and articles actually have to co-occur. We will take up this point below.

The evidence we have discussed so far points to the article as a realization of a functional head D, which selects the lexical NP and projects DP. As a result of being embedded under D, the NP can function as an argument (of a verb, for instance). The basic structure elaborated so far is given in (45):

(45)



Recall that according to earlier versions of X' theory (Jackendoff 1977), NP was taken to be a single (endocentric) projection of N. Its leftmost specifier position was taken to be occupied by a number of different elements such as articles, demonstratives, possessive NPs, possessive adjectives and interrogative pronouns. The basic reason for grouping of all these elements was the fact that in English they cannot co-occur; in other words they have the same distribution:

(46) a. *John's the book / *****the John's book
b. *this the book / *****the this book
c. *the his book / *his the book
d. *John's this book / *****this John's book

So, associating all the relevant items with one syntactic position leads to the prediction that these constituents will be in distributional equivalence, i.e. only one of them will show up. A combination of two or more of them should be ungrammatical. In the earlier proposals the unique position was the specifier of NP; following the DP hypothesis and assuming that articles are hosted by D, we would then have to propose that the elements listed above occupy D. However, the co-occurrence restrictions identified for English and which form the basis for a unique position are not universal. Once we observe that, say, a possessive pronoun and a determiner can co-occur, as in Italian and in Greek:

(46) e. il mia gatta (Italian)
the my cat

f. i ghata mu (Greek)
the cat-my
'my cat'

We conclude that we need to postulate at least two positions: one to host the determiner and one to host the possessive.

In addition, even with respect to the English data, the argument is not straightforward. We have already drawn attention to the fact that genitive noun phrases (*John's, the student's*, etc.) cannot be treated uniformly with determiners and demonstrative pronouns: the former belong to open classes and are definitely phrasal constituents whereas the latter belong to closed classes, and articles could plausibly be argued to constitute heads.

A salient difference between demonstratives and the definite article is that demonstratives are a universal category: unlike the definite article, demonstratives are found in all languages. They further have a double usage: they are used either intransitively (English *this*, Dutch *dat*, Greek *afto*), without an NP complement, or transitively with an NP complement (English *this book*, Dutch *dat book* ('that book')), in what is often referred to as the adjectival use of demonstratives. As will be seen later on, demonstratives can also be either simple (e.g. French *ce livre* ('this book)), or complex, namely compounded with an adverbial reinforcer (e.g. French *ce-ci* as in *ce livre-ci* ('this book here')). This 'complex' character of demonstratives has repercussions on their syntactic account, as we will see.

Demonstratives do have some similarities to definite articles. Like the definite article, demonstratives form a closed class, they lack substantial descriptive bulk and hence they can be argued to constitute a grammatical/functional category. Nevertheless demonstratives seem to have slightly more descriptive content than the definite article. We will review evidence found in the literature (Giusti 1997, 2002, see in particular section 4.2) that the distinguishing feature of demonstratives, viz. the deictic feature or [DEM], constitutes a kind of descriptive content. In what follows we will also see that the semantic difference between demonstratives and (definite) articles amounts to demonstratives having a clearly identifiable semantic value: they are responsible for the deictic interpretation (and thus indirectly of referentiality) of the noun phrase (Giusti 1997, 2002). This property holds irrespectively of the fact that articles historically derive from demonstratives, an important issue which we will briefly address in the following paragraph.

4.1.1. A note on the historical connection between demonstratives and the definite article

In a sense, the definite article and the demonstrative are distributionally (and functionally) similar: both pertain to the determination area, as said in the introduction to this part of the book, at some stage of the syntactic derivation both are found within the domain of the head D (see section 4.2). In languages lacking a separate morpheme for the definite article, demonstrative pronouns are sometimes used with the function of the article. This is, for instance, the case in Polish and in Latin (see Chapter 2), and even in Asian languages where classifiers may also play a limited role as articles. Thus, in Japanese, although a bare NP may denote a definite or indefinite NP, to stress definiteness a demonstrative is used.

As we will discuss below (section 4.1.2), both definite article and demonstrative are definiteness markers (for demonstratives as definite markers see also the discussion of (25) above). This common property of the definite article and the demonstrative is not an accident. Indeed it is a reflex of their diachrony. In general, in those languages in which they do exist, definite articles have emerged from demonstrative pronouns through a process of semantic and phonological weakening. For instance, French *le*, Italian *il* and Spanish *lo* have all developed from the Latin demonstrative *ille*, through its phonological reduction from (*il*)*le* to *le* (Greenberg 1978; Lyons 1977; Giusti 2001 and references therein;[27] also Lyons 1999, Chapter 9, among others).[28] The Modern Greek article (realized as *o* for masculine nouns, *i* for feminine nouns and as *to* for neuter nouns) had a morphologically identical ancestor in Ancient Greek which was used exclusively as a demonstrative pronoun (Jannaris 1897).[29] The same pattern is observed in English.

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[27] See section 6 below for a different approach by Giusti whereby it is claimed that the article emerges as a consequence of the weakening/loss of case distinctions on the noun.

[28] We could add here that according to Giusti (2001), this phonological weakening had as a consequence the reanalysis (in time) of *ille* from its original position in the specifier of DP to the head D.

[29] As Jannaris (p. 317–318) points out, the final development of the definite article in Greek becomes apparent: "only in Ancient prose, and particularly in Plato's philosophical language, where its presence or absence shows the finest differentiations and distinction between individual and generic notions." The definite article has retained its usage as a demonstrative in some fixed expressions, for instance, *to ce to* 'this and that'.

The definite article of the modern language-as well as the modern demonstratives themselves-emerged from the Old English demonstrative pronoun realized as *se* (masc.), *seo* (fem.) and *Þæt* (neut.).[30]

Notice that the historical approach to the emergence of the definite article is independent of the theoretical approach which basically links the emergence of the definite article to the development of DP structure, given more general assumptions concerning the development of functional projections in the child. But as Lyons (1999: 322ff) points out, the theoretical/acquisitional approach alone cannot explain in a satisfactory way how definite articles came about in those languages that have them. This is so, Lyons says, because that would imply first that definiteness markers (the definite article, in particular) must be determiners (Ds). This, however, does not necessarily hold, according to Lyons, given the affixal nature of articles in some languages. Secondly, "it is not clear why an adjectival demonstrative in a non-DP language should not weaken to express merely definiteness while remaining adjectival; and conversely, it is not clear why a language with determiners (because with DP) should not have only demonstrative, cardinal, etc. determiners, without a marker of simple definiteness" (Lyons 1999: 322–323).[31]

However interesting this diachronic issue of the evolution of articles from demonstratives and their respective impact on the expression of definiteness in the nominal projection may be, we will not pursue it further

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[30] For reasons of space we offer a simplified account here. The article in English might well have developed as a consequence of a series of changes concerning the loss of adjectival inflectional endings. See Spamer (1979) for interesting discussion.

Similar facts are reported by Vangsness (2004) for certain Scandinavian languages, where the free morpheme *den* serves for both the article and the distal demonstrative. In general, such processes are well-known cases of language change. In Finnish *se* is slowly turning into a definite article undergoing a process of grammaticalization which eventually will probably result in the definite article (Laury 1997).

[31] Greenberg (1978) hypothesizes a common pattern of ontological development of the definite article which involves four basic stages: the zero stage with no definite article as a means of the expression of definiteness, stage 1 whereby the definite article emerges out of a demonstrative, in stage 2 the use of the definite article becomes more general and finally in stage 3 it becomes grammaticalized (a purely grammatical marker). The reader is referred to Greenberg (1978) and references therein for this interesting issue.

here. By way of concluding this historical note, we cite an illuminating extract from Krámský (1972: 34), in which the point where a demonstrative becomes an article and the subsequent differences between them and their source is discussed:

> And here we come to the conclusion that we can speak about an article only when the definite article indicates a noun in a GENERAL function (e.g. *the horse is an animal*); an individual stands here for a whole class. If the pronoun has this meaning it becomes article. Let us mention another difference between the article and the pronoun: the pronoun is only facultative whereas the article is obligatory, it is a constant quality of the noun. Moreover, the article is not mere determination: this results even from the theories which we have discussed above. The fact that the article adds a definite element (be it a concretizing, substantivizing, actualizing element, the element of familiarity, etc.) to the noun is another important factor of the distinction between articles and demonstratives. In contrast to demonstratives, the article is always determination plus something else, some other element, which modifies the meaning of the word. It seems that the article influences the noun somehow from the inside, that is to say it influences the noun directly in its very essence, whereas the demonstrative pronoun merely points from the outside without substantially affecting the noun. The demonstrative pronoun does not insert anything into the noun to which it belongs.

4.1.2. The deictic interpretation of demonstratives

With respect to the interpretation of demonstratives, the important question that arises concerns their relationship with the definite article: what is the contribution of demonstratives to the interpretation of the nominal phrase and how is this similar to/ different from that of the definite article? Both the definite article and the demonstrative can be said to impart definiteness and referentiality. One obvious difference between demonstratives and definite articles is that, though both are definite, only the latter can be used to refer to a kind term (see Chapter 2 for generic nouns): *this dodo* in (47b) and *this mobile phone* in (48b) cannot refer to kinds.

(47) a. The dodo is extinct.
b. This dodo is extinct.

(48) a. The mobile phone has changed western culture.
b. This mobile phone has changed western culture.

Obviously, demonstratives do not have a generic reading. This should be related to the context dependent nature of demonstratives: their use is immediately connected with the coordinates of the utterance. This is what it means for the demonstrative to 'point from the outside' in the above passage from Krámský (1972).

Lyons (1999) points out that identifiability is the common denominator of the definite article and the demonstrative. Just like the definite article, demonstratives, being inherently definite, serve to identify the referent. However, demonstratives are *directly referential* expressions in that they can directly refer to entities of the linguistic or the extralinguistic (situational) world. Demonstratives denote entities without describing them. We can say they lack descriptive content, i.e. while demonstratives have extension they lack sense (*Sinn*). Because, besides being definite, demonstratives are also directly referential, they are considered to be among the deictic elements of language, viz. those linguistic forms whose use and interpretation rely crucially on the context in which they are produced.

(49) illustrates the genuinely demonstrative use of the demonstrative *that*:

(49) That is Melissa's favorite piece of clothing.

Deictic categories relate the linguistic entities that encode them to the spatiotemporal, that is the extra-linguistic, context. Quoting Lyons (1977: 637):

> By deixis[32] is meant the location and identification of persons, objects, events, processes and activities being talked about, or referred to, in relation to the spatiotemporal context created and sustained by the act of utterance and the participation in it, typically, of a single speaker and at least one addressee.

Other deictic categories are person and tense: being context-related, the reference of deictic items naturally varies from utterance to utterance or from context to context. Such context dependent expressions are also referred to

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[32] It is further useful to give another informative quotation from Lyons (1977: 637) concerning the terminology employed: «The fact that the Latin-based term 'demonstrative' has been specialized in linguistic terminology in the sense that the Greek grammarians gave to 'deiktikos', enables us to employ the terms 'deictic' and 'deixis' in a wider sense. And this is now common practice in linguistics. (…) Deixis covers not only the characteristic function of the demonstrative pronouns, but also tense and person, and a number of other syntactically relevant features of the context-of-utterance».

with the general term indexicals. Pronouns and temporal and locative adverbs such as *today*, *then* and *there* are also indexicals. However, demonstratives differ from indexicals such as *today*, *tomorrow*, *yesterday*, *I*, *you*, *she*, etc. in that they also require an associated demonstration – cf.: "typically, though not invariably, a (visual) presentation of a local object discriminated by a pointing" (Kaplan 1977: 9).

Let us consider example (50):

(50) Yesterday Topsy gave birth to this lovely kitten here.

All the indexical elements in this example acquire a meaning which depends on the context of their use. To interpret an utterance such as (50), one needs to know who utters it, when and where, and what is being *pointed at* ('*this* kitten') as it is being uttered.

The use of a demonstrative thus involves – to a greater or lesser degree – a contrast among referents (Hawkins 1978; Lyons 1999)). For instance, in (50) there is a contrast between 'this' kitten and some other kitten (*that one*, *John's kitten*, etc). While demonstratives and the definite article share the semantic component of identifiability and referentiality, deicticity (or ostensivity) is what sets them apart. The definiteness of demonstratives is not a matter of inclusiveness (Lyons 1999: 17). In demonstratives, deicticity or ostentivity is combined with identifiability to give rise to their typical interpretation.

The deictic component of demonstratives helps to locate the referent with reference to some point in the non-linguistic context (but see immediately below for the anaphoric use of demonstratives). The deictic feature of demonstratives is in general interpreted in two ways; either it is encoded in the opposition [+/– proximal] (or, inversely, [+/– distal]), with the speaker as the direct anchoring point. *This cat* denotes a cat that is found closer to the speaker than does *that cat*. In this case, the deictic feature functions in a way parallel to (physical) pointing/gesturing. As Lyons further points out (1999: 18), the relevant distance may also be temporal (cf. the contrast between *that day* and *this day*/*this week*). Or, alternatively the deictic feature is made contingent on the grammatical category of person; it then denotes association or closeness to the speaker, or a set of individuals that includes the speaker. For instance *this cat* can mean 'the cat I have / I and you have etc.). In other words, in this case *this cat* is associated with first person, viz. with the use of the pronouns *I* and *we*. *That cat* on the other hand is used to link the referent to a set of individuals that includes the hearer and excludes

the speaker or a set which excludes hearer as well as speaker. In other words, *that cat* is used to refer to a cat that is either associated with the hearer (second person) (51a) or with some other entity that excludes the hearer (third person) (51b).

(51) a. Show me that (?this) letter you have in your pocket.
(Lyons 1999: 18, his (61))
b. Tell her to bring that (?this) drill she has.
(Lyons 1999: 18, his (62))[33]

The deictic component inherent to demonstratives is taken by some linguists (Giusti 1997) to be a semantic component. In this sense, deixis is the semantic content that is missing from the definite article. As Giusti claims, demonstratives, as opposed to articles, have a semantic value, this property being crucial for "the interpretation of the referential index of the noun phrase" (1997: 42). Pursuing this point, Giusti (1997) goes a step further, casting doubt on the status of demonstratives as (completely) functional elements.

Deixis/ostension is thus considered to be the defining property of demonstratives. However, Lyons (1999) makes a more specific claim. He argues that the main diacritic property of demonstratives, which really sets them apart from the definite article, is a more abstract feature which he labels [+/–DEM], and which is to be kept distinct from the deictic feature.[34] But what does [+DEM] amount to? Lyons says that his [+DEM] feature can be compared to Hawkins' earlier (1978) 'matching constraint'. According to the matching constraint, the hearer is instructed to match the referent of the DP with some object which is either identifiable/visible in the context (cf. (49)), or which is known on the basis of previous discourse (Lyons 1999: 20). The contrast between the acceptable definite article and the unacceptable demonstrative in (52b) illustrates the point:

(52) a. I got into the car and turned on the engine. (Lyons 1999: 20)
b. *I got into the car and turned on this engine.

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[33] As Lyons notes (1999: 18–19), *this* could also be used in these examples if it were thought as an appropriate word to refer to the speaker.

[34] According to Lyons, [+Dem] and [+DEF] are intrinsically connected, so that marking demonstratives as [+DEF] is even redundant. Demonstratives are necessarily definite.

In this example the definite article can be used to signal the need for activation of all-purpose knowledge, namely that cars have engines, and moreover that they have just one. On the other hand, the use of the demonstrative signals that the referent must be located in the (non)linguistic context or the immediate situation. The matching constraint looks close to identifiability but the type of identifiability intended here is of a more restricted kind than that implicated by the use of the definite article. The demonstrative signals that the identity of the referent is directly accessible (cf. 'direct reference') to the hearer (e.g. by pointing), without the need for the hearer to do any of the inferencing that would be associated with processing definite articles (Lyons 1999: 21). The context of (52b) is not such as to provide direct accessibility to the referent 'the engine'. Hence the use of the demonstrative is infelicitous. Example (8) above, repeated here as (53a), illustrated a similar point. Once again the referent of the DP *the bride* is accessible as a result of inferencing: there is one bride at a wedding. Again a demonstrative would not be appropriate (53b):

(53) a. I've just come back from a wedding. The bride was wearing red.
b. I've just come back from a wedding. *This/that bride was wearing red.

Lyons's (1999) decision to replace (spatio-temporal) deixis by the more abstract feature [DEM] is also motivated by the observation that demonstratives are sometimes neutral with respect to spatio-temporal location. This can be illustrated from a number of languages. English *that*, for example, is sometimes neutral with respect to spatio-temporal location (54a), especially when used as a pronominal in relative clauses (Lyons 1999: 19).

(54) a. She prefers her biscuits to those I make.
(Lyons's 1999: 19, his (63))

Likewise, French demonstrative *ce* is itself neutral with respect to the coding of distance/proximity (Lyons 1999: 19). That is why it can be accompanied by so-called reinforcers: the bound morphemes *-ci* and *-là* are deictic markers, which are attached to the noun and carry information about distance. This is shown in (54b). The demonstrative *ce* itself is neutral between the proximal *this* and the distal *that.*

(54) b.	Ce bateau-ci	*vs*	ce bateau-là
	this boat -here		this boat -there

Such examples show that spatio-temporal deixis can be dissociated from the more abstract property [DEM], which Lyons takes to be the constitutive feature of demonstratives.

Egyptian Arabic is another example cited by Lyons (1999: 19–20) in support of his claim that, although deixis is a common property of demonstratives, it is not an invariant property. In this language, there is a one-form demonstrative system, *da* ('this/that'), which lacks deictic contrast altogether. Not having been lexicalized or grammaticalized, information concerning the distance of the referent from the speaker is retrieved on the basis of other contextual means. Observe that Egyptian Arabic has a distinct morpheme for the definite article (?*il*), so that it could not be argued that *da* is an article.

Similar observations can be made for Modern Greek. Modern Greek has a two-form demonstrative system:[35] the relevant forms are *afto* ('this') and *ecino* ('that'). However, *afto* is often used in a neutral way with respect to proximity or distance from the speaker, functioning more as a kind of default demonstrative of the language. Reinforcers can be inserted to make the proximity/distance clear. This is shown in examples (55a–b), where the deictic markers *edho* ('here') and eci ('there') are added to signal proximity-distance from the speaker respectively.

(55) a. afto-edho to praghma
this here the thing

b. afto-eci to praghma
this that the thing

The second demonstrative, *ecino* ('that'), is different: only the reinforcer *eci* ('there') can be added to this demonstrative form (55c), *edho* ('here') is excluded:

(55) c. Fere ecino-eci to trapezi.
bring-2SG-IMPER that-there the table
'Bring that table there.'

d. *Fere ecino-edho to trapezi.
bring-2SG-IMPER that-here the table

[35] It is interesting to note that the Modern Greek article is also related to a demonstrative usage in pre-homeric Greek, expanded as *hode* in the classical period, i.e. a form containing a reinforcer to act as a demonstrative.

Ecino, then, is unambiguously used to exclude the speaker.

The Finnish demonstrative *tämä* is used to refer to items close to the speaker, while the demonstrative *tuo* is used to refer to items further away. The language has a third demonstrative *se*, which is considered to be neutral:

(56) a. tämä
this
b. tuo
that
c. se
'unmarked' (Lyons 1999: 113)

To summarize the discussion of the status of demonstratives, we give the following illustrative extract from Lyons (1999: 21):

> A demonstrative signals that the identity of the referent is immediately accessible to the hearer, without the inferencing often involved in interpreting simple definites. This may be because the work of referent identification is being done for the hearer by the speaker, for example by pointing to the referent. The deictic feature typically expressed on a demonstrative plays a similar role to pointing, guiding the hearer's attention to the referent. This suggests a necessary connection between [+DEM] and [+DEF], the former implying the latter. I take demonstratives, then, to be necessarily definite.
> (Lyons 1999: 21)

4.1.3. The anaphoric use of demonstratives

Before closing this subsection, a brief mention must be made of the most common non-deictic usage of demonstratives, namely the anaphoric usage. Anaphoric usage is going to be rather crucial in our syntactic account for demonstratives (see in particular section 4.2.3). Consider the following example:

(57) Every girl brought her favorite piece of clothing to school and wore that to the party rather than her uniform.

Demonstrative *that* in (57) refers back to the expression *her favorite piece of clothing*, i.e. to an entity referred to already available in the discourse. In

this usage, the demonstrative acts like an anaphoric pronoun which is interpreted in terms of its connection to an antecedent linguistic expression.

Anaphora is a common non-deictic category involved in demonstrative systems (Lyons 1999, section 3.1.2). In the anaphoric use of demonstratives the deictic feature [+/–PROX] tends to be used for anaphoric reference, as do the person-based systems; first person forms are used as proximal, in an extended sense, and non-first or third person forms as distal. The Latin demonstratives *hic* (first person) and *ille* (third person) have regular anaphoric uses as more ('the latter') versus less ('the former') recently mentioned. Latin also has an anaphoric use of the form *is*, a deictically unmarked form. But several languages have a special demonstrative for anaphoric usage (Lyons: 114): such is the case, for example, of the element used in polydefinite constructions in Romanian, as well as in Greek (see Chapter 1 of Part III for discussion of the polydefinite construction).

In their anaphoric use demonstratives can be seen as markers of topichood. Some languages have a special demonstrative for this use. In others it is the position of the demonstrative relative to the noun that brings about the anaphoric interpretation. In the next section we will discuss a case from Modern Greek, in which the demonstrative can serve as an anaphoric pronoun when found immediately after the noun or an adjective.

In the light of the observations made in this section, it can be concluded that demonstratives, despite the fact that they constitute a closed class in all languages, and even though they lack descriptive content as such, belong to the (semantic) field of deixis. It can therefore be concluded that demonstratives, unlike the definite article, may be seen as affording at least some semantic content (Giusti 1997) – it essentially consists of the feature [+DEM]. In section 4.2 we examine a number of syntactic differences between the definite article and demonstratives.

4.2. The syntactic representation of demonstratives

4.2.1. Demonstratives as maximal projections

We have already said repeatedly that in Jackendoff's model of phrase structure, demonstratives and articles, along with other elements, belong to the class of determiners[36] and were assigned to the same structural position,

[36] In fact Jackendoff distinguishes two major classes, *demonstratives* and the *quantifiers* (Jackendoff 1977: 104). Articles and demonstratives belong to the first class.

namely the leftmost specifier of the NP. As discussed above, this hypothesis was meant to capture the fact that English articles are in equivalent distribution with demonstratives, so they could be thought of as occupying the same position:

(58) a. This book is interesting.
b. That book is boring.
c. *This the book is interesting.
d. *The this book is interesting.
e. *That the book is boring.
f. *The that book is boring.

One important remark at this point concerns the cross-linguistic evidence which strongly suggests that in fact the demonstrative and the determiner do not occupy the same structural position. One argument for distinguishing the demonstrative from the article is that in many languages the two elements can co-occur:

(59)	a.	ez	a	haz	(Hungarian)
		this	the	house	
	b.	ika	n	anak	(Javanese)
		this	the	baby	
	c.	afto	to	vivlio	(Greek)
		this	the	book	
	d.	omul	acesta		(Romanian)
		man-the	this		

A further property that sets apart (definite) articles from demonstratives, already mentioned above, is that demonstratives may stand alone, intransitively as it were, a property not shared by the definite article, be it a bound or a free morpheme: [37]

(60)	a.	I like that.	*vs*	I like the *(book).	
	b.	Ho visto quello.	*vs*	Ho visto il *(ragazzo)	(Italian)
		I have seen that	*vs*	I have seen the (boy)	

This property of demonstratives is connected with their autonomy in the sentence; in contrast to the definite article, they do not depend morphologically/phonologically on the noun (or an adjective, if there is one).

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[37] See Giusti (2002) for discussion of some apparent counterexamples.

Giusti (1997: 112) discusses the evidence provided by the Italian sentences in (61), which show two interrelated facts. The examples concern the possibility of extracting material from within the DP, in particular of extracting a possessor. We see that extraction is possible provided there is no demonstrative present (Giusti 1997: 111):

(61) a. Di chi hai la foto sulla tua scrivania? (Italian)
of whom have -2SG the picture on-the your desk
'Whose picture do you have on your desk?'

b. *Di chi hai questa foto sulla tua scrivania?
of whom have-2SG this picture on-the your desk

The first conclusion from these examples is that definiteness as such should not be taken as the factor blocking extraction. Both the definite article in (61a) and the demonstrative in (61b) lead to definiteness in the DP. Extraction from the former is possible while it is blocked from the latter.

The second related conclusion concerns the syntactic status of the demonstrative *vs.* that of the article: Giusti assumes that the contrast in (61) is due to the different syntactic status of the article and of the demonstrative. If the article is a head, it does not as such block extraction of a maximal projection (the *di*-phrase). On the other hand, Giusti proposes that the demonstrative is a maximal projection, it occupies a specifier position and hence it blocks extraction. Extraction data thus offer some evidence for differentiating demonstratives and the definite article in terms of their syntactic status: the former are maximal projections, the latter are heads.

Further evidence for opposing the phrasal status of demonstratives and the head nature of articles is provided by the following examples from Romanian, also discussed by Giusti (1997: 107):

(62) a. acest băiat frumos
this boy nice

b. băiatul (acesta) frumos
boy-the (this) nice

c. frumosul băiat
nice-the boy
this nice boy

d. *frumosul acesta băiat
nice-the this boy
this nice boy

Comparing (62a) with (62b) we see that the demonstrative *acest* ('this') can be crossed over by the noun *bajatul* ('boy-the'). In (62c–d) we observe that the demonstrative *acesta* cannot be crossed by an adjective *frumosul* ('nice-the') (see also Part III, Chapter 1). If the adjective is moved as a phrase (as argued for by Giusti 1993, and Dimitrova-Vulchanova and Giusti 1998) the fact that it cannot cross over the demonstrative is further evidence for the maximal projection status of the demonstrative itself.

4.2.2. Articles in D; demonstratives in SpecDP

We can now combine the above observations with some more syntactic facts about demonstratives in order to determine their location in relation to the domain headed by D.

In some languages, English and Greek among them, there is an interpretative similarity between *this* and degree modifiers like *such*, in that both point to an element known from the discourse context: *such a reaction* means, roughly, 'a reaction of this kind'. This is shown in the following examples:

(63) a. I did not expect this reaction.
'I did not expect such a reaction.'

b. Dhen perimena afti tin antidhrasi. (Greek)
not expected-1SG this the reaction

c. Dhen perimena tetia antidhrasi.
not expected-1SG such reaction[38]

Observe also that the English demonstrative *that* is in fact used as a degree modifier in an adverbial phrase or in an adjective phrase, and is comparable to the degree adverb *so*:

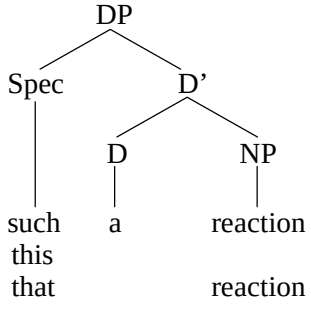
(64) a. I did not expect it to happen [$_{AdvP}$ that quickly].
b. I did not expect it to happen [$_{AdvP}$ so quickly].
c. I did not expect [$_{DP}$ [$_{AP}$ that big] an audience]].
d. I did not expect [$_{DP}$ [$_{AP}$ so big] an audience].

In (64a) *such* immediately precedes the article in D. As a first approximation, it can be proposed that *such* occupies SpecDP. Exploiting the observed

[38] Interestingly, traditional grammars of Greek list both *aftos* ('that') and *tetios* ('such') under demonstrative pronouns.

similarity between *such*, *so* and the demonstrative, we might formulate the hypothesis that the demonstrative *this* in (63a) also occupies the specifier of DP:

(65)



This means that the demonstrative appears to be located in SpecDP. Indeed it is evident from even a superficial inspection of DPs which contain a demonstrative in a wide range of languages that the demonstrative often occupies the leftmost position in the DP. A further question that arises now is this: is this leftmost position the 'base' position or is it a derived position? Putting the question differently: does the demonstrative start out in the leftmost position of DP or does it originate somewhere lower in the DP or, even, in the NP? If the latter is the case, then the leftmost position of the demonstrative is a derived position to which it must have been moved.

4.2.3. A lower position for demonstratives

An assumption shared by many linguists is that the demonstrative is found in the position of SpecDP as a result of movement from a lower position (Giusti 1997, 2002; Brugè 2000, 2002; Brugè & Giusti 1996; Panagiotidis 2000; Grohmann & Panagiotidis 2005; Shlonsky 2004). Support for the movement analysis comes from a number of languages in which the demonstrative is indeed found in a lower position. This is illustrated for Romanian in (66), Spanish in (67) and Greek in (68). As can be seen, in all three languages the demonstrative may either be the initial constituent of the DP or it may occur to the right of the head noun.[39]

[39] Note that the difference between Romanian and Spanish on the one hand and Greek on the other concerns the presence vs. absence of an overt determiner co-occurring with the demonstrative. The determiner is licit (in fact it is obligatory) in Greek, but not in Spanish.

(66) a. acest băiat (frumos) al sau (Romanian; Giusti 2002: 71)
this boy nice of his
b. băiatul acesta (frumos) al sau
boy-the this nice of his

(67) a. este hombre (Spanish)
this man
b. el hombre este
the man this

(68) a. afto to vivlio (Greek)
this the book
b. to vivlio afto
the book this

Brugè (1996) argues that the patterns illustrated above can be accounted for if one assumes that the demonstrative is generated in a low specifier position. The relevant proposal is that the demonstrative is first inserted as the specifier of a functional category immediately above NP.[40] In addition, it is assumed that D contains a [+DEF] feature, which needs to be associated with an overt element (i.e. lexicalized). This requirement may be satisfied either by the definite article (66b, 67b, 68b) or by the demonstrative (66a, 67a, 68a). Let us consider the examples above.

In Romanian (66a), the uninflected demonstrative *acest* precedes the N *baiat* ('boy'), which in turn precedes the adjective, *frumos*. There is no determiner on either the noun or on the adjective. In (66b) the noun *baiat* is prefixed to the enclitic definite article *-ul* and precedes the demonstrative, which bears agreement inflection (*acesta*).

If we assume that (66b) is derived by head movement of N, then the Romanian data support the view that demonstratives are maximal projections. Head-movement of N in (66b) would cross the demonstrative (*acesta)*. If the demonstrative *acesta* were itself to be analyzed as a head we would have to say that head-movement of the noun *baiat* can cross a head in violation of the locality conditions on movement. The assumption that demonstratives are maximal projections avoids this problem. If we assume

[40] Vangsness (2004) also assumes demonstratives are generated at the spec of the category that hosts the enclitic article in Icelandic. This category immediately dominates the category that hosts the inflectional morpheme of the noun (the so-called Word Marker (see Chapter 3)).

that the noun in (66b) has moved to D, then the example also suggests that the position of the demonstrative is lower that the D level.

The Spanish examples in (67a,b) display a similar pattern. The post-nominal occurrence of the demonstrative in (67b) also offers evidence for a lower position of the demonstrative. Note that it has been proposed that in Spanish the noun also raises to an intermediate functional head. In (67b) the demonstrative occupies a lower position: we can assume it remains in its base position, the specifier of a functional projection between DP and NP. The order in (67b) can be derived by noun movement to a head position between DP and NP. The prenominal occurrence of the demonstrative *este* ('this') in (67a) can be interpreted as resulting from the demonstrative raising to SpecDP.

At this point we have derived Romanian (66b) and Spanish (67b) in the same way: the demonstrative is kept in a low position and the noun moves. It must be pointed out, however, that although in Romanian (66b) and in Spanish (67b) the demonstrative immediately follows the noun+article and the noun respectively, the post-nominal position of the demonstrative in Romanian can be shown to be different from that in Spanish. Consider (69):

(69) a. el cuadro redondo este suyo
the painting round this of his

b. tabloul acesta rotund al său
painting this round of his

In both Spanish (69a) and Romanian (69b) the demonstrative follows the head noun. However, in (69a) the demonstrative *este* also follows the descriptive adjective *redondo* ('round'), while in (69b) the demonstrative *acesta* precedes the adjective *rotund* ('round'). If the demonstrative occupies its base position in Spanish (69a) then (69b) suggests that it has undergone movement in Rumanian.

Giusti (2002: 71–72) takes the position of the demonstrative in the Romanian example (69b) to be derived. She postulates partial movement of the demonstrative to a position intermediate between DP and the lower base position of the demonstrative. She assumes that when the enclitic article is merged in the structure , this creates a further projection. This can be seen in (69b): in this example there is an enclitic article, *-ul*, on the noun *tabloul* ('the painting'). The same type of enclitic article appears on the noun *băiatul* ('the boy') in (66b), while there is no such enclitic article in (66a).

Merging of the article triggers movement of the noun. Giusti also assumes that this in turn will necessitate the creation of a new specifier position for the demonstrative to move to at the level of Logical Form (LF) (see (70) below for the motivation for LF movement).[41] So movement of the demonstrative to an intermediate position in Romanian is contingent on the bound nature of the article which triggers N-movement.

But notice now that, in contrast to (66a), the sequence in (66c), in which the demonstrative precedes the combination noun+ article, is ungrammatical.

(66) c. *acest băiatul (frumos al său)

The format in (66d) summarises the general structure which Giusti postulates to derive the Romanian examples in ((66a-b), (69b), (66c)):[42]

(66) d. [$_{FPmax}$ [N+art [$_{FP4}$ dem [N [$_{FP3}$ AP [N [$_{FP2}$dem [N [$_{FP1}$ poss AP [N]]]]]]]]]
(Giusti 2002: 72)
where AP=descriptive adjective, possAP =possessive adjective

We will first illustrate how the structure is implemented by providing representations for the Romanian examples just given. Then we will explore some of Giusti's principles underlying these representations. For (66a), there is no article on the noun. Giusti assumes that the derivation moves to FP4, and then moves to FPmax (see (70) for argumentation):

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[41] The discussion assumes that there are a number of different levels of representation, D-structure, S-structure and L(ogical) F(orm). These levels were typically adopted in pre-minimalist approaches, like in the Government and Binding framework (Chomsky 1981, 1986).

D-structure is the level at which elements are inserted. S-structure results from various movement operations and is reflected in the overt form of the sentence. LF is an interpretative level in which non-overt movements may have taken place to encode semantic relations (scope, for instance). It is assumed that any movement that can overtly take place before S-structure may also apply covertly to generate LF-relations.

See also Part I (Introduction) section 2.1. for a discussion of levels of representation

[42] Following Giusti's own practice we use copies to indicate moved constituents.

(66) a.' [$_{FPmax}$-acest [$_{FP4}$ ~~acest~~ [băiat
[$_{FP3}$ frumos [~~băiat~~ [$_{FP2}$~~acest~~ [~~băiat~~ [$_{FP1}$al sau [~~băiat~~]]]]]]]]]

For (66b), the enclitic article *-ul* is merged with FP4 and heads FPmax. The clitic in F_{max} attracts the noun *băiat*, which moves cyclically through the heads of the functional projections (FP2, FP3 FP4). The demonstrative *acesta* originates in the low functional projection, FP2, and has moved to the specifier position of a functional projection FP4.

(66) b.' [$_{FPmax}$ [băiatul [$_{FP4}$acesta [~~băiat~~ [$_{FP3}$ frumos [~~băiat~~ [$_{FP2}$ ~~acesta~~ [~~băiat~~
[$_{FP1}$ al sau [$_{NP}$ ~~băiat~~]]]]]]]]]

The ungrammaticality of (66c) shows that, unlike what happens in (66a), the demonstrative does not move beyond SpecFP4 to land in SpecFPmax. Giusti (2002) accounts for the ungrammaticality of (66c) on the grounds that merging of the article is a last resort procedure. If SpecFP^{max} is occupied by the article, the projection is visible and its specifier need not be overt, therefore it must not be overt. Hence, the demonstrative cannot move to SpecFPmax (cf. (71) below).[43]

(66) c.' *[$_{FPmax}$ acesta [băiatul [$_{FP4}$ ~~acesta~~ [~~băiat~~ [$_{FP3}$ frumos [~~băiat~~ [$_{FP2}$ ~~acesta~~
[~~băiat~~ [$_{FP1}$ al sau [$_{NP}$ ~~băiat~~]]]]]]]]]

In order to clarify why demonstratives should move in languages like Romanian and why in some languages they cannot co-occur with the definite article (Greek), Giusti adopts the following assumptions (for more on this, see Giusti 2002):

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[43] Another instance of a last resort process in Romanian concerns the pseudo-demonstrative *cel*, which is merged in the structure when the adjective fails to check the *phi*-features on D (Campos 2005 for details).

In Romanian there are two words that mean 'first': *întâi-ul* and *dintâi*. Notice that only the first one bears definite inflection. The use of the second one requires insertion of *cel*:

(i) a. inta-ul text b. *dintâi text c. cel dintâi text
first-the text the first text

Since numerals are adjectives merged high in the nominal structure, the noun does not have the choice of moving past them (i.e. the order is always Num-N). Thus the last resort Spell-Out of the determiner that Giusti proposes does not work here and the pseudo-article (the anaphoric-cataphoric demonstrative) plays the role of the adjective.

(70) 1. D has a referential feature. The referential feature on D needs to be associated with an overt element; this is realized either on the head D itself or on its specifier.

2. "The interpretation of a noun phrase at LF is done in its highest Specifier position " (Giusti 2002: 56).

   In our examples the highest Specifier position is $SpecFP_{max}$ in (66b). $SpecFP_{max}$ corresponds to DP.

3. Demonstratives, as well as other maximal projections carrying referential features, must check their referential features in $SpecFP_{max}$ /SpecDP at some level of representation (and by LF at the latest).

   In (66a) the demonstrative is in the specifier of the highest projection and can check its features; in (66b) it occupies SpecFP4 but the highest specifier is SpecFPmax. The demonstrative will therefore have to undergo movement to SpecFPmax at LF to check its referential features.

Observe that the third condition interacts with the first in that movement of the demonstrative to SpecDP will satisfy the condition on the overt realization of the referential feature on D. Moreover, as we said above, referring to Lyons (1999), the defining characteristic of demonstratives is the feature [+DEM]. So we can understand point 3 as saying that what is checked by raising the demonstrative are not just the referential features of the demonstrative, but rather the feature [+DEM]. [+DEM] entails definiteness, so when the demonstrative reaches SpecDP, the whole nominal phrase is interpreted as definite, as expected.[44]

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[44] Brugè (2000) assumes that the demonstrative has a feature [REF] which must be checked in the DP area. Depending on the strength/weakness of this feature Brugè predicts the following tripartition of languages: if [REF] is strong the demonstrative will (always) be forced to move to SpecDP (English); if it is weak, the demonstrative will remain in situ, i.e. in the lowest specifier position according to Brugè and Giusti (1996) (Celtic, Hebrew); if it is either strong or weak, the demonstrative will either stay in situ or move to SpecDP (Greek, Romanian). This account captures the cross-linguistic distribution of demonstratives but it also has a number of shortcomings: first, it implies that in Greek and the languages that pattern with it, [REF] is both weak and strong. Second, the choice between the DP position of the demonstrative and the lower one is taken to be free. But as Panagiotidis (2000: 726), with whom we agree, points out, the different interpretation the two positions receive do not support such a freedom of choice.

The question is a more general one: how can the co-occurrence of the demonstrative and the (free form) definite article attested in some languages be best accounted for? One should bear in mind that the realization of a functional head is seen as a last resort procedure (Giusti 2002, among others), i.e. a functional head is realized only if it is absolutely necessary. In addition, Giusti (2002: 70) assumes that a functional projection has to be licensed.

(71) *Principle of Economy of lexical insertion*:

A functional projection must be licensed at all levels of representation by

a. making the specifier visible
b. making the head visible

Clauses (a) and (b) of (71) may operate either disjointly or conjointly depending on the language and on the constituent in the specifier position. In Greek they are conjoint and the demonstrative and the article can (in fact, must) co-occur. In English they are disjoint, so that either the article or the demonstrative can be realized. In the case of disjoint application of (71a) and (71b) the result is a 'doubly filled Comp Filter' effect, whereas when conjoint, application will result in doubly filled Comp languages (Giusti 2002). In other words, the complementary distribution of a demonstrative in SpecDP and a determiner in D can be seen as parallel to the complementary distribution of a *wh*-phrase in SpecCP and the overt realization of the complementizer in C.

There have been a number of different implementations of this doubly filled comp filter effect in the nominal domain. Campbell (1996: 167) proposes a *th*-criterion (cf. section 2.2. above), whereby «A [+TH] determiner has a [+TH] specifier and a [+TH] operator specifies a [+TH] determiner». For Campbell, all demonstratives are specificity/definiteness operators, so his feature [TH] in all appearances is used as an abbreviation for these semantic categories. Panagiotidis (2000: 724), following Campbell, proposes the "Demonstrative Criterion" to the same effect.

We can now understand better why (66c) is bad: the demonstrative has been raised to the highest spec position and the article, being a last resort procedure, cannot be merged. If the demonstrative is in SpecDP, the head of this category must remain empty according to clause 2 of (70) in combination with the disjoint operation of the *Principle of Economy of lexical insertion.*

4.2.4. An alternative proposal: head movement and demonstratives

In the discussion above it was assumed that the demonstrative moves from a low position, the specifier of a functional projection between NP and DP, to a higher specifier position, viz. SpecDP. The demonstrative moves as a maximal projection.

Bernstein (1997) elaborates a different implementation of the hypothesis that the demonstrative moves from a position between DP and NP to the spec of DP. She assumes that the demonstrative moves as a head, i.e. it raises and substitutes into the D° position. Her analysis is based on the observation that in several dialects of French Picard the simple demonstrative functions as a definite article, a fact which suggests that it has lost its deictic value:

(72) a. chèle école (Boulogne French; Bernstein 1997: 94)
this school
the school

b. che monde
this world
the earth

According to Bernstein, the demonstrative starts out as a phrasal element and undergoes raising to D, where properties of the head in these dialects contribute the definite interpretation.

The raising analysis also accounts for another characteristic of demonstratives. In English, demonstratives are ambiguous between a deictic interpretation and an indefinite specific interpretation. In the latter case, the demonstrative can be paraphrased by the indefinite article:

(73) a. this woman (right here)
b. this woman (from Paris)
= a woman
c. There's this book (that) you ought to read.
= a book

Bernstein suggests that the deictic interpretation (73b,c) is associated with a demonstrative that has raised to D°.

Observe that Bernstein's proposal could also be used to account for the different forms of the demonstrative in the Romanian example (66) repeated here as (74). It could be argued that in (74b) the form *acesta*, which

occupies a postnominal position, is the phrasal variant of the demonstrative, while the reduced form *acest* in (74a) results from head movement to D.

(74) a. acest (frumos) băiat (Romanian; Giusti 2000: 71)
b. băiatul acesta (frumos)

However, Bernstein's head movement hypothesis implies that prenominal demonstratives and the definite article could have the same distribution, since they both occupy D. This account faces the problem that in some languages demonstratives co-occur with determiners, suggesting that the two do not compete for the same position, as is the case in Greek, as already said; cf. (75):

(75) afto to vivlio
this the book

An account in terms of a doubly filled DP filter (see above) will more readily account for this type of parametric variation.

4.2.5. Reinforcers as empirical evidence for a lower position

We have already discussed some evidence that though demonstratives occupy a high, left peripheral position in the DP, they probably originate lower in the structure. The distribution of reinforcers (see section 4.1.1.) associated with demonstratives provides some independent evidence for this hypothesis. In the discussion above we illustrated reinforcers in Greek (*edho, eci*) and in French (*ci, là)*. Reinforcers are also found in the Germanic languages: (76) and (77) provide some examples.

(76) a. den här mannen (Swedish)
the here man
b. den där mannen
the there man

(77) a. this here guy (non-standard English;
b. that there guy cf. *that guy (over) there)*

In French, demonstratives are marked for proximity vs. lack thereof via the presence of *ci* and *là* (see (54b) above):

(78) a. cette femme-ci
this woman here
b. ce livre-là
that book there

Bernstein (1997: 100) proposes the following structure for DPs containing demonstratives and reinforcers:

(79) a. $[_{DP}\ [_{FP}$ cette $[_{F'}$ ci $[_{NP}$ femme]]]]

In (79), the demonstrative *ce* occupies the specifier position of a functional projection, FP, between DP and NP, the reinforcer *ci* occupies the head-position of that functional projection. The N *femme* ('woman') is the head of NP. The demonstrative moves from SpecFP to D stranding the adverbial element *ci*. However, in the examples in (78) the noun (*femme* ('woman'), *livre* ('book') occurs between the demonstrative and the adverbial reinforcer. Bernstein argues that in this case the noun moves and left-adjoins to FP (79b).

(79) b. $[_{DP}$ ⟵ $[_{FP}$ cette $[_{F'}$ ci $[_{NP}$ femme]]]]

Based on the examples above the movement of the noun might be taken to be head movement. However, the data in (80) show that in fact the relevant movement is phrasal: in (80) we see that the noun can be modified by adjectives (80a) and that it can be accompanied by its complements (80b):

(80) a. ce livre jaune ci (French)
this yellow book here
b. ce marchand de vin ci
this merchant of wine here

So the phrasal constituent (NP, or more vaguely XP, according to Bernstein) that contains the noun and its modifiers/complement is moved and adjoined to a position between the demonstrative and its reinforcer. Bernstein assumes that the trigger of such movement is a strong feature on F, which

needs to be checked.[45]. The resulting structure is as in (80c), where traces indicate the base positions of the moved constituents.[46]

(80) c. $[_{DP}$ ce$_i$ $[_{FP}$ $[_{XP}$ livre jaune $_j]$ $[_{FP}$ t$_i$ $[_{F'}$ ci $[_{XP}$ t$_j]]]]$

In the Germanic languages there is no phrasal NP (or XP) movement : the noun always follows the reinforcer:

(81) a. det här stora huset (Swedish)
this here big house
b. det här ringen av guld
this here ring of gold

Bernstein assumes that the demonstrative raises to DP, as is the case in the Romance languages:

(81) c. $[_{DP}$ det $[_{FP}$ t $[_{F'}$ här $[_{NP}$ huset $]]]]$

Observe however that in many languages the reinforcer may appear in a position separate from that of the demonstrative. This is, for instance, the case in West Flemish, a Dutch dialect, in which the demonstrative *dienen* ('that') is DP initial and the reinforcer (*hier*, ('here') and *doar* ('there')) is final.[47] The fact that in many languages the demonstrative and its reinforcer can be separated provides additional evidence for the hypothesis that within the DP there are at least two positions related to demonstratives.

(82) a. dienen goukden ring hier (West Flemish)
that gold ring here
b. dienen foto van Marie doar
that picture of Mary there

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[45] Bernstein further assumes that XP movement of the phrase containing the noun can be extended to Spanish and Catalan, languages which exhibit no reinforcers. Here too a strong feature on head F triggers raising of the NP (including its modifiers) to the left of FP, deriving thus the post-nominal position of demonstratives available in these languages.

[46] As before, rather than using the Minimalist copy notation, we use (coindexed) traces because they provide for a more legible representation.

[47] Observe that WF *dienen* is compatible with both the proximal reinforcer *hier* ('here') (82a) and with the distal one, *doar* ('there'), (82b).

So, from within different angles and based on different, but complementary, types of data linguists have been led to hypothesize (at least) two different positions for demonstratives – a higher one and a lower one. The question now is: What is the interpretative reflex of these two distinct positions? Let us therefore return briefly to the interpretation of the demonstratives in the distinct positions, an issue which will lead us to a discussion of the Greek data illustrated in (68) above.

4.3. Interpreting the positions of the demonstrative in the DP. The case of Greek.

Bernstein claims that prenominal demonstratives need to raise to SpecDP due to the fact that they are interpreted deictically. Let us also recall the hypothesis (originally due to Lyons) that demonstratives are intrinsically [+DEM], [+DEM] being the feature that identifies them.

We said above (section 4.1.2) that demonstratives also have an anaphoric use, whereby they pick out referents from the existing discourse. Let us consider the following Greek data in (83) which can cast some light on this issue:

(83) *Context A*: Mary is at the butcher's pointing to a pork joint that she wants to buy.

a. Mary: Thelo afto to butaki.
want-1SG this the joint
'I want this pork joint.'

b. Mary: ??Thelo to butaki afto.[48]
want-1SG the joint this

Context B: A paragraph from a guide book about a Greek town.

c. I poli eçi pola istorika ktiria pu xronologhunte apo ti vizantini epoçi.
the town has many historical buildings that date back to the Byzantine period

d. Ta ktiria afta episceptonte kathe xrono ekatondadhes turistes.
the buildings these visit-3SG every year hundreds tourists

[48] For some speakers (b) is acceptable with contrastive intonation on the demonstrative and an accompanying deictic gesture.

e. ??? Afta ta ktiria episceptonte kathe rono ekatondadhes turistes.
these the buildings these visit-3SG every year hundreds tourists[49]
'These buildings are visited every year by hundreds of tourists.'

Manolessou & Panagiotidis (1999), Manolessou (2000), Panagiotidis (2000), and Grohmann & Panagiotidis (2005) observe that in Greek the pre-article position of the demonstrative *afto* entails greater deictic strength, in contrast with the post-nominal position in which the demonstrative is used as discourse anaphoric, namely to refer back to an entity that has been previously mentioned. Only the pre-article demonstrative can normally be used along with a pointing gesture: based on this observation it is generally agreed that only the pre-article demonstrative is genuinely deictic.[50] The post-nominal demonstrative, unlike the prenominal one, cannot be used to contrast two entities denoted by the noun. To support this, Manolessou (2000: 16–19) draws on corpus material. She shows that in spoken material, including plays, the post-nominal use of the demonstrative is statistically very low, while the pre-article use gets a very high percentage. On the contrary, the pre-article use is very rare in written language, scientific-theoretical composition included, in which the post-nominal use is by far preferred. In particular, in scientific texts we find 96,47% of demonstratives in post-nominal position and only 3.53% of demonstratives are prenominal. Conversely, in plays only 5.89% of demonstratives are post-nominal and 94.1% are prenominal (Manolessou 2000: 17).

Let us further again point to the immediately relevant fact that, although (83c–d) display the usual first-second mention distinction concerning the indefinite/definite article use, (83d) involves the demonstrative because the referent of the DP has already been introduced by the indefinite DP in

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[49] Notice that the 'strategy' discussed in the preceding note is not available for rescuing (83e) since the buildings in question are not physically present, and so one cannot point to them (unlike the butcher's customer who actually sees the joint).

[50] Interestingly, a different proposal with respect to the interpretation of post-nominal and pre-article demonstratives is made by Tasmowski De Ryck (1990), who argues that the pre-article demonstrative has a thematic interpretation (i.e. it represents an entity already known/given) while the post-nominal demonstrative has a rhematic (i.e. new) interpretation.

(83c). (83d) would be entirely infelicitous (signaled by #) without the demonstrative – cf. (83d').

(83) d.' #Ta ktiria episceptonte kathe xrono ekatondadhes turistes. (Greek)
the buildings visit-3SG every year hundreds tourists

This clearly shows that despite the fact that both the definite article and the demonstrative are definite and referential, the demonstrative still contributes something 'extra': in the spirit of Lyons (1999:21) we can say that the demonstrative signals that the reference of the noun involved is immediately accessible to the hearer/reader. Rather than the speaker pointing to the referent (remember that (83c–d) represents a written text), the speaker exploits the postnominal position of the demonstrative to immediately relate the denotatum to the intra-linguistic context.

Along these lines, consider further some differences between the two positions or uses of the demonstrative, already shown in (68), repeated here as (84):

(84) a. afto to vivlio
this the book
b. to vivlio afto
the book this

First, only in the the pre-article position can the demonstrative be stressed emphatically; emphatic stress is not possible when the demonstrative occurs post-nominally (but see note 48):

(85) a. **afto** to vivlio
b. *?to vivlio **afto**

Second, the post-nominal demonstrative cannot be used independently.

(86) *Context:* Pjo vivlio aghorases?
Which book did you buy?
a. Afto
this
'This one.'
b. *to Ø afto

To understand a third difference between the post-nominal and the pre-article position we must at this point introduce some data which illustrate another position of the demonstrative, namely the 'post-adjectival' position. Consider (87):[51]

(87) to oreo afto forema
the nice this dress
'this nice dress'

In (87) the demonstrative appears to be sandwiched between the prenominal adjective *oreo* ('nice') and the noun *forema* ('dress'). It is important to notice with respect to (87) that it is not the case that the demonstrative simply occupies its original low position above the noun, because if the adjective is not present, the result is ungrammatical:

(88) *to afto forema
the nice dress

Taken together (86b) and (88) suggest that the demonstrative found between the noun and a prenominal adjective is dependent on the adjective, in the same way that it is dependent on the noun when it follows it (68b/84b), while the pre-article position allows for an independent use.[52]

Now, just like post-nominal *afto* in (84b), post-adjectival *afto* in (87) cannot be emphatically stressed:

(89) ??to oreo **afto** forema
the nice **this** dress

(85b) and (89) jointly suggest that the demonstrative that appears following the adjective is also in some lower position. We will come back to this immediately below.

Still another difference between the pre- and the post-nominal position of the demonstrative in Greek is the fact that the adverbial reinforcers *edho* ('here') and *eci* ('there') are compatible with the prenominal position of the

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[51] See Part III, Chapter 1 for discussion of the exclusively prenominal position of adjectives in Greek.

[52] See Stavrou & Horrocks (1989), Manolessou & Panagiotidis (1998), Manolessou (2000), Panagiotidis (2000), Grohmann & Panagiotidis (2005), among others, for discussion and different accounts.

demonstrative but they cannot easily be associated with a demonstrative in post-nominal or post-adjectival position (see Campos & Stavrou 2004 for discussion):

(90) a. afto edho to vivlio
this here the book
'this book here'

b. ??to vivlio afto edho
the book this here

c. *?to oreo afto edho vivlio
the nice this here book

In the light of the data in (84) down to (90) then, and in line with the discussion in Manolessou & Panagiotidis (1999), Manolessou (2000), Panagiotidis (2000), and Grohmann & Panagiotidis (2005), we conclude that a demonstrative which appears both post-nominally and post-adjectivally lacks deictic force and is anaphoric.[53] In addition, the post-nominal/post-adjectival demonstrative, being syntactically dependent, behaves much like a weak pronoun along the lines of Cardinaletti's (1998) and Cardinaletti & Starke's (1999) proposal.[54]

The crucial question now is how the three positions, the pre-article position, the post-nominal position and the post-adjectival position, of the demonstrative in Greek are related. In a fairly obvious way, it can be assumed that the pre-article position is derived by raising of the demonstrative from its lower position (whether this be SpecXP or SpecNP). This is what has been assumed for Spanish and for Romanian (see above). The trigger for such a movement is the need for the demonstrative to check a strong deictic feature in the DP domain.

Accounting for the post-nominal and the post-adjectival positions is more intricate. For these two positions, the explanation has often been contingent on N-raising. In order to derive the post-nominal position of the demonstrative, researchers often appeal to N-movement; the noun rises to the immediately preceding functional head (see Part III, Chapter 3 and also Chapter 1), stranding the demonstrative in its original position.

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[53] See also Panagiotidis (2000).

[54] In Cardinaletti's tripartition of possessive pronouns, the weak or deficient ones are prenominal whereas the strong ones are post-nominal. The question we turn to in detail in section 4.4 is how demonstratives fit into this typology.

In particular, Manolessou & Panagiotidis (1999), Manolessou (2000) and Panagiotidis (2000) assume that the nominal head of NP moves to the head of a functional projection (NumberPhrase) to check its strong morphology (see Bernstein 1993 for an early proposal of N-movement). The authors also assume that demonstratives are generated in SpecNP. Phrasal movement of the demonstrative to SpecDP derives the prenominal position of the demonstrative (84a); the demonstrative is assumed to be attracted there by a strong [+DEIC] feature on the definite article itself (recall that the definite article necessarily accompanies the demonstrative in Greek).[55]

The post-nominal position of the demonstrative (91) is obtained if the noun moves leaving behind the demonstrative at SpecNP:

(91) to forema afto
the dress this
'this dress'

Though N-movement may be a tool to derive the right orders in the DP, we will see in Chapter 3 and in Chapter 1 of Part III that it raises a number of problems. In the next section we would like to pursue a different account for the orders demonstrative>noun and noun (or adjective)>demonstrative.[56]

To account for DPs with a demonstrative after a prenominal adjective, as in (92), Panagiotidis (2000), assumes that, when present, a prenominal adjective is able to check the relevant *phi*-features of NumberP (generated between DP and NP), thus making the movement of the noun in front of the demonstrative not necessary – and on economy principles undesired. In this way (92) is generated.

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[55] Cf.: "…the locus of deixis, a [DEIC] feature, is always a D." (Panagiotidis 2000: 736). This universality of the nature of the deixis, Panagiotidis further claims, does away with any 'doubly-filled D-filter', which only has descriptive value but no explanatory power. [DEIC] can be seen as the same as Lyons' [DEM] feature.

[56] We further refer the reader to Kolliakou (1995, 1997, and references therein) for a particular implementation in the HPSG framework of the post-nominal and post-adjectival positions of the demonstrative in Greek. In addition, Stavrou & Horrocks (1989) elaborate an alternative way to capture these positions, adopting a Parallel Morphology (Borer 1993) type of model, whereby syntax and morphology interact at all levels of the derivation. Demonstratives are thus treated as a kind of phrasal affix attached onto the noun or the adjective on the way between D-structure and S-Structure, creating a morphologically complex N.

(92) to oreo afto forema
the nice this dress
'this nice dress'

In more recent work, Grohmann & Panagiotidis (2005) revise the analysis of (92) along the following lines. The discourse anaphoric demonstrative is merged (as before) in the Agreement Domain (abbreviated as AD in (93)[57]). An empty operator along the lines of that proposed by Campbell (1996) occupies the specifier of the Discourse Domain (DP)[58] and forms a chain with the demonstrative which remains in situ. This is represented in (93a) (slightly simplified from Grohmann & Panagiotidis 2005: 12).

The high domain (DP) is related to a strong-deictic interpretation and the low position (AD), where the demonstrative is merged, is related to a weak-anaphoric interpretation. Accordingly, *afto* is expected to have an anaphoric interpretation in (92). When it moves upwards, towards DP, the demonstrative crosses the position of the article, a position immediately above the demonstrative. However, according to Grohmann's (2003: 26) *Anti-locality Hypothesis*, movement must not be too local; it must cross a minimum distance in order to be well-formed. Grohmann & Panagiotidis argue that the last step in the movement of the demonstrative to the D domain is too local (see Grohmann 2003, and Grohmann & Panagiotidis 2005 for details). Because of the antilocality condition, we need to appeal to a rescue strategy: Copy Spell Out (Grohmann 2003), by which the violating copy is spelled out in the form of the definite article, which agrees in all *phi*-features with the demonstrative. The relevant derivation is represented in (93a) (For expository reasons we have simplified Grohmann & Panagiotidis' (2005: 12) analysis. The interested reader is referred to their work for details.

(93) a. $[_{DP}$….afta…[~~afta~~ → ta $[_{AD}$ nea [~~afta~~ $[_{NP}$ phenomena]]]]]
these the new these phenomena

Grohmann & Panagiotidis assume that in the case in which the demonstrative remains in a lower position, the empty operator also moves from the projection of the determiner (see Grohmann & Panagiotidis 2005: 9) and thus it likewise makes too local a move, giving rise to Copy Spell Out, as shown in (93b):

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[57] Grohmann & Panagiotidis actually use the label ΦΔ.
[58] Grohmann & Panagiotidis use the label ΩΔ.

(93) b. [$_{DP}$….*OP*…[~~*OP*~~ ta [$_{AD}$ nea [afta [$_{NP}$ phenomena]]]]]

According to this analysis, the article in examples such as (92) is introduced during the derivation by the rescuing strategy Copy Spell Out (Grohmann & Panagiotidis 2005). The article is not independently merged in the numeration; it is simply a grammatical formative inserted in the structure at PF. It is the spelled out Copy of the anti-locally moved demonstrative, which happens to be homophonous with the definite article. In other words, it is neither the definite article, nor a generic article, nor a demonstrative article as in Panagiotidis (2000). According to Grohmann & Panagiotidis (2005: 12ff) the article that co-occurs obligatorily with the demonstrative is not a 'real' article but a grammatical formative[59] – and this is true of all the languages in which the article co-occurs with the demonstrative. This proposal makes explicit claims concerning a more finely articulated DP structure overall, an important issue to which we turn in section 5.3 below.

4.4. Splitting the DP

The goal of this section is to offer an account of the fact that in some languages demonstratives may both precede or follow the head noun. In particular we want to try to derive post-nominal demonstrative positions without having recourse to N-movement. The account is tentative.

Anticipating the discussion in section 5.3. below, let us assume that DP is not a unitary projection but that it can be analyzed into an articulated array of projections. This proposal is in line with analogous proposals concerning the nature of the CP layer (the so-called Split CP hypothesis, see Rizzi's (1997), which we return to in section 5.3.) A number of authors (Ihsane & Puskás 2001; Aboh 2002, 2004a,b; Grohmann & Panagiotidis 2005; Haegeman 2004; Laenzlinger 2005) analogously propose that DP itself be split into a number of functional projections. In his work on the structure of CP, Rizzi proposes that the head C be decomposed into two heads, labelled 'Force' and 'Fin'. Analogously, let us assume that there are two DP layers internal to the noun phrase as shown in (94a) below.

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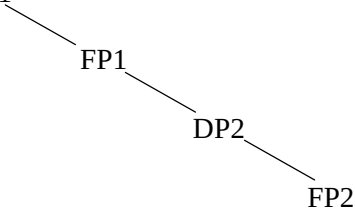
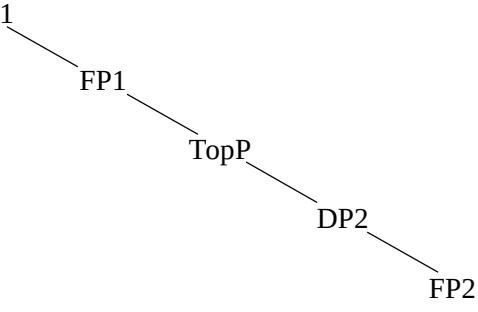
[59] Notice however that a distinction between what is called 'real' article and grammatical formative is not made clear by the authors.

(94) a. DP1 (deixis)



In addition to Force and Fin, Rizzi proposes that the CP field may also contain TopP and FocP. These are functional projections which are related to the informational status of fronted constituents. Below we propose that there is a TopicP between FP1 and DP2.

(94) b. DP1 (deixis)



The relevance of this assumption will become clear presently. In section 5.3. below we briefly come back to the possibility that there may be such projections in the DP too.

The highest DP layer, DP1, is the locus of that part of interpretation of the nominal projection that encodes discourse/pragmatic aspects of its interpretation; for example, it may encode concepts such as familiarity, referentiality and deixis. The lower DP, DP2, expresses determination, i.e. definiteness, indefiniteness and so on. For the similarity between the lower DP and FinP see also Haegeman (2004).[60] We continue to assume, in the spirit of Bernstein (1997), Giusti (2002) and Brugè (2002), that the demonstrative is generated as the specifier of a lower functional category in DP2.

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[60] Cf.: "…D is decomposed into separate functional heads. The position that encodes (in)definiteness in the D domain and in which the definite article is merge, is parallel to Fin in the C domain. In the same way that finiteness 'delimits/anchors' the event in time, (in)definiteness 'delimits/anchors' nominal reference in space." (Haegeman 2004: 235).

As discussed above, Greek prenominal demonstratives are interpreted as deictic. Post nominal or post-adjectival demonstratives are not interpreted deictically, rather they are interpreted anaphorically.

In the simple cases, when no reinforcer is present, we take the demonstrative to originate in SpecFP2 in (94). The assumption is that it has to move to a higher layer. If it is deictic, it moves to SpecDP1 via SpecDP2 and spec FP1, where it checks its strong deictic feature – Lyons' feature [DEM]. This way the pattern with an initial demonstrative, demonstrative >DP, is generated.

The order DP>demonstrative is derived by moving the demonstrative only as far as FP1[61] and by fronting the whole of DP2 to SpecDP1. This ensures that the higher DP level is overtly realized and hence DP1 is visible at LF (see above (70) and (71)).

(95) $[_{DP1}[_{DP2}$ to praghma] $[_{FP1}$ afto $[_{DP2}$ t]]]

Note, however, that this derivation hinges on the prior assumption that the definite article *to* originates inside the lower DP (DP2 in (94)). In the absence of DP2 to DP1 movement, the article itself will move from D2 to D1 to make the projection DP1 visible.

Recall from the discussion and data in sections 4.1.2 and 4.3 that the post-nominal demonstrative signals that the identity of the referent of the DP is given in the close context. How can this 'givenness' component be represented in the structure? In his initial elaboration of the CP structure Rizzi (1997) also postulates that the CP layer contains, among other things, a TopicPhrase, which hosts topics, i.e. constituents that are accessible in the context. This proposal has been implemented in the analysis of the DP structure. Assuming that there is a TopicPhrase between DP1 and DP2 (see section 5.3 for more details), we take DP2 to pass through SpecTop on its way to SpecDP1, checking the feature [+TOP]. This additional move captures the intuition that when the DP precedes the demonstrative, it has a topical/ anaphoric interpretation. (95) illustrates these assumptions, without including the presence of TopP, to which we return in more detail in section 5.3.

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[61] Perhaps it is a weak pronoun that cannot remain in the low position. Recall from section 4.3. that the postnominal demonstrative is somehow syntactically dependent (cf. Cardinaletti's (1998) and Cardinaletti & Starke's (1999) proposal concerning the typology of pronouns).

When a reinforcer is present as the head of FP1, the order Demonstrative >DP-reinforcer is derived by fronting DP2 to a position preceding the reinforcer as shown in (96). On the other hand, to derive the order Dem-reinforcer-DP we assume D2 is not fronted (97):

(96) $[_{DP1}$ afto $[_{DP2}$ to pragma] $[_{FP1}$ edho [t]]]

(97) $[_{DP1}$ afto $[_{FP1}$ edho $[_{DP2}$ to $[_{NP}$ praghma]]]]

Several proposals deriving the post-nominal position of the demonstrative rely on N-movement. In view of the discussion in Chapter 1 of Part III, in which we will cast doubt on the use of the mechanism of N-movement as a way of deriving the word order of the nominal projection, we have sketched a way of deriving the post-nominal (anaphoric) and the pre-article (deictic) position of the demonstrative in Greek without invoking N-movement. In particular we have sketched a split approach to DP, along the lines of Rizzi (1997).

Concluding this section, the various word order patterns observed in various languages involving a demonstrative, a noun and possibly also an adjective, have been tentatively accounted for by the interplay of a number of different types of movement such as raising of the demonstrative to SpecDP, possibly combined with head movement of N to higher head positions.[62] We have outlined a possible account to derive the word orders in Modern Greek. Obviously, more research will be needed for a fully fledged syntactic account of the various positions and the related interpretations of demonstratives in various languages. We hope to have put a base here for such an account.

In the next section we return to some of the basic parallelisms between DP and the clause. We return to additional implementations of the split CP in section 5.3.

5. DP and CP

In this final section of the chapter we return to the general issue of the functional domain of the nominal projection and in particular to the parallelisms (if any) between the DP layer and the CP layer of the clause. It is assumed that DP is the extended projection of N. In the original proposals a nominal

[62] In Romanian this movement may be as high as D.

projection was taken to be selected by a functional head D, occupied by the determiner. Szabolcsi (1983, 1994), Abney (1987), Horrocks & Stavrou (1987), Loebel (1989), Stowell (1989), Longobardi (1994) and many others have emphasised a number of parallelisms between DP and the clause. In this section we will survey some of the ways in which DP has been seen as parallel to CP.

In Chapter 3 we will consider further parallelisms between inflectional categories in the nominal and the clausal domains. Comparing clauses as extended projections of V and nominal projections as extended projections of N, the question arises whether we should compare DP to a functional projection of the IP-type (AGRP, TP), or rather to a functional projection of the CP-type.

5.1. DP as parallel to CP

There is compelling evidence that DP is a CP-type projection. We review some of this evidence here. We have already presented arguments in support of the hypothesis that D is a subordinator turning NP into an argument. In view of the fact that only DPs and CPs can function as arguments, we can say that D is like C in that both turn their complements into arguments. In addition, the interpretative role of D and C is similar: both D and C head projections that link their complements with the discourse or non-linguistic context.

In the clause, the CP layer constitutes the interface between the proposition and the domain of language use. The projections associated with CP serve to link a proposition (expressed by IP) with the discourse and specify the nature of this link, whether the proposition is questioned or affirmed, for instance; in other words CP serves to convert a proposition into a particular speech act. In the same way, it has been argued that DP links the content of the nominal projection (a predicative category) to the universe of discourse indicating whether the referent is already contextually available (definite D) or is novel in the discourse (indefinite D). “The function of the determiner is to specify the reference of a noun phrase. The noun provides a predicate, and the determiner picks out a particular number of that predicate’s extention” (Abney 1987: 77).

I addition to this semantic argument, there is also distributional evidence making DP parallel to CP. We have already cited evidence from Greek based on work by Horrocks & Stavrou (1987: 86). The relevant data show that phrasal movement operates in a parallel way in the clause and the noun

phrase. In particular, constituents that are focused can be fronted to SpecCP and SpecDP. Horrocks & Stavrou (1987) show that focalization in the clause has the properties of A'-movement (see also Introduction).

Moreover, the parallelism between interrogative clauses and interrogative DPs in Greek strengthens the assumption that DP is to NP what CP is to VP, as shown in examples (32)–(33) repeated below for the reader's convenience as (98)–(100):

(98) a. Ekane ti?
did-3SG what
'He did what?'

b. Ti ekane?
what did-3SG
'What did he do?'

(99) a. to vivlio tinos?
the book who-GEN

b. tinos to vivlio?
whose the book
'whose book?'

(100) a. Mu ipes [$_{CP}$ pos dhjavases [$_{DP}$ to vivlio tinos]]?
me-GEN said-2SG that read-2SG the book who-GEN
'You told me you read whose book?'

b. Mu ipes [$_{CP}$ pos dhjavases [tinos to vivlio t]]?

c. [$_{CP}$ [Tinos] mu ipes [$_{CP}$ t pos dhjavases [t to vivlio t]]?

d. [$_{CP}$ [To vivlio tinos]mu ipes [$_{CP}$ t pos dhjavases t]?

e. [$_{CP}$ [Tinos to vivlio t] mu ipes [$_{CP}$ t pos dhjavases [t]?[63]

Horrocks & Stavrou claim that whether DP corresponds to CP or to IP varies cross-linguistically. Thus the Greek DP corresponds to the IP layer in the English clause but to the CP layer in the Greek clause. This claim is

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[63] We note that Horrocks & Stavrou's argument is reinforced if a demonstrative is included in (100c). If the demonstrative is in [SpecDP], it ought to block extraction of *tinos* ('whose'). Indeed (i) below is ungrammatical. We thank Hector Campos for bringing this fact to our attention.

(i) *Tinos mou ipes pos dhjavases [afto to vivlio]?
whose you told me that read this book

based on the observation that there is an asymmetry between Greek and English DPs with respect to the structural position of the subject. The Greek DP lacks a structural (prenominal) subject position, whereas English has one (see for details Part IV, Chapter 1). Consider the following examples:

(101) a. the enemy's destruction of the city
b. *tis Marias apoplanisi t apo to Jani (Greek)
the-GEN Mary-GEN seduction by the John

In English there are two positions to which the theta roles of a (deverbal) noun can be assigned; one seems to correspond to the canonical position of determiners (*the enemy's*, cf. *his/the destruction*), and the other is the post-nominal/complement-of-N position regularly occupied by an *of*-phrase (*of the city*).

In Greek by contrast, "there is no genitive NP position distributionally equivalent to the determiner slot in NPs. (…), ANY pre-head genitive, including interrogatives, must precede the article and not 'replace' it." (Horrocks & Stavrou 1987: 93–94). (101b) becomes grammatical if the article is put into place:

(101) b.' tis Marias *i* apoplanisi (apo to Jani)
the-GEN Mary-GEN the seduction (by the John)
'Mary's seduction by John.'

The genitive *tis Marias* in (101b') precedes the article, which suggests that the genitive phrase is found in specDP, the head D being realized by the article. Notice further that a second genitive noun phrase cannot appear in the same DP:

(102) a. *tis Marias i apoplanisi tu Jani
the-GEN Mary-GEN the seduction the John-GEN
b. *i apoplanisi tis Marias tu Jani
the seduction the-GEN Mary-GEN the John-GEN

The only way to express the agent role in a case like that in (102) – the role encoded in the determiner-like possessive DP in English – is via an adjunct *by*-phrase (*apo to Jani*, 'by John'), as in (101b').

The syntax of possessors and genitives will be dealt with in detail in Chapter 1 of Part IV. Here it need only be emphasized that pre-article genitives in Greek are necessarily focused and we assume that they have been

moved in that position from the complement-of-N position. So the pre-article genitive in (102) is on a par with the pre-article interrogative in (31b) and (32e), as well as with the pre-article demonstratives in (68a). In view of the relevant facts, Horrocks & Stavrou (1987) conclude that the specifier of the Greek DP is not an argument position (i.e. it cannot encode the external argument of the noun phrase).[64] Because focus is not required for the English genitive, Horrocks & Stavrou (1987) propose that the pre-nominal genitive in English is an argument.

We mentioned above that in English there is evidence for the existence of a specifier position in the DP, parallel to that of the clause (CP). The examples in (37) were given to illustrate that assumption. Here we will supply more evidence. Just as the English CP domain may host non-interrogative constituents introduced by *so*, the specifier of DP may also host non-interrogative constituents introduced by *so*. In (103a) the DP *so vivid a picture* has been moved to SpecCP. This DP itself exhibits DP-internal leftward movement of the AP *so vivid*. The landing-site of this movement is to the immediate left of D, i.e., by assumption, SpecDP. In (103b), *such* moves to a DP-internal landing-site to the immediate left of D, SpecDP. Note that unlike *so*, the degree modifier *such* in (103b) fronts independently of the adjective *important*, which it modifies:

(103) a. [$_{CP}$ [$_{DP}$ [$_{AP}$ So vivid] a picture] does [$_{IP}$ this program draw of the situation of these animals that the reader wants to react immediately]].
b. [$_{IP}$ The article had [$_{DP}$ [$_{AP}$ such] an important impact] that the proposal had to be withdrawn.

(104a) and (104b) are additional examples of DP-internal leftward movement of an AP:

(104) a. This is [$_{DP}$ [$_{AP}$ too easy] a conclusion].
b. I did not expect [$_{DP}$ [$_{AP}$ that big] a turnout].

Furthermore, data from Hungarian reinforce the view of DP as being aligned to CP. As shown by Szabolcsi (1983, 1987) Hungarian offers further confirmation for making the D node parallel to C. The Hungarian pre-nominal

[64] They draw a number of additional conclusions with respect to SpecDP in English. However, these are framed in an older version of our theoretical model and would have to be reformulated and updated to be properly evaluated within the current framework.

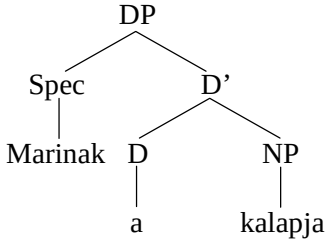
possessor may occupy two positions. It may follow the determiner, in which case it has nominative case (105a), or it may precede the determiner, in which case it has dative case, as shown in (105b).

(105) a. a Mari kalap-ja
the Mari-NOMINATIVE hat-3SG

b. Mari-nak a kalap-ja
Mari-DATIVE the hat-3SG
'Mari's hat'

It seems reasonable to propose that *Marinak* in (105b) occupies the specifier position of DP.[65] In fact, (105b) is the exact parallel of the Greek pattern in (101b'). The relevant structure is under (106):

(106)



Data from topicalization and *wh*-movement in Hungarian suggest that SpecDP is also an escape hatch for A'-movement, just as it has been claimed for Greek by Horrocks & Stavrou. In (107a), the dative possessor *Marinak* is topicalized independently of the noun with which it is construed. Topicalization of the nominative possessor is not possible (107b). In (108), similarly, the interrogative dative possessor has undergone *wh*-movement independently of the noun with which it is associated:

(107) a. [$_{CP}$ [$_{TopP}$ Marinaki [$_{FocP}$ PETER làtta [$_{IP}$ [$_{DP}$ ti a kalapja]]]]].
Mari-DATIVE Peter saw the hat
'Peter saw Mary's hat.'

b. *[$_{CP}$ [$_{TopP}$ Marii [$_{FocP}$ PETER làtta [$_{IP}$ [$_{DP}$ a ti kalapja]]]].

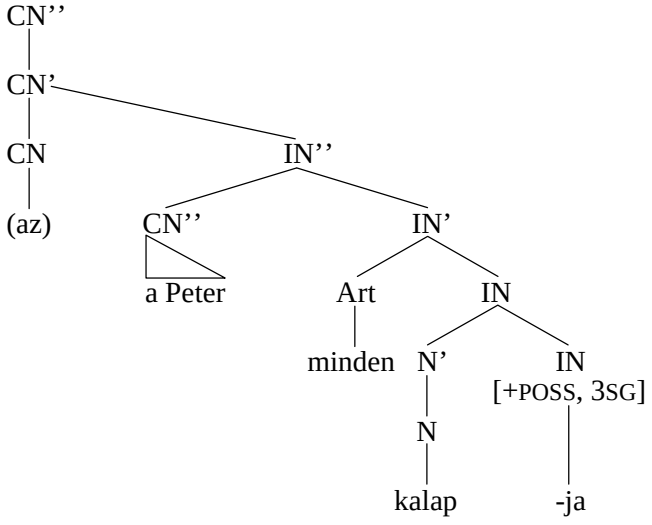
---

[65] But see also Knittel (1998) and Den Dikken (1999) for claims that Hungarian dative possessors involve a left dislocation configuration.

(108) [$_{CP}$ [$_{FocP}$ Kineki whose-DATIVE làtta saw [$_{IP}$ Kati Kati [$_{DP}$ ti a kalapja the hat]]]?
'Whose hat did Kati see?'

Szabolcsi (1987) proposes (109) to represent the structure of the phrase *a Peter minden kalapja* 'Peter's every hat'. CN is the nominal counterpart of CP and IN is the nominal counterpart of I(nfl) in clauses.

(109)



(109) suggests a strict parallelism between DP and clausal structure: in the nominal domain the definite article occupies the position that is occupied by the complementizer in the clause. In the same way that the clausal subject occupies the specifier of IP, the possessor DP occupies the specifier of the nominal inflectional projection (IN). The head of IP is a functional element that enters in an agreement relation with the head noun. We may add at this point that Szabolcsi (1994 in particular), establishes two categories of determiners; D and Det. D is represented by the article(s) (for instance *az*) and is hosted by D in (109), while Det stands for all other determiners, like *minden* ('every'), *melyik* ('which'), *kevés* ('few') and others. These determiners are found under the head Art in (109). The reader is referred to Szabolcsi's work (1994: 212–213) for details concerning the different semantic functions of these two types of determiners.

In chapter 3 we will explore to what extent we can find evidence for postulating additional functional projections in the nominal extended projection which can be paralleled with corresponding projections in the clause.

5.2. DP as a VP-like category: DP-shells

Larson (1996) elaborates an interesting and novel approach to the expansion of DP based on the observation that D, like V, possesses a thematic structure. We have mentioned repeatedly that the definite article is a subordinator in that it takes the lexical NP as its complement. Put differently, bare lexical projections, NPs, cannot act as arguments of verbs or prepositions – they have to be preceded by a constituent belonging to the general class of determiners. Thus, articles, as well as other determiners, can be thought of as being 'transitive'. Crucially, in this line of thought, certain determiners, the definite article among them, cannot stand by themselves, they necessarily must take an 'object'. Consider the following:

(110) a. *the/most
b. the cat/most cats

The notion 'transitive determiner' means that a certain determiner can express a relationship between predicates. Thus, plural *some* expresses a relation between the predicate X (=whale) and Y (=mammal) that corresponds to the non-empty intersection relation as illustrated by (111) (all the examples are from Larson 1996):

(111) a. SOME (X,Y) iff $|Y \cap X| > 0$
b. $|\{x; x \text{ is a whale}\} \cap \{x: x \text{ is a mammal}\}| > 0$

Putting this in more simple terms, the intersection of 'whales' and 'mammals' is bigger than zero, i.e. a non empty set. (112) gives the same idea for THE:

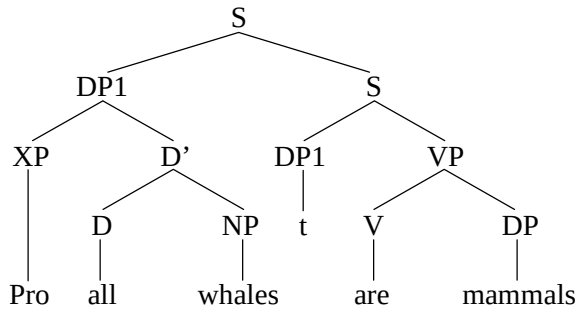
(112) THE (X,Y) iff $|Y - X| = 0$, where $|Y| = 1$

(112) is thus another way of expressing uniqueness as one semantic component of definiteness as we saw in 2.1 above. THE signals the unique Y.

If certain determiners amount to transitive predicates possessing argument structure, «projection of DPs can be viewed analogously to the projection of VPs.» (Larson 1996: 147). In a strictly compositional fashion, i.e. in a way that the syntax of DP reflects one by one its semantic properties, Larson elaborates an analysis whereby the specifier of DP is a subject position. The subject of DP is provided by the clause which the DP is a sister of in

Logical Form.[66] For example, for the sentence *All whales are mammals*, Larson gives the following structure:

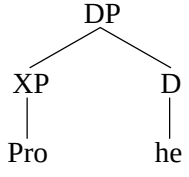
(113)



In particular, the DP subject is the pro-form Pro (cf. also Campbell (1996), who claims that the specifier of DP hosts an operator, which may be empty or may be realized as the demonstrative depending on the language). Larson claims that it denotes a variable that ranges over sets – the value of the variable (x) is given by the clause 'are mammals'. Larson further takes this pro subject to be always uniformly selected as the highest argument of a DP.

In this line of thought, *all whales* represents a 'transitive' structure. Accordingly, the English pronoun *He* entails an intransitive structure like that in (114):

(114)



A further parallelism is drawn by Larson concerning the structure of the DP containing a relational noun and that of a VP with two arguments. Larson (1988) argues for the following structure for a ditransitive verb like *give*:

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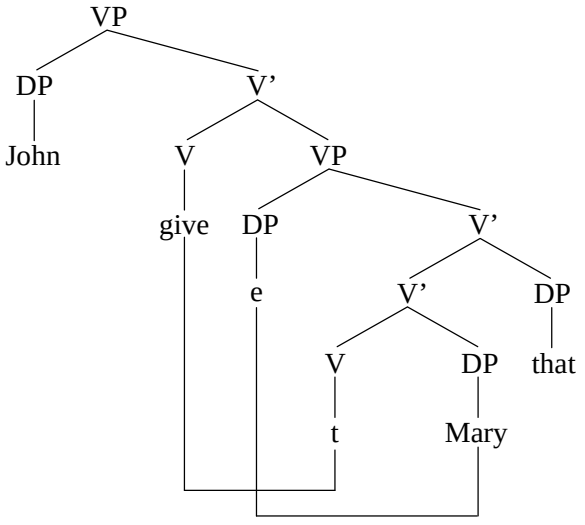
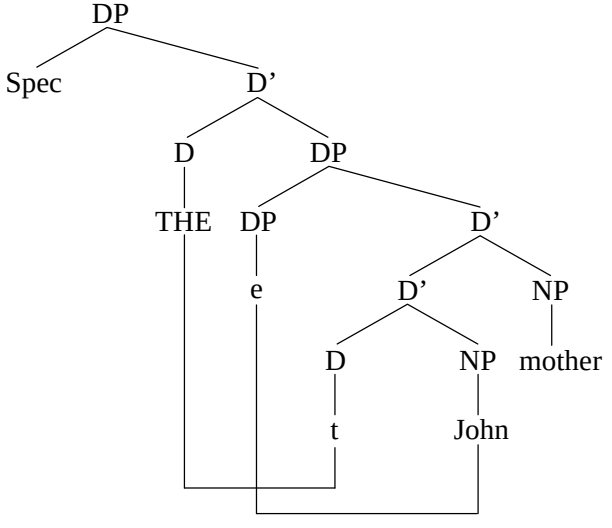
[66] LF is an interpretative level. See note 41.

(115)



VP expands in shells – each V has as its sister node another VP and so on. Larson (1996) gives the following structure for DPs, where the category DP also expands in a shell-like fashion:

(116)



(116) is the structure underlying the noun phrase *John's mother*. Details aside, we see that here too the DP creates a shell structure, whereby every D head has as its sister node another DP, which in turn also contains another

DP, etc. We observe then that for Larson DP is more strictly paralleled with the lexical VP in terms of internal structuring.

In Chapter 1 (section 5.2) of Part III we will have more to say about Larson's structure (116) on the basis of facts concerning adjective ordering and distribution DP internally. This will be particularly relevant in relation to the opposition individual/stage-level adjectives.

5.3. Topic Phrase and Focus Phrase in the DP: some proposals

In sections 5.1 and 5.2 we reviewed ways in which the category DP is aligned to CP. We said that the parallelism of D with C lies primarily in the fact that both categories turn a predicate into an argument. They further encode functions that can be characterized as discourse-oriented, namely referentiality, identifiability, deixis and the like.

For the clausal domain, Rizzi (1997) has argued in favor of splitting up the CP into a number of separate projections. If DP is analogous to CP, then we might expect that in the nominal domain too, DP will be reanalyzed in terms of articulated projections. By analogy with Rizzi's proposal to decompose CP into an articulated structure, there have indeed been a number of proposals to decompose the functional domain of DP into a more articulated structure. We have already referred to such proposals in sections 4.3 and 4.4. We review similar proposals here. A number of proposals have been elaborated and are being elaborated and we will not be able to go over all of these in detail. Rather we will provide a brief survey of Rizzi's original proposals for the split CP and then discuss the kind of data that have been used to support the articulated structure of the DP.

With respect to CP Rizzi says:

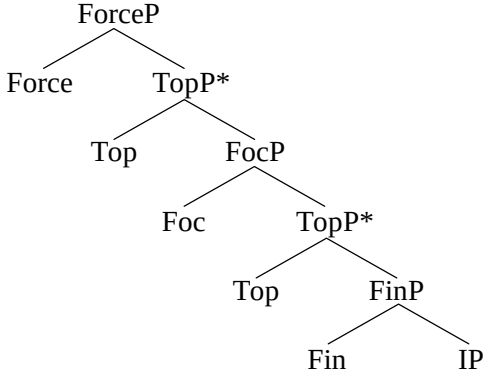
> We can think of the complementizer system as the interface between a propositional content (expressed by the IP) and the superordinate structure (a higher clause or, possible, the articulation of discourse, if we consider a root clause). As such, we expect the CP system to express at least two kinds of information, one facing the outside and the other facing the inside.
>
> (Rizzi 1997: 203)

The outside layer of the CP encodes information concerning the type of the clause (declarative, question, exclamatory, etc.) – this is what Rizzi, following Chomsky (1995), calls 'Force'. FinP relates to the content of (a possibly articulated) IP, which is embedded under C. In section 4.4 above we

noted that by analogy with Rizzi's ForceP and FinP in the clausal domain, some authors have proposed that DP can be split into a higher DP and a lower DP.

In addition, as anticipated in section 4.4, Rizzi (1997) proposes that the C layer includes information that goes beyond the mere encoding the selectional relations with the neighboring systems. The left periphery of the clause encodes the traditional discourse-informational concepts of topic and focus. The finer structure that Rizzi proposes (1997: 291) as an articulation of the 'upper' layers of CP is given below:[67]

(117)



Topic and Focus are concepts related to the information packaging: they are the syntactic reflex of the topic-comment and the focus-presupposition (or background) contrasts (Jackendoff 1972; Chomsky 1972; Lyons 1977). Aboh (2002, 2004a, 2004b) proposes the following format as a schematic way of mapping these traditional discourse-linked notions to the structure of the clause:

(118) a. [$_{CP}$ Topic [$_{IP}$ comment]]
b. [$_{CP}$ Focus [$_{IP}$ presupposition/(shared) background]]

Notice that in the structure proposed by Rizzi, Topic is a recursive category whereas Focus is not.[68] This is compatible with the interpretation of senten-

---

[67] A full motivation of the structure is beyond the scope of this book.

[68] This has been refuted by Beninca (2001), where she basically argues that there is only one [the higher one] recursive topic position. Beninca and Poletto (2004) exploit and apply this to Medieval Romance.

tial Focus: the complement of FocP is the part of the informational structure that is presupposed, whereas its specifier is the focal part. Topic Phrases undergo free recursion since their complement can in turn be another topic-comment structure, and so on (see Rizzi 1997, for details). Crucially, a clause can contain many topics but only one focus. This is illustrated in the Modern Greek example in (119).

(119) a. O Janis, sta pedhja tu, to spiti tha to afisi
the John, to-the children-his, the house will it leave
xoris epifilaksi. (Greek)
without hesitation
'John will leave the house to his children unreluctantly.'

b. * **O Janis sta pedhja tu** tha afisi to spiti (xoris epifilaksi)
the John to-the children-his will leave the house (without reluctance)

Several proposals seek to establish a parallel articulation of (the left periphery of) the nominal phrase as comprising a Topic and a Focus category. Aboh (2002, 2004a,b) presents evidence from Gungbe, showing that the noun phrase in that language comprises both a TopicP and a FocusP whose specifiers host topicalized and focalized nominal constituents respectively. In the spirit of Rizzi (1997), Aboh claims that Top and Foc

> project within the DP, the highest projection of the nominal left periphery that expresses the interface between discourse and the nominal expression, and NumP, the lowest projection of the system, that is, the juncture between the nominal left periphery and the nominal inflectional system. As such, NumP encodes the agreement features and certain referential features (…) that parallel those of the inflectional domain. (Aboh 2004a: 4)

He further takes D to be the equivalent of Rizzi's (and Chomsky's) Force, because it is a subordinator. Aboh makes the claim that the nominal and the clausal periphery are strictly parallel and that Topic and Focus project between D (Force) and Num (Fin).

Ihsane & Puskás (2001) also provide evidence for a Topic Phrase in the left periphery of noun phrases. The argument the authors bring in favor of this projection is based on the observed split between definiteness and specificity. They show that noun phrases introduced by the definite determiner are definite but that, at the same time, they are not necessarily interpreted as specific too; specificity should be thus kept apart from definiteness:

(120) a. J'ai pris le train. (French)[69]
I have taken the train
b. I have taken the train.

The DP *le train* ('the train') in (120a) and the DP the *train* in (120b) is definite but it can be interpreted either as a specific or as a non-specific DP. The latter case applies to the situation in which the DPs in question do not refer to a specific train; they fail to pick out a particular train (of that time or that type or color or origin), but they refer to the train used as a means of transport, as opposed to, for example, the bus, or the taxi or the boat. Contrast this interpretation to the specific interpretation of *the twelve o'clock train* in (120c).

(120) c. I took the twelve o'clock train.

The authors propose that it is the highest projection in the left periphery that is associated with encoding specificity. In particular according to them, the relevant projection is that which contains elements linked to the discourse, i.e. Topic Phrase. Definiteness, as distinct from specificity, is encoded in a lower DefinitenessP. Thus they have the following hierarchy:

(121) Top >…DefP…

The head of TopP carries the feature [+SPECIFIC] and is the licenser of constituents which give rise to a specific interpretation such as the specific definite article and demonstratives (cf. also 4.4 above).

Aboh (2002, 2004a,b) produces evidence that in Gungbe specificity is morphologically marked. Specific noun phrases can be either definite or indefinite (much as is the case with many other languages, such as English or Greek or French for instance). In his approach, the specificity marker is

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[69] Ihsane and Puskás also invoke Giusti's example (22) above, where, as we saw, the presence of the definite article does not necessarily induce reference. However, it is more accurate to say that the contrast Giusti's example reveals is the contrast between reference and attribution in Donnelan's (1967) terms. The definite article may well designate attribution (which in the particular example is signaled by the subjunctive on the verb). The relevance of Giusti's example to the distinction between definiteness and specificity is thus quite oblique as it is reference and not attribution that implies specificity is – i.e. a specific noun phrase can only be referential, not attributive, while a referential noun phrase is not necessarily specific, as Ihsane & Puskás own example (2001: 120) shows.

also hosted by the head of TopP. The nominal constituent that is interpreted as specific is taken to be a predicate that moves from its original position to the specifier of TopP to check the feature [SPECIFIC] under Top.

Dimitrova-Vulchanova & Giusti (1998) present some empirical evidence for postulating a DP-internal FocPhrase and a TopPhrase. However, in their proposal these projections are not considered to be universal. Moreover, their position is subject to cross-linguistic variation as they can both precede and follow the DP. As we will see below, for instance, in Albanian a DP-internal FocP is postulated as the target of a certain type of A'-movement of the AP. This operation is also available for genitive noun phrases. Since the moved constituent follows the determiner, Dimitrova-Vulchanova and Giusti propose that the relevant functional projection is situated immediately below DP. In Bulgarian, both Topic movement and Focus movement are found, but here the preposed elements precede the determiner. This leads the authors to propose that the projection which is targeted dominates D. Furthermore, in Bulgarian Topic movement is restricted to genitive phrases. In Romanian, finally, neither extension of DP is found.

In using the term A'-movement to characterize DP-internal movement processes like those illustrated below, Dimitrova-Vulchanova & Giusti (1998) intend to characterize a type of operator movement that is motivated by information structure and which gives rise to a marked word order. We illustrate some such cases below.

Consider the following Albanian data (from Dimitrova-Vulchanova & Giusti 1998: 348ff). They contain adjectives modifying an event nominal. The adjectives appear in a fixed order, the thematic adjective must be lower than the descriptive adjective. Albanian differs from Italian in that in Albanian the noun precedes both adjectives, while in Italian the noun appears between the high adjective and the low one (see Chapter 1 of Part III for a full discussion of adjective orderings):

(122) a. pushtimi i tmerrshëm italian i Shqipërisë (Albanian)
invasion-the terrible Italian of-Albania

b. la terribile invasione italiana dell'Albania (Italian)
the terrible invasion Italian of Albania
'the terrible Italian invasion of Albania'

(123) a. *pushtimi italian i tmerrshëm i Shqipërisë (Albanian)
invasion-the Italian terrible of-Albania

b. *l'italiana invasione (terribile) dell'Albania (Italian)
the Italian terrible invasion of Albania

The prenominal position of the adjective in Albanian is marked. In this position, either adjective can appear. This is the case both in object-referring nominals (124) and in event nominals (125):

(124) a. tjetr-a grua e bukur (Albanian)
other-the woman ART-nice
b. *e bukur-a grua tjetër
ART-nice-the woman other
'the other nice woman'

(125) a. ?i tmerrshëm pushtimi italian i Shqipërisë
b. ??Italian pushtimi i tmerrshëm i Shqipërisë
the Italian invasion terrible the of-Albania
'the terrible Italian invasion of Albania'

This suggests that the prenominal position is derived by movement of the AP. Furthermore, if the A/A'-distinction can be applied to the movement of adjectives, then it can be argued that the adjectival movement observed here is a kind of A'-movement, because it serves information-structure purposes. Dimitrova-Vulchanova & Giusti assume this movement to be an instance of Focus movement.

If AP-movement is to be assumed to account for these cases, one should inquire what the target position is. The landing site of the adjective follows the position of the demonstrative, which the authors identify as SpecDP (cf. Giusti (1993), Brugè & Giusti (1996), see also the discussion in section 4.2). A focused AP cannot precede the demonstrative (all the data that follow are from Dimitrova-Vulchanova & Giusti 1998: 349, unless otherwise stated):

(126) a. kjo (shumë) e bukur(a) grua tjetër
this (very) ART-nice(-the) woman other
b. *e bukur(a) kjo grua
ART-nice(-the) this woman
c. *tjetra/tjetër kjo grua
other(-the) this woman

Observe that not only adjectives may occupy the position to the immediate right of the demonstratives. Possessives can also be moved there as shown in (127):

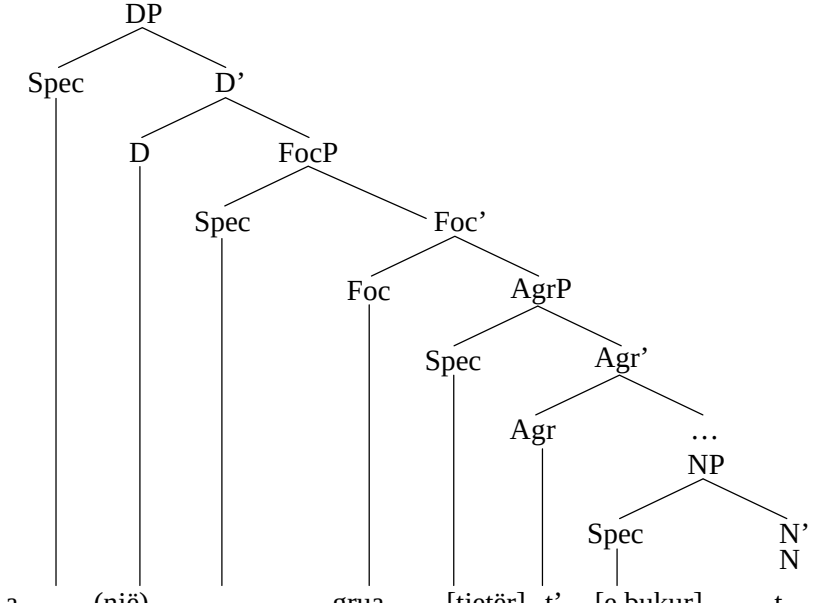
(127) a. ky libër i Benit
this book ART-of-Ben

b. ky i Benit libër
this ART-of-Ben book

c. *i Benit ky libër
this book of Ben's

The fact that this derived position can host elements of various categories strongly supports the proposal that it is a derived position of A'-type. The structure proposed for Albanian by Dimitrova-Vulchanova & Giusti (1998: 350) is given below:

(128)



a. (një) $grua_i$ [tjetër] t_i' [e bukur] t_i
(një) [tjetër]$_j$ $grua_i$ t_j t_i' [e bukur] t_i
(një) [e bukur]$_j$ $grua_i$ [tjetër] t_i' t_j t_i
another nice woman

b. [DEF]$_k$ $grua_i$-ja_k [tjetër] t_i' [e bukur] t_i
[DEF]$_k$ [tjetr-a_k]$_j$ $grua_i$ t_j t_i' [e bukur] t_i
[DEF]$_k$ [e bukur-a_k]$_j$ $grua_i$ [tjetër] t_i' t_j t_i
the other nice woman

c. kjo [DEF]$_k$ $grua_i$(-ja_k) [tjetër] t_i' [e bukur] t_i
kjo [DEF]$_k$ [tjetër/r-a_k]$_j$ $grua_i$ t_j t_i' [e bukur] t_i
kjo [DEF]$_k$ [e bukur(-a_k)]$_j$ $grua_i$ [tjetër] t_i' t_j t_i
this other nice woman

Bulgarian also displays A'-movement inside the nominal structure, though it has different properties. Firstly, DP-internal fronting distinguishes between possessor DPs and adjectives, in that topicalization applies exclusively to possessor phrases. Secondly, the landing site of the movement is to the left of the position where demonstratives are found.

(129) a. tezi novi knigi na Ivan
these new books to Ivan

b. na Ivan tezi mu novi knigi
to Ivan these CL-DAT-3SG new books
'these new books of Ivan's'

Dimitrova-Vulchanova & Giusti assume that (129a) underlies (129b) which is derived via fronting of the *na* -DP.

Given the relatively free word order in the Bulgarian clause, it is difficult to establish whether the preposed possessor is actually still inside the DP or whether it has 'scrambled' out of the DP. Dimitrova-Vulchanova & Giusti, based on a rather complicated interaction of data (1998: 351ff,) conclude that the possessor forms a constituent with the rest of the DP (see also Giusti & Stavrou, to appear, for detailed discussion on this).

Of course, the *na*-DP can be extracted out of its host DP, as an instance of fronting (130a) or as *wh*-movement (130b), just as the possessor can (raise and) be found in front of the definite article in Greek or Hungarian too, as we saw above:

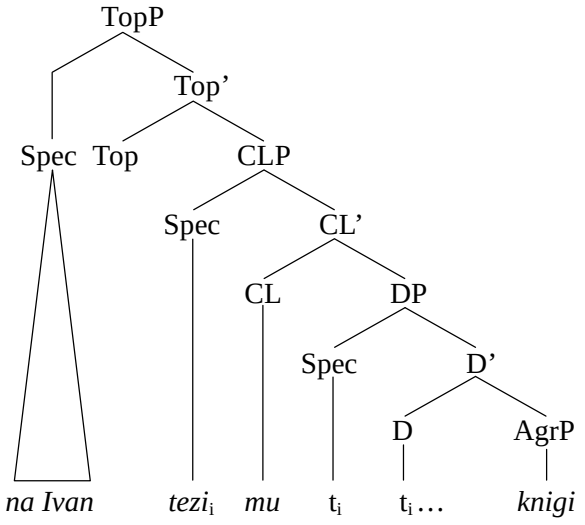
(130) a. Na Ivan ja procetox knigata *(mu) na studentite.
to Ivan I read book-the *(CL) to students-the
'A book of Ivan's, I read to the students.'

b. Na koj izvesten gruzki filisof kupi portet(a) (*mu)?
of which famous Greek philospher did you buy [a]/the portrait?

c. Na IVAN kupix portret(a) (*mu)!
of IVAN I bought the/a portrait!

The authors present the derivation of topicalization in the Bulgarian noun phrase structure as in (131) (Dimitrova-Vulchanova & Giusti 1998: 354). Observe that they also postulate a clitic projection (ClP) within the nominal periphery.

(131)



The position in which the *na* DP lands is identified as SpecTopP, because the moved possessor phrase receives a topic interpretation.

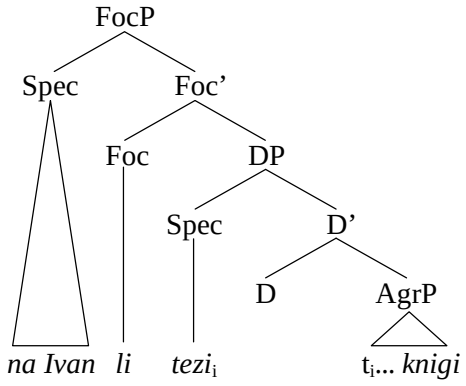
If the fronted constituent is not a topic, the *na* DP in a left peripheral position is only allowed if it receives contrastive focus. Thus it is claimed that there is also a Focus position in the extended nominal projection in Bulgarian. The head of this projection can be overtly realized by the question clitic *li*, as in (132b,c). This type of construction represents the only instance of DP-internal A'-movement of demonstratives (or APs) in Bulgarian (Dimitrova-Vulchanova & Giusti 1998: 355):

(132) a. **Na Ivan** knigata (*mu)
to Ivan book-the (*CL)

b. **Na Ivan** li tezi (*mu) knigi
of Ivan Qcl these CL books
(questioning 'na Ivan')

c. tazi li kniga/negovata li kniga
this Q-CL book / his-the Q-CL book
(questioning 'this'/'his')

d.



Note that in the presence of the question clitic *li*, the possessive clitic cannot surface at all, which implies essentially that in the construction type in (132), no TopP is projected. It can be suggested that in focus constructions the two projections collapse into just one, e.g., FocP (cf. Kiparsky (1995) for a diachronic proposal viewing CP in Germanic as having collapsed the Proto-Indo-European [$_{\text{TopP}}$… [$_{\text{FocP}}$…]] into one projection).

The similarity between (132a) and the cases of possessor fronting in Greek, as given in (89b') above repeated here as (133a) and further in (133b), is striking:

(133) a. tis Marias i apoplanisi
the Mary-GEN the seduction
'Mary's seduction'

b. tu Jani to vivlio
the John-GEN the book
'John's book'

In the light of these facts from Bulgarian and the accompanying observations, and aiming at establishing a structure that can account for as many aspects of a phenomenon as possible, and in as many languages as possible, we can revise the analysis for Greek as originally proposed by Horrocks & Stavrou and assume that the structure for Bulgarian in (132d) is relevant also for Greek. Recall that in Greek the genitive DP encoding the possessor can be A'-moved to SpecDP. Demonstratives are also standardly taken to move to SpecDP from a lower position – cf. (68), (84) and (99).

Horrocks & Stavrou argue that both the pre-article genitive and the demonstrative bear emphatic stress and are focused. Then one only needs to

make one more step to also assume that these pre-article constituents in Greek can be hosted by a projection above DP, namely a FocP. This leads to the conclusion that FocP is a projection in the extended projection of the Greek noun too.

Observe that following Dimitrova-Vulchanova and Giusti's proposal there is massive parametric variation with respect to the positioning of DP-internal TopP and FocP. In particular, while sometimes the relevant A' projections dominate DP, in other cases the hierarchy is the opposite. Though as such this may be an option, the proposal ends up being quite different from Rizzi's initial split CP proposal according to which parametric variation was restricted. However, this problem may be only apparent. Recall that we have proposed that in the same way that Rizzi split C into Force and Fin, 'D' itself can be split into two projections, which we labeled DP1 and DP2 (see (94)). The lower projection was responsible for definiteness. (See also Haegeman (2004) for an implementation of this proposal.) Though further research is required to substantiate this view, one way of reconciling the apparent diverging landing sites of A' movement proposed by Dimitrova-Vulchanova and Giusti could be to say that the relevant TopP and FocP in fact are sandwiched between the higher DP and the lower DP, much in the same way that Rizzi inserts TopP and FocP between ForceP (the 'higher CP') and FinP (the lower CP).

As has been observed above, the articulation of the DP area also ties in with the position of possessors in the DP. We return to this issue in Chapter 1 of Part IV. In the same spirit, it has been proposed that, when stressed with focus intonation the articled adjective in the so-called polydefinite construction may also be moved as a head to the head Foc of a FocP which is found above DP (Campos & Stavrou 2004: 163). We turn to these constructions in more detail in Chapter 1 of Part III. Another, and related, empirical area which further supports the presence of a FocP, reflecting the clausal FocP along the lines of Rizzi (1997), is the DP-internal movement of prenominal adjectives. As we will see in Part III, Chapter 1, DP-internal adjectives usually present themselves in a canonical order but this canonical order of adjectives in the DP can be disturbed if an adjective is contrastively stressed. The stressed adjective stands out and is apparently displaced from its original position in the hierarchy. The 'internal' FocP can then be invoked to host the emphatically stressed (prenominal) adjective found in a position different from that predicted by the universal ordering hierarchy (see Chapter 1 of Part III for discussion). Consider (134):

(134) a. i omorfi palia ksilini karekla (Greek)
the nice old wooden chair
b. i omorfi **ksilini** palia karekla
the nice **wooden** old chair

This point is made by Dimitrova-Vulchanova & Giusti (1998) with respect to Albanian. We will not pursue the issue of the DP-internal Focus position further here. Suffice it to say that this 'nominal' focus category may further interact in rather intricate ways with sentential focus (see Aboh 2002, 2004a,b4). For a proposal that DP-internal focussing interacts with ellipsis see Corver and Van Koppen (2006).

6. The category D and Case

Before closing the chapter a brief mention needs to be made of the connection between Case and the category D. How are these two functional categories related?

The relation between case and definiteness is a common theme in the literature. It is a well-known fact that in some languages case markings interact with definiteness-indefiniteness or specificity-non-specificity or even the whole-part distinction (Finnish, Hungarian).[70] In other languages the direct object is marked by accusative (or another marker) only if it is definite (Turkish, Modern Hebrew), as will be shown in the data in (135) below. Such phenomena have been taken as indications of a close relationship between case and definiteness.

An interesting observation in connection with this issue is found in Giusti (1995); although verbal inflection has been analyzed as

> a syntactic process that takes place due to the presence of functional projections (cf. Pollock 1989, Beletti 1990, among others), the study of the properties of nominal inflection has not been related to functional nominal projections. (Giusti 1995: 77)

Giusti was writing these lines back in 1995. We already saw that the inadequacies of the older accounts referred to by Giusti have been eliminated over the years by the introduction of various functional categories that were

[70] See Lyons (1999), section 5.1 in particular for a comprehensive presentation of these and other related phenomena.

thought of as relevant in the nominal domain and which parallel the functional architecture of clause. In the following chapter we will turn to the role and the raison d' être of certain inflectional categories projected between D and NP.

In older formulations of the DP-hypothesis, D was thought of as simultaneously hosting features of (in)definiteness, gender, number and, crucially, Case. Such was the approach by Loebel (1989, 1993) and it has also been maintained by Giusti throughout her work on DP (1993, 1995, 1997, 2002). However, Loebel (1994), echoing work by Lamontagne & Travis (1986, 1987), proposes that the nominal structure also contains a Kase Phrase, dominating DP itself. In other words she proposes that DP is split between a category that bears Case features and a category that hosts the determiner. Let us go briefly over the argumentation behind this proposal, as first formulated by Lamontagne & Travis (1986, 1987) and developed by Loebel (1994).

The primary evidence for postulating a separate functional head for Case concerns the alternation between Case marking and zero realization of a Case feature in some languages. The following examples from Turkish illustrate the point:

(135) a. Hasan dün bu pasta-yi ye-di. (Turkish)
Hasan yesterday this cake-ACC eat-PAST (from Loebel 1994: 41)
'Hasan ate this cake yesterday.'

b. Hasan dün pasta ye-di.
Hasan yesterday cake eat-PAST
'Hasan ate cake yesterday.'

In (135a) the accusative marking appears on the object noun, whereas in (135b) it does not. This may well be due to the specificity vs. non-specificity of the noun phrase involved. When it is interpreted as specific the accusative marking is present, when non-specific the object appears without the accusative marking. But things are clearly not as simple as that: even when non-specific, the accusative marking cannot be dropped if the object is not adjacent to the verb; thus (135c) is ungrammatical (Loebel 1994: 42):

(135) c. *Hasan pasta dün ye-di.
Hasan cake yesterday eat-PAST

The same effect is reproduced for Japanese (Loebel 1994: 42).

Based on such evidence Lamontagne & Travis propose there is a parallelism between CP and a nominal projection involving C/case. [71] Recall from what we said in the preceding section that DP has been seen as parallel to CP on general semantic and syntactic grounds. In (136) we notice that Comp is optional:

(136) a. John believes (that) Mary will win.
b. John believes wholeheartedly *?(that) Mary will win.
(Lamontagne & Travis 1986: 57; Loebel 1994: 42)

Optionality of complementizer depends on nothing intervening between the embedded and the matrix clause (136a). When something intervenes, the complementizer is obligatory (136b). Exploiting this observation, Lamontagne & Travis claim that COMP-drop and Case-drop are very similar, as both involve the presence of an empty element and in both this element is subject to strict adjacency: adjacency is the key notion uniting COMP-deletion and the omission of the morpheme realizing Case on nominals. The parallelism between the two phenomena is captured by Lamontagne & Travis by the postulation of a category dubbed KP, 'Kase' Phrase. Kase Phrase is aligned to CP in clauses. KP selects DP.[72]

Loebel adopts and expands this idea of Lamontagne & Travis. The division of labor between D and K is expressed by Loebel (1994) as follows:

> I propose applying this argument to the noun phrase and "splitting up" the category D into two separate functional categories, one with semantic content, where D itself functions as a feature bearer of referential features, and one with primarily syntactic function, i.e. K for Case. (Loebel 1994: 51)

K is licensed by the feature [+Case].[73] The modified nominal structure is as follows:

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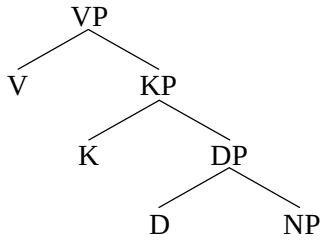
[71] Lyons (1999) also assumes a K head distinct from D.

[72] Notice that Abney too argued for a functional category KP, however in his case KP is the category that occurs at the position of SpecDP in nominal phrases like *Caesar's destruction of the city* (1987: 103).

[73] Bittner & Hale (1996) also hypothesize a separate KP above DP but only for 'marked' cases – nominative, for example, is unmarked, so the DP encoding nominative case is caseless and therefore not a KP.

(137) a.

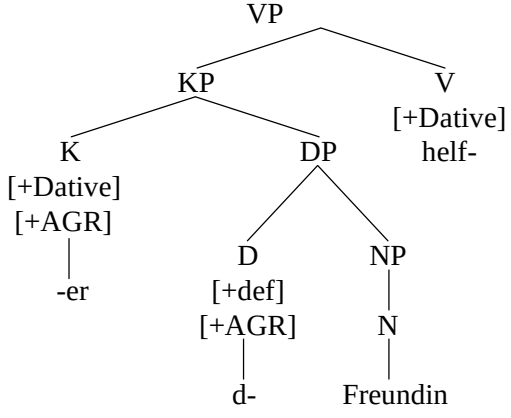


Loebel illustrates her basic claims with the following sentence:

(137) b. Barbara hilft der Freundin. (German)
B. help-3SG the friend-dat
'Barbara helps the friend.'

Which she analyses as in (137c):

(137) c.



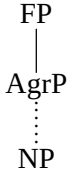
KP is the projection directly selected by a higher case assigning head. As Loebel underlines, K does not assign case; KP *is* case. The surface structure is obtained through head movement of D which adjoins to K, giving rise to the article form *der.* Loebel offers an articulated analysis relying on the structural-inherent Case distinction and Case assignment. She argues that Case assignment interacts with the referential features [+/– definite] and [+/– specific] and it further depends upon such nominal features as [+/– human] and [+/–animate]. We are not going to go into the details of Loebel's analysis here, as this would take us too far. The reader is referred to her article for details concerning the ways her approach to a split D/K hypothesis capture the alternation between partitive and nominative case in Finnish and

the partitive (genitive) case in Russian, unaccusative verbs in English, the personal *a*-object construction in Spanish and bare NP- adverbs in English.

By contrast, the connection of the category D with case does not lead Giusti (1995; also 1993) to propose a separate functional category but, on the contrary, it leads here to a unified analysis of the relevant nominal projections. As we mentioned earlier on (see the discussion of (27) in 2.5), for Giusti, the article is a syntactic means of expressing case. As we also said at the beginning of this section, definiteness is linked by some linguists to the loss, or reduction, of case markings, as is the case with the Romance and the Germanic languages (Philippi 1997; also Giusti 1993, 1995. But see Lyons 1999: 324 and also in pp. 217–219 for doubts about the centrality of determiners in the expression of nominal inflectional categories – let alone case). Giusti postulates that case markings are 'transferred' onto the determiner after they have been lost on the noun;[74] in either case the expression of case and through it the exact argumental function of a given noun phrase is ensured.

Giusti assumes the projection DP as a saturator of the predicate NP (in the sense of Longobardi (1994) and others, see section 2.2), and that only case-marked constituents can function as arguments. Giusti (1993, 1995) postulates one functional projection FP, which conflates or unifies referentiality and case. FP[75] is taken to be the highest nominal projection – accordingly the nominal structure expands as follows:

(138)



While the head of FP is universally instantiated to satisfy the Case filter, its specific instantiation varies cross-linguistically; F may host the article or a case morpheme, in a language that marks case on nouns, or even nothing at all (see following chapter). Giusti's proposals for the conflation of case and reference/argumenthood under a single functional head (namely F), is con-

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[74] Giusti appeals to Renzi (1984), who proposed that in those languages that have an article, it emerged at a stage in which morphological case was eliminated or at least weakened.

[75] Giusti's FP corresponds to the 'traditional' DP. The label FP is used to accommodate those data in which case seems to take over the role of the article.

tingent on the assumption that articles tend to be in complementary distribution with case morphology.

It should be noted here that viewing the emergence of the article as a consequence of the reduction or the loss of case distinctions in the case system of a language leads to different claims compared with what we said earlier on (see section 4.1) about the emergence of the article from some kind of reduction or weakening of demonstratives. To the best of our knowledge no analysis of the rise of the article has combined the two routes – via the (weakening of) demonstrative and via (loss of) case markings on nouns. Quite importantly, there are languages where the article in all of its basic functions co-exists with a rather rich case system on nouns (Greek, Icelandic, German and others). The issue of the interrelations between case and (in)definiteness will not occupy us any more here.

7. Summary of the chapter

In this chapter we have discussed a number of issues that relate to the determination area of the nominal projection.

In section 2 we concentrated on the function of the article, in particular of the definite article. We have examined the various properties that have been attributed to it, both semantic/pragmatic and syntactic.

In section 3 we turned to the DP hypothesis: the idea that in the same way in which the lexical projection VP is dominated by functional material, the lexical projection NP is dominated by DP, the projection whose head hosts the article. We also surveyed some problems for the DP hypothesis.

Section 4 is essentially focused on definite articles and demonstratives, elements which are commonly classified as determiners and seem to be naturally related to D and its functional domain. Though definite article and demonstratives at first sight share a number of semantic and distributional properties it turns out that there are also arguments for not amalgamating them completely. In one particular proposal it is argued that while the article is a head element that fills D, the demonstrative is a phrasal constituent that may (but need not) fill SpecDP.[76] We also examine in more detail the

[76] See Lyons (1999, especially his Chapter 8) for a different proposal according to which free form definite articles are specifiers of DP, while affixal articles are realized under D. This proposal echoes Cinque's work on modifiers as specifiers of functional categories, and also relies on the assumption that DP is essentially a definiteness phrase. See also subsection 3.1.4.

various positions that can be occupied by the demonstrative and the accounts that have been proposed to relate these positions.

In section 5 we returned to the more general build-up of the DP and we examined further analogies between the nominal periphery and the clausal periphery. Among other things we showed that just as there can be arguments for splitting up the CP layer of the clause into a number of articulated projections, arguments have been put forward for splitting up DP into a range of articulated projections.

Finally, in section 6 we briefly mentioned possible correlations between case marking and DP, formulated by two different recent approaches; one approach holds that case is encoded on a separate functional head (K) and the other holding that D (labeled F) subsumes both case and whatever semantic notions are carried by the definite article.

In the next chapter we will address the issue of the omission or lack of the definite article in certain languages or in certain DPs in languages where there is a definite article.

Chapter 2

Determinerless Noun Phrases

1. Introduction: D across languages

1.1. Languages without (definite) articles

In the previous chapter we listed a number of roles that are regularly attributed to the functional element D. We also discussed the fact that according to many researchers D is like C in that they both turn their complements into arguments, and in that only DPs and CPs can function as arguments (Stowell 1989, 1991; Szabolcsi 1994; Longobardi 1994, among many others). This is basically attributed to the fact that D imparts referentiality to its complement and that (syntactic) arguments are entities that have reference (Higginbotham 1985). One issue which we remained vague about, however, was the exact relation between D as a functional head, semantic entities such as definiteness and referentiality, and the items that are standardly taken to be the natural realizations of D, e.g. the (definite) article, demonstratives, etc. The natural realizations of D such as the definite article and demonstratives are usually conceived of as the natural expressions of the semantic categories of definiteness and referentiality. So, in a sense, the functional head D mediates between semantic entities (definiteness, referentiality) and their phonetic expression. Our vagueness on this issue reflects the general vagueness and uncertainty found in much of the recent literature with respect to the precise functions of D. In a nutshell the problem can be stated as follows:

> Is reference conveyed to the NP by virtue of the functional head D as such, or is it conveyed by the lexical realizations (i.e. the fillers) of D?

In the previous chapter we surveyed some views according to which it is essentially the structural position D that assigns referentiality to its NP complement, and it is not the article per se that is to be held responsible for that.

In this chapter these views will be further supported by the cross-linguistic evidence we will discuss and which mainly bears on the ways in which noun phrases without articles ('bare nouns') are licensed and interpreted. The starting point for our discussion here is the observation that not all languages have the type of morphemes that could be considered as articles (definite/indefinite).[1] And yet, noun phrases in these languages are clearly interpreted in the same way that noun phrases in languages like Greek or English, which do have articles, are interpreted.

For an illustration consider the following examples from Latin, a language without a definite article (the relevant nouns are in italics; the notation ':' marks long vowels):[2]

(1) a. Annum age:ns sextum decimum *patrem* a:mi:sit.
year during 16th father lost.
'During his 16th year he lost his father.'
(Suetonius, *Life of Julius Caesar* 1.1)

b. In expugna:tio:ne Mytile:na:rum *coro:na:* ci:uica:
in storming of Mytilene crown civic
do:na:tus est.
awarded PART MASC was
'At the storming of Mytilene he was awarded a civic crown.'
(viz. like a medal). (Suetonius, *Life of Julius Caesar* 2)

c. Uastante *regio:ne:s* proxima:s Mithrida:te.
devastating regions neighboring Mithridates
'while Mithridates was devastating the neighboring regions.'
(Suetonius, *Life of Julius Caesar* 4.2)

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[1] Krámský (1972) proposes a typology of seven language types based on the formal means that express the category 'determination' (see below, subsection 2.2). Type A consists of languages in which the category 'determination' (vs. 'indetermination') is expressed by independent words, type B consists of languages in which one member of the category is expressed by an independent word, and the other by an enclitic or a proclitic. Type C contains languages where both members of the category are coded in enclitics or proclitics. Type D, which directly concerns our discussion here, consists of languages in which this category is inherent in the noun itself. In type E the category 'determination' is expressed by inflection, while in type F it is expressed by prosodic means. Finally, type G contains languages that have a zero category for determinedness. Here, following the mainstream literature on articleless nouns/languages, we will be concerned exclusively with the lack of the definite article.

[2] We thank Geoffrey Horrocks for providing us with the Latin examples.

As the English translations show, in all of the above examples, the underlined Latin noun corresponds to a noun preceded by a definite article or an equivalent determiner (e.g. a possessive adjective) in English. It is thus natural to conclude that the English-type article is just one way to express definiteness and indefiniteness (Felix 1988; Lyons 1999[3]).

Another language that illustrates this point is Polish. Polish has no definite article, but the demonstrative pronoun *ten* ('this' MASCULINE), *ta* ('this' FEMININE), *to* ('this', NEUT) is regularly used in front of common nouns in much the same way that the definite article is used in languages like English (Masiejewska 1996):[4]

(2) Kiedy kończysz *tę* swoją pracę?
when finish-2SG this your work?
'When are you finishing off your work?'

Such a use of a demonstrative pronoun to replace the article is also observed in Latin (3a), as well as in Japanese, another language in which there is no definite article, as shown in (3b):

(3) a. *Illa* die:s ueniet mea qua: lu:gubria po:nam.
that day come-FUT-3SG my when mourning put-1SG
'The day will come when I will put aside my mourning.'
(Ovid, Tristia 4.2.73)

b. Peter-to Mary-wa *sono* heya-ni odori-konda. (Japanese)
Peter and Mary-TOP that (the) room-into danced
'Peter and Mary danced into the room.'

---

[3] For instance, as Lyons (1999, section 2.4) points out, other ways for languages to express definiteness are adpositional marking, agreement with the verb, word order, pronominal marking. Likewise Krámský (1972) writes:

> Languages that do not possess an article of the same kind as English or German does, can express the same concept by means of other grammatical categories. Some Asian languages possess an objective case which corresponds with the definite article of let us say English. The difference between the nominative and the partitive case in Finnish resembles in a way the function of articles. (Krámský 1972: 28–29)

See Chapter 1, section 2.5. for Giusti's claims concerning the purely grammatical functions of the definite article.

[4] Krámský (1972: 188) attributes the same claim about the use of the demonstrative pronoun *ten* as a definite article in Czech to Josef Zubaty. And the same is reported for Sorbian (1972: 190).

Two questions arise at this point: (i) How do noun phrases get interpreted in languages that do not have articles? (ii) Under the assumption that D turns the NP into an argument, does the projection DP exist in all languages regardless of whether a language does or doesn't have articles? To put it differently: Do languages like, e.g., Latin, Slavic languages like Polish, Hindi, Mohawk, which do not have a definite article, have/need a DP layer the head of which will remain empty (non-lexicalized)? Or is it the case that these languages have impoverished nominal projections, in particular, are their nominal projections merely NPs?

The answers that have been proposed to these questions vary. While many authors adhere to the more or less standard view about the universality of D as a category relevant to semantic interpretation, this has been challenged by Lyons (1999), who argues in favor of distinguishing the semantic/pragmatic notion of definiteness from its grammatical exponent, namely D. In his view, D is only projected in a language if this language encodes semantic definiteness. If a language fails to encode definiteness, DP is absent.[5] Lyons argues (1999, especially Chapters 8 and 9) that the creation of DP entails the creation of definiteness marking (see also the preceding chapter, 4.1.1 on the historical development of determiners). He says:

> there can be no definite article in languages lacking DP structure, and, to the extent that it is obligatory to have some expression of a projection, languages with DP structure must have a definite article. (Lyons 1999: 323)

On the other hand, Stowell (1989, 1991), Longobardi (1994), Szabolcsi (1993, 1994), Giusti (1993, 1997, 2002), among others, maintain that the functional head D is as such responsible for the interpretation of a noun phrase as definite, generic, etc. This means that even in the absence of an overt article a nominal projection that is interpreted as, say, definite will have a D-projection. Concretely, while for Lyons (1999) the underlined NPs in (1) are mere NPs, for the other authors mentioned they will be DPs in spite of the absence of a determiner.

In this chapter we will survey some approaches to the issues sketched above.

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[5] Lyons writes:

> With this framework, it is possible to maintain that DP structure is necessary for a language to have a definite article, and even that the creation of an article is a necessary concomitant of the emergence of DP structure. This is a desirable position because the empirical evidence is for a much closer on the part of definite articles than of other 'definite determiners' like demonstratives. (Lyons 1999: 323)

1.2. The distribution of the definite article in languages that have one

The question of the universality of D arises most clearly with respect to those languages such as Latin and Polish, illustrated above, which lack the article altogether. However it also arises with respect to languages that do have articles. This is because in the latter languages determinerless NPs can also be found in specific circumstances. In fact it is the latter issue that will be the focus of our discussion. We will also suggest ways of handling determinerless languages, but as will be shown in section 3.3. below, the debate as to how to deal with these remains fairly open.

Let us look at some examples of languages that have determiners but which also display determinerless nominal constituents. Both Greek and English have a definite article. However, in both languages there are cases where a nominal constituent can apparently function as an argument without the article. This is illustrated by the underlined bare noun phrases in (4).

(4) a. *Topsy* loves *cheese*; *Peter* loves *alcohol.*
b. *Battered cats* can usually find a refuge.
c. I Topsy pini *ghala.* (Greek)
the Topsy drink-3SG milk
'Topsy drinks milk.'
d. Dhjavazi (*pola) vivlia*.
reads-3SG (many) books
'He (she) reads (many) books.'

But in the same languages such bare noun phrases are not generally admitted and may give rise to ungrammaticality. In (5a,b) *cat* is ungrammatical in the absence of an article, similarly in (5c) the absence of an article with *student* leads to ungrammaticality. (5d,e) show similar effects in Greek:

(5) a. *****Peter loves cat.[6]
b. *I saw cat.
c. *Student came in.

---

[6] One interesting complication arises here. While singular count nouns cannot function as arguments they can do so in coordination, at which point the coordinated string has a definite reading. The examples are drawn from Heycock and Zamparelli (2003: 443) to whom we refer for detailed discussion.

(i) A black cat and a brown dog were fighting in the street.
a. *Cat was filthy.
b. Cat and dog were equally filthy.

d. *O Petros aghapai ghata. (Greek)
the Peter love-3SG cat
'*Peter loves cat.'

e. *Mathitis bice mesa.
student came-PAST-3SG in
'*Student came in.'

One factor that determines the different status of (4)–(5) is that the bare nominal constituents in (4) are headed by mass nouns (4a,c) or by plural count nouns (4b,d). The nominal constituents in (5) are headed by singular count nouns: apparently in both English and Greek a bare singular count noun can neither appear in object position (5a,b,d) nor in subject position (5c,e).[7] However, Greek bare plurals do not have a free distribution in argument positions either. In Greek, a bare plural noun such as *pedhja* ('children') is not fully acceptable in (preverbal) subject position:

(5) f. ??Pedhja pezun.
children play.3PL
Children play.[8]

In the light of the differences in grammaticality between the examples in (4) and in (5) the following questions arise: What licenses bare noun phrases in languages that have a definite article? How does a bare noun phrase get its interpretation in the absence of an article?

One important difference between English and Greek is that while in English the article does not normally occur before proper names and generic nouns ((4a) and (6a)), in Greek, in contrast, it is required in front of both noun types (6b,c):

(6) a. Cats are adorable creatures.

---

[7] This pattern is thus different from the marked case in Brazilian Portuguese discussed by Schmitt & Munn (2003), in which bare singulars are allowed freely, generally with the interpretational properties of bare plurals. We will come back to Brazilian Portuguese later in the discussion. For deteminerless count nouns with definite reading in dialects of Dutch see Oosterhof (2006a) and the references cited there.

[8] Marinis (2003) and Alexiadou (1996) discuss the conditions under which a bare plural can be allowed in (preverbal) subject position. The reader is referred to these works (and the references therein) for details concerning Greek.

b. *(I) Topsy aghapai *(to) tiri.
the Topsy love-3SG the cheese
'Topsy loves cheese.'

c. *(I) ghates ine aksiolatrefta plasmata.
(the) cats are adorable creatures
'Cats are adorable creatures.'

Thus a final question to be dealt with is: What underlies crosslinguistic variation with regard to the licensing conditions of bare nouns (4)–(6)?

The questions that arise with respect to the absence of articles in languages with determiners are very similar to those raised in the previous sub-section with regard to languages that do not have a definite article. It will become clear, as the discussion unfolds, that the understanding of each one of these questions can cast light on the other. Questions concerning the (non)existence of articles in certain languages and concerning the interpretation of determinerless noun phrases in others have given rise to a vast literature both in the typological tradition (Krámský 1976; Christophersen 1939; Chesterman 1991; Gil 1987; Lyons 1999, a.o.) and in the generative tradition (Longobardi 1994; Chierchia 1998, a.o.). As we will see, both traditions contribute to our better understanding of these issues.

The remainder of the chapter is organized as follows: in section 2 we will review some earlier views on the issue of the universality of D as a nominal functional category. These views emerged in direct response to the DP-hypothesis. In section 3 we turn to two recent widely discussed accounts of noun phrases that do not instantiate a determiner. In section 4 we summarize the basic points discussed.

2. The functional head D and the configurationality of noun phrases

2.1. Setting the scene

Often the article is the leftmost constituent in the noun phrase and is not preceded by anything else. Recall from the previous chapter (section 1) that before the emergence of the DP-hypothesis, the commonly held assumption was that the article occupied a specifier position within the nominal projection (NP). In particular, in Jackendoff's three-level system, the article was taken to occupy the highest specifier. In that framework, the noun phrase was seen as an endocentric construction, headed by N. A specifier was pro-

jected when there was an overt filler available. If an article preceded the noun, the highest specifier was projected; if no article was present but a quantifier or quantificational adjective was available (e.g. *many books*), the immediately inferior specifier was projected, etc. Crucially for our discussion here, if nothing preceded the noun, only N is projected:

(7) $N'( )$
$|$
N_0

The idea that the position occupied by the article is a specifier of NP and may or may not be projected, depending on its overt realization, is obviously in sharp contrast with basic tenets of the DP-hypothesis, according to which the nominal projection is no longer seen as a single endocentric construction but is reinterpreted as the projection of the (functional) category D, which selects the lexical NP as its complement. In this more recent approach, the role of the article has in a sense been upgraded: being inserted in D, the article is now associated with the head of the projection, i.e. it has become associated with an obligatory constituent of the nominal projection. But of course, it is this very hypothesis that has given rise to the discussion about the status of the head D in the absence of an overt article. In particular, it gives rise to the question whether, if no article shows up, D is (still) required as a structural position?

In the following sections we shall review some of the answers that have been given to the question above.

2.2. Gil 1987, Loebel 1989

Gil (1987) claimed that languages split into two broad types according to two co-varying parameters, the parameter of configurationality and the parameter of the count-mass distinction. The latter parameter is based directly on the existence of plurality markers and the use of numeral classifiers in a language. See also section 3 below.[9]

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[9] For Gil, these two parameters are the summary of seven typological correlates. The details of these correlates need not concern us here, except for a brief mention of his seventh correlate, which concerns the order of adjectives in the noun phrase and for which Gil predicts that in non-configurational languages the hierarchical interpretation of stacked adjectives is not available. See Chapter 1 of Part III for detailed discussion of this issue.

The following table (Gil 1987: 256; Loebel 1993: 184) illustrates the classification: English and Japanese illustrate two types of languages:

Table 1. The configurationality parameter for noun phrases

	Type A (English)	*Type B (Japanese)*
a	configurational noun phrases[10]	non-configurational noun phrases
b	count vs mass nouns	all nouns as mass

Gil's typology is based on two interrelated observations. The first concerns the obligatory marking of (in)definiteness. In languages like Japanese there is no definite article. In languages like English, there is an article (*a book*, *the book*); and articleless nouns have a very restricted occurrence compared with the articled ones. As we will see below, in the latter type of languages, only plurals and mass nouns can appear without an article.[11]

This leads Gil to propose that in Japanese the noun *hon* meaning 'the/a book' is a zero level category (N^0), there is no branching inside the NP; the

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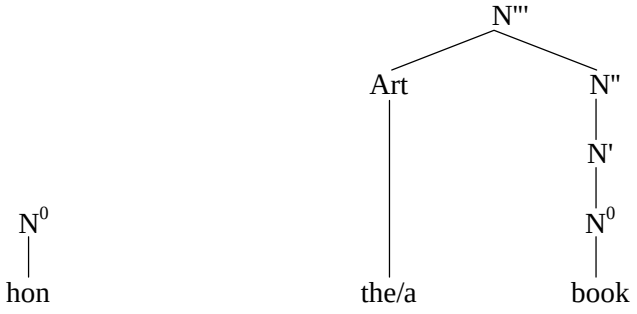
[10] The issue of configurationality is an important one, but we cannot go into it here, as it goes well beyond the immediate aims of our study. Put informally, a typical property of non-configurational languages is that their constituent order seems to be much freer than that of configurational languages. The reader is referred to Lyons (1999: 153–156) for a concise excursus to the various views on (non)configurationality. In terms of the theoretical framework adopted here, Chomsky (1981) accounts for the distinction between configurational and non-configurational languages like Japanese by proposing that in non-configurational languages there is no hierarchical structuring of the clause. The verb, the subject, the direct object, the indirect object and the oblique are all part of a flat structure, that is to say all of these constituents are dominated by a single node (labelled 'S' in the 1981 framework), without any more hierarchical structuring among them. (Also Hale 1978, 1982, 1983.)

It is worth mentioning here that according to Lyons, languages are not necessarily configurational or non-configurational but may vary in the different parts of their grammars, being, for instance, configurational in noun phrases and non-configurational in their clauses (like Hungarian) (Lyons, 1999: 154). According to him, there are degrees of configurationality, languages showing properties of each type to a varying degree.

[11] As we will see later on (3.1.1), these are the same properties on which Chierchia (1998) bases his own distinction between languages like English on the one hand and languages like Chinese or Japanese on the other.

NP is said to be 'non-configurational'. This is represented in (8a). The English equivalents *the book* or *a book* are of the category N^{0+1}, i.e. the NP is internally structured and hence is said to be 'configurational' (see note 10). In particular, in English the NP is a three level endocentric category, according to the Jackendovian framework (8b).

(8) a. Japanese b. English



Similarly, Fukui & Speas (1986), echoing Fukui (1986), argue that in Japanese the nominal phrase is non-configurational. In particular they propose that it is not a DP but an NP. These linguists argue that Japanese lacks all of D, COMP and INFL and as a consequence all the relevant constituents are X' and not X'' (Fukui & Speas (1986: 134). See also Introduction, section 2.3).

The conception of the nominal projection as a three level endocentric category as illustrated above would obviously not be compatible with one version of the DP hypothesis. According to this view, the article is the head of a nominal functional projection, D and the functional head D is always present because it is always interpreted at the component of Logical Form (LF), independently of whether it is lexicalised or not (see Chapter 1).[12] This view is captured in Loebel's (1993) account which incorporates the DP hypothesis. Loebel's leading idea is that within the framework of the DP hypothesis, languages do not differ with regard to configurationality: in both English and Japanese, for instance, the category DP is present, i.e. NP is embedded under D. For Loebel (1993), the source of crosslinguistic asymmetries with respect to the presence or absence of the definite article is found in a lexical property called 'determinedness' or 'determination'. Determinedness/determination is a property of the noun itself and not of

[12] See Part I (Introduction) section 2.1 for a discussion of levels of representation.

determiners.[13] Languages only differ in the lexical make-up of their nouns. In particular, the inherent lexical attribute 'determination' gets different values (+ or –).

Quoting Loebel:

> In particular, it is claimed that all nouns of all languages are (1) either countable or non-countable, and are (2) either inherently determined or non-determined. We claim that countability and 'determinedness' resp. 'determination' in this sense are both lexical properties which are parametrized, i.e. that these properties constitute 'possible parameters' which have syntactic influence with regard to inflection (namely pluralization) and the configurationality of noun phrases (namely the obligatory occurrence of the article).
>
> (Loebel 1993: 183)

'Determination' is the superordinate term which comprises definiteness and indefiniteness: [definite] and [indefinite] are simply realizations of 'determination'. 'Determination' is an inherent property of all nouns, which are thus characterized as [+determined] (and then as +/–definite), or as [–determined]. The noun *hon* ('book') in Japanese is [+determined], whereas the noun *book* in English is [–determined]. If a noun is marked [+determined], it will not be accompanied by an article; if it is marked as [–determined] it will co-occur with an article. To explain the occurrence of the article, Loebel invokes Emonds' *Invisible Category Principle* (Emonds 1985: 227),[14,15] which states, informally, that a functional category which has a particular

---

[13] Loebel's (1993) account is reminiscent of Krámský's (1972) account in which the typology of nominal constituents is based on the term 'determinedness'.

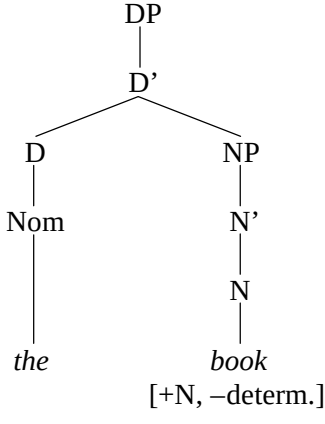
[14] Emonds puts forward this principle to account for manifestations of so called 'adverbial case NPs' (see Emonds 1985: 224 for the term) or of NPs that occur as indirect objects of verbs of 'giving'. He assumes in particular that such noun phrases are the complements of empty Ps that bear certain semantic features such as DIRECTION, LOCATION, DATIVE (Emonds 1985: 224ff). Note that Emonds uses the term NP rather than DP.

[15] Loebel invokes the *Invisible Category Principle* in combination with the parametrized feature 'determination' concerning the interpretation of noun phrases not only across languages but also within one and the same language. The feature 'determination' is parametrized both across languages, as we saw, but also within the same language. The *Invisible Category Principle* can account for the fact that English proper nouns – as well as mass nouns – do not have an article, while singular common nouns must have an article. For Loebel proper nouns in English are marked as [+determined], just like all nouns in Japanese are.

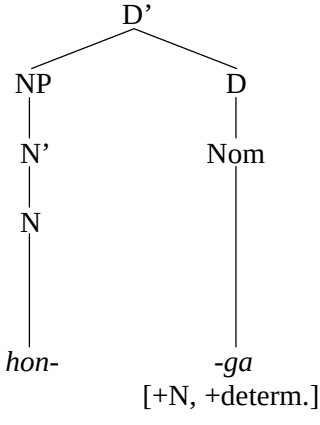
feature or a feature complex, may remain empty if this feature (or these features) is (or are) morphologically transparent on a phrasal sister of the functional category. We can apply this principle to the functional category D. If the feature of determination (along with features for gender, case and number) is positively marked on a noun, as Loebel assumes, then by the *Invisible Category Principle*, D may remain empty. This is typically the case of Japanese: nouns themselves are [+determined] and hence D may remain empty. Conversely, if nouns are marked as [–determined], as is the case in English, then D will have to be phonetically realized.

Loebel points out that, being syntactically relevant, the feature [+/–determined] must be a syntactic feature and not a (purely) semantic feature. She further claims that, with respect to the projection of D, the structure of the nominal constituent in English and Japanese is the same. In particular, D is present both in Japanese which lacks a morpheme for the (definite) article and in languages like English, in which there is definite article. The reason for this claim is the assumption (Loebel 1993: 192) that D is the site where Case is realized and where Case is assigned (for some discussion of case in relation to D, see Chapter 1 section 6, and see also the discussion of case in Chapter 3). The DP *the book* has Case (nominative or accusative, according to where it occurs): *the book* corresponds, according to Loebel, not to Japanese *hon* ('book') but to the Japanese DP *hon-ga* (('the/a) book-NOMIN') (see Chapter 3). The relevant structures for the DPs in the two languages are given in (9) (Loebel 1993: 192):

(9) a.



b.

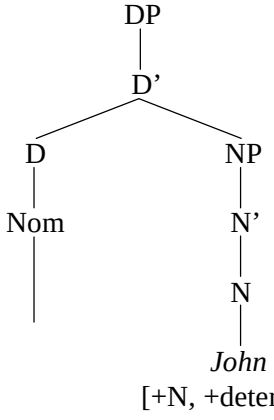


The structure in (9b) does not contradict Loebel's claims about why there is no definite article in Japanese. In (9b) D is present because it hosts the morpheme *ga* which realizes (nominative) case. It is in this respect that in

English and in Japanese the noun phrase is expanded in a parallel fashion. (See also Chapter 1 section 6 for the alternation of case markers and articles in D).

Now English proper names such as *John* also do not co-occur with a determiner. We will return to these in more detail belong but we will briefly sketch Loebel's analysis here. Loebel treats the noun *John* in English as parallel to the common noun *hon* in Japanese in that she takes both to be inherently marked as [+determined]. For Loebel the [+definite] marking on the noun allows for the D position to remain phonetically empty, the role of the article hosted by D being taken over by the N itself in these cases:

(9) c.



More recently, Lyons (1999: 155) has cast doubt on the validity of Gil's empirical evidence for the correlation between non-configurationality and the absence of number or defininitess marking. Japanese (like Warlpiri and Korean) only typifies the most strongly non-configurational language. In such languages, the NP is indeed non-configurational, just like their clause, etc. But the correlation between configurationality and definiteness or number marking on the one hand or the absence of configurationality and the absence of definite and number marking on the other is not absolute. Russian is a case in point. Russian is usually taken to be configurational. However, it has no articles, neither does it use classifiers. On the basis of the latter observation, and in terms of Gil's classification, one would have to group Russion with the non-configurational languages; however, like configurational languages, Russian does have number marking. So absence of a determiner does not mean that a language is necessarily non-configurational. Lyons suggests that the correct generalization should rather be stated in the opposite direction: languages that are non-configurational in the noun

phrase, almost always lack definiteness marking (1999: 155).[16] Lyons proposes that languages lacking definiteness marking lack the category D. In the same vein, Lyons says that if a language lacks number marking, it means that it lacks the functional category NumP, the locus of number distinctions (see Chapter 3). Lyons also assumes that the nominal projection contains the projection Card(inality)P. This is the functional category, which, according to Lyons, hosts cardinal numerals in its specifier. If a language lacks the possibility of 'counting' directly by means of numerals (see section 2.3 below), this is taken as an indication that the category CardP is absent in that language. In this case, numerals will have to appear somewhere else, for instance in association with classifiers. In English, as in most European languages, only mass nouns require a measure or classifier phrase, like *a pint* or *a glass*, in order to be countable, as, e.g., in the sequence *a glass of milk* (see Chapter 2 of Part III). Chinese, on the other hand, has a generalized classifier system: all nouns require the presence of a measure phrase or a classifier, and this is true of all classifier languages (see also section 3.1.4 for more about classifiers in Chinese and for examples).

2.3. Bare Plurals, Mass nouns, Proper nouns and Generic nouns

In this section we will briefly introduce the terms generic noun, mass noun and 'bare plural' (BP), as these noun types are the ones often discussed in the literature on the presence/absence and interpretation of the article. The semantic interpretation of these noun types seems to be uniform across languages but they differ in their make up. In English generic nouns and mass nouns appear article-less, and plural nouns may be bare, giving rise to what are called bare plurals (BP). In other languages there is variation as to the appearance or lack of articles in the semantically equivalent noun types.

2.3.1. The interpretation of bare plurals in English

Consider the following examples. The underlined nouns in (10) are bare: there is no article, either definite or indefinite.[17] In (11) the underlined NPs

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[16] Chierchia (1998b) identifies the following characteristics as the typological correlates of languages like Chinese: (a) absence of plurality, (b) generalized classifier system, (c) a tendency for the absence of definite and indefinite article (1998a: 2).

[17] For discussion of the interpretation of bare plurals see also Delfitto (2006).

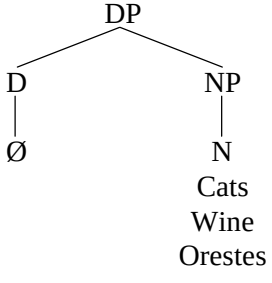
are accompanied by a determiner element: a definite article or a demonstrative (11a) or a possessive pronoun in (11b,c).

(10) a. *Cats* gathered at the entrance of the restaurant.
b. *Cats* are very independent animals.
c. *Wine* spilt on the floor.
d. *Wine* goes well with seafood.
e. *Orestes* will fly to *Prague* tomorrow.

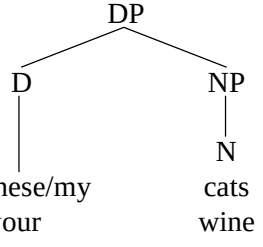
(11) a. The(se) *cats* gathered again at the entrance of the restaurant.
b. My *cats* are very independent animals.
c. You didn't drink your *wine*.

The central question that arises with respect to all articleless nouns is whether the noun phrase that they are the head of also contains a covert/silent determiner, so that the structure of the phrases in (10) can be aligned with that of the phrases in (11). This is shown in (12a) in which articleless NPs have the same structure as the NPs in (11), represented in (12b).[18]

(12) a.

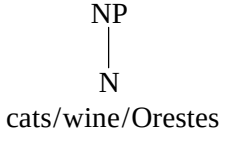


b.



Alternatively, it might be proposed that such articleless NPs lack the DP layer altogether, as in (12c):[19]

(12) c.



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[18] We insert both articles and demonstratives under D here, but see Chapter 1 section 4.2.2 for more careful discussion of the status of demonstratives and differences with articles.

[19] In either version, intermediate levels of representation will of course have to be introduced to accommodate various modifiers (APs, etc.).

In English (as in many other languages) bare plural nouns (*cats*) and bare singular mass nouns (*wine*) can be used as an argument. However, in English (and many other languages), a bare singular noun (*cat*) used as an argument gives rise to ungrammaticality – cf. (13) (and see also (5a–e) above):

(13) a. *Cat came in.
b. *Cat is independent animal.

Why can a bare singular (non mass) noun not function as an argument in English? The answer that has been given to this question will be discussed in section 3 below.

Anticipating for a moment what will be discussed there, however, let us recall what we said in the previous chapter (see especially section 2). A noun is a predicative category that is turned into a referring expression by virtue of it being accompanied by the (definite) article. In the sentences in (10) the underlined noun (phrase) lack an article, and yet the sentences are fully well formed. What is responsible for the fact that these sentences get a full interpretation? In particular, how does the predicative category that corresponds to the noun get interpreted as an argument in the absence of an article? Moreover, as we will discuss presently, the bare plural noun *cats* has two different readings in (10a) and (10b), as does the bare mass noun *wine* in (10c) and (10d). Where does the difference in interpretation derive from? The first idea that comes into mind is that it must be D that assigns an interpretation to the noun.

Let us first consider the interpretation of the noun phrases in (10). *Cats* is an articleless plural noun and it is a generally agreed that such articleless plurals are indefinite, the lack of an overt definite article being as it were a 'marker' of indefiniteness (Lyons 1999; Diesing 1992). The bare plural *cats* in (10a) means 'some cats' or a number of cats'; the noun is interpreted existentially. (10a) is about a set of cats located at a particular place and, though it is not explicitly mentioned in the particular sentence, at a particular time. The sentence can be roughly and informally paraphrased as 'there is an x, such that x, x a cat, x gathered…'. The sentence thus asserts the existence of some number of cats that gathered in a particular place. According to Carlson (1977), the existential reading of bare plurals is attributed to an existential sentential operator. Crucially, this operator is involved in the interpretation of the sentence as a whole and is not part of the BP itself.

In contrast, in (10b) the same bare plural noun refers to the totality of cats, to all cats as members of a class, or as belonging to the same (natural) kind, let us say to the "cat-kind", and not to any set of locally or temporally

identifiable cats. *Cats* in (10b), as an expression referring to all members of a kind, constitutes a *generic* or universal term. The term generic applies to a noun phrase through which reference is being made to the entire class of entities of which the denotatum of the noun is a member. The class in question consists of all the cats that satisfy the description expressed by 'cat' (see Carlson & Pelletier 1995 for discussion of genericity).

Chierchia (1998b), building on Partee (1987), presents an analysis of such a concept of kinds based on the following premises:

(a) Kinds are seen as regularities that occur in nature. They are similar to individuals but their spatiotemporal manifestations are 'discontinuous'. The kind 'cat' is the totality of all cats. Kinds can be of various types: they can be 'natural' (like the cat-kind), or artifacts (like chairs or cars), or complex things (like intelligent students or spots of ink). All these can be kinds to the extent that we can ascribe to them a sufficiently regular behavior (see Carlson 1977; Krifka et al. 1995). What counts as a kind is determined by the knowledge of a community of speakers and not by the grammar per se; what constitutes a kind varies with the context and remains vague (Giannakidou & Stavrou 1999).

(b) Kinds are intensional individuals. Thus, the dog-kind can be thought of as the individual concept that comprises the totality of all dogs in all possible worlds.

(c) There is a mapping between natural properties and kinds. According to Chierchia (1998b), for a natural property, say DOG, there is a corresponding kind, say the dog-kind and vice versa for the dog-kind there is the property DOG of being a dog. The correspondence between properties and kinds suggests that there must be ways (i.e. functions) to get from one to the other. Let us introduce the notation proposed in Chierchia (1998: 349) for that. If DOG is the property of being a dog, then $^{\cap}$DOG is the corresponding kind. Conversely, if d is the dog-kind, $^{\cup}$d is the property DOG of being a dog. $^{\cap}$ and $^{\cup}$ are maps that allow us to get a kind from the corresponding property and vice versa. According to Chierchia, kinds can be regarded as nominalization of predicative common nouns and predicative common nouns as the predicativization of kinds. The down operator nominalizes, the up operator predicativizes. It seems natural to identify a kind in any given world or situation with the totality of its instances. As Chierchia points out, not any old property will have the corresponding kind. If $^{\cap}$ applied to a property P does not yield a kind, then $^{\cap}$P is undefined. It is important for the discussion to follow in section 3.1.3 that since kinds cannot have a singular instance in every world, $^{\cap}$ will not be defined for singular properties. It will only be defined for plural ones.

A crucial note for the discussion of the expletive article in 2.3.2, is that Chierchia considrs the nominalizing operator an intensionalized version of the *iota* operator (symbolised by the symbol *ι*, which is the Greek letter iota). The *iota* operator is basically the definite article. By virtue of the iota operator, an expression that denotes a property comes to denote the unique individual that has this property. This is exemplified in (14a):

(14) a. [[the woman in black]] = ιx [WOMAN (x) ∧ IN-BLACK (x)]

In (14a) the iota operator translates a singular term. It is understood as a uniqueness operator. (14a) identifies the unique individual that meets the condition expressed by the descriptive content of the NP, i.e. the unique (contextually relevant) woman in black (see Giannakidou & Stavrou 1999, section 4.3.2).

When the iota operator is applied to pluralities, it refers to the largest plurality in that extension:

(14) b. the cats = ι CATS

When the definite article co-occurs with proper names and with generic nouns, Chierchia also analyses it as an iota operator: its function is to turn an expression that denotes a property (see below) into an expression that denotes a kind.

The form of generic noun phrases displays considerable crosslinguistic variation, a fact that has given rise to a vast literature both philosophical and semantic (see Krifka et al. (1995) for a good survey of various views on genericity as manifested in many phenomena; also Smith 1975; Carlson 1977; Carlson & Pelletier 1995 and references therein). In English, all of the underlined noun phrases in (15) are used generically:

(15) a. *Cats* are independent animals.
b. *The cat* is an independent animal.
c. *A cat* is an independent animal.

In Greek on the other hand, the equivalent of (15a) does not exist. Bare plurals have a considerably more restricted distribution in Greek than in English (see also (5c) above).[20] Generic noun phrases in Greek are as a rule

[20] Definite plurals in English are used rarely for generic statements; they are used for nouns of nationality (*the Greeks, the Chinese*) and as names of classes of classes (*the dinosaurs*) (Lyons 1999: 181–182).

definite plural (16a), they may also be realized by definite singulars (16b), but this is rarer. Indefinite singulars (16c) are not possible (see Marmaridou 1984 and Roussou & Tsimpli 1993 for generic noun phrases in Greek).

(16) a. *I ghates* ine aneksartita zoa.
'The cats are independent animals.'
b. *I ghata* ine aneksartito zoo.
'The cat is an independent animal.'
c. *Mia ghata ine aneksarito zoo.
'A cat is an independent animal.'

In French, generic noun phrases are singular, and they must be accompanied by an article, either indefinite or definite:

(17) *Le/Un castor* construit des barrages. (Lyons 1999: 185)
'The/A beaver builds dams.'

English has three ways of expressing genericity: singular indefinities (15e), bare plurals and singular definites (cf (15b). Definite plurals are never used for genericity, regardless of the precise interpretation. However, Lyons (1999: 179ff) points out that the ways of expressing genericity are not always interchangeable. Thus, for example, both bare plurals and singular definites can be used to refer to the class as a unit (15d)[21] and for characterising sentences which generalize over the members of the class (15e). However, while the indefinite singular can be used for characterising sentences (15e), it is ruled out if it refers to the class as a unit (15d) (Lyons 1999: 182, who mentions in particular Burton-Roberts' (1989) account of indefinite singular generics).[22]

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[21] Predicates such as 'extinct' which apply to a class as such, rather than to its individual members are called 'kind predicates'.

[22] A generic noun phrase can either refer to the class as an entity or unit or to the class as the aggregate of its individual members.

(i) a. Tigers will soon be extinct. b. Tigers are unpredictable

While 'being extinct' characterizes the class as a whole, 'being unpredictable' is a property that charcterises individual members of the class. Since many of these issues are essentially semantic and do not bear directly on syntactic issues we will not discuss them further here. See Lyons (1999: 179–198) for a first discussion. For the semantics of kind-referring predicates and characterising predicates see also Cohen 1999; Declerck 1991; Gerstner-Link & Krifka 1993; Krifka et al. 1995; Oosterhof 2006a/b; Wilkinson 1988).

(15) d. *A dodo is extinct.
Dodos are extinct.
The dodo is extinct.
*The dodos are extinct.

e. A squid lives on seaweed.
Squids live on seaweed.
The squid lives on seaweed.
*The squids live on seaweed.

Carlson (2003) addresses the question whether the two readings of bare plurals – the existential reading and the generic reading – represent one unified meaning which is differentiated in different contexts, or whether they are originally separate.

First of all, Carlson (1977, 2003) observes that not all predicates are compatible with a generic reading of their bare plural subjects. Consider (18a), which contains a bare plural:

(18) a. Cats are around.

In (18a) the bare plural *cats* cannot have a generic reading because the predicate 'be around' expresses a temporary, transitory property and as a result it cannot be used to make a generic statement about the totality of cats. This means that in this example *cats* cannot be interpreted generically. Carlson calls predicates such as 'be around' 'stage-level' predicates. Stage-level predicates are contrasted with individual-level predicates. Stage-level predicates denote non-permanent properties (states or activities), that is, properties such as 'giving birth', 'laying the table', writing', 'being ill,' etc. Individual-level predicates denote permanent and enduring properties/states, that is properties such as 'having four legs', 'being mortal', 'being tall', etc. Individual-level predicates give rise to generic readings of BPs:[23]

(18) b. *Cats* are the masters of their humans.

With many predicates, there is a potential for ambiguity, since one and the same predicate can sometimes have either a temporary reading or a perma-

[23] Carlson's distinction between stage level predicates and individual level predicates is relevant in other domains. For instance, we will return to the distinction in Part III Chapter 1 when discussing Larson's account of the interpretation of post- and prenominal adjectives.

nent reading. Applied to a bare plural noun this may result in either an existential reading of the BP or in a generic reading. This is illustrated in (18c):

(18) c. Firemen are available.

As Diesing (1992: 17ff.) points out:

> The first reading (of (18c) – A-H-S) is the existential reading (…). On this reading there are firemen available at some point in time. This reading involves an "episodic" reading of the predicate, along with an existential reading of the subject. The second reading is generic expressing a dispositional attribute to firemen; it is a necessary property of firemen that they be generally available for fighting fires.[24]

Diesing, following Wilkinson (1986) and Gerstner & Krifka (1987), assumes that the generic reading associated with a nominal expression is due to the presence of an abstract generic operator at the sentential level. This sentential operator is represented as 'Gen'. Accordingly, the representation of (18c), repeated here as (19a) is as in (19b) (from Diesing 1992: 16):

(19) a. Firemen are available.
b. $Gen_{x, t}$ [x is a fireman and *t* is a time] and x is available at *t*.

Genericity is also a function of the aspectual distinctions on the verb. By and large, generic noun phrases are best compatible with verb forms that express habitual or timeless aspect (e.g. imperfective rather than perfective aspect):[25]

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[24] Diesing notes yet a third interpretation of (18c/19a), which is that of 'existential generic' interpretation. According to this reading, the sentence in (18c) can be paraphrased as: "Generally, there are firemen available." (1992: 18). The context that would give rise to this reading is that according to which firemen work on short shifts but in general some of them are always available.

[25] This is an overgeneralization. There are cases where the predicate manifests punctual aspect, this is particularly the case with kind predicates, when the generic NP refers to the class as an entity:

(i) The dodo became extinct in the eighteenth century. (Lyons 1999: 180)

However, it is likely that sentences that are predicated of the kind as a whole and characterising sentences probably differ in other ways. We will not go into this issue here. See also Cohen (1999), Declerck (1991), Krifka et al. (1995), Oosterhof (2006a/b), Wilkinson (1988) for a semantic discussion. See Guéron (2006b) for discussion of examples such as (ii):

(ii) a. Horses were introduced in Europe by the Romans.
b. The dodo-bird is extinct (from Guéron 2006b: her 526f)

(20) a. Cats eat grass.
b. Cats are eating grass.

In (20a) the present tense has a habitual reading and is compatible with a generic reading of the bare plural *cats*. In (20b), on the other hand, the progressive present is incompatible with a generic reading of the bare plural subject *cats*.

The fact that generic BPs refer to entities taken as an aggregate/unit lies behind Carlson's (1977, 2003) basic assumption that BPs are like proper names and definite noun phrases (see also the discussion below):

(21) a. Topsy
b. the cat on the roof (i.e.Topsy)

In their generic use, BPs directly denote an entire class, a kind, in the same way that proper nouns (like *Topsy* in (21a)) denote an individual; both BPs and proper nouns function like rigid designators in the sense of Kripke (1972). BPs are names of classes, proper nouns are names of individuals (see also Lyons 1999: 193ff.).[26]

2.3.2. Mass Nouns

Going back to the sentences in (10), we observe that *wine* in (10c-d) is a mass noun. The distinction between count and mass nouns is crucial to the discussion of the syntax and semantics of 'bare' nouns. Mass nouns refer to an undifferentiated substance. While a count noun denotes a kind with subparts and individual members, a mass noun denotes a kind with subparts but no atomic members. For instance *caviar* is a mass noun. It may be used to refer to the kind in general (22a). In this case the mass noun has a generic interpretation: 'caviar in general', all instantiated subparts of the substance 'caviar'. Or we may refer to just some particular subpart (22b):

(22) a. Topsy likes *caviar*.
b. Topsy ate (*some*) *caviar*.

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[26] There are of course differences between these two types of nouns. The most salient is that while names of classes do have descriptive content, names of individuals do not. But for our purposes here we do not need go into that.

Chierchia (1998a: 55–57) identifies ten basic empirical properties that jointly characterize the differences in the behavior of mass and of count nouns.

> **Property 1**: Availability of plural morphology (the examples that follow are all based on Chierchia 1998a, unless otherwise stated).

Mass nouns do not have plural morphology, count nouns have plural morphology:

(23) a. There are shoes in the store.
b. *There are bloods on the wall.

> **Property 2**: Distribution of numerical determiners.

The denotation of count nouns can be 'counted'; this is reflected in the fact that count nouns can be directly associates with numerals. The denotation of mass nouns can be measured but it cannot directly be counted. Hence they cannot be directly associated with numerals:

(24) a. three drops, four pieces of furniture, two virtues
b. *three bloods, *four furnitures, *two honesties

> **Property 3**: Obligatoriness of classifier and measure phrases for combining with numerals.

In order to associate a mass noun with a numeral either a classifier or a measure phrase is required:

(25) a. three grains of rice; two piles of wood, two stacks of hay
b. a pound of rice (example A-H-S)

Property 3 obviously derives form Property 2; because direct association with numerals is not available, for mass nouns counting necessitates the use of classifiers or measure phrases (see also Chapter 2, Part III).

> **Property 4:** Some determiners occur only with count nouns. In English the singular determiners *every, each* and *a* and the plural determiners *several, few, a few, many, both* associate only with count nouns.

(26) a. Every/each/ cat was looking at her. (examples A-H-S)
b. *Every/each/a water was dirty.

> **Property 5**: Some determiners such as *much* and *little* occur only with mass nouns.

(27) a. *There wasn't/weren't much cat/cats. (examples A-H-S)
b. There wasn't much water.

Property 6: Some determiners such as *a lot of, all, plenty of, more, most* occur only with plurals and mass nouns.

(28) a. There were a lot of cats/*cat. (examples A-H-S)
b. There was a lot of water.

Property 7: Some determiners such as *the, some, any, no* are unrestricted.

(29) a. The cat ran away. (examples A-H-S)
b. The cats ran away.
c. The blood covered the floor.

Properties (4)–(7) show that the mass/count distinction is relevant to the determiner system (Chierchia 1998a: 56).

Property 8: Independence of the distinction from the structure of the matter.

The distinction between mass nouns and count nouns is independent of the denotatum. In particular it does not depend on the structure of the matter/ object that is denoted by the noun. For instance, *shoes* and *footwear* refer to the same entity, but the former is countable and the latter is non countable (30a). The same applies to *coins* and *change* (30b) and to *clothing* and *clothes* (30c):

(30) a. There aren't many/*much shoes. (examples A-H-S)
There isn't much/*many footwear.
b. I don't have many/*much coins.
I don't have much/*many change.
c. I don't have many/*much clothes.
I don't have much/*many clothing.

Property 9: (Predominantly) count nouns can be made mass.

While the noun *rabbit* is a count noun in (31a), it is used as mass noun to refer to 'rabbit meat' in (31b):

(31) a. There is a rabbit in the kitchen.
b. There is rabbit in this stew.

> **Property 10**: A (predominantly) mass noun can be turned into a count noun, denoning a particular subtype of the substance involved.

While the noun *blood* is a mass noun in (32a), it is used as count noun to refer to 'types of blood' in (32b):

(32) a. There was blood all over the floor of the lab.
b. In this lab we store three bloods.

Taking these properties as a starting point, Chierchia formulates the hypothesis that mass nouns are inherently (lexically) plural nouns. Because they are inherently plural, they cannot take plural morphology, and because they cannot take plural morphology they are incompatible with a numeral and hence they need the co-presence of a measure phrase if they are to be quantized. Chierchia's leading idea is that:

> If crosslinguistic variation is to be accounted for in terms of parametric variation, then the mass/count distinction seems to provide evidence for a semantic parameter. (Chierchia 1998a: 53)

We will discuss Chierchia's (1998a) semantic parameter in section 3.1 below.

2.3.3. Proper names

Finally, let us briefly turn to proper nouns. (10e) above, repeated here for convenience:

(10) e. *Orestes* will fly to *Prague* tomorrow.

(10e) contains two proper names – one human name *Orestes* and one place name *Prague*. We have mentioned above that proper nouns are like generic nouns in that both noun types are used to denote directly; the former directly denote an individual the latter directly denote a class.[27] However, this may sound like a gross generalization. In fact, from this very perspective, generic NPs and proper nouns seem also to be the exact opposite of each

[27] In fact, this assumption lies at the heart of Longobardi's theory, as we will see further below: he argues that bare proper names are allowed in a language only if that language also allows generic (i.e. 'kind') readings for bare plurals or mass nouns (Longobardi 2001a, 2001b).

other: proper nouns are contrasted with common nouns in that they designate an entity without describing it – i.e. without having sense.

Proper nouns (or names) have been called 'rigid designators' by the philosopher Kripke (1972). They are expressions that denote the same individual/ entity with respect to all possible worlds. For example, while the noun *cat* may or may not be a correct description of a given animate entity (depending on when and where and under what particular circumstances it is used), and while it can be applied appropriately to a number of different entities, the name 'Topsy' will be used to denote the animate entity Topsy, irrespective of who utters it, where and when. A caveat is useful at this point. It is true that the name 'Topsy' has probably been given to millions of cats and that, as a consequence, every time the name is uttered, the context is important for the identification of the intended cat. However, there is a naming convention associated with proper names, in that they are used as if they applied in a unique way to inherently unique individuals – just as the definite noun phrase *the sun* refers to a single, unique object (see Lyons 1999: 21 and the reference to Lyons 1977: 177–229). There is of course a difference between *the sun* and *Topsy*: the difference is expressed by either saying that while the former expression denotes a singleton set, the latter denotes an individual (Lyons 1999: 23); or, alternatively, it can be said that both denote a singleton set, but while in the case of *the sun* the set happens to have only one member, in the case of *Topsy* it is by definition a single-member set. If proper names by definition denote a single-member set, this implies that there is no need to signal the uniqueness of referent of the proper name and that the definite article will be 'superfluous'. This issue is taken up in section 2.3.4 below.[28]

Carlson (1977), echoing the philosophical tradition of Kripke, treats bare plurals as proper names of classes – viz. 'kinds'. This analysis is based on certain similarities between BPs and proper nouns. Both are can be used 'rigid-

[28] The semantics of proper names has given rise to a lot of discussion among philosophers. According to the empiricist philosopher John Stuart Mill (1843), proper names are not given on the basis of a quality or property or characteristic of an individual; hence they are not connotative. For the philosopher Frege (1892), nouns are either concept-words or proper names. A proper name is any expression that denotes an object and not a concept. For Frege, a proper name is never a predicate, though it can be part of it. Proper names are nouns like *Caesar*, but also *the capital of Greece*, and *the number four*. For Frege, a nominal expression has to refer to a unique object. Proper names have to be definite. For the philosopher Russel (1905) too proper names are disguised definite descriptions.

ly' in that they can directly denote an entire class and an individual (respectively). BPs and proper names differ, in that, in describing a class, the former, but not the latter, have themselves semantic content: proper nouns are devoid of any sense, as we mentioned citing Kripke (Lyons 1999: 194). Lyons (1999) proposes a reversal of Carlson's proposal: proper nouns, Lyons suggests, are a kind of generic; "they do denote ensembles (…), but always generically, because these "ensembles" consist of only one entity." (Lyons 1999: 194).

In contrast to most of the philosophical tradition, Chierchia (1998b) assumes that proper names are predicates (i.e. of the semantic type <e,t>) true of just one individual. As we will see in some detail in section 3, Chierchia focuses on the form of the various noun phrase types. Proper nouns, like generic nouns, are exclusively argumental; nevertheless, they are not uniformly expressed across languages. In some languages, as in English for example, they occur 'bare' (*John*, *Peter Smith*, *Paris*, *China*), like generic nouns. In Greek, in contrast, as in most Northern Italian dialects, proper nouns are regularly preceded by the definite article, again like generics:

(33) a. *(O) Janis
b. Il Gianni

Such an article is called expletive, because it is taken to be devoid of any substantive content. We will briefly address this issue in 2.3.4.

In section 3 we will see how the omission of the definite article in front of proper names and generic noun phrases is accounted for by Chierchia (1998b) and by Longobardi (1994).

2.3.4. A note on the expletive article

Before turning to Chierchia's theory a note is in order here about what has come to be known as the expletive use of the definite article. An interesting, as well as challenging, fact about proper names is that their primary function is that of an argument although formally, being determinerless, they look like predicates.[29] This 'double' behavior is reflected in the varied

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[29] Proper names can also be used predicatively, as illustrated in (i):

(i) He is really an Einstein.

In (i) the expression *an Einstein* does not refer directly to the individual Einstein, rather it plays a predicative role: (i) is roughly interpreted as 'He is like Einstein'. 'He is very clever/a *genius*'. This function is called attributive by Donnellan (1966). The attributive function is also available for names of places, towns etc.:

way proper names occur in various languages. Recall that in Greek, as in some Italian dialects, proper nouns are always preceded by the definite article, whereas in English they appear 'bare'. The same remarks hold for generic nouns. While in English generic plural nouns, as we said, occur bare, in Greek and in Romance languages they have the form of definite noun phrases. We may also mention in passing that there are languages that have special forms for expletive articles – many Austronesian languages and Catalan among them. See Lyons (1999: 123) for relevant examples.

The important fact about the (definite) article accompanying proper (and generic) nouns is that the definiteness conveyed by this article can be said to be redundant. In Chapter 1, section 2, we showed that, according to a rich literature on the subject, one of the most prominent functions of the definite article is to encode definiteness. This means that the presence of the definite article is used as an instruction for the hearer to search for the referent of the noun in the spatio-temporal or textual context. We said there that definiteness can be seen as a cover term for such notions as familiarity, identifiability and inclusiveness. Ultimately, the goal of using a definite NP is to allow the (intended) referent of a definite NP to be retrieved/identified by the hearer.

Now, recall from above that proper names denote a single/unique individual – they form a priori and by definition single-member sets. Their use, in other words is 'rigidly designating'. This makes the presence of the definite article with a proper name redundant in a sense, since proper nouns by themselves seem to fulfill the function that the definite article serves with common nouns. Such a redundant use of the definite article in front of proper nouns has been called an 'expletive' use (Vergnaud & Zubizarreta 1992; Longobardi 1994) because it resembles the redundant occurrence of the expletive subject with certain verbs (weather subjects, such as *it* in *it rains* for instance). Like *it* in *it rains*, the Greek definite article *o* in *o Janis* ('the John') is devoid of any semantic content.

The 'emptiness' of certain occurrences of the definite article has thus given rise to a partitioning among article uses: meaningful occurrences of the definite article are set apart from expletive or pleonastic occurrences (Lyons 1999: 164).

(ii) He returned to London, not indeed a London he could remember (…) and certainly not the London of its youth." (Krámský: 59 and references therein)

The second occurrence of *London*, in which it is associated with an indefinite article, aligns the proper noun *London* with a common noun through the use of the article. In the same vein, the third occurrence is associated with a definite article.

With respect to expletive articles, two intimately related questions have been addressed in the literature: first, given the 'universal' semantics of proper and generic nouns, why is this expletive use of the article, for instance with proper names, attested at all, and why does it occur in some languages but not in others. Secondly, how is this expletive use of the definite article best accounted for?

It can be assumed that proper nouns are inherently [+def]. But once again the question arises whether this feature is a feature on D or on N? We mentioned above that Loebel treats the noun *John* in English as parallel to the common noun *hon* in Japanese in that she takes both to be inherently marked as [+determined] (recall that in this approach the term 'determinedness' is a superordinate term for any kind of determination). For Loebel the [+definite] marking on the noun allows for the D position to remain phonetically empty, the role of the article hosted by D being taken over by the N itself in these cases (see the diagram in (9c)).

Notice that the question whether the feature [+def], is on D or on N (Lyons 1999: 22)[30] does not really arise in Loebel's analysis. By virtue of Emonds's *Invisible Category Principle* (see above) it doesn't matter where exactly the feature is located because by this Principle it will effectively be on both heads.

In the use of the term discussed above the expletive article, as a semantically redundant article, is opposed to the substantive article, which does have some semantic impact, i.e. that of encoding definiteness, for instance. However, the distinction between the two uses of the article is not drawn uniformly across authors.

For Chierchia (see also above section 2.3.1) the definite article with generic nouns and with proper names would not be considered as being expletive, as the article denotes the iota operator, i.e. its function is to turn an expression that denotes a property (see below) into an expression that denotes a kind, or, putting it differently, it has a type-shifting function in that it shifts the type of a noun from property denoting to kind denoting.[31]

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[30] In fact, Lyons (chapter 4) argues that proper names are not marked [+def], as (in English) they are indefinites, their apparently definite behavior is said to derive from their genericity.

[31] See also Giannakidou & Stavrou (1999) who claim, along the lines of Chierchia, that the article in front of generics (and proper names for that matter) in Greek is not expletive but contentful, as it is the locus of the nominalization operator. It turns an adjective into a generic noun (*i plusii*, 'the rich').

For Longobardi, on the other hand, as we will see below, the definite article associated with countable nouns translates as the iota operator which encodes existentiality and uniqueness, the expletive article associated with proper names is a 'filler' of the D position; it merges in the nominal structure as a last resort strategy when all other means which can lexicalize the D position (thus rendering it interpretable at LF) have failed.

Lyons's (1999) approach differs again. Recall the quotation from Chapter 1, partially repeated here for the reader's convenience:

> Thus for languages in general there is a range of noun phrase uses which can in principle be characterized as definite, because they can be described in terms of identifiability or inclusiveness. These uses represent "semantic definiteness" *but this is not what articles encode*.
>
> (Lyons 1999: 159, italics A-H-S)

Because they do not encode definiteness, definite articles that are free morphemes can be argued to always be expletive.[32] Recall that Lyons's basic assumption is that the semantic-pragmatic concept of definiteness is not realized lexically (i.e. by some particular item such as the article), but that it is grammaticalized structurally, through the specifier of the functional projection D (whatever may occupy this position in any given occasion). A crucial consequence of this assumption is that since the expression which induces definiteness in the NP by its presence in the specifier need not be a definite Det, there is no need for the definite article to be associated with the feature [+Def]. Now, the definite article frequently seems to have no other semantic or grammatical content apart from being associated with definiteness, which itself is argued to be a feature of D. This means the definite article itself can be semantically and grammatically empty. It can thus be argued to be a (meaningless) filler, with the role of occupying the specifier of D in the absence of any contentful item to fill that position. In this respect the definite article has a function similar to that of expletive subjects (Lyons 1999: 290).

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[32] Giusti's approach (1993, 2002), which we mentioned in Chapter 1, is related to this view. Recall that for Giusti the definite article only encodes case and does not have any semantic content (such as, for instance, definiteness).

2.4. Summary

Mass nouns, proper names and generic noun phrases occupy a prominent position in both the typological and theoretical research; they have given rise to discussion because they form well-circumscribed nominal expressions whose overt realization, although subject to a uniform interpretation varies cross linguistically, is 'bare' in some languages, and associated with articles in others.

Bare plurals may be interpreted either generically/universally or existentially; they are used either to make some statement over a class of relevant entities or to assert the existence of some set of entities. The same is true of mass nouns. Mass nouns and bare plurals (of count nouns) have other commonalities as well; both appear without the indefinite article *a* in English (and in languages similar to English) and in their generic use they reject the definite article *the*.

Proper names also have certain similarities with the previous two noun types. In English (and in the Germanic languages)[33] they appear without the definite article. Again, in other languages such as Greek and in some dialects of Romance, they necessitate the presence of the definite article, which, because it is devoid of any semantic substance is referred to as the expletive (use of the) definite article.

The differences in the distribution of the article across languages and also within the same language has been extensively discussed in the generative theory, both semantically and syntactically. In section 3.1 we turn to Chierchia's (1998b) account of the distribution of articles. This account is grounded on semantics. In section 3.2 we will see how Longobardi's (1994) more syntactically oriented analysis derives roughly the same effects.

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[33] There is cross linguistic and cross dialectal variation, though. To mention just one example: while in Standard Dutch proper names occur without an article (i), in many Flemish dialects, the article is used: (ii) is from the Antwerp dialect.

(i) Jan komt morgen
Jan comes tomorrow
'Jan is coming tomorrow.'

(ii) De Jan komt morgen
the Jan comes tomorrow
'Jan is coming tomorrow.'

For some German data see the discussion in section 3.2.4.2.

3. Noun phrases as arguments and as predicates

The main topic of the previous chapter was to show how a noun can become a referential expression and therefore function as an argument of a verb (and a preposition for that matter) when embedded under D. The crucial assumption underlying this discussion has been that the position D is always relevant semantically. In particular, D, being the category that assigns reference and argumental status to the noun, must always be available to rules of interpretation. In the literature a number of strategies have been discussed by which D can be made available to the rules of interpretation by one of the following ways:

(i) D is lexicalized, i.e. it is realized by an overt determiner (article, demonstrative);[34]
(ii) D specifies a set of rules for the interpretation of N;
(iii) N moves to D.

In the discussion in the previous chapter we saw what it means for D to be lexicalized. In this chapter, where we focus on bare nouns, we will place the emphasis on both (ii) and (iii) by reviewing some of the literature that accounts for the absence of an article in front of a noun in argument position, either by proposing specific rules for the interpretation of an articleless noun or by relying on movement of N to D. In fact we will see that the raising of N to D (option (iii)) is tantamount to (i) in that the moved N then lexicalises D. Raising of N to D is triggered by the need of D to be visible by rules of interpretation.

In this section we will examine the conditions under which a noun which is not preceded by an article can be a referential expression/argument.

3.1. A typological parameter: Chierchia (1998b)

3.1.1. General presentation

Chierchia's approach starts from the fact that nominal constituents appear to play a double role: On the one hand, they are non-referring and appear in predicate position: this is illustrated by *cats* in (34a), *chair of the round table* in (34b) and by *jatros* ('doctor') in the Greek example (34c).

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[34] For a precise discussion of the syntax of demonstratives we refer to Chapter 1, section 4, in which it becomes clear that demonstratives are not necessarily fillers of D.

(34) a. Topsy and Quaxo are cats.
b. Topsy and Gumbie Cat elected Quaxo chair of the round table.
c. O Petros ine jatros. (Greek)
the Peter is doctor
'Peter is a doctor.'

On the other hand, as we have seen (Chapter 1), as referring expressions nominal constituents (or more precisely DPs) are arguments. The option for a noun to be used as either the head of a predicate or as the head of an argument is presumably available in some form or other in every language. The question is how these two distinct functions of nouns are realized in different languages.

Chierchia (1998b) has developed a comprehensive theory to account for the use and interpretation of bare nouns and bare noun phrases in the Romance languages and in the Germanic languages. Chierchia's theory is encapsulated in the *Nominal Mapping Parameter*. According to Chierchia, there is no crosslinguistic isomorphism between argument noun phrases and the category DP. Languages vary as to what their NPs denote. In some languages, NPs as such are basically argumental and can therefore occur freely without determiners; this is the case of Chinese, for instance, as we will see in more detail below. In other languages like the Romance languages and Greek, nouns and noun phrases are essentially predicates and this prevents them from appearing in argument position, unless the category D is projected. Finally, there are languages like English, which permit both predicative and argumental NPs. Notice crucially, that under this theory count nouns are not uniformly predicative in nature, i.e. they are not uniformly of type <e, t>. Sometimes, or in some languages, they are of type *e*, namely arguments.

3.1.2. The Nominal Mapping Parameter

The *Nominal Mapping Parameter* is essentially a semantic parameter and is implemented in terms of the binary features [+/–arg] and [+/–pred]. These features are taken as a means to constrain the interpretation of the syntactic category headed by N, that is the way in which the syntactic category headed by N is mapped onto its interpretation crosslinguistically.

The features [+/–arg] and [+/–pred] can be combined in three ways.[35] Each combination represents a particular type of language. To be more concrete here, a language permits its NPs to denote (a) only kinds ([+arg, –pred]), (b) only predicates ([–arg, +pred]) or (c) either arguments or predicates ([+arg, +pred]). This is summarized in table 2:

Table 2. The Nominal mapping parameter

Feature specification	Denotation	Language
[–arg], [+pred]	Predicates	Romance languages
[+arg], [+pred]	Arguments or predicates	Germanic languages
[+arg], [–pred]	Kinds	Chinese, Japanese

The combination NP [–arg, +pred] is represented in the Romance languages. Since nouns are [–arg], they are mapped onto predicates, and since by definition predicates cannot occur in argument positions, this group of languages will disallow bare nominals altogether. This means in effect that in these languages nouns need be embedded under D in order to qualify as arguments. It is thus predicted that these languages will have the category DP. Based on Gil's typological correlates (see also table 1) the prediction is that nouns will be distinguished in count nouns and mass nouns and that count nouns bear plural markings.

3.1.3. Some applications

French, to take a concrete example from Chierchia, generally bans bare plural nouns in argument positions:

(35) a. *Enfants sont venus chez nous.
children are come to us.
b. *J'ai mangé biscuits dans mon lait.
I have eaten cookies in my milk

[35] Obviously, the combination [–arg, –pred] is not attested. It would cancel out the very existence of the category 'noun' – being neither argumental neither predicative, nouns would not have a *raison d' être*.

In Italian too, bare plural subjects are not possible but Italian differs (minimally) from French in that it allows for bare plural nouns in specific contexts such as object positions.

(35) c. *Bambini sono venuti da noi.
children are come to us
d. Ho preso biscotti con il mio latte. (Chierchia 1998b: 356)
I have taken cookies with my milk.

However, Italian is also a language of the type [–arg, +pred]. So we cannot conclude that the bare plural in the object position in (35d) is simply an NP. A determiner is still required to turn the NP in an argument. It is assumed that in object positions the determiner associated with the bare plural is non-overt. The assumption is that non-overt determiners are licensed in lexically governed positions, object positions being a case in point. Since the subject position in (35c) is not governed, the bare plural, i.e. the null determiner, is not allowed. (Section 3.2. returns to the discussion of Longobardi's use of null determiners and the role of lexical government and licensing of null D.)

To account for the ungrammaticality of both (35a) and (35b) in French it suffices to assume that empty D is not licensed. Micro-variation can thus be seen to be attested within the same language type. NPs in both French and Italian are of the type [–arg, +pred]. In order to account for the contrast in (35a,b) and (35c,d) Chierchia assumes the presence of a null D in the case of Italian (35d) under specific conditions,. In French on the other hand, empty D is never allowed. Since bare singulars of count nouns are not possible, it must be assumed that the null D is only available with pluralities.

Chierchia's framework has recently been applied to Greek by Sioupi (1999, 2001a,b) and Marinis (2003, 2005). Greek seems to pattern more or less with the Romance languages, i.e. it is classified by these linguists as a [–arg, +pred] language. Accordingly, it has the mass/count distinction as well as plural morphology marking. Bare plurals cannot occur in preverbal (subject) position of transitive verbs,[36] whereas they are allowed in lexically governed positions, as is the case in Italian (cf. (35c,d)):

[36] Unless they involve a contrastive interpretation licensed by a Focus head (see following note).

(36) a. *Ghates efaghan to psari.[37]
cats.NOM ate.PAST-PERF the fish.ACC
b. I Topsy dhen troi psarja.
the Topsy not eat.3SG fishes

However, there seems to be a (minimal) difference between Greek and the Romance languages; while the former also allows – admittedly quite restrictively – bare singulars, the latter does not. Greek bare singulars are in general ruled out as shown in (37a–c), but they are possible in certain well-defined environments. For example, in the object position of certain verb classes (38a–b) (Sioupi 1999, 2000b, 2001a, 2002 – see also note 26), in particular this concerns verbs of creation and verbs of consumption. The bare singular N is also licit when focus stressed (and preposed – (38c)) and when in the scope of negation (38d)) (see Marinis (2003) for fuller discussion and relevant references.[38] Cf.:

(37) a. *Pedhi ine kalo.
child is good
b. *Pedhi irthe.
child came
c. *Idha fititi.
saw.1SG student

(38) a. Efagha biskoto me to ghala mu.
Eat-PAST 1SG biscuit with milk my
'I eat a bisuit with my milk.'
b. O Janis xtizi spiti.
the John build-3SG house
'John is building a house'
c. KOTOPULO theli.
chicken want.-3SG
'It is chicken that he wants'

---

[37] This sentence improves if the preverbal bare plural is stressed and thus brought under the scope of focus. See Roussou & Tsimpli (1993) for more on the distribution of bare nouns in Greek.

[38] According to Marinis (2003), in the case of post-verbal bare objects, the null D^0 is licensed by a lexical head, i.e. the verb that takes the bare object as its argument, while pre-verbal focused bare objects are licensed via Spec-Head Agreement with the head of a Focus Phrase (Rizzi 1997).

d. Skilos dhen troi tetja. (Marinis 2003: 73)
dog not eat.3SG such things
'Not even a dog can eat these.'

To account for the fact that bare nouns are licensed in the object position of verbs of creation and verbs of consumption, Sioupi (2001a, 2001b) takes as a starting point the typology of determiners proposed by Chierchia (1998b) and provides arguments for the existence of a null determiner in Greek. She proposes that null D is possible not only for pluralities, as Chierchia has proposed for Italian and the Germanic languages, but also for singularities (in object position). D projects a DP layer mapping the interpretation of the noun onto an argument.[39]

In Brazilian Portuguese, in sharp contrast with what is the case in the rest of Romance, bare singulars are common and they have the same properties as bare plurals.[40] In particular, bare singulars may receive both a generic interpretation (39a) and an existential interpretation (39b) (examples from Schmitt & Munn 2002): [41]

(39) a. Criança lê revistinha. (Brazilian Portuguese)
child read-3SG comic book
'Children read comic books.'

b. Chegaram crianças/criança.
arrived children/child
' Children/{a child/children} arrived.'

Germanic languages such as English set the features of the Nominal Mapping Parameter as [+arg, +pred]. In these languages NPs are either predicative or argumental, (40a,b), and the language has the mass/count distinction

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[39] For Sioupi, a semantically null D functions like a type-shifter, shifting the semantic type of the NP to that of an argument.

[40] As Schmitt & Munn show (2002: 187), the distribution of bare singulars in Brazilian Portuguese is unrestricted in object position and postverbal subject position while it is more restricted in preverbal subject position. See also Oosterhof (in preparation) for bare singulars in Dutch dialects.

[41] Note in passing that, though rare, bare singulars are not completely absent from English:

(i) I saw it on television. (Carlson 1999)

Carlson also cites instances from Norwegian, where bare singulars appear somewhat more systematically than in English.

(the N→arg option yields mass nouns, whereas N→pred yields cound nouns). Mass nouns will occur as bare arguments, but singular count nouns won't. In these languages plurals will be able to occur as arguments. These properties are exemplified in turn below, cf. (41)–(42).

(40) a. Cats were chasing the birds in our garden this morning.
b. Nelson and Topsy are cats.

In [+arg, +pred] languages, nouns can be freely shifted via ∩, as this is consistent with the category-type assignment in the language. But ∩ applied to a singular won't in general yield a kind (see section 2.3.1). So ∩CAT will be undefined. ∩ applied to a plural will normally yield a predicate, hence ∩CATS will be defined. This explains the contrast between (41) and (42), where plural nouns as opposed to singular ones can occur bare in argument position.

(41) *Cat was chasing bird.

(42) a. Cats arrived this morning.
b. Cats think very highly of themselves. (Carlson 1999)

Moreover, if a noun is of type [+arg], it will be mass and it will be able to occur as a bare argument.

(42) c. Water is dripping on the floor.

So, as far as bare plurals and mass nouns are concerned, English behaves like Chinese, a language to which we turn in the next section.

3.1.4. Chinese NPs

Chierchia's feature combination [+arg, -pred] is also supposed to account for the basic properties of so called argumental-NP-languages, like Chinese and Japanese, in which bare NPs can systematically be found in argument positions. Members of the category N (and their phrasal projections) in such languages denote kinds and can therefore be mapped into arguments. In effect, all nouns in such languages are of the semantic type <e>, [+arg], and can thus be inserted in argument positions. Hence the equivalent of English (43) ought to be grammatical in those languages:

(43) a. *Girl saw boy.
b. *Cat was playing with mouse.

In languages like Chinese all nouns are treated as mass nouns; they have the following properties:

(a) they lack D,
(b) they lack plural marking on nouns,
(c) they are able to occur bare in argument positions and, finally,
(d) nouns are associated with a generalized classifier system.

Notice that for nouns of this type, no special device is needed for generic interpretation and the definite interpretation can arise when the context favors or requires it.

In section 2.2 we referred to Japanese while discussing the Gil/Loebel dispute concerning the projection of D in this language. Here we will focus on the literature that discusses the ways Chinese circumvents the lack of D in this language.[42]

To begin with, recall that in English, as in most European languages, only mass nouns require a measure or classifier phrase, like *a pint* or *a glass*, in order to be countable, as, e.g., in the sequence *a glass of milk* (see Chapter 2 of Part III). As we already mentioned above while discussing Gil's view on the expansion of the noun phrase in this language, Chinese, in contrast, is a classifier language: it has a generalized classifier system, in which all nouns require the presence of a measure or classifier noun. This is a defining characteristic of all classifier languages (Allan 1977).

(44a) illustrates a mass noun *jiu* ('liquor'), which is accompanied by the numeral *san* ('three') and the measure N *ping* ('bottle'). The pattern here is the same that we find in English: in both languages the measure noun plays an essential role in the counting. In (44b) the count N *xuesheng* ('student') denotes a person but in order to be countable once again Chinese requires the presence of a classifier (*ge*). In its absence counting is not possible. Obviously in this type of example, counting does not necessitate the use of a classifier in English (44b').

(44) a. san *(ping) jiu
three bottle liquor
a.' three *(bottles of) liquor

[42] The facts are much more complex than presented here, but full discussion would take us too far afield. The interested reader is referred to Chierchia (1998b), Carlson (1999) and references therein.

b. san *(ge) xuesheng
three CL student
'three students'

b.' three students

Cheng & Sybesma (1999) point out that classifiers can be divided into two groups: those that create a unit of measure as in (44a), and those that simply name units as in (44b).

This generalized use of the classifiers to achieve counting essentially amounts to saying that all nouns in Chinese are really mass nouns, which is what the system elaborated in Chierchia (1998) derives. As Cheng & Sybesma write:

> It is clear that the distinction between the two types of classifiers is made with explicit reference to two types of nouns: nouns that come with a built-in semantic partitioning and nouns that do not – that is, count nouns and mass nouns. If count-classifiers are assumed to merely name the units in which certain phenomena naturally present themselves, then these units pre-exist as part of the semantics of the nouns count-classfiers cooccur with.
>
> (Cheng & Sybesma 1999: 515)

What distinguishes Chinese from English is that in Chinese the grammatical reflex of the mass/count distinction is not at the level of the noun, as there is no plural marking on nouns.[43] The same authors assume that classifiers in Chinese head their own projection. While in non-classifier languages the deictic functions, that is, the individualizing and singularizing functions, are performed by D, in Chinese and in related languages it is the classifiers that perform this function (Cheng & Sybesma 1999: 518). This is so because classifiers in Chinese are involved in the expression of (grammatical) number; it is classifiers that have the ability of picking out singular instances of what is denoted by N, something which we saw in the previous chapter is the primary function of D. In the following chapter we will discuss in more detail how the function of D as an individualizing category is linked with the category of Number. Here let us consider the primary data that show how Chinese classifiers perform the individualizing function usually associated with D.

In Cantonese noun phrases consisting of a classifier and a noun are Classifier Phrases. Absence of the numeral induces an indefinite interpretation.

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[43] Observe that, as Cheng & Sybesma (1999) point out, it is not the case that the mass/count distinction is non-existent in the language: it is reflected at the classifier level (Cheng & Sybesma 1999: 519).

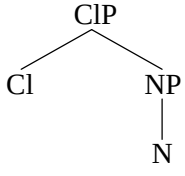
This is illustrated in the examples below, where (45b) contains the classifier *di* which indicates plurality, whereas *gaa* in (45a) indicates singularity:[44]

(45) a. Gaa ce zo-zyu go ceot-hau.
CL car block-CONT CL exit
'The car is blocking the exit.'

b. Di ce zo-zyu go ceot-hau.
CL car block-CONT CL exit
'The cars are blocking the exit.'

The structure proposed is illustrated in (46a) (Cheng & Sybesma 1999: 529):

(46) a.



The indefinite interpretation of nominals in Chinese is achieved through overt numerals, which the authors assume occupy NumeralP. (46b) illustrates the structure they propose for noun phrases with an indefinite interpretation, regardless of whether there is a classifier present or not (either of Num or Cl may remain empty) (Cheng & Sybesma 1999: 528–529) (see Chapter 2 of Part III for a proposal along these lines for the Pseudopartitive Construction):

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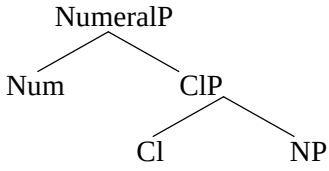
[44] Cheng & Sybesma's (1999: 519–520) objection to one basic claim of Chierchia's theory must be mentioned here. As these authors discuss, in Chinese bare nouns can be both singular and plural. This fact is problematic for Chierchia's theory which claims that Chinese nouns are in effect mass nouns. Absence of plural morphology entails that the singular/plural distinction is neutralized – a crucial feature from Chierchia's perspective of mass nouns. The paradox as Cheng & Sybesma(1999) put it is that: "Chinese makes a count/mass distinction, but its count nouns appear to have the semantic properties that Chierchia attributes to mass nouns." (1999: 520).

In order to resolve this paradox, Cheng & Sybesma adopt Doetjes' (1997) noun partitioning in singular nuns, plural nouns, count mass nouns (like f*urniture*) and mass mass nouns (like *water*) and they propose that Chinese has both mass mass nouns and count mass nouns (so it has both count and mass nouns of the English type). The fundamental difference between Chinese and English is that the count (mass) type nouns do not have number morphology in the former language while they do in the latter.

(46) b.



So, for Cheng and Sybesma DP is not projected in the Chinese nominal constituent.

In contrast with Cheng & Sybesma, Li (1999) argues that certain nominal constituents in Chinese do contain a D level. These constituents are non-quantity individual denoting expressions. Such expressions are related to entities in the discourse. On the other hand, according to Li (1999), quantity expressions do not contain a D level. (47) illustrates a quantity expression, while (48) contains an individual denoting NP. While the nominal constituent *sanzhi gunzi* ('three sticks') in (47) is a simple NumeralP, the nominal *sange xuesheng* ('three students') in (48) is a DP.

(47) Sanzhi gunzi gou ni da ta ma?
three+CL sticks enough you hit him Q
'Are three sticks enough for you to hit him?'

(48) You sange xuesheng zai xuexiao shoushang le
have three+CL student at school hurt PAR
'There are three students hurt at school.'

One piece of evidence presented by Li in favor of this partitioning of nominal projections has to do with the co-occurrence of the individual denoting type with operators that range over individuals. Chinese has two such operators *you* ('exist, have') as in (48) above and also in (50), and *dou* ('all'), as in (49). The former asserts the existence of individuals, while the latter ranges over an entire set of individuals to derive a universal expression. (49) and (50) receive the following interpretations: (49) (with *dou*) must be interpreted in the sense that each of the three individuals came here and (50) (with *you*) must be interpreted in terms of the existence of three individuals who came here:

(49) Sange xuesheng dou lai zher le.
three+CL student *dou* come here PAR
'Three students all came here.'

(50) You sange xuesheng lai zher le.
you three+CL student come here PAR
'There are three students that came here.'

The operators are compatible with non-quantity individual denoting expressions, i.e. DPs in Li's approach. On the other hand, adding such operators to quantity expressions makes them unacceptable: in (51) *you* is added to (47), and the result is ungrammatical:

(51) *You sanzhi gunzi gou ni da ta ma?
have three+CL sticks enough you hit him

DPs (i.e. non-quantity individual denoting expressions) and quantity denoting expressions also have different discourse properties. DP is an individual denoting expression, hence a DP can refer to entities in the discourse and bear a referential index. On the other hand, a quantity denoting expression cannot. This amounts to saying that a DP can enter into a co-referential relation with a following nominal, a quantity denoting expression cannot.

(52) Sange ren_i, taibudong zhejia gangqin.
three+CL person lift+not+move this+CL piano
*$Tamen_i$, de liliang tai $xiao_i$
their de strength too small
'Three people cannot move this piano. Their power is too small.'

(53) You sange ren_i hui lai. $Tamen_i$ hai hui dai liwu lai.
have three+CL person will come. they still will bring present come
'There are three people coming. They will also bring gifts.'

Li considers such contrasts as evidence for suggesting that both D and NumP exist in Chinese. However, she points out that both types of nominals can appear in argument positions in Chinese. This would entail that languages like Chinese differ in this respect from languages like English, where only DPs can appear in argument positions.[45]

3.1.5. Summary

In this subsection we briefly surveyed Chierchia's account of the crosslinguistic distribution of articles and the interpretation of bare noun phrases.

[45] For discussion of the historical development Chinese we refer to Peyraube (1998).

According to Chierchia, there is no cross-linguistic isomorphism between arguments and the DP layer. Chierchia (1998b) proposes that rather than taking argumenthood to be dependent on the category D, nouns themselves are crosslinguistically either (more) argumental or (more) predicative in nature.

In his account, count nouns are not predicates per definition. They can or even sometimes must be kind-denoting, in the sense of Carlson (1977). Count nouns can and sometimes must be of the argument type. In languages in which count nouns are kind denoting, there is no need to assume the presence of a DP layer with a null D^0 whenever bare common nouns appear in argument positions. When such count nouns are argumental, they can function as arguments without any need to be embedded in a DP. On the other hand, when count nouns are predicative in a particular language, they need to be embedded under D, which thus is postulated in a given language. In order to account for what seem to be bare NPs in languages whose count nouns are not themselves argumental Chierchia appeals to the use of a null determiner, with restricted distribution.

Chierchia's theory is applied both crosslinguistically (comparing, for instance, Germanic with Romance languages) and within one and the same language (or group of languages) to account for the omissibility (or not) of the article.

A fairly obvious conclusion that one can draw from this sketchy overview of Chierchia's typology is that when it comes to languages with articles, there are no 'pure' types of languages. The whole issue of the absence of an article in these languages is reduced to the issue of a language being more or less close to a language with the feature complex [+/–pred] [+/–arg], i.e. one should think of this typology as a tendency of languages towards one or the other type rather than as an absolute black-white distinction.

If one wants to compare Chierchia's theory with somewhat older accounts of the same kind of data, one can say that Chierchia's account has a certain resemblance with Loebel's account: both heavily rely on what is to be perceived as an inherent property of (the class of) nouns. This is what Chierchia's [+/–arg] and [+/–pred], and Loebel's [+/–determination] features are purported to represent.[46]

---

[46] It is interesting to also mention here that Krámský's (1972) approach in terms of the determinedness/indeterminedness category resembles Chierchia's and Loebel's approaches: in his approach, a noun refers either to an individual ([+arg] and [+determin] or to a property ([+pred] or [–determin]). Krámský (1972) underlines the inherent nature of such features:

In the next subsection we will present a more syntactically orientated alternative to Chierchia's interpretative rules of determinerless nouns/languages.

3.2. Longobardi and N-to-D-Movement

Longobardi takes as a starting point a general rationale which also underlies our discussion in this and the other parts of the book, namely the need for separating a semantic category from its lexical/phonetic realization. In particular, the semantic content of functional categories is distinguished from their phonetic instantiation.

In contrast to Chierchia (1998b), Longobardi favors the isomorphism between the status of noun phrases as arguments and the category DP. In order to account for the omissibility of the definite article in front of certain kinds of nominals, Longobardi (1994) elaborates an articulated theory of N raising to the higher functional head D. Such a theory obviously hinges on the existence of at least one higher functional head in the nominal domain, the head of which hosts the moved N. Longobardi takes this additional functional projection to correspond to the D layer in the noun phrase, hence his analysis supports postulating the category DP. Longobardi's analysis then is an exemplification of the distributional evidence used to postulate a functional head, as pointed out in the general Introduction (Longobardi 1994: 609).

3.2.1. Bare Ns in Italian and null D

Longobardi provides a detailed discussion of bare common NPs (54a) and of proper names (54b):

(54) a. Bevo vino e mangio patate.
drink-1SG whine and eat-1SG potatoes
'I drink wine and I eat potatoes.'

If we try to characterize the essence of the category of determinedness vs. indeterminedness it is necessary to realize that this category is based on the opposition of individual and genus; it is an opposition inherent to our thinking. Most nouns express both genus and individual. Semantic differentiation is then formed by the article or by other formal means, in some languages determinedness or indeterminedness is inherent in the noun itself, without formal differentiation (…). The categorial difference individual vs. genus must be understood similarly as e.g. the categorical difference perfectiveness vs. imperfectiveness of verbs. (Krámský 1972: 30)

b. Gianni mi ha telefonato.
Gianni me has called
'Gianni has called.'

Longobardi assumes that bare (common) nouns are predicative categories, i.e. elements of the type, $<e, t>$. As such they cannot be mapped onto arguments and they are not expected to appear in argument positions (see Chapter 1). In order to map an NP into an argument the DP layer is required. So this means that both *vino* ('wine') and *patate* ('potatoes') in (54a) must be dominated by a DP layer. Longobardi also assumes that the locus for kind-interpretation is the NP layer of the projection:

(55) a. In order to refer to a kind (…), a noun must head the N position at S-structure. (Longobardi 1994: 637)

We note here that Longobardi assumes two distinct levels of representation: S-structure and LF. These levels were typically adopted in pre-minimalist approaches, like in the Government and Binding framework (Chomsky 1981, 1986). S-structure results from various movement operations and is reflected in the overt form of the sentence. LF is an interpretative level in which non-overt movements may have taken place to encode semantic relations (scope, for instance). It is assumed that any movement that can overtly take place before S-structure may also apply covertly to generate LF-relations.[47]

Consider now (56a–f) (from Longobardi 1994):

(56) a. Bevo sempre *vino*.
drink-1SG always wine
'I always drink wine.'

b. Mangio *patate*.
eaT-1SG potatoes
'I eat potatoes.'

c. Viene giù *acqua* dalle colline.
come-3SG down water from the hills
'Water is coming down from the hills.'

---

[47] See also Part I (Introduction) section 2.1 for a discussion of levels of representation.

d. In questo officio telefonano sempre *marocchini*.
in this office call-3PL up always Moroccans
'Moroccans keep calling this office.'

e. **Acqua* viene giù dalle colline.
water come-3SG down from the hills

f. *In questo officio *marocchini* telefonano sempre.
in this office Moroccan always call-3PL up

g. *Ho invitato *studente*.
have-1SG invited student

In (56a) and in (56b) the bare nouns, *vino* ('wine') and *patate* ('potatoes'), are arguments; they are licit in spite of the absence of a determiner. Given the interpretative principle in (55a) coupled with the assumption that arguments must be DPs we conclude that there must be a DP layer projected with a null determiner: we represent the empty determiner by the symbol 'e' in (56a') and (56b'):

(56) a'. Bevo sempre [$_{DP}$ [$_{D}$ e] [$_{NP}$ vino]].
b'. Mangio [$_{DP}$ [$_{D}$ e] [$_{NP}$ patate]].

Longobardi proposes that null determiners are interpreted existentially:[48]

(55) b. [D_e] has a default existential interpretation.
(Longobardi 1994: 64)

From the remaining examples in (56) we can deduce that there must be some restriction on the distribution of the bare NPs: while the bare NP is grammatical in object position (56a,b) and in postverbal subject position (56c,d), it gives rise to ungrammaticality in the canonical subject position (56e,f). In order to account for this distributional difference Longobardi proposes that there is a licensing condition on the null determiner:

(55) c. [D_e] is subject to a lexical government requirement.
(Longobardi 1994: 617)

---

[48] Longobardi (2001b) argues that the interpretation of bare nouns in Italian – and Romance in general – and bare nouns in English differ systematically to the effect that Romance and Germanic bare nouns are often different semantic objects. We will not pursue this issue here.

Finally, (56g) shows that not all bare nouns are indiscriminately licensed, even in governed positions. Bare determiners are not compatible with singular count nouns. Thus we have a further restriction on null D:

(55) d. [D_e] is restricted to mass or plural nouns.

As Longobardi (1994, 1996, 2001a,b) argues extensively, the interpretation of the (bare) nominal in all these examples is very close to that of an indefinite existentially quantified NP. The relevant generalization then is that existential quantification can be expressed through a bare noun phrase in well defined structural positions.

To make the existential reading of the determiners more precise, Longobardi assumes that determiners are operators that bind a variable, the range of which is the extension of the natural kind referred to by the head noun. Or, to put it differently: variables are restricted by kind-reference, i.e. by predicative properties. The semantics of D is schematised as follows: the structure in (57a) is translated in the logical formalism in (57b):

(57) a. [D [N]]
b. D_x, such that *x* belongs to the class of Ns. (Longobardi, 1994: 634)

This approach to the semantics of D leads Longobardi to view the plural or mass interpretation of bare common nouns as a reflex of their kind-denoting nature.

3.2.2. Proper Nouns in Italian and N-to-D movement

Apart from bare common nouns, which have a restricted distribution in Italian (for English see below), Longobardi also accounts for the articleless use of proper nouns.

(58) a. Gianni mi ha telefonato.
Gianni me has called

The question that he addresses is the following: in Italian names of individuals, cities, days and months occur freely without an article and without being subject to the licensing conditions in (55). Such proper names differ in a number of respects from the common nouns discussed above. (i) They are not mass or plural nouns, (ii) as rigid designators, they fail to receive an

existential reading, and (iii) they may occur in ungoverned positions. How can these facts be accommodated under the hypothesis that an empty D receives an existential interpretation by default? The answer that Longobardi offers to this question is that in this case we must conclude D cannot have remained empty. Thus, (58a) must not be taken to have the representation in (58b).[49]

(58) b. *[$_{DP}$ [$_{D}$ e] [$_{NP}$ *Gianni*]] mi ha telefonato.

The question is then what IS the representation of (58a)? Observe that *Gianni* not being a kind term, principle (55a) does not apply and there is no requirement for the noun *Gianni* to be in the position N at S-structure. Longobardi adopts a traditional assumption that proper names are rigid designators: "(proper names) seem to be able to dispense completely with the denotational interpretation. (…)" (1994: 635). Hence, proper nouns do not fall under the logical schema of (55a). Rather they are used as directly designating the entity referred to. Longobardi's proposal is then that in the case of determinerless proper nouns the noun, here *Gianni*, moves to D, thus eliminating the null D already at S-structure. As a consequence the default existential interpretation (55c) will not come into force, there being no null determiner at S-structure.

(58) c. [$_{DP}$ [$_{D}$ Gianni] [$_{NP}$ ~~Gianni~~]] mi ha telefonato.

Observe that in Italian, there is free or stylistically conditioned alternation between (58a), with no article in front of the proper noun, and (58d) with the article:

(58) d. [$_{DP}$ Il Gianni] mi ha telefonato.

Longobardi assumes that within the subject DP *Gianni* in (58a) occupies the same position as the article *il* in (58d). As we have discussed above, with proper names the definite article does not encode reference, this being already inherently associated with the N. In such cases the definite article is said to be expletive.

The N-to-D analysis of (58a) is supported by the distribution of the head noun in the underlined DPs in (59) (from Longobardi 1994: 623):

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[49] The asterisk means that representation (58b) is inadequate.

(59) a. *Il mio Gianni* ha finalmente telefonato.
the my Gianni has finally called up
b. **Mio Gianni* ha finalmente telefonato.
my Gianni finally called up
c. *Gianni mio* ha finalmente telefonato.
Gianni my has finally called up

Whenever the (expletive) article fails to show up, *Gianni* precedes *mio* ('my'), the possessive adjective. If we assume that the possessive adjective occupies a (specifier) position intermediate between D and NP, then the order *Gianni* – possessive adjective suggests that the N has moved leftward. Longobardi assumes that the N has moved to D. As a result there is no room for the article in D:

(59) d. $[_{DP}\ [_{D}$ il$]\ [_{FP}$ mio $[_{NP}\ [_{N}$Gianni$]]]]$
e. $[_{DP}\ [_{D}$Gianni$]\ [_{FP}$ mio $[_{NP}\ [_{N}$~~Gianni~~$]]]]$

When N is raised to D, it is assumed that its original position (technically, the 'foot' of the chain formed by the moved N and its base position) remains uninterpretable. Longobardi says:

> In this technical respect, DPs headed by proper names can be correctly claimed not to resort to any denotational structure (i.e. kind-referring content) to be interpreted, but just to directly designate the individual object the name refers to. (Longobardi 1994: 649)

Raising of N to D in this case is therefore seen as a means to fill the D position if no other material can do that, and if the interpretation of the entire nominal phrase is non existential. In other words, the proper noun plays the role of the definite article, so that the whole phrase is interpreted as if there were an article present.[50]

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[50] See also Heycock & Zamparelli (2003) who postulate movement to SpecDP of the coordinated NPs in (ia) to derive the definite reading. See also note 6. Thus the null D is licensed via movement to its specifier. For more details see Heycock & Zamparelli (2003).

(i) a. Cat and dog were equally filthy.
b. $[_{DP}\ [$coorDP$_{i}\ [_{NP}$ cat$]$ and $[_{NP}$ dog$]\ [_{D}$ e$]\ [_{CoorDP}\ t_{i} \ldots]$

Observe also (59f):

(59) f. Il Gianni mio ha finalmente telefonato.
the Gianni my has finally called up
'My Gianni has finally called.'

In this example *Gianni* precedes the possessive adjective *mio* but it cannot have raised to D since the definite article *il* is also present. This pattern forces us to assume that in (59f), with *Gianni* appearing between *il* and *mio*, the proper noun has raised leftward, stranding the possessive adjective behind. Such examples receive a clear contrastive interpretation distinguishing this particular Gianni from every other individual with the same name. It could then be proposed that there is perhaps a contrastive focus position between the determiner and the possessive pronoun. See also Chapter 1, section 5.3, for focus positions in the functional domain of the noun.

(60) shows that the same distributional pattern encountered with the prenominal possessive adjective is also found with some other prenominal adjectives:

(60) a. La sola Maria si è presentata.
the only Mary showed up
'Only Mary showed up.'

b. *Sola Maria si è presentata.
Maria sola si è presentata.
'Only Mary showed up.'

On the basis of (60a) vs (60b) we conclude that in Italian an adjective can precede the proper noun only if there is an overt article available. (60c) again illustrates the pattern in which N has moved to D:

(60) d. $[_{DP}\ [_{D}$ la$]\ [_{FP}$ sola $[_{NP}\ [_{N}$ Maria$]]]]$
e. $[_{DP}\ [_{D}$ Maria$]\ [_{FP}$ sola $[_{NP}\ [_{N}$ ~~Maria~~$]]]]$

Consider now the examples in (61), which reveal a contrast between the distribution of nouns and that of pronouns.

(61) a. *La sola lei si e presentata.
the only she herself has presented

b. *Sola lei si e presentata.
only she herself has presented

c. Lei sola si e presentata.
she only herself has presented
'Only she/ she alone showed up.'

Unlike the proper name *Maria* in (60), the pronoun *lei* ('she') cannot follow the adjective *sola*. It must precede it. On the basis of this evidence, Longobardi (1994) concludes that pronouns occupy D, as Postal had already assumed in 1969.

For completeness' sake, it is worth mentioning that in contrast with what is assumed to happen with proper names, because of the interpretative principle in (55a), common nouns cannot circumvent the null determiner by raising to D. Common nouns are always understood as kind-referring/predicatively and hence they must be interpreted in N at S-structure.

As mentioned already, the fact that proper names are themselves referring expressions implies that when they co-occur with a definite article this must be expletive. To support the expletive nature nature of the definite article in front of proper names Longobardi also draws on evidence from coordination (originally attributed to Cinque (see Longobardi 1994: 651)). The relevant data involve coordination of two noun phrases one of which contains a proper noun and a definite article and the other a common noun excluding the article. Consider (62):

(62) a. Il mio collega è arrivato in ritardo.
the my colleague is arrived late
'My colleague is arrived late.'

b. Il mio amico è arrivato in ritardo.
the my friend is arrived late
'My friend is arrived late.'

c. Il mio collega e amico è arrivato in ritardo.
'My colleague and friend is arrived late.'

In (62a) and in (62b) the definite article is not an expletive: it translates as the iota operator which encodes existentiality and uniqueness. As shown by (62c), two NPs with different denotation can be coordinated under one definite article. The result of the coordination is that we refer to one entity that has the two relevant properties, being a colleague as well as being a friend (see also the discussion in Chapter 1, section 2.3). Consider now the data in (63): in (63a) the definite article is expletive, it serves no referential function since, of its own, the N *Maria* designates a unique individual. In (63b),

(63b), on the other hand, the article is not expletive. We observe in (63c) that one instantiation of the article cannot serve to coordinate the two NPs.

(63) a. La Maria è arrivata in ritardo.
the Maria is arrived late
'Maria has arrived late.'

b. La mia segretaria è arrivata in ritardo.
the my secretary is arrived late
'My secretary has arrived late.'

c. *La Maria e (mia) segretaria è arrivata in ritardo.
the Maria and (my) secretary arrived late

Let us assume that coordination requires some degree of parallelism in interpretation. The ungrammaticality of (63c) can be accounted for in terms of the non-identity of interpretation of determiner in relation to the two noun phrases involved. In association with the second noun, *segretaria* ('secretary'), which is a predicate instantiating a range for the article, the definite article *la* will be understood as an operator. However, in association with the first noun, *Maria*, the definite article is expletive. Thus in (63c) the article *la* would have two different functions, depending on the item of the coordinates that it relates to. Exactly the same effect can be reproduced for Greek:

(63) d. *I Maria ke ghramateas mu irthe argha. (Greek)
the Maria and secretary my came late

3.2.3. Proper names in English and parametric variation

The next question that arises is how the differences between Italian and English can be accounted for. First of all, in English proper names are not preceded by an expletive article (64a) but occur all by themselves (64b). In addition, an English proper noun cannot precede the possessive pronoun (64c), if it co-occurs with a possessor it will follow it (64d). Neither can a proper name precede an adjective (64e), it will again follow it (64f).

(64) a. *The John has phoned
b. John has phoned.
c. *John my has phoned.
d. My John has phoned
e. *John old has come back.
f. Old John has come back.

Do these facts warrant the conclusion that in English there is no D or DP associated with the proper names? According to Longobardi, this is highly unlikely, as there is no deep interpretative difference between Italian and English nominal phrases. In particular if arguments are universally DPs, then John in (64b) is also dominated by DP, regardless of the absence of the determiner. Given that the proper noun follows the possessor or the adjective we conclude that it has not moved to D. If DP is projected, then we are led to assume the existence of an empty D with English proper names (of course, the same conclusions carry over to other languages like English). Thus (64b) would have the representation in (64g):

(64) g. $[_{DP}\ [\ _{D}$ e] $[_{NP}$ *John*]] has phoned.

However, recall that this very representation was ruled our for the Italian equivalent of (62b) on the grounds that null determiners were confined by a set of distributional and interpretative requirements. So additional assumptions have to be made to account for the freer distribution of bare nouns in English. Longobardi's explanation of the crosslinguistic asymmetries of the distribution of bare nouns relies on the postulation of the universal principles (Longobardi 1994: 641) we listed in (55). We repeat them here for convenience's sake in (65):

(65) a. In order to refer to a kind (…), a noun must head the N position at S-structure.
b. [D_e] has a default existential interpretation.
c. [D_e] is subject to a lexical government requirement.
d. [D_e] is restricted to mass or plural nouns.

Longobardi further assumes the following parameter to account for cross linguistic variation:

(65) e. N raises to D (by substitution) in the Syntax in Italian but not in English.

(65e) should be seen in conjunction with the more general parameter schema which Longobardi (1994: 641) attributes to Huang (1982): movement operations apply either in the syntax, that is overtly, or at the level of Logical Form (LF), that is covertly. In Italian, proper names may raise to D overtly, i.e. in the syntax. In English proper names raise to D covertly – i.e. at LF. Accordingly then, the NP *old John* in English (66a) has the LF in (66b) (Longobardi 1994: 642)

(66) a. Old John came in.
b. [$_{DP}$ [$_{D}$ John] [$_{FP}$ old [$_{NP}$ [$_{N}$ ~~John~~]]]]

If N-movement to D is delayed till LF in English, then this means that at S-structure there will be null determiners. In order for this to be licit we have to assume that the government requirement (65c) too is an LF-condition. The question then arises, though, why in Italian N movement to D does apply as early as S-structure and why it should be delayed till LF in English. What is the trigger for N-movement to D and how come this trigger activates the movement earlier or later?

In the spirit of the feature-driven approach of the Minimalist theory, Longobardi hypothesizes that raising of the proper noun to D is driven by a referential feature of D. This feature can be represented as δ, where δ stands for 'denotation' or 'designation' (Longobardi 1996: 44) Longobardi (1994, 1996) assumes that this feature on D is uninterpretable and thus needs be checked: δ attracts N. The variation in the timing of the checking (hence of the movement) is related to the strength of δ: when δ is strong, N movement takes place in the syntax and when δ is weak N raises to D only at LF. In Italian δ , the referential feature of D, is strong, triggering obligatory raising of N to D in the syntax. In contrast, in English, and in Germanic languages in general, the δ feature on D is weak.

3.2.4. Bare common nouns in English

In section 2.3. we discussed the terms bare plural, generic noun and mass term, all of which feature prominently in Chierchia's theory of the Mapping Parameter. In this and the next subsection we return to these terms from the point of view of Longobardi's theory of the licensing conditions of bare nouns in English.

3.2.4.1. Bare indefinites

Recall from (56) that in Italian bare noun phrases have a restricted distribution. Their distribution is much wider in English:[51]

[51] See also the data at the beginning of the chapter, especially (5) and (6), for the observation that English is also different from Greek as regards the distribution of bare arguments.

(67) a. I drink *wine* with my dinner.
b. I never eat *potatoes*.
c. There was *water* running down the mountains.
d. There are *students* working in that office.
e. *Water* was running down the mountains.
f. In that office *students* are working on their theses.
g. *I have invited *student*.

We observe that bare NPs are licit not only in governed positions, but also in non-governed positions. If we associate such NPs with a null determiner then apparently the restriction that the null determiner is only licit with mass nouns and with plural nouns holds (67g), but it might seem as if the government condition does not hold. Note though that if the government condition (65c) is an LF condition, then nothing prevents us from postulating a null determiner in association with the underlined NPs in (67) and to postulate that N moves to D at LF. At S-structure the common noun is duly interpreted in N (65a), and the null determiner can be assigned an existential reading (65c).

3.2.4.2. Bare generics

We have seen that Italian displays expletive articles with proper names. We also find expletive articles with generic NPs for which English uses bare plurals. Observe that such bare plurals also appear in non-governed positions: in (68) *beavers* occupies the canonical subject position.

(68) Beavers build dams.

As a result of LF movement, not only proper names in English but also articleless common nouns can undergo movement to D, after they have satisfied the predicative licensing in the N position at S-structure. Thus, in (68) *Beavers* has substituted for the empty D at LF. Notice that in this case too, as was the case with proper names, there is a chain created at LF between N and D. However, now it is N that is interpreted, not D, as was the case with proper names. Thus, the argument status of generic noun phrases requires a DP, "but the semantic content of the latter amounts just to the designation of the kind referred to by the noun." (Longobardi 1994: 649). Apart from this 'technical' dissimilarity, generics in English share basic properties with proper names, something that led Longobardi (1994: 647)

to reach a conclusion that supports Carlson's (1977) definition for (all) English bare plurals, namely that they are names for kinds. He has also expressed an important typological generalization to the effect that the two types of determiner-less nominals are related: "a proper name may occur without a D position phonetically filled (…) iff generic (plural or mass) nouns may do so in all environments." (Longobardi 2001b: 360).

In Italian generic nouns must remain in N at S-Structure, whereas in the absence of an expletive article, proper names can raise to D. Longobardi (2001a) draws the following generalization:

(69) A language has kind-referring (i.e. referential generic) bare nouns iff D is not strong.

We have also seen that proper names and generic nouns in Italian and Greek are associated with a definite article, which is taken by some linguists to be an expletive.[52] In Longobardi's view, this too is a function of the strength (or weakness) of the referential feature on D. If the referential feature on D is strong,

> *visible* systematic association of referential items with D (either by overt movement of the noun itself or by means of an expletive placeholder) is necessary. (…). In other languages, the referential properties of D are 'weak', i.e. referential readings may affect nominal items *not* overtly associated with D, exactly as, in some languages, question words are not overtly wh-fronted. (Longobardi 2001b: 361)

In other words: if the referential feature of D is strong it must be overtly realized in the syntax and inserting an (expletive) article in D is one way of ensuring that the feature is spelled out. This is the option chosen with generic Ns in Italian.

As is clear from this, N-to-D movement of proper names and the presence of the expletive article in D with generic NPs are two formal ways to render D referential by preventing it from being empty and thus interpreted existentially.

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[52] In particular, Roussou & Tsimpli (1993) claim that the article accompanying proper names is an expletive article. Giannakidou & Stavrou (1999) argue that it is a contentful article, a position also adopted by Marinis (2003, 2005) and by Grohmann & Panagiotidis (2005).

It is also important to note at this point[53] that the expletive article is not confined to Romance generics and proper names only. It is also encountered before singular non-mass generic nouns in English (Longobardi 1994: 650):

(70) a. The lion has four legs.
b. *Lion has four legs.
c Lion is no good to eat.

As the examples in (70) show, the non-mass interpretation of the singular noun *lion* cannot be encoded by an empty D. Longobardi explains this rather unexpected fact by postulating the last resort[54] nature of the expletive article (1994: 653). However, he also points out that such an assumption can hardly be considered as universal and that it cannot be applied, for instance, to Romance. On the other hand, he grants the necessity of such a principle, even if it gives rise to complications or gets parametrized, because it can account for the distribution of expletive articles in various Germanic languages and dialects.

3.2.4.3. The role of morphological marking

Along these lines and in way of illustration of the above, there is an interesting set of data concerning the distribution of the expletive article in certain varieties of German. The expletive article is optionally used with plural and mass generics as well as with proper names. The examples in (71) are from Longobardi (1994: 653):

(71) a. (Die) Milch ist weiss.
(the) milk is white
'Milk is white.'
b. (Die)Biber bauen Dämme.
(the) beavers build dams
'Beavers build dams.'
c. (Der) Hans ist angekommen.
(the) Hans has arrived
'Hans has arrived.'

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[53] See Longobardi (1994: 650).

[54] By 'Last resort' here Longobardi (1994: 653) means 'if no synonymous raising derivation is available'.

What is interesting about (71) is the fact that the article appears to be optional in just those cases where Longobardi's theory predicts that the article is expletive. But it also is interesting that none of the varieties of German that allow for the use of the expletive article, allow for the alternative of N-to-D-raising of proper names. In other words, all of these variants pattern just like English at least as far as N-to-D movement is concerned.

To account for this type of variation, Longobardi suggests that the limited use of the expletive article that English displays might be correlated with the lack of morphological coding of gender and number on the article in English. In the Romance languages, as in Greek and in some varieties of German, there is an expletive article and these languages also have a morphological coding of gender and number on D (see Chapter 3). This correlation is taken to mean that "an expletive article is always ungrammatical unless licensed by the need to spell out some abstract morphological content (e.g., gender or number features present in D as a result of (optional) agreement with the head noun)." (Longobardi 1994: 654). Thus the cross-linguistic distributional restrictions on the use of the article seem to follow from independent morphological properties of the language (see Longobardi 1994, section 7 for more discussion on the properties and the typological correlates of the expletive article).

3.2.4.4. Summary

Summarizing, in Longobardi's theory of articleless nouns, what determines the presence or the absence of the article in front of proper names, bare plurals and generics is an interplay of a number of factors: the quality of the referential feature on D in a language (strong or weak), the licensing conditions of empty Ds, and movement of N to a higher position, ultimately to (an empty) D.

The essence of the parametric distinction is attributed by Longobardi to whether the status of D – referential or variable/existential – must be encoded in the overt spell out or not.[55] In Romance, if D is spelled out as empty, it will always get a variable interpretation. This is not necessarily so in the Germanic languages.

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[55] What we loosely call the level of overt spell out corresponds to S-Structure in the Government and Binding/Principles and Parameters model, and to the level of P(honological) F(orm) in the Minimalist model. For levels of representation see also Part I, the Introduction, section 2.1.

Crucially, concerning the general questions posed at the beginning of this chapter, D is always taken to head the entire nominal projection. It determines the particular designation of the whole DP, while the N position is interpreted as referring to universal concepts (i.e. kinds).

3.3. The syntax of determinerless languages

We have already discussed some approaches to the syntax of determinerless NPs in Chinese (see section 3.1.4). Slavic languages (along with Latin) exemplify a type of language that allows for all kinds of articleless argument nominals. Languages of this kind do not have any definite or indefinite lexical article but instead they make use of more complex determiners (possessives, demonstratives, quantifiers, cardinal numerals) (Longobardi 1999: 16).

There is an ongoing debate about how such languages should be treated. We will briefly indicate some of the directions this debate is taking. Some linguists have argued that in spite of the absence of the determiner as such these determinerless languages offer telling evidence for the existence of a DP; others argue that the absence of the determiners correlates with the absence of DP. We will briefly consider examples of each point of view here.

3.3.1. Evidence for an empty D

The contrasts from Serbo-Croatian illustrated in (72) suggests that languages of this group provide evidence for an empty D. (72) illustrates a noun/pronoun contrast in this language. In Serbo-Croatian proper nouns uniformly follow adjectives (72a,b), but those adjectives that can appear with pronouns must necessarily follow the pronouns (Progovac 1998: 167f):

(72) a. I samu Mariju to nervira. (Serbo-Croatian)
and alone Mary that irritates
'That irritates even Mary.'

b. ?*I Mariju samu to nervira.

c. ?*I samu nju/mene to nervira.
and alone her/me that irritates

d. I nju/mene samu to nervira.
'That irritates only me/her.'

The above data indicate that pronouns and nouns appear in different surface positions. If both in Italian and Serbo-Croatian pronouns occupy D (as Longobardi shows to be the case for Italian, see (61) above), then no difference in adjective placement with respect to pronouns is expected, as confirmed by the data. However, in Serbo-Croatian, no overt N-to-D raising seems to be taking place, as the noun cannot precede the adjective. Thus we are led to conclude D apparently can remain empty in this language.

In the same vein, Leko (1999) maintains that though Bosnian lacks articles and there is no evidence for overt raising of proper names, there is still a DP, the head of which is usually empty but carries the referential features of the noun phrase.[56] Bosnian demonstratives appear very high in the nominal structure, preceding all other constituents. Leko argues that DP can be postulated to host the demonstrative at its specifier.

(73) a. onaj mladi momak
that young man
b. *mladi onaj momak

Accordingly, Leko assumes that the specifier of DP is reserved for demonstratives or demonstrative phrases. Demonstratives may serve a function similar to that of the article *the* in English, viz. they express definiteness.[57] Leko further claims that indefinite determiners, expressing indefiniteness (like English *a* and *some*) also occupy the same position as demonstratives, as they display the same ordering restrictions as demonstratives (1999: 240–241).

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[56] Leko (1999) mentions that (personal) pronouns are the only category that may occupy the D position, but even this possibility is rare (1999: 239).

(i) mi siti ne vjerujemo gladnima (Serbo-Croatian)
we full not believe hungry
'We who are full do not believe the hungry.'

[57] Leko's main point in the article is that definiteness and indefiniteness in Bosnian – a language without articles – is expressed through the use of different forms of the adjectives. In particular, descriptive adjectives have both definite and indefinite forms. Leko also argues for a projection DefP, which is lower than DP itself, and also lower than NumP, but it is assumed to be higher than AgrP and NP. DefP is involved in determining the form of the adjective. If Def is positively specified for definiteness, a definite adjective form will be used, if it is negatively specified, an indefinite form will be used.. For more details and data see Leko's article.

Another piece of evidence for postulating a DP in apparently articleless languages comes from the behavior of demonstratives in Russian. Russian has no articles, but demonstratives have a special status among modifiers that justifies treating them as occurring in a higher functional projection. Adjectives in Russian can focus-scramble out of the DP, but they cannot do so in the presence of a demonstrative:

(74) a. Xorošuju on kupil knigu
good-ACC he bought book-ACC
'He bought a good book.'

b. *Xorošuju on kupil etu knigu
good he bought this book-ACC

Under the assumption that extraction out of a noun phrase proceeds via SpecDP, the fact that demonstratives block extraction can be accounted for if we assume that demonstratives occupy SpecDP (see Chapter 1 for similar discussion). Hence the contrast in (74) provides indirect evidence for the presence of a D layer in Slavic languages.[58]

3.3.2. Extraction and determinerless languages

Bošković (2005) uses similar extraction data to argue for a different analysis.[59] He argues that determinerless languages such as Serbo-Croat have nominal projections that lack the DP layer. He adopts this contrast to account for the fact that while it is not possible to extract from an English DP (75), this is possible in Serbo-Croat (76). The examples are from Bošković (2005: 2, his (2) and (3)).

(75) a. *Whose did you see [t father]?
b. *which did you buy [t car]?
c. *That, he saw [t car].
d. *Beautiful he saw [t houses].
e. *How much did she earn [t money]?

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[58] But see Baker (2003: 113), who, in the general spirit of Chierchia (1998b) makes the opposite claim.

[59] For discussion of extraction see also Part IV, Chapter 2, section 5.

(76) a. Cijeg si vidio [t oca]?
whose are seen father
'Whose father did you see?'

b. Kakva si kopio [t kola]?
what-kind-of are bought car
'What kind of a car did you buy?'

c. Ta je vidio [t kola].
that is seen car
'That car, he saw.'

d. Lijepe je vidio [t kuce].
beautiful is seen houses
'Beautiful houses, he saw.'

e. koliko je zaradila [t novca]?
how-much is earned money
'How much money did she earn?'

The same type of extraction is possible in Latin. The examples are from Bošković (2005: 2–3, his (4)):

(77) a. Cuiam amat Cicero [t puellam]
whose loves Cicero [girl]
'Whose girl does Cicero love?'

b. Quales Cicero amat [t puellas]
what-kind-of Cicero loves girls
'What kind of girls does Cicero love?'

The extractions above illustrate what has come to be known as Left Branch Extractions (LBE) (see Ross 1967; Corver 1990; Gavruseva 2000). Bošković's point of departure is that LBE is allowed only in languages lacking overt articles. Among the Slavic languages Bulgarian and Macedonian have articles and do not allow LBE, while Russian, Polish, Czech and Serbo-Croatian do allow it. (Cf. Uriagereka 1988: 113.) The modern Romance languages, which have articles, do not allow LBE while Latin, which lacked articles, allowed it. [60]

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[60] However, the correlation has to be refined. Greek, for instance, is a language with a definite article but which also allows LBE of the type illustrated in (76a). Recall the following example (100c) from Chapter 1:

In his paper, Bošković presents and examines different accounts for the contrast. A first proposal explores the possibility that in languages lacking determiners there is no DP layer. In the appendix to his paper (2005: 37–39) he discusses an alternative account for the data which relies on another property that sets apart languages that allow LBE and those that don't, namely the possibility of scrambling – that is to say, the relatively free reordering of elements which may lead to the creation of discontinuous constituents. Languages with 'massive' scrambling are often referred to as non-configurational languages (see the discussion in section 2.2 and note 10), and thus Bošković's alternative analysis would explore the correlations established by Gil (1987) and by Loebel (1989).

Bošković summarises the problem by indicating ways of testing the hypotheses he has presented: either the absence of DP is crucial for LBE, and scrambling is not. This means that there might be LBE languages without scrambling. Alternatively, scrambling is the crucial condition for LBE, and the absence of DP is not, meaning that there might be LBE languages with DP:

> Under the scrambling analysis, the fact that the LBE/DP correlation holds for the languages considered may be an accident, and the same may be true for the DP/NP analysis when it comes to the LBE/scrambling correlation (unless we can establish a DP/scrambling correlation, where the presence of DP would correlate with the lack of scrambling). To tease apart the two analyses, we need to look for LBE languages that have scrambling and DP, or LBE languages that do not have have either scrambling or DP.
>
> (Bošković 2005: 37)

(i) [$_{CP}$ [Tinos] mu ipes [$_{CP}$ t pos dhjavases [t to vivlio t]]?
who GEN me-GEN said-2SG that read-2SG the book

See Horrocks & Stavrou 1987. Similarly, Hungarian allows for possessor extraction as illustrated by the examples (107a) and (108) from Chapter 1, repeated here in (ii):

(ii) a. [$_{CP}$ [$_{TopP}$ Marinaki [$_{FocP}$ PETER làtta [$_{IP}$ [$_{DP}$ t_i a kalapja]]]]].
Mari-DATIVE Peter saw the hat
'Peter saw Mary's hat.'

b. [$_{CP}$ [$_{FocP}$ Kineki làtta [$_{IP}$ Kati [$_{DP}$ t_i a kalapja]]]?
whose-DATIVE saw Kati the hat
'Whose hat did Kati see?'

For discussion see Bošković (2005: 4, note 5).

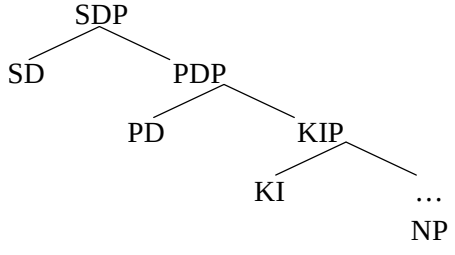
4. Further developments

In this chapter we have gone over the general issue of how to analyse apparently determinerless NPs. The focus of the debate has been on such NPs in argument position and we have presented two main approaches. Summarizing these here in their extreme form we can say that according to one approach (Chierchia 1998b) when no determiner occurs then we can postulate that NPs are indeed 'bare' and are not dominated by DP.[61] Thus there is no perfect match between argumenthood and DP. Opposed to this is the approach that all arguments are DPs (Longobardi 1994). In the latter approach, of course, accounts need to be provided for when D appears to be empty.

At this point we have operated with a very minimal structure for the NP, concentrating on NP and DP. In such a view, the default position for the noun is in N and that of the determiner is in D. Longobardi shows that N may move to D and also that D may remain empty. As discussed in section 3.1.1 and as we will also see in Chapter 3, however, research into the NP has revealed the need to postulate a richer array of functional projections dominating NP. Obviously, given more functional projections accounts like that inspired by Longobardi's seminal paper may draw on a richer array of projections to account for the distribution and interpretation of determiners. In such an approach it is possible to propose, for instance, that NP be dominated by one or more functional projections and that depending on the projections available a determiner may occupy either D or another functional head and that associated with this variable position there is a different interpretation. We cannot do justice to all these accounts here but we just mention a few examples.

One influential approach is Zamparelli (2000). He assumes a strong isomorphism between form and interpretation and he decomposes the DP in different layers of projections each representing a distinct semantic type:

(78)



[61] Bear in mind that an alternative option is that there is a null determiner, as with bare NPs in object position in Italian.

SDP is the strong determiner phrase. DP is of the semantic type <e>. The Projection of PD is the PredicativeDeterminer Phrase of the type <e, t>. KIP, the Kind Determiner Phrase, denotes an atomic property or a kind. SDPs are referential and only they can appear in argument positions. PDPs are predicative and can appear in contexts which could otherwise host adjectives, KiPs represent pure properties and can appear as the complement of the *kind-of*-construction. The three types are illustrated in (79):[62]

(79) a. SDP *The cat* is running.
b. PDP Nelson is *a cat.*
c. KiP Nelson is a shy kind of cat.

Another recent influential approach is Borer (2005), to which we briefly turn before concluding the chapter. Here we can hardly do justice to the importance of the work and its far reaching claims. In compensation, we strongly recommend Borer's own work for further reading.

Borer (2005) offers a detailed discussion of the issues presented in this and the previous chapter and explores the richness of the internal functional structure of the NP to relate this to particular types of noun phrases. Along the lines of Cheng and Sybesma (1999), discussed in sectin 3.1.4 above, she proposes that the functional structure of the noun phrase contains layers such as Classifier Phrase (CLP) and Quantity Phrase (#P), see (80). These projections are postulated on the basis of the properties of the distinction between mass and count noun, the properties of proper names, and, more generally, the ways determiners are interpreted:

(80) [DP [#P [ClP[NP]]]]

CL is responsible for the generation of mass. vs. count structures and is assigned a range by the plural and classifier inflection and by the indefinite article. #P, which corresponds to what is often labelled Number Phrase, is the merger location of all other determiners, including the definite article. The absence of CLP gives rise to mass interpretation, while the absence of #P gives rise to a non-quantity interpretation.

It is the failure of #P to project which is the common denominator for bare plurals and determinerless mass nouns in this system. It is assumed that determiners do not invariably occupy just one position. Rather they may

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[62] For an application of Zamparelli's system to Gaelic syntax see Adger & Ramchand (2003).

occupy different positions in the functional domain and the position of determiners is responsible for definiteness and indefiniteness as well as for strong and weak nominal readings. For instance, if determiners remain in #P they receive weak readings, if they move to DP they receive strong interpretations, etc. Simplifying things considerably, the representations for some DP types that Borer discusses in detail are given in (81), simplifying her notation considerably:

(81)	a.	$[_{DP}\ [_{NP}$ salt]]	determinerless mass
	b.	$[_{DP}\ [_{CLP}\ [_{NP}$ dogs]]]	determinerless plural
	c.	$[_{DP}\ [_{\#P}\ [_{NP}$ salt]]	quantity weak mass
	d.	$[_{DP}\ [_{\#P}\ [_{CLP}\ [_{NP}$ dogs]]]	quantity weak plural
	e.	$[_{DP}$ the$_i$ [#P t_i $[_{NP}$ salt]]	definite mass
	f.	$[_{DP}$ the$_i$ $[_{\#P}\ t_i\ [_{CLP}\ t_i\ [_{NP}$ dogs]]]	definite plural

Borer's approach allows for specific implementations to account for the properties of one language or another. One such implementation is found in work by Gueron (2006).

5. Conclusion

The issue of how to deal with nominal projections that lack a determiner and function as arguments has received a number of different answers. In a semantically oriented approach Chierchia (1998b) has argued that there exists a semantic parameter which determines whether or not D is projected. The relevant property is related to the potential interpretation of N as argument or predicate. In certain languages, such as Chinese, projections of N, i.e. NPs, as such can be interpreted as arguments. Hence in these languages there is no need to project D. The difference between languages like, e.g., Italian and languages like Chinese is that in Italian NPs are primarily predicates. Hence in Italian a D must project in order for an argument to be created.

Other approaches inspired by Abney's work (1987) assume an isomorphism between argumenthood and DP. According to these views even in the absence of an article an argument nominal expression is invariably dominated by a DP. Empirical evidence from typologically oriented theoretical research on determinerless nouns and determinerless languages is compatible with the assumption that the head D may be present even in the absence of any lexical material under it. Assuming that all arguments are

DPs, it is assumed that the head D contributes in specific ways to the interpretation of the nominal projection. D can remain empty under specific licensing conditions. Li (1998) and Cheng & Sybesma (1999) provide detailed argumentation that the distribution of determinetless NPs is not free and largely follows the same distribution of bare NPs in languages which otherwise have overt determiners.

Longobardi (1994, 1996, 2001a/b) elaborates an analysis in which null D is allowed under restricted conditions. The essential assumption here is that D must be visible in some way or other for semantic interpretation at LF. Bare noun phrases in argument positions are not homogeneous across languages. Proper names do not occupy the same position in all languages, neither do generic phrases and bare plurals or bare singulars. In particular, Longobardi proposes that proper names without overt determiner result from movement of N to D. Parametric variation often reduces to the qualities, in particular the so-called strength, of the referential feature on D which may precipitate or delay the movement of N to D.

Note that evidence for N movement of the type provided by Longobardi offers support for an articulated structure of the nominal projection. If the head N of a projection can be shown to move, then we need to postulate at least one higher functional head to host the moved constituent. Such data are obviously difficult to reconcile with a flat structured NP in which there is only one (lexical) head. In the next chapter we address the issue of additional possible functional categories in the nominal projection, in particular of agreement type of categories situated between D and the lexical NP shell.

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

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,

[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 *lɛ́* is necessarily interpreted as [+definite, +plural] (1b).

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

b. Mi sà àkwékwè àt n lɛ́ ná mi
2PL sell banana five Numb for 1SG
'Sell me the five bananas.'

In (1b) the sequence *àkwékwè àt n lɛ́* ('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 be able 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

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[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).

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	chats	(French)
		cat	cat-PL	
	d.	ami	amis	
		friend	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	ghati	(Greek)
		the-neut SG	kitten (neut SG)	
	b.	ta	ghati-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

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[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) a. to oreo ghati (Greek)
the-NEUT SG nice- NEUT SG kitten- NEUT SG

b. ta orea ghatia
the- NEUT PL nice- NEUT PL kitten- NEUT PL

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) a. The secretary of John and collaborator of Paul is/?are at the station.
b. La secretaire de Jean et collaboratrice de Paul est/*sont à la gare. (French)
the secretary of Jean and collaborator of Paul is at the station

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

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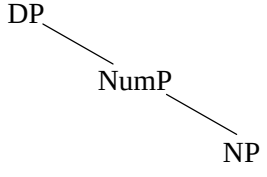
[4] Or more, if there are more adjectives.

[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.[6] 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).[7]

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)


[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)

	Singular	*Plural*
Feminine	-et, -it, -at	-ot
Masculine		-im

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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[8] This was Chomsky's assumption in the Aspects model (Chomsky 1965). He assumed in particular that Number is a feature ([+plural]) that was assigned to nouns by a syntactic rule.

[9] Recently, Heycock and Zamparelli (2004) have proposed a syntactic implementation of the pluralization operation as a functional head (dubbed Pl) selecting the NP projection, and taking the denotation of the latter as its argument. Similar arguments have been produced by Borer (2005).

[10] Gender is in fact a much broader term referring to several semantic properties of nouns, different across languages. In certain languages Gender reflects, for instance, animacy, size, shape or material etc. Here we will confine ourselves to the

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)

Following extensive work by Ralli on Greek (1994, 2002, 2003) we will assume that gender values are an integral part of the noun stem and not of the inflectional suffix (Ralli 1994, 1997, 2002, 2003).

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

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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):

(9)

	MASC	FEM
NOMIN	*patera-s* ('father')	*xara* ('joy')
GENIT	*patera*	*xara-s*

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[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 [*-os*] (*dhas-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).[12]

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

[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.[13] 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, Picallo 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) DP > NumP > GenP > 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:

> 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 exponence? 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.

(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').[14] 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 *ragazzo* ('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):

(14)	*NOUN*	*Interpretability*	*Variability*
a. *ragazza*	'girl'	+	+
b. *donna*	'woman'	+	–
c. *sedia*	'chair'	–	–

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

[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,[15] 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'

(examples from Ritter 1993: 797)

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[15] 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 2003[16]) 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

[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.[17]

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,

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[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-

[18] See Part I (Introduction) section 2.1. for a discussion of levels of representation.

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 (Hebrew)
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 (Standard Arabic)
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') .

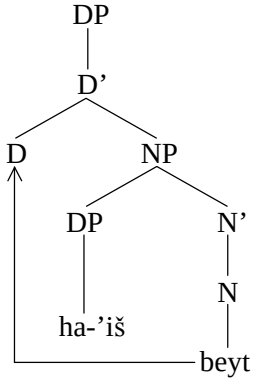
(ii) The possessor in the free state, *ha-'iš* in (18a) is the complement of a preposition *šel* ('of'); the genitive in the construct state cannot be associated with this preposition.

(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.[19]

(19) a.



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

[19] 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.

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.

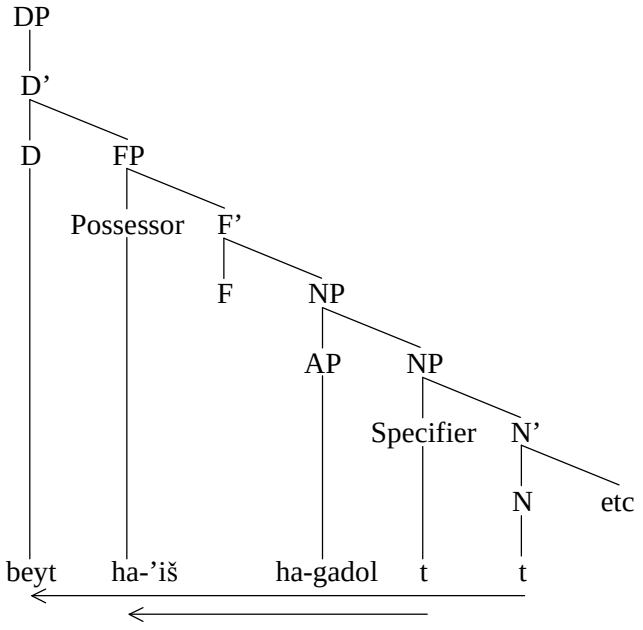
However, Ritter shows that (19) is too simple and gives rise to problems. In particular she points out that the assumption that D selects NP as its complement would be problematic when we want to assign a structure to the free state in (18a). Let us assume that *ha* in (18a) occupies the D position. 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 $Agr_{gen}P$, but this notation is only mnemonic: it is an AgrP where structural Case is checked in the noun phrase. …the noun is inserted with Agr_{gen} features that must be checked with Agr_{gen}.
>
> (Siloni 1997b: 182–183)

In (20a) we provisionally adjoin the AP to NP; we reconsider this in Chapter 1, Part III.

(20) a.



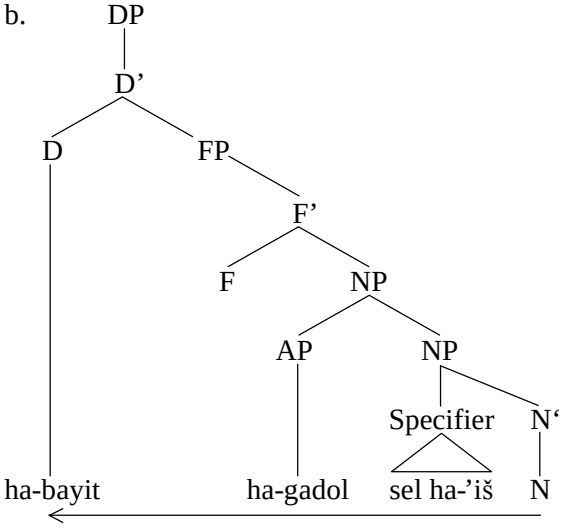
Note that a theoretical problem might arise for (19) in terms of analyses in which case is taken to be assigned/licensed in specifier head relations, as proposed in some of the Minimalist literature: in (19) case is assigned under government, a concept which itself has been challenged in Minimalist approaches. 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 Agr_{gen} (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.[20]

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

[20] See Part I (Introduction) section 2.5.2.1 for the concepts probe and goal.

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).

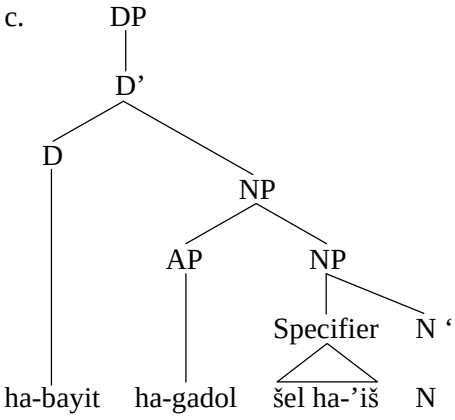
(20) b.



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)).

(20) c.



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 Agr_{gen} features, which results in a construct state, or with its [+definite] feature (the article), but not with both. There is some basic incompatibility between Agr_{gen} features and an intrinsic definiteness specification. (Siloni 1997b: 183–4)

See Longobardi (1996) for an account of this incompatibility extended to English.[21]

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 Picallo'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 $[_{Num}$ traducción$]$ $[_{GenP}$ t_i $[_{NP}$ t_i t_n d'aquesta novel.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) $[_{DP}$ $[_{D}$ $casa_n]$ $[_{NumP}$ mia $[_{NP}$ $[_{N}$ $t_n]]]]$

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)

	Italian		*French*
a.	il primo capitolo the first chapter	masculine singular	le premier chapitre
b.	la prima descrizione the first description	feminine singular	la première description
c.	i primi capitoli the first chapters	masculine plural	les premiers chapitres
d.	le prime descrizioni the first descriptions	feminine plural	les premières descriptions

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.[22] 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 *frisch*, (28b–f), N movement across the adjective does not take place.

(28) a. das frische Brot — neuter singular
the fresh bread

b. die frischen Brote — neuter plural
the fresh loaves

c. die frische Blume — feminine singular
the fresh flower

d. die frischen Blumen — feminine plural
the fresh flowers

e. der frische Kuchen — masculine singular
the fresh cake

f. die frischen Kuchen — masculine plural
the fresh cakes

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 *die* and the adjective *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).

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[22] 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).

(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) evjenik-i jinek-a/fil-i
the-FEM:SING:AC polite-FEM:SING:AC woman/friend-FEM:SING:AC

(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:

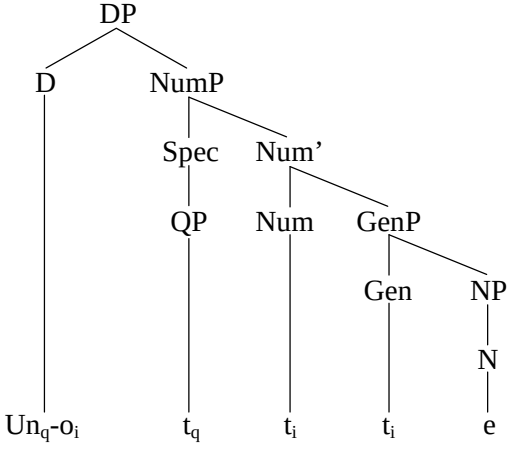
(33) a. uno pequeno
a-MASC-SG small-MASC-SG (one)
b. uno piccolo
a-MASC-SG small-MASC-SG (one)
c. *a small

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 (Spanish)
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.'

b. Un très gros chien vit dans cette maison-ci. Un petit vit dans celle-là.
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')

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[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. (German)
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:

(39) Indefinite NP ellipsis and adjectival distribution.

Language	*Indefinite ellipsis*	*N-Adjective order*
Spanish	+	+
Italian	+	+
French	+	+
English	–	–
German	+	–

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

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

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

Deugniet	Masculine	Naughty male person
Deugniete	Feminine	Naughty female person
Zot	Masculine	Madman
Zotte	Feminine	Madwoman

b. Minimal pairs: [–human] nouns

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

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.[24] 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. [25]

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/oreo
the house big/old/nice
b. to meghalo/paljo/oreo 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

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[25] 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
the-FEM:SG:ACC polite-FEM:SG:ACC woman/friend-FEM:SG:ACC

(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 exponence 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'[26] 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

[26] This feature for Ralli is represented as an attribute-value pair, where the value part assumes the form of a digit, each one of them corresponding to one of the eight declensional classes.

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, I(nflection)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.[27] The number affix follows the gender/WM morpheme-crucially, the WM may not be followed by any other morpheme:

(48) muchach-o(-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-os
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 inflectionally 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,[28] or it is part of

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

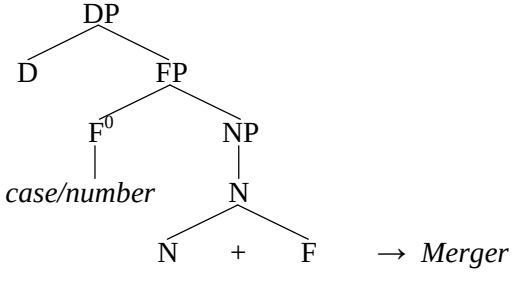
[28] If one takes the view of the WM as a thematic vowel, one has to allow for zero morphemes (for cases like *jineka*-0 woman-FEM.SG.ACC/nom, *pedhi*-0 child-NEUT.SG.ACC/NOM, etc), as does Ralli (2000, 2003). This issue is complicated and tackling it here would take us too far into the details of Greek.

the ending itself, which realizes jointly number and case (49).[29] 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).[30] 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):

(50)



[29] 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.

[30] 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 F^0 (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 F^0).

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 (Spanish)
a small

b. ein neues (German)
a new

c. ena kenurio (Greek)
a new

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

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

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

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[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.[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 [~~oto~~].
I have a red-MASC car and Valère has a green-MASC [~~car~~]

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 *oude* is compatible with ellipsis, whether this be of a masculine singular noun (say *tekst* ('text')) or a feminine singular noun (say *deur* ('door')) or a plural noun (say *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.

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[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-

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[34] What is said here about English disallowing noun ellipsis concerns the cases where the noun is omitted after an adjective (of all types). Nevertheless, English does allows noun ellipsis after elements that are marked for either [+case] or [plurality/Number] (Lobeck 1991), or even [partitivity] according to Sleeman (also Bouchard 2002, ch. 4).

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[35] 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.

[35] 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.

(56) a. i eksetasi tu Jani epi mia ora
the examination the John-GEN for one hour
'the examination of John for an hour'

b. *to dhiaghonisma tu Jani epi mia ora
the exam the John-GEN for one hour
*'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) a. i katastrofi ton stixion prosektika (Greek)
the destruction the evidence-GEN carefully

b. *to kolibi tu Jani me epitixia
the swim the Jani.GEN with success

(58) a. i katastrofi ton stixion kathimerina
the destruction the evidence-GEN daily

b. *to kolibi tu Jani ja dio ores
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 naucyzcieli (Polish)
evaluation-PF the students-GEN by teachers

b. ocenianie studentow przez naucyzcieli
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)
aux-PAST walk my grandfather
'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 grandfather-PAST
'my grandfather' 'my late grandfather'

b. tel xeltel tel xeltel-elh
my pencil my pencil-PAST
'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, Kawkiult (Lecarme 1998: note 1), for the Salishan languages St'at'imcets (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:

(66) a. Dhibaatá-dii Khalíij-ku wáy dhammaatay. (Somali)
problem-DETF [+PAST] Gulf-Det M[+NOM] FEM-3SG ended [+PAST]
'The Gulf problem has ended.'

b. Ardáy-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. Ardáy-dii wáy joogaan.
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) Bandhíg-ga/-gii máad 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) Khalíij-ka dhibaatá-d-iis-ii (wáy dhammataatay) (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):

(70) dhibaatá-dii Khalíij-ku wáy dhammaatay
problem-deF [+PAST] Gulf-DetM[+NOM] F+3S ended [+PAST]

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.

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[1] Some Germanic languages display doubling of the indefinite article (see, for instance Delsing (1993a) for Northern Norwegian, Penner & Schoenenberger (1995) for Swiss German, Brandner (2006) for Allemanic, and Kallulli Rothmayr (2006) for Bavarian).

1.2. Setting the scene: Cross-linguistic asymmetries

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

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

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

c. le chat gris (French)
the cat grey
un chat doux
a cat sweet
la belle fille
the beautiful girl
énergie électrique
power electric
présumé voleur
alleged thief

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

e. l' invasione brutale (Italian)
la brutale invasione
'the brutal invasion'
la camicia azzurra
the shirt blue

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 (Greek)
the cat grey
*i ghata omorfi
the cat beautiful
*i enerjia ilektriki
the energy electric
*i epithesi viei
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 (Greek)
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.[3] 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'[4] 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

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[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 'attributive' 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 reason 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 occupying 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 below, 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[5] 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.[6] In section 2.6 we will come back to intersectiveness.[7]

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]
$\leftarrow$

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.

adjective in (5) above, the postnominal position of the adjective in (6) can been 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,*[8] and *nuclear* in *nuclear energy,* are not predicative adjectives, neither are they intersective. We discuss complications such as this in the next section.

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[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.[9] 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.)[10] (Larson & Marušič 2004) 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.

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[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'.[11] 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 *–a*/*-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-

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[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.[12] 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.[13]
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),[14] 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 directionality 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), thus 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.

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[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 *i*, 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. (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:

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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. ∃e[friendship (e)[18] & Theme (Peter, e) & old (Peter))]
d. ∃e[friendship (e) & Theme (Peter, e) & 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. Marya is a former dancer.
b. #Marya is former, and Marya is a dancer.
c. 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. John is a true linguist.
b. ≠ John is a linguist and John is true.
c. 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

[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.

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[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. (West Flemish)
that tree is green

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 (Greek)
the grey cat
b. I ghata ine griza.
the cat is grey

The same applies for French[21]:

(35) a. le petit garçon (French)
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

[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 (English)
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 (Finnish)
big old black English dog

f. idiɔk akaan ndaidat ɔfɔng (Ibibio)
ugly old red dress

g. etΛk ekara okpokoro
small round table (e–g from Scott 2002: 99)

g'. *ekara etΛk okpokoro
round small table

h. la maravillosa larga jornada (Spanish)
the wonderful long day (Demonte 1999: 55)

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),[22] 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.

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

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).[23] 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).[24] Non-absolute adjec-

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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).[25] 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).[26] 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):[27, 28]

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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").

[25] 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 subsective – 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 subsective 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 contex-

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.[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:

(44) a. a French car
b. a round table
c. a wonderful car
d. a wonderful French car
e. *a French wonderful car

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

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[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).

[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).

(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 Sleeman 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-

ticular case a 'car type' or a 'table type' ('French cars', 'round tables').[31] 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.

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

that are syntactically integrated via direct modification.[32] 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$_j$ who$_j$ [e]$_j$ 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 huãping
small green vase

b. *lü xiâo huãping
green small vase

c. xiâo-de lü-de huãping
small-DE green-DE vase
small green vase

d. lü-de xiâo-de huãping
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:

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[32] Cinque (1993) collapses direct modification with the notion of attributive modification.

(49) fēi-de nião
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 maravilliosa 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 adjunction 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:

(a) modal epistemic (*posible* ('possible') , *presumible* ('probable'));
(b) intensional (evaluative, intensifying) (*completo* ('complete'), *simple* ('simple'), *unico* ('unique'), *falso* ('false'));
(c) circumstantial (*antiguo* ('old') , *frequente* ('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 preoccupa el probable completo fracaso de le obra.
me-DAT worries the probable complete failure of the play
'The probable complete failure of the play worries me.'
b. *Me preoccupa el completo probable fracaso de le 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
(Demonte 1999: 51)
b. sus frecuentes furtivas entradas
his/her frequent furtive entrances
sus furtivas frecuentes entradas
his/her furtive frequent entrances (Demonte 1999: 53)

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

structural representations. This line of reasoning goes back to Bolinger (1967), who argued that the attributive use of adjectives in English is linked to their prenominal position, whereas the predicative use is linked to the postnominal position, which is to be accounted for independently from the prenominal one. Siegel's (1976) treatment of adjectives echoes these earlier assumptions. According to Siegel, only the adjectives in (4) are predicates, that is to say functions from entities to truth values (=sentences). [33] The adjectives in (5) are considered as adnominal modifiers: Siegel, like Bolinger, calls these adjectives attributive. They combine with common nouns to form new common nouns. In semantic terms, they are assigned to category 'Common Noun/Common Noun' (CN/CN).

Approaching the various uses of an adjective independently of one another is the conceptual opposite to reductionism. We use the label 'separationism' to refer to that tendency. Separationism underlies many contemporary studies, such as the work by Sproat & Shih (1987, 1991), Lamarche (1991) and Bouchard (1998), among others, as we will discuss in detail. However, one should not infer that in rejecting the old reductionist view these linguists share a common approach to the problem of deriving the pre- and the postnominal position of adjectives. Among separtionists, two major strands are distinguished. According to the first, for a certain meaning combination there is a single abstract, universal, representation, and the varied surface orders are obtained through the syntactic displacement of either the noun or of the adjective. According to the other line of reasoning, pre- and postnominal adjectives are kept apart from the beginning and throughout the derivation and are therefore held to be generated independently from one another. Strictly speaking only the latter approach is genuinely 'separationist'; the former can be considered as 'pseudo-separationist' or 'crypto-reductionist', because there is still a syntactic (varying among researchers) relationship between a unique 'deep' combination of the adjective and the noun and a 'derived' adjective-noun combination. Putting it differently: surface orders are still derived from ('reduced to') other underlying orders. What distinguishes 'pseudo-separationists'/'crypto-reduction-

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[33] It is important to draw attention to the fact that when we refer to the predicative position, or to predicative adjectives, what is meant is the appearance with the copula of an adjective or an adjective phrase as such – i.e. not as part of a noun phrase in predicative usage. So in this terminology *famous* is predicative in (i) but not in (ii):

(i) Oscar is famous.
(ii) Oscar is a famous cat.

ists' from 'reductionists' is that the former postulate a number of different abstract representations, related to semantic relations.

Within the crypto-reductionist approach two particular routes are distinguished: one according to which the adjective-noun order is affected by noun or NP movement (Grosu 1988; Valois 1991a,b; Bernstein 1993, 1997; Cinque 1994, 1999, 2005; Giusti 1993, 2002; Bosque & Pigallo 1996; Shlonsky 2004; Laenzlinger 2005, and several others). The other approach adopts what can be called the clausal hypothesis (Kayne 1994; Demonte 1999; Alexiadou 2001b). Here, the adjective-as-predicate originates within a clausal structure (this is either a relative clause (Kayne 1994; Alexiadou 2001b)[34] or a small clause (Demonte 1999) following the noun, which is the lexical head of the extended nominal projection. The surface order A+N is derived through movement of the predicate adjective (or more accurately the predicate adjective phrase). We will see below, however, that authors differ as regards the trigger of the displacement of the adjective.

Special mention must also be made at this point of Larson (1998, 1999, 2000a,b), who proposes an account of the pre-/postnominal position of adjectives based on the parallel existence of N- and D-shells (see Part II, Chapter 1 section 5.2), but who also assumes that (postnominal) adjectives originate in a relative clause and may move out of it in the derivation, primarily for reasons of case checking (via agreement: Larson 1996, 1998; Larson & Marušič 2004).

The second approach – genuine separationism – is represented by Lamarche (1991) and, more recently, by Bouchard (1998, 2002).

In the remainder of this section we will present the main empirical facts from the Romance family and then we will discuss the operation of noun movement, which was basically motivated as a means to capture the Romance facts. We will also signal the empirical problems this account raises. Section 5 will be dedicated to the variants of the clausal hypothesis.

4.2. Post- and prenominal adjective meaning contrasts in the Romance languages

We saw in section 1.2 that in the Romance languages postnominal adjectives are much more common than they are in the Germanic languages. In fact, in the Romance languages the postnominal position of the adjective is

[34] Though Alexiadou (2001b) claims that this holds only for certain adjectives; see also Alexiadou & Wilder (1998).

the rule rather than the exception. In Germanic languages, only a small subset of the adjectives that can appear to the right of the noun in Romance languages can follow the noun:

(59) a. l'invasione brutale (Italian)
the attack brutal
'the brutal attack'

una persona molto gentile (Italian)
a person very polite
'a very polite person'

b. une personne (très) gentille (French)
a person (very) polite

une voiture bleue
a car blue

c. el sombrero redondo (Spanish)
the hat round

la chica alta
the girl tall

(60) a. une personne soucieuse de son avenir (French)
a person careful of her/his future

b. uno studente preoccupato per suo futuro (Italian)
a student worried about his future

It is clear that most adjectives that would naturally correspond to prenominal attributive modifiers in English occur postnominally in the Romance languages. These include descriptive, evaluative, temporal and classifying adjectives. In other words, in the Romance languages postnominal adjectives correspond to two occurrences of adjectives in Germanic: prenominal (59) and postnominal (60) (see section 2.4). (59) comprises adjectives both of the objective/absolute and of the descriptive/evaluative/speaker-oriented kind. Postnominal complemented adjectives in Romance languages (60b) are also postnominal in English because complemented adjectives are banned from prenominal position in English (Di Sciullo & Williams 1987; Emonds 1985, among others.).

On the other hand, the prenominal position in the Romance languages seems to be the only position available for intensional, non-intersective adjectives (see sections 2.5 and 2.6). This restriction holds for English too (cf. the glosses in the examples below). Adjectives such as Italian *mero*

('mere'), *principale* ('main') and Italian *altro* ('other') or French *autre* ('other') never appear postnominally:

(61) a. un mero accidente (*un accidente mero) (Italian)
a mere accident

b. il principale motivo (*il motivo principale)
the main motive

c. l'altra persona (*la persona altra)
the other person

d. l'autre maison (*la maison autre) (French)
the other house

In the light of (61) one could infer that in the Romance languages non-predicative adjectives generally cannot follow the noun. However, it turns out that this is too strong a claim: there is a class of non-predicative adjectives which do occur postnominally and which in fact may only occur postnominally. These are the classifying adjectives we discussed under section 3.3 above and which are illustrated in (62) and (63). Such adjectives must appear postnominally, as shown by the ungrammaticality of (63a), and they lack a predicative use as shown by the ungrammaticality of (63b).

(62) a. l'énergie nucléaire (French)
the energy nuclear

b. l'invasion italienne de l'Albanie
the invasion Italian of Albania

(63) a. *la nucléaire énergie

b. *L'invasion (de l'Albanie) était italienne.
the invastion (of Albania) was Italian
*L'énergie était nucléaire.
the energy was nuclear

Nucléaire in (62a) is a classifying adjective, it appears adjacent to the noun and it defines a domain in terms of which the denotation of the noun is (sub)classified. *Italienne* in (62b) is a thematic or referential adjective because it is licensed by the thematic structure of the noun it modifies, which is a deverbal noun.[35] Interestingly, by showing up exclusively to the right

[35] Such thematic adjectives absorb the external role of the deverbal noun (Stavrou & Alexiadou 1999, 2000).

of the noun, both these subtypes of adjectives will pose a potential problem for analyses which exclude N-movement (see section 4.5 and also the end of section 8).

Leaving aside the classifying adjectives in (61), the natural question that arises if one compares the data in (59) with those in (64) below, is why the same adjective appears both to the left and to the right of the noun. Is this simply a matter of (stylistic) choice or is there a (predictable) difference in meaning?

(64) a. la brutale invasione (Italian)
the brutal invasion

b. des éternelles discussions (French)
eternal discussions (Bouchard 2002: 78)

c. mi (unica) divertida colega (Spanish)
my (only) funny colleague (adapted from Demonte 1999: 51)

In fact, as many linguists have discussed, there IS a difference in meaning between the two positions. Bouchard (1998, 2002), for instance, argues extensively that postnominal adjectives in French have a different interpretation from their (homophonous) prenominal counterparts.[36] As already discussed in section 2.5., with regard to the intensional/non-intersective vs. extensional/intersective distinction, Bouchard claims that the difference is due to the adjective modifying a different sum or part of the noun from each position. In particular, the prenominal adjective modifies a subelement of what constitutes the basic sense of the noun, whereas the postnominal adjective "applies to the whole network of elements that determine the extension of the N" (Bouchard 2002: 66). With respect to the French example in (64b), prenominal *éternelles* means that the "property of questioning is ongoing, that the status of having a discussion is constantly renewed..(…)" (Bouchard 2002: 78), whereas in postnominal position (*des discussions éternelles*), the discussions go on for ever. A similar pair is illustrated in (65):

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[36] Demonte (1999) also claims that in Spanish the postnominal occurrence of the adjective contributes in a different way from the prenominal one to the interpretation of the adjective plus noun combination. Thus, *la arenosa nieve* means 'snow having dust on it', but *la nieve arenosa* means 'snow being like dust' (1999: 57).

(65) a. de nombreuses familles
numerous families
b. les familles nombreuses
families with lots of children (or generally members)

Prenominal *nombreuses* is numerical and refers to the number of families, in (65b) postnominal *nombreuses* expresses a property of the families, *une famille nombreuse* is a family with many children (or members more generally) (see also Bernstein 1993: 24). This meaning difference is further seen in the contrast in (66) (from Bouchard 2002: 82):

(66) a. #une nombreuse famille (incoherent)
a numerous family
b. #des individus nombreux (incoherent) *vs* de nombreux individus
individuals with many members numerous individuals

(66a) is incoherent because the quantifier *nombreux* must associate with a plural N. (66b) is also incoherent because in postnominal position *nombreux* means 'having many members' while an individual as such is just one member.

Consider next (67):

(67) a. une ancienne eglise (French)
an old church
narrow scope: 'former church'
b. une église ancienne
wide scope: 'old, ancient church'
'an old church'

The adjective *ancienne* has a single meaning ('old', 'aged'): there is just one lexical entry in the French dictionary. However, this meaning is differentiated according to the directionality of the adjective relative to the noun. Quoting Bouchard (2002: 73):

> In *église ancienne*, the ADJ combines with the whole network of the N, so it modifies the extension of *église*: the set of things that have the property of being a church in *w* at *i* intersects with the set determined by the property 'aged' of *ancienne*, hence the interpretation of a church that is old. In *ancienne église*, the ADJ only modifies the subelement to which the temporal

> property 'aged' is applicable, i.e. the time interval *i* at which the characteristic function of *église* holds. This time interval *i* is deictic, defined on the basis of NOW, the moment of speech; the interpretation when *ancienne* applies to the *i* of *église* is therefore 'something characterized as a church at an interval of time in the past.

Bouchard further discusses some interesting examples with evaluative adjectives. We saw in section 2 that such adjectives only receive an interpretation if the meaning of N is taken into consideration; they are not interpreted in abstraction from the N or in an absolute way. Consider now, as a further illustration, the following example form Bouchard (2002: 89):[37]

(68) a. un bon chef (French)
a good chef

b. un bon couteau
a good knife

In (68) *bon* says something about the property denoted by the noun, being prenominal it is "evaluated on an internal scale, the scale of N" (Bouchard 2002: 89). From (68a) one understands that somebody is good as a chef (in whatever a chef does), and from (68b) one understands that a particular knife is judged as good for cutting. When postnominal, *bon* "is put on a higher order, external scale, and determines the set of individuals being characterized (…). The quality of being good applies on a broader scale, such as being good as a human being." (Bouchard 2002: 90). When *bon* follows *couteau,* as in # *couteau bon*, the result is at least odd, because there is hardly anything to constitute an 'external' scale for knife; how could a knife be evaluated for something more general than as just a knife – i.e. for cutting? There are many more examples illustrating the pre-/postnominal meaning difference in French. The reader is referred to Bouchard (2002: chapter 2) for discussion and many more relevant data.

Certain adjectives which occur both prenominally and postnominally in the Romance languages are given a strong subjective reading in prenominal position and a manner reading in postnominal position. Turning to Italian,

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[37] Of course, as also mentioned in 3.1, with respect to the subjective/objective adjective distinction, what is judged by a subject as 'good' ('clever', 'fast', 'slow', etc.) varies according to context (cf. *good road*, *good day*, *good food*) (Bouchard 2002: 91).

the case of *brutale* ('brutal') in (69) is discussed by Cinque (1993, 1994) and Crisma (1993, 1996) among others[38]:

(69) a. la loro aggressione brutale all' Albania (cf. (64a)) (Italian)
the their attack brutal in-the Albania

b. la loro brutale aggressione all' Albania
the their brutal attack in-the Albania
'their brutal attack of Albania'

In (69a) the adjective is postnominal and it has a manner-like interpretation – i.e. the way the attack took place was brutal. But in (69b), the prenominal adjective expresses the speaker's evaluation about the event of attacking ('it was brutal on their part to attack Albania'). In the latter pattern, despite the speaker's opinion to the contrary, the actual attack itself might in fact not have been so brutal after all.

Interestingly, there are phonological as well as pragmatic correlates of this interpretational difference. First, the prenominal adjective is unstressed and the noun carries nuclear stress, while the postnominal adjective is stressed. Second, connected with this is the non-restrictive interpretation the adjective is given prenominally, in contrast with the regular restrictive interpretation of the postnominal adjective. Both in English and in the Romance languages, postnominal adjectives are typically interpreted restrictively.[39] English prenominal adjectives are interpreted either restrictively or non-restrictively, and the same is true of Greek prenominal adjectives. Prenominal adjectives in the Romance languages on the other hand are interpreted non-restrictively. We turn to the contrast restrictive-non-restrictive in some more detail in the next section.

4.2.1. The distinction restrictive – non-restrictive adjectives

The distinction between restrictive and non-restrictive adjectives is ultimately rooted in pragmatics. An adjective modifying a noun restrictively

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[38] Se also Laenzlinger (2000, 2005).

[39] Italian seems to differ somewhat from French and Spanish because, as Cinque (p.c.) points out, the non-restrictive reading is also possible in the postnominal position in Italian.

Lamarche (1991) reports that the prenominal position in French results in ambiguous Adj+N strings as regards both the restrictive-non-restrictive opposition and the intersective-non-intersective opposition.

helps in the identification of the particular individual that is the intended referent of the DP. If the adjective modifies the noun non-restrictively, "it contributes to the delineation of the whole set of objects that constitute the extension of the noun" (Kamp 1975: 153). In other words, a non-restrictive adjective forms an intrinsic part of the reference of the noun itself, whereas the restrictive adjective asserts a property for some referent, which exists independently of this property. Observe also that non-intersective, intensional adjectives are always restrictive. Consider the following example from Bouchard (2002: 94–95):

(70) a. Les britanniques phlegmatiques accepteront ses recommendations.
the flegmatic Brittons will accept his recommendations
b. Les phlegmatiques britanniques accepteront ses recommendations.

In (70a) we get an intersection: *britanniques* defines the set of British individuals and the adjective *phlegmatiques* defines the set of individuals that are flegmatic. The subsection of the two sets determines a subset of the pre-established set of British individuals. In (70b) (*phlegmatiques britanniques)* there is no set intersection. This is because there is no set pre-established by the sense of N, therefore there is no intersection with that set. In this pattern, the adjective simply "combines with the characteristic function (see 2.4) of N, defining a single set based on this complex property" (Bouchard 2002).

These different readings are further illustrated by Demonte (1999: 61–62), who notes that there is an interesting correlation between the restrictive/non-restrictive opposition and the absolute/non-absolute distinction mentioned above. The same adjective may be interpreted either restrictively or non-restrictively, depending on the noun it modifies. Thus, *white*, an absolute non-gradable adjective, when it modifies *snow*, is interpreted non-restrictively, but when it modifies carnations it is interpreted restrictively. Why should this be so? The reason reported by Demonte (referring to Martin 1995) is that certain (prenominal) adjectives specify a "prototypical value of the noun" (Demonte 1999: 62). For instance, snow is white, as a matter of necessity (in this world), but carnations are not so – they may be of any color. So the use of *white* with *snow* does not actually 'add' something new with respect to the noun – either its sense or its referent – , so it is interpreted non-restrictively because it does not in any obvious sense restrict the denotation of *snow*. The use of the same adjective with *carnation* does contribute to the delineation of the referent of the description, *white carnation*, because it helps to determine the intended referent of *carnation*,

namely a white carnation as opposed to all the other carnations (i.e. non-white ones). A related observation is that the combination A+N in cases like *white snow* denotes a generic concept (as opposed to cases like *white carnation*), with the result that such a combination may have a syntactic reflex in being taken to constitute a (syntactic) compound – i.e. as constituting a single word (Ralli & Stavrou 1997: 248) – see also 3.3. This role of a non-restrictive adjective is taken up by Givón: "Non-restrictive modifiers in a sense enter into a compound relation with their head noun. That is, they create a unitary concept, thus potentially a new lexical item" (Givón 1993: 268). The idea underlying 'unitary concept' is the same as that of Bouchard's 'complex property' which we mentioned in the preceding paragraph.

The distinction restrictive/non-restrictive (adjective) is orthogonal to the distinction intersective/non intersective. As Siegel (1976) illustrates, the sentence *Olga is the beautiful dancer on stage* has the following readings:

a. 'Olga is the dancer on stage, who, by the way, is beautiful.'
   (non-restrictive and non-intersective)
b. 'Olga is the one who is beautiful and a dancer on stage.'
   (intersective and restrictive)
c. 'Olga is the one on stage who dances beautifully.'
   (restrictive and non-intersective)
d. 'Olga is the one on stage, who, by the way, dances beautifully.'
   (non-intersective and non-restrictive)

The fact that we understand all four combinations of the features (+/–restrictive) and (+/–intersective) shows that the two features are independent one from the other.

4.2.2. Summary

Summarizing the discussion of section 4.2: in the Romance languages, adjectives occurring to the left of the noun modify it in a way which is different from the way in which they modify it when they follow the noun. A prenominal adjective modifies (part of) the meaning components that make up the sense (reference) of the noun. A postnominal adjective modifies the referent or the denotation of the noun, i.e. the noun as an already complete entity (Bolinger 1967). This may be more (cf. the cases illustrated in (59) and (64)–(67)) or less clear (cf. prenominal and postnominal 'good' in French or Italian) depending on the particular adjective-noun combination

involved, but seems to hold quite generally. There seems to be a cross-linguistic correlation between an adjective being intensional or subsective and its appearance in prenominal position on the one hand and between an adjective being intersective and its appearance in postnominal position, on the other.

Now, if we recall the facts discussed in section 2.4 concerning the meaning differences between a prenominal and a postnominal adjective in English, which we said can be partly described in terms of the intersective/non-intersective, or, equally, the referent/reference, stage-individual level or extensional/intensional opposition, the generalization that emerges after the discussion in section 4.2 based on data from Romance languages seems to be that the prenominal-postnominal distinction is cross-linguistically relevant. Given the clear-cut interpretative effects (minor variation among the relevant languages groups aside), we conclude that the distribution of a prenominal adjective should be accounted for independently of the postnominal position.

Two basic interrelated issues need now to be addressed:

(a) The basic difference between the unmarked order in Germanic languages and in Greek on the one hand and that in the Romance languages on the other. In the Germanic languages the large majority of (attributive and predicative) adjectives are prenominal, in Greek they are exclusively prenominal, while in the Romance languages adjectives are either pre- or postnominal, but with the postnominal position being the rule rather than its exception. This holds independently of the meaning differences that are observed in the Romance languages between pre- and postnominal adjectives.

(b) The difference in interpretation between prenominal and postominal adjectives in the Romance languages, and in English, when postnominal adjectives are attested (as in *the present mayor/the mayor present*).

In fact, the two questions can be collapsed. Assuming that an adjective from the postnominal position modifies the noun in a different way from the prenominal position, then why is it the case that this isomorphism between distribution and interpretation is not observed in all languages? Why is it (more or less) transparent in the Romance languages, but much less so in the Germanic languages and almost non-existent in Greek? One proposal that has been put forward to account for the different positions of adjectives in English and in the Romance languages is that postnominal orders are derived by leftward N-movement. This is discussed in the next section.

4.3. N-movement as a means of deriving the postnominal position of the adjective

According to one well-established hypothesis (see also Part II, Chapter 3, section 4), attributive adjectives are universally inserted in a prenominal position, and, in those languages in which it is attested, the surface order noun-adjective is derived by (cyclic) leftward movement of the noun to a higher functional head (e.g. Number, Gender) in the nominal domain (Grosu 1988; Valois 1991a,b; Cinque 1993, 1994, 1999; Bernstein 1993; Longobardi 1994, and others). As (71) illustrates, the APs stay in place and it is the noun that raises cyclically passing by one (or, depending on the language, more than one) adjective.

(71) a. Germanic $[_{DP}$ D $[_{FP}$ AP F $[_{FP}$ AP F $[_{NP}$ N …]]]]
b. Romance $[_{DP}$ D $[_{FP}$ AP $[_{F}$ N_n] $[_{FP}$ AP $[_{F}$ $t_n]$ $[_{NP}$ t_n…]]]]
$\xleftarrow{\qquad\qquad\qquad}$

There are two underlying hypotheses for such an account. The hypothesis that the noun moves leftwards past one or more adjectives is based on the prior assumption that the adjective(s) is (are) generated to the left of the noun as NP-adjunct(s) or as specifier(s) of dedicated functional projections, as illustrated in (72a-b):

(72) a. $[_{DP}$ D $[_{NP}$ AP $[_{NP}$ AP $[_{NP}$ N …]]]]
b. $[_{DP}$ D $[_{FP}$ AP F $[_{FP}$ AP F $[_{NP}$ N …]]]]

Since the N-movement analysis treats prenominal adjectives as being adjoined to the NP or to functional projections higher than the NP (NumP, GenP) (see Part II, Chapter 3, section 4 on the functional structure of DP), this also entails, of course, that there must be additional heads between N and D. If there were no intervening projections, there would be no landing site for the moved N.

Alternatively, the difference in word order between the 'Germanic' A+N order and the 'Romance' N+A order can also be explained in terms of a difference in the base position of the adjectives. According to such a hypothesis, attributive adjectives in the Germanic group are always inserted prenominally, while in languages such as those of the Romance group attributive adjectives can be inserted both prenominally or postnominally. For instance, adopting an adjunction approach this would implicate assuming both right and left adjunction. (73) is a schematic representation. In

Germanic languages, adjectives (as APs) are left-adjoined to the lexical projection.[40] In the Romance languages, attributive adjectives would be left-adjoined (73b) or right-adjoined (73c), and in the case of multiple adjectives the two options could combine (73d):

(73) a. Germanic [$_{DP}$ D [$_{NP}$ AP [$_{NP}$ AP [$_{NP}$ N …]]]]
b. Romance (i) [$_{DP}$ D [$_{NP}$ AP [$_{NP}$ AP [$_{NP}$ N …]]]]
c. Romance (ii) [$_{DP}$ D [$_{NP}$ [$_{NP}$ [$_{NP}$ N …] AP] AP]]
d. Romance (i)+(ii) [$_{DP}$ D [$_{NP}$ [$_{NP}$ AP [$_{NP}$ N …]] AP]]
Romance (i)+(ii) [$_{DP}$ D [$_{NP}$ AP [$_{NP}$ [$_{NP}$ N …] AP]]]

As it stands, such an approach encounters a number of problems.

First there is the theoretical problem that according to some strict views of X-bar theory, adjunction itself is either excluded or severely restricted.

Secondly, the adjunction hypothesis takes prenominal AP to be left-adjoined to NP. By analyzing multiple APs in terms of iterated adjunction to a single category (NP), the adjunction analysis (73a) provides at first sight no syntactic basis for accounting for the ordering constraints on adjectives. We said above that when more than one adjective is present, there are clear restrictions as to which adjective precedes the other(s), cf. again the following:

(74) a. nice red dress (*red nice dress)
b. an ugly big table (*a big ugly table)
c. large red Chinese vase (*Chinese large red vase) (?large Chinese red vase) (Sproat & Shih 1987)

We have also seen that (cross-linguistically) non-absolute (speaker-oriented or evaluative) adjectives precede absolute ones. In addition, among the absolute adjectives, adjectives denoting size precede adjectives denoting shape, which in turn precede adjectives denoting color, which precede adjectives denoting nationality or material. It is normally assumed that there is no ordering constraint on constituents adjoined to a single node. Hence, there are no syntactic principles that could select among different adjunction orders to a single node.

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[40] Notice that within this hypothesis, some extra assumptions must be made to account for cases like those in (i):

(i) a. a mother proud of her son
b. The people responsible should report to the enquiry desk.

See section 9 for more on this.

The adjectives-in-spec-analysis illustrated in (72b) allows for a straightforward syntactic account for adjectival ordering. The ordering hierarchy (37a) or (38a) can be interpreted as the result of head-head selection in a hierarchy of functional heads within the N-D extended projection (Grimshaw 1991). Assuming in particular that the functional projections labeled FP in (72b) are specifiers of specialized categories which appear in a specific order (FP1<FP2<FP3), and that the AP with the relevant feature is, according to standard theoretical assumptions, in specifier-head agreement with the corresponding head F°, the observed ordering restrictions among prenominal adjectives follow. Moreover, given that the relevant specifiers are specifiers in the extended projection of N, the agreement data can also be accounted for in a straightforward way: the APs have a specifier head relation with the (extended) head of the NP.

Various upgraded adjunction analyses can also capture the adjectival ordering problem mentioned above. For instance, one may consider prenominal adjectives as multiple specifiers of the NP, assuming that such multiple specifiers are licit (Koizumi 1995; Richards 1997 and others). Then one might argue that the specifiers check hierarchically ordered features on the head noun. The hierarchical ordering of the features could thus determine a ranking of specifiers and could accordingly determine the ordering. Observe, however, that a hierarchical organization of feature checking with matching multiple specifiers mimics the hierarchy of the functional projections typical of a spec analysis or a head analysis.

Alternatively we might reproduce the functional hierarchy proposed in (72b) and relate particular semantic classes of adjectives in a principled way to particular functional domains. Then we could propose that adjectives adjoin to such functional projections. (75a) illustrates how such an account would work for Germanic languages. For the Romance languages we could then propose that N-movement targets the intermediate heads (75b). As can be seen the resulting representations will be closely similar to that yielded by the specifier account.

(75) a. Germanic $[_{DP}$ D $[_{F1P}$ AP $[_{F1P}$ F $[_{F2P}$ AP $[_{F2P}$ F $[_{NP}$ N …]]]]]]
b. Romance $[_{DP}$ D $[_{F1P}$ AP $[_{F1P}$ $[_{F}$ $N_n]$ $[_{F2P}$ AP $[_{F2P}$ $[_{F}$ $t_n]$ $[_{NP}$ t_n..]]]]]]

4.4. Problems for the N-movement hypothesis

In Part II, Chapter 3, section 4 we already mentioned certain problems of the N-movement analysis. Here, we will focus in particular on problems that

regard scope relations among adjectives and also between adjectives and the noun they modify.

Lamarche (1991) was the first to point out a series of problems with the N-movement analysis. For more recent discussions see Bouchard (1998, 2002), Dimitrova-Vulchanova (2000, 2003), Alexiadou (2001b), Laenzlinger (2000, 2005), Shlonsky (2004) and Cinque (2005), among others. In the following we briefly discuss the more basic problems.

One empirical prediction of the N-movement analysis is that the order of DP-internal adjectives should remain constant cross-linguistically and that, *ceteris paribus*, only the position of the head N varies. This prediction is indeed borne out by French examples such as those in (76a): the pre- and postnominal adjectives in French display the same ordering compared to their English prenominal counterparts. The sequencing of the three adjectives, *joli/beautiful*, *gros/big*, *rouge/red*, remains constant.

(76) a. un joli gros ballon rouge (French)
a beautiful big red ball

However, it is by no means always the case that the sequencing of postnominal adjectives in French corresponds to that of prenominal adjectives in English. This is shown by (76b), in which the linear order of the underlined French adjectives, one prenominal and one postnominal, is the opposite of the linear order of the corresponding English prenominal adjectives (from Cinque 1994: 102). The same is observed in (76c–e) where both adjectives are postnominal (c–d from Cinque 1994: 102; e–f from Bernstein 1993: 47)

(76) b. une <u>énorme</u> maison <u>magnifique</u>
a beautiful big house

c. un fruit <u>orange énorme</u>
an enormous orange fruit

d. un poulet <u>froid délicieux</u>
a delicious cold chicken

e. une voiture <u>blanche rouillée</u>
a rusty white car

f. une bière <u>blonde froide</u>
a cold pale beer

(77) provides examples from other languages. Following the N-movement analysis, the DP- initial position of the noun in Irish (77a) and in Thai (77b)

could be taken to mean that N has moved all the way up to D (cf. Longobardi 1994, see Part II, Chapter 3, section 4.2). This would be compatible with the N-movement analysis outlined above. However, in (77b) the order of the adjectives is the mirror image of the order in English. Hence something extra will have to be said to derive the unexpected inverted order of the adjectives. [41] We will come back to such data in later sections and we will provide an alternative analysis in section 8.

(77) a. cupán múr uaine
cup large green (Laenzlinger 2000: 4)
'large green cup'

b. ma daam may
dog black big
'big black dog'

Svenonius (1994) shows that the problem of relative scope of modifiers also raises a problem for the N-movement analysis. This problem was first noticed by Lamarche (1991). The spec analysis combined with the N-movement analysis makes the incorrect prediction that the relative scope of adjectives should be from left to right both in the Germanic languages such as English, Dutch and German, and in the Romance languages such as Italian and French. Consider the noun phrases in (78):

(78) a. chopped frozen chicken
a'. gehakte bevroren kip (Dutch)

b. frozen chopped chicken
b'. bevroren gehakte kip (Dutch)

The DPs in (78a,a') refer to chicken that was first frozen, then chopped, while the DPs in (78b,b') refer to the chicken that was first chopped, then frozen. The higher adjectives (those to the left) modify the entire constituent that they combine with. In other words *chopped* has scope over *frozen*

[41] Cinque (1994) points out that this difference could be explained under the assumption (which we also follow here) that the postnominal adjectives are exempted from the hierarchical ordering because they are predicative and predicative adjectives, being related to some clausal structure mimic the DE-modifiers of Mandarin Chinese (Sproat & Shih 1987, 1991). See also Laenzlinger (2005: 658) on this particular point and further Cinque (2005) for a novel analysis of postnominal adjectives relying on phrasal movement (section 8).

chicken in (78a). These effects follow from the Spec approach: AP1 in (79) c-commands and has scope over AP2.

(79) $[_{DP}$ D $[_{FP}$ AP1 F $[_{FP}$ AP2 F $[_{NP}$ N …]]]]

In the light of the spec analysis combined with the N-movement analysis (Bernstein 1993, Cinque 1994), postnominal adjectives in Romance should have the same scope properties as prenominal adjectives in English: adjectives to the right of the head noun should be within the scope of the adjectives to their left.

(80) $[_{DP}$ D $[_{FP}$ $[_{F}$ N] $[_{F1P}$ AP1 F $[_{F2P}$ AP2 F $[_{NP}$ N …]]]]]

However, this prediction does not seem to be correct. (81a,b) below are from Lamarche (1991: his (18)):

(81) a. une personne agée handicappée (French)
a person elderly handicapped
b. une personne handicappée agée
a person handicapped elderly

Quite unexpectedly, an adjective to the right seems to take scope over an adjective to its left (cf. Bernstein 1993: 48). This contrast between the French data in (81a,b) and their English counterparts in (82) below is unexpected if adjectives are specifiers of specialized projections and postnominal positions of adjectives are derived by leftward N-movement.

(82) a. a handicapped elderly person
b. an elderly handicapped person

In (81a) the adjective *agée* in the specifier of F1P would be expected to c-command *handicappée* in SpecF2P, as shown in (81a'). In (81b) *handicappée* in SpecF1P should c-command *agée* in SpecF2P, a shown in (81b'). If anything, we thus would expect the inverse scope relations.

(81) a'. $[_{DP}$ D $[_{FP}$ $[_{F}$ personne] $[_{F1P}$ agée F $[_{F2P}$ handicappée F $[_{NP}$ N …]]]]]
b'. $[_{DP}$ D $[_{FP}$ $[_{F}$ personne] $[_{F1P}$ handicappée F $[_{F2P}$ agée F $[_{NP}$ N …]]]]]

In sum, with respect to scope relations, the Romance postnominal adjectives manifest the mirror image of their English counterparts.

If one assumes that adjoined adjectives give rise to the same left-right scope relations, the N-movement analysis in conjunction with the adjunction analysis raises the same problem.

According to Lamarche (1991), another problem for the N-movement analysis concerns the observation made above (see section 4.2) that there are semantic differences between the prenominal and postnominal position of the adjective in Romance (cf. Lamarche 1991 and Bouchard 1998, 2002). (83b–e) below further illustrate the same point. English prenominal *poor* in (83a) is ambiguous between two interpretations: an objective, descriptive reading, 'impoverished', and an emotive, subjective reading, 'pitiable'. In the Romance languages, the adjective corresponding to *poor* also has these two meanings but each interpretation is linked with a different position, prenominal vs. postnominal. The emotive, subjective reading is associated with the prenominal position, the objective descriptive reading with the postnominal position. This is shown in (83b,c) for Spanish and in (83d,e) for French.

(83) a. the poor boy (two readings: 'impoverished', 'pitiable')
b. el chico pobre (Spanish)
the boy poor (impoverished)
c. el pobre chico
the poor (pitiable) boy
d. le garçon pauvre (French)
the boy impoverished
e. le pauvre garçon
the pitiable boy

At first sight it might seem difficult to derive these interpretative differences within the N-movement analysis. How could the interpretation of the adjective change after the application of the movement of N? How can the fact that N crosses A induce a meaning change in A? Upon closer inspection, though, these data may be amenable to an analysis that would no longer constitute a problem for the N-movement hypothesis. Consider English (84a,b):

(84) a. the poor poor boy
b. the navigable navigable rivers

In (84) the adjectives *poor* and *navigable* are repeated. Two possibilities arise for (84a): either the reduplication strengthens the interpretation of the adjective, in which case (84a) either means ' the very pitiable boy' or 'the

very impoverished boy'. Alternatively, and in direct connection with our present discussion, in its first occurrence the adjective *poor* means 'pitiable' and in its second occurrence it means 'impoverished' (see Bernstein 1993; also Larson 1999, 2000). Likewise, the first instantiation of *navigable* signals a stage-level or temporary property, while the second an individual level or an enduring one. The data in (84) strongly suggest that there are two prenominal positions for *poor* and *navigable* depending on the meaning, and that this is probably the case cross-linguistically (see Crisma 1996 for Italian). Similarly, in (84c) *poor* occupies the higher position and has a subjective reading, *rich* occupies the lower position.

(84) c. poor rich girl

In French (84d) prenominal *pauvre* and postnominal *pauvre* co-occur and the meaning is something like 'the pitiable impoverished student'.

(84) d. le pauvre garçon pauvre
the poor boy poor

These examples suggest that we need to postulate two structural positions for the English adjective *poor* and its counterparts in other languages. In English, both positions are prenominal. In the Romance languages they are split between the prenominal and the postnominal domain. Prenominal *pauvre* in (83e) occupies the position of leftmost *poor* in English (84a) and of *poor* in (84c). Postnominal *pauvre* in (83d) occupies the position of rightmost *poor* in (84a) and of *rich* in (84c).

Similarly, recall example (66) in which *nombreuses* in prenominal position has a numeral reading and in postnominal position it expresses a quality of the N. Again both uses of *nombreuses* can co-occur in (84e):

(84) e. De nombreuses familles nombreuses ont protesté.
numerous families numerous have protested

Recall also the meaning difference between the prenominal and the postnominal occurrence of the adjective *brutale* in (69): the prenominal adjective is given a subjective interpretation whereas the postnominal adjective gets a manner (i.e. an objective) interpretation. So, once again, we are led to assume that there are at least two positions for attributive adjectives.

The operation of N-movement will interact with the assumption that adjectives such as *pauvre* may occupy two positions. Assuming, as we just did,

that each position correlates with one interpretation,[42] the natural assumption is that in the Romance languages N moves to a position to the left of the lower position and to the right of the higher position:

(85) a. $[_{DP}$ D $[_{F1P}$ pauvre $[_{F1P}$ N $[_{F2P}$ pauvre $[_{F2P}$ t_n $[_{NP}$ t_n …]]]]]]
b. $[_{DP}$ D $[_{F1P}$ nombreuses $[_{F1P}$ N $[_{F2P}$ nombreuses $[_{F2P}$ t_n $[_{NP}$ t_n …]]]]]]

So there would be an empirically motivated way to overcome one objection raised against N-movement.

The picture is, however, more complicated as cross-linguistic facts in combination with standard theoretical considerations pose additional challenges to the N-movement analysis as a means of deriving adjectival orders. A major problem is that N-movement seems to lack triggers. Specifically, N-movement does not seem to correlate with the presence of 'rich' morphology on either A or N itself, as its parallelism with V-movement would presuppose. For instance, in Greek, just like in English, no noun movement seems to take place (or if it does, it is covert); the head noun always follows the adjectives that modify it, independently of the adjective type involved – see again the data in section 1.2 and also (86).

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

And yet, as the discussion in Part II, Chapter 3, section 4 has shown, Greek nouns, in sharp contrast with their English counterparts (see Alexiadou, Haegeman, Stavrou 2001; Alexiadou 2001a,b), manifest a 'rich' nominal morphology system, which is arguably even richer than that of their Romance counterparts. All nouns in Greek bear case markings, as well as gender/number ones. Besides, adjectives and determiners show overt inflectional distinctions. Determiners and adjectives enter into an extended agreement with nouns encompassing all of gender, number and case.

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[42] This proposal would match similar proposals made for adverbials: it is well known that certain adverbials have a different interpretation depending on their position:

(i) a. He did not answer wisely.
b. He wisely did not answer.

In (ia) *wisely* modifies the way of answering – i.e. it is a manner adverb – whereas in (ib) it modifies the whole proposition – i.e. it is a speaker-oriented adverb.

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

b. ti(n) evjenik-i jinek-a/fil-i
the-FEM:SG:ACC polite-FEM:SG:ACC woman/friend-FEM:SG:ACC
'the polite woman'[43]

Similar observations can be made for West Flemish, where feminine nouns are systematically marked for morphological gender, and where determiners and adjectives show effects of gender/number agreement; however, regardless of these rather robust overt morphological markings, the language has rigidly prenominal adjectives (see Haegeman 2000; Alexiadou, Haegeman & Stavrou 2001; Haegeman 2002a; Haegeman & Van Peteghem 2002):

(88) a. de groene deure
the green door-*e*

b. *de deure groen

Such evidence casts doubts on the adequacy of an analysis in terms of DP-internal N-movement.

More recently several attempts have been made to derive variation in DP-internal word order via (DP-internal) phrasal movement (see Laenzlinger 2000; Shlonsky 2004; Cinque 2005 and others). We will come back to this issue later in this chapter.

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[43] It must be said at this point that despite the ungrammaticality of (86a), N-movement has been claimed for Greek by Manolessou & Panagiotidis (1999) and Manolessou (2000), primarily in the light of cases involving postnominal demonstratives (see Chapter 2), as in *to vivlio afto* 'the book this'. But observe that the distribution of demonstratives can be accounted for in a number of alternative ways (see Part II, Chapter 1 for discussion). Moreover no adjective can ever be stranded by N-movement in Greek, N-movement is then vacuous movement. It is not clear that vacuous movement is theoretically motivated: the proposal runs against fundamental principles of economy which are particularly dominant within the recent minimalist framework.

4.5. The adjective-as-head hypothesis

In the context of the discussion of the noun movement analysis and the problems it raises, the hypothesis of (prenominal) adjectives-as-heads is also relevant. The issue is particularly relevant here because the two hypotheses, the N-raising hypothesis and the adjective-as-head hypothesis, interact in interesting ways.

A first clarification is in order at this initial point. The idea that prenominal adjectives are heads, rather than projections, is extensively argued for by Lamarche (1991), and independently by Sadler & Arnold (1994), who call A+N clusters 'small constructions' (also Stavrou 1999, Alexiadou & Stavrou 1998, Dimitrova-Vulchanova 2003, among others). This idea is endorsed – usually non-explicitly – in many syntactic accounts in the generative paradigm, where the labels 'light' vs. 'heavy' constituent are used. According to this view, there is a motivated contrast between prenominal adjectives, behaving syntactically as zero-level categories, and postnominal ones, which are plausibly phrasal constituents. In support of this approach authors will cite the fact that in some languages, English among them, only postnominal adjective phrases can have complements; prenominal, as a rule, cannot.

In this subsection we will present the view according to which prenominal adjectives, being zero-level categories, qualify as syntactic heads – i.e. as selecting categories – on the path between N and D, as illustrated in (89) (Abney 1987; Delsing 1993a; Androutsopoulou 1996 for Greek, among others):

(89) $[_{DP}$ D $[_{AP}$ A $[_{AP}$ A $[_{NP}$ N …]]]]

One argument in favor of this approach is based on the Spell-Out of determiners in Danish (Delsing 1993a). In this language the suffixed article may be attached to the noun:

(90) a. hus-et
house the

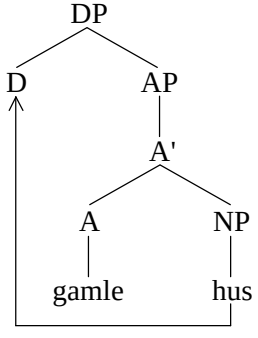
However, in the presence of a prenominal adjective, the article has to be spelled out independently by a free morpheme (*det* in (90b)). The Spell-Out as an affix is not available (90c):

(90) b. det gamle hus[44]
this old house

c. *gamle huset

Delsing (1993a) proposes that the adjective *gamle* (‘old’) in (90b) heads an AP projection, and that it takes the NP headed by *hus* as its complement. He assumes that the order Noun + determiner-affix in (90a) is derived by movement of N to D. He proposes that the intervention of the adjective in (90b) blocks N to D movement because it would lead a violation of the head movement constraint. One head, N, would cross an intervening head, A, on its way to a higher head, D.

(90) d.



However, one problem with the account above and its appeal to the H(ead)M(ovement)C(onstraint) is that this very argumentation based on the HMC can also be used against the head analysis of prenominal adjectives. Consider the Romanian examples in (91), taken from Giusti (1993, 1997):

(91) a. acest frumos baiat
this nice boy

b. baiatul acesta frumos
boy-determiner this nice

In Romanian, (91a), the demonstrative *acest* is uninflected and precedes the adjective *frumos*, which in turn precedes the noun *baiat*. The example lacks

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[44] As we will see below, in the Swedish analogy of (90b) the article is spelled out on the noun (as in (90a)) and at the same time in the DP-initial position:

(i) det viktige møtet
the important meeting-DEF

an overt article. It could be assumed that D is projected and that the demonstrative has moved to the head D (see however Chapter 1 of Part II for a different analysis). In (91b) the noun *baiat* appears to the left of the demonstrative, which now bears agreement inflection (*acesta*). In this example the noun *baiat* is prefixed to the morpheme *-ul*, the spell-out of the (affixal) definite determiner in Romanian. It can thus be assumed that the noun has left-adjoined to the affixal determiner (Grosu 1988). This means that in this example the demonstrative is not in D. If a derivation in terms of N-movement to D (*ul*) is correct, then, with respect to (91b), one is led to conclude that head-movement of the N bypasses the demonstrative, *acesta*, as well as the adjective *frumos*. If the adjective *frumos* were to be analysed as a head taking NP as its complement, then we would have to say that head-movement of the noun *baiat* can cross the adjectival head. But this would violate the HMC: all movement, including head-movement, is subject to locality, and hence a head cannot skip an intervening head (cf. Giusti 1997, 2002). Needless to say, this particular problem does not arise for the adjunction approach nor for the spec approach: heads can cross maximal projections.

The adjective-as-head analysis makes the prediction that prenominal adjectives will not be able to take complements since they already have a phrasal projection of the N-D extended projection as their complement. In (90d), for instance, the NP headed by *hus* ('house') is the complement of *gamle* ('old'). This particular prediction is borne out for English (92b,c), where prenominal adjectives cannot take complements. However, there are languages, Greek (92a) among them, where phrasal APs appear normally in prenominal position.

(92) a. i [periphani ja to jo tis] mitera (Greek)
the proud for the son her mother
b. *the proud of her son mother
c. the mother proud of her son

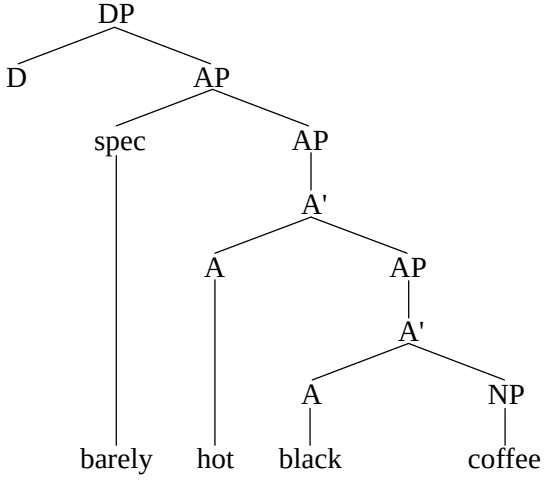
Another difference opposing the head approach to both the adjunction approach and the spec approach concerns the interpretation of pre-adjectival modifiers within the noun phrase (see Svenonius 1994 for discussion). Consider (93):

(93) some barely hot black coffee

In (93) the degree adverb *barely* modifies the adjective *hot*. The degree adverbial does not bear on the adjective *black*. The coffee may be completely

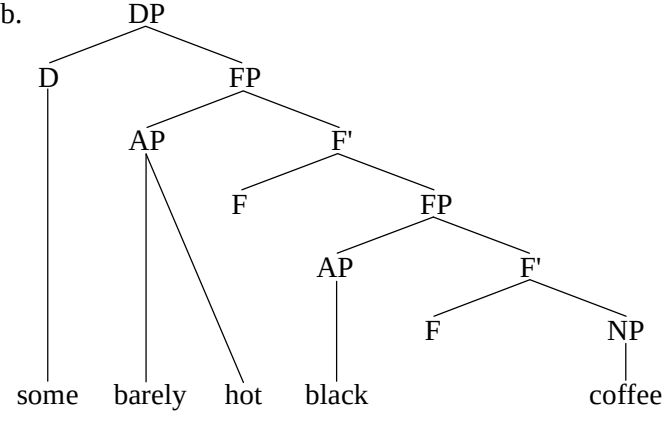
black, it is not necessarily 'barely' black. Assuming a restrictive X'-theory, *barely* must be associated with a maximal projection. Under the head analysis, *barely* will be associated with an AP dominating the projection *hot black coffee*. This structure, in which *barely* c-commands *hot black coffee* will incorrectly lead to the prediction that *barely* takes scope over *hot black coffee*.

(94) a.



Both the spec analysis and the adjunction analysis fare better with respect to these data. If the AP headed by *hot* heads an adjunct/specifier AP, then *barely* can be taken to be adjoined to that AP. The c-command domain of *barely* is then limited to the containing AP and it will not be not expected to take scope over *black coffee*, which it does not c-command.

(94) b.



The arguments against the generalized head analysis of adjectives outlined above are essentially based on phrasal prenominal APs. Observe that these arguments cannot be extended to all prenominal adjectives. In particular, we cannot use the arguments with respect to non-intersective/intensional modifiers of the *alleged*, *former*, *nuclear*, etc. type, which cannot be modified (cf. Bernstein 1993; Mandelbaum 1994). Thus, even if the head-analysis poses problems for the intersective modifiers, it might be possible to maintain it for the non-intersective (or sub-sective) modifiers, which behave as zero-level categories. This approach would give rise to a mixed analysis in which not all prenominal adjectives are derived in an uniform fashion.[45] Such a proposal has in fact been made, we briefly turn to it below and we will have more to say on this in section 9.

Anticipating our discussion in later sections, we may point out here that there is the possibility for a mixed analysis, i.e. for an analysis according to which some prenominal adjectives are heads while others head maximal projections in adjoined (95a) or specifier (96a) positions. Mandelbaum (1994) specifically argues for such a mixed approach, adopting the head-analysis for non-intersective intensional adjectives, and an adjunction analysis for intersective ones. Obviously, it is expected that in such an approach the two types of prenominal adjectives may co-occur (96c):

(95) a. D° [$_{NP}$ AP NP] (the red book)
b. D° [$_{AP}$ A NP] (the alleged murderer)
c. D° [$_{AP}$ A [$_{NP}$ AP [$_{NP}$ NP]]] (any future big investment)

(96) a. D° [$_{FP}$ AP [F] [NP]] (the red book)
b. D° [$_{AP}$ A NP] (the alleged murderer)
c. D° [$_{AP}$ A [$_{FP}$ AP [F] [NP]]] (any future big investment)

Bernstein (1991) and Zamparelli (1994) also assume a ‘mixed’ analysis by claiming that non-intersective intensional adjectives are merged as heads above the lexical NP. A similar approach is advocated by Demonte (1999), to whom we turn in section 5.3. Thus, in order to capture the empirical data

[45] The head status of intensional adjectives is suggested by Higginbotham (1985) on semantic grounds. Interestingly, it is refuted by Jackendoff (1997: 64–65), who says that though semantically intensional and intensional-like adjectives are heads taking N as their argument, syntactically they are adjuncts. He writes in particular: “I see no evidence internal to syntax to substantiate such a claim.” (1997: 64)

one probably cannot derive all prenominal adjectives in the same way, and some sort of mixed analys seems rather inescapable.

To conclude this section, let us summarize the main points. The N-movement hypothesis seems able to capture certain facts concerning the distribution of DP-internal adjectives in the Romance languages, as it can account for their pre/post nominal occurrences. On the other hand, such an account is achieved at the cost of sacrificing the observed scope and interpretational differences. Although there might be ways to overcome at least some aspects of the problem, the N-movement hypothesis also raises the issue of its apparent lack of clear triggers. In particular the trigger for movement cannot be morphological: languages with what could easily be described as 'rich morphology' in the N or in the determiner system (Greek, for example) would not display N-movement. N-movement runs against fundamental principles of economy, since movement seems unmotivated (see also section 4 in Chapter 3 of Part II).

The objections listed above have been raised repeatedly in the literature (Lamarche 1991; Bouchard 2002; Shlonsky 2004, and others). We may further observe at this point that the English facts concerning the postnominal position of well-circumscribed adjective classes raise another big obstacle for N-movement. English has never been proposed as an N-movement language. It is not clear how one could impose N-movement for the 'exceptional' postnominal adjectives in English. Recall that APs in postnominal position must always be predicative, i.e. they correlate with postcopular APs. This would follow naturally from an account which assumes that postnominal adjectives originate as predicates in some kind of (reduced/small) clause. Such an account would in turn mean that, minimally, if some adjectives are heads, other adjectives are projections. In other words, to force a uniform head account of adjectives seems to run against the facts.

We close this discussion with a note on classifying adjectives illustrated in (62) above (see also section 3.3). In fact, for such cases, it would be possible to postulate a trigger for N-movement. In the Romance languages classifying adjectives occur exclusively postnominally. In addition, such adjectives cannot be used predicatively. Proponents of the N-movement analysis could straightforwardly account for the order N-A under the assumption that N moves a short distance up, past the classifying adjective, which thus must be assumed to be merged either in the specifier of N or of another category immediately above N. Because of the various theoretical and empirical problems raised above, we do not in principle opt for the N-movement approach, even in the case of classifying adjectives. This means that

we need a different explanation for the order illustrated in (62). At the moment we don't have anything to offer and we leave this to future research.

In section 5 we will turn to the general idea that at least certain adjectives originate in a (relative) clause. We will first examine the most articulated formulation of this idea-the so-called D-complementation hypothesis, as developed by Kayne (1994). Then we will briefly consider two promising ways of approaching the pre- vs. postnominal adjective problem that also assume a clausal origin for (certain) adjectives.

5. The clausal hypothesis

5.1. The determiner complementation, or Relative Clause Hypothesis

As discussed in section 2, the idea of deriving prenominal adjectival modifiers in English by the predicate fronting of adjectival modifiers that originate in a postnominal position as part of a reduced relative clause goes back to the first days of transformational grammar. Recently this idea was revived and developed by Kayne (1994: ch. 8).[46]

For English, such an approach to postnominal adjectives is strongly supported by the fact that APs in postnominal position can only be predicative, i.e. they typically allow for paraphrases with postcopular APs. This follows naturally if syntactically postnominal adjectives originate as predicates in some kind of clause.

However, we also have seen (section 2) that many problems arise if all prenominal APs are treated as fronted predicative APs. This does not mean that the AP-fronting analysis is to be ruled out completely: it may well be that *some* prenominal adjectives are derived by AP-fronting while others are not, thus again leading to a mixed proposal.

Before we outline some further arguments for a mixed proposal we turn to the details of Kayne's (1994) implementation of the AP-fronting analysis. This analysis, elaborated according to antisymmetric guidelines (see Introduction), has been very influential in current research on the structure of DPs.

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[46] Cinque (1994) identifies the base position of predicative adjectives as one internal to a reduced relative clause, a type of a small clause (i), within which the relevant AP constitutes the main predicate. This AP is predicated of an empty argument subject, itself controlled by the host DP:

(i) $[_{DP}$ the $[_{NP}$ $[_{NP}$ mother $]_j$ $[_{AgrP}$ PRO_j proud of her son]]]

5.1.1. Kayne 1994

Kayne develops the predicate fronting approach to prenominal adjectives within his general analysis of relative clauses, and in so doing he echoes the Det-hypothesis of the sixties and the seventies (Smith 1964; Stockwell; Schachter & Partee 1973; Vergnaud 1974 – see also Jackendoff 1977, ch. 7 for a summary and commentary of the older theories about relative clauses). Because Kayne's analysis is the most recently formulated version of this type of analysis, we will summarize his account here.

In Kayne's approach, relative clauses are analyzed as clausal projections, CPs, which are complements of a determiner. The nominal 'head' of the relative clause, i.e. what is usually referred to as 'antecedent', is taken to originate as a DP inside the relative clause. The surface order in which the head N precedes the relative clause, is derived by moving the DP/NP to SpecCP. This analysis is sometimes referred to as the head-raising analysis.[47] The general schema for the derivation of relative clauses is given in (97). A specific implementation is shown in (98).

(97) a. $[_{DP}$ D CP]
b. $[_{DP}$ D $[_{CP}$ DP_j $[_{C°}$ $[_{IP}$ t_j …]]]]
$\leftarrow$

(98) a. $[_{DP}$ the $[_{CP}$ that $[_{IP}$ John made $[_{DP}$ claim$]_j$]]]
b. $[_{DP}$ the $[_{CP}$ $[_{DP}$ claim$]_j$ that $[_{IP}$ John made t_j]]]

Reduced relative clauses are analyzed analogously. Specifically, a clausal structure is assumed where the DP/NP functions as the subject and the AP as the predicate. The DP undergoes head-raising to SpecCP (99b), resulting in a pattern with a postnominal reduced relative clause (1994: 97). In this way, Kayne dispenses with the empty subject and the control relation often invoked for reduced relatives. The pattern in (99b) applies to the case postnominal adjectival modifiers.

(99) a. $[_{DP}$ D $[_{CP}$ $[_{IP}$ DP AP]]]
b. $[_{DP}$ D $[_{CP}$ DP_j $[_{IP}$ t_j AP]]] head-raising
$\leftarrow$

[47] The term 'head raising' is actually slightly misleading in that the relevant raising operation affects a projection rather than a 'head'.

The prenominal position of adjectival modifiers is then argued to be derived by predicate fronting, i.e. by leftward movement of the AP predicate of the reduced relative across the subject DP to SpecCP (99c) (Kayne 1994: 99–101; Fanselow 1986). This type of predicate-fronting is also referred to as predicate-raising.

(99) c. $[_{DP}$ D $[_{CP}$ AP_j $[_{IP}$ DP .. t_j]]] predicate-fronting/predicate-raising
$\leftarrow$

The underlying structure for a DP modified by a postnominal AP will be as in (100a). The DP *mother* has moved into the matrix DP. A DP with a prenominal AP will be given representation (100b), with raising of the predicate AP *yellow*.

(100) a. $[_{DP}$ the $[_{CP}$ $[_{DP}$ mother$]_j$ $_{C°}$ $[_{IP}$ t_j … $[_{AP}$ proud of her son]]]]
b. $[_{DP}$ the $[_{CP}$ $[_{AP}$ yellow$]_j$ $_{C°}$ $[_{IP}$ $[_{DP}$ book] … t_j]]]

It goes without saying that non-intersective (intensional) prenominal adjectives are not amenable to this analysis since a predicative source is not plausible for them (Bolinger 1967; Levi 1978). If the head-raising analysis is adopted for certain classes of prenominal adjectives, namely for intersective and evaluative/speaker-oriented ones, then this once again will lead us to adopt a mixed analysis, as we will further discuss in section 9.

The analysis in (99–100) is sometimes also referred to as the D[eterminer] complementation analysis because in this approach relative clauses are analyzed as clausal projections that are complements of a determiner. The analysis offers interesting perspectives for the syntax of adjectives, but it requires some modification and extension in order to capture the ordering restrictions governing prenominal attributive adjectives, as in (101) (Alexiadou & Wilder 1998):

(101) a. the big red book
b. *?the red big book

The D-complementation analysis crucially relies on the idea that the (predicative) adjectives originate as predicates of a relative clause. Stacked relative clauses display relatively free ordering, with relative scope being the determining factor (Jackendoff 1977: ch. 7). Cf. (102) as an illustration of this:

(102) a. The students [who failed the exam] [who are currently on holiday].
b. The students [who are currently on holiday] [who failed the exam].

For prenominal APs that originate as reduced relatives in a D-complementation structure, the derivation leads us to expect that they could display variable orders, depending on their underlying positions. Consider (103) below. The possibility of there being stacked prenominal adjectives must mean that the base structure in (100) is recursive: each AP is conceived of as a predicate of a relative clause. We will use the indices 1, 2, etc. to keep track of the projections in our illustration below; these indices have no theoretical status. In (103a), DP3 *book* is the subject of the predicate *red* in CP2. The containing CP2 is the complement of the (abstract) determiner, D2. DP2 is the subject of the predicate *big* in CP1. CP1 is the complement of the determiner D1. First, *red* undergoes predicate fronting to SpecCP2 (103b), then *big* predicate-fronts in its own cycle (CP1), leading to the order *big* < *red* in (103c).

(103) a. $[_{DP1}$ the $[_{CP1}$ $[_{IP}$ $[_{DP2}$ D_2 $[_{CP2}$ $[_{IP}$ $[_{DP3}$ book] $[_{AP}$ red]]]] $[_{AP}$ big]]]]
b. $[_{DP1}$ the $[_{CP1}$ $[_{IP}$ $[_{DP2}$ D2 $[_{CP2}$ $[_{AP}$ red] $[_{IP}$ $[_{DP3}$ book] t_{AP}]]] $[_{AP}$ big]]]]
c. $[_{DP1}$ the $[_{CP1}$ $[_{AP}$ big] $[_{IP}$ $[_{DP2}$ D_2 $[_{CP2}$[$_{AP}$ red] $[_{IP}$ $[_{DP3}$ book] t_{AP}]]] t_{AP}]]]

But as shown in (104), assuming an underlying order where *big* is the predicate of the inner CP2, the order *red* > *big* can also be derived. This order, however, is ill-formed (104c).

(104) a. $[_{DP1}$ the $[_{C1P}$ $[_{IP}$ $[_{DP2}$ D_2 $[_{CP2}$ $[_{IP}$ $[_{DP3}$ book] $[_{AP}$ big]]]] $[_{AP}$ red]]]]
b. $[_{DP1}$ the $[_{C1P}$ $[_{IP}$ $[_{DP2}$ D2 $[_{CP2}$ $[_{AP}$ big] $[_{IP}$ $[_{DP3}$ book] t_{AP}]]] $[_{AP}$ red]]]]
c. *$[_{DP1}$ the $[_{C1P}$ $[_{AP}$ red] $[_{IP}$ $[_{DP2}$ D2 $[_{CP2}$[$_{AP}$ big] $[_{IP}$ $[_{DP3}$ book] t_{AP}]]] t_{AP}]]]

To the extent that adjectives generated via D-complementation are subject to ordering constraints, the analysis under discussion here clearly runs into a problem. One way to overcome this problem is to propose that the various ordering hierarchies are treated as an output filter, i.e. as a cognitive filter (along the lines of Sproat and Shih 1987, 1991).

Let us summarize the preceding subsection. We have considered one particular approach to postnominal adjectives – the D-complementation analysis or the head-raising analysis. According to this approach, postnominal adjectives originate in a (reduced) relative clause, which is the complement of D. To derive postnominal adjectives we assume that it is the adjectives that stay *in situ* and the nominal subject of the relative clause

moves. To derive prenominal adjectives we assume that they move as predicates to a position higher than the noun. Interestingly, this approach directly reflects the earlier transformational approaches of the sixties to prenominal adjectives. In spite of the time lapse, then, the predicate-fronting approach seems to have maintained its popularity.

5.2. N- and D-shells

Larson's account of modification by adjectives endorses the idea of the (intersective) adjective originating in a reduced relative which is itself a complement of D (see also Part II, Chapter 1 section 5.2.).

Larson (1991, 2000, 2002) distinguishes between what he calls inner and outer adjectives. Specifically, there are two domains of modification by adjectives – modification of N and modification of D. Modifiers of N are called inner modifiers – they are inside the NP, modifiers of D are outer modifiers – they are outside the NP. This is illustrated in (105):

(105) $[_{DP}\ \alpha\ [_{NP}\ \beta\ N\ ]\ \alpha\ ]$ (α= D-modifier, β= N modifier)

Inner modifiers have a generic reading: they express individual-level predication. Such modifiers are illustrated by: *beautiful dancer* (= dances beautifully in general) and *navigable rivers* (rivers generally navigable). They are thus intensional and evaluative adjectives.

According to Larson, extensional intersective adjectives are modifiers of D.[48] Ambiguities in prenominal adjective-noun combinations are not due to adjective hierarchies per se but rather to the proximity of the adjective to N. In the examples below, the first adjective in the series is an outer modifier, the adjective closest to N is an inner modifier:

(106) a. Olga is a blonde beautiful dancer
outer (intersective) inner (non intersective)

b. Olga is a beautiful beautiful dancer
outer (intersective) inner (non-intersective)[49]

---

[48] Cf.: "D-modification is intersective and equivalent to modification by RCs." (Larson 2000).

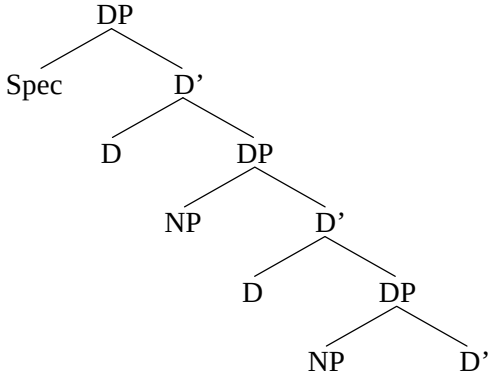
[49] Notice that it is also possible to have two outer modifiers, two adjectives both of which are interpreted intersectively, as in (i):

(i) a. beautiful blonde dancer

Both adjectives here are D modifiers (Larson 2000).

How is each modifier type accounted for? Outer modifiers – the leftmost adjectives in (106) – are taken to be generated 'externally', as DP complements, in a DP expanded around D shells (see also Part II, Chapter 1, section 5.2. on Larson's view of DP structure). In (107b) we give an illustration of the representation of DPs with postnominal adjectives of the type *the stars visible*, *the students present*. In (107a) a schematic DP structure built around D-shells is represented.

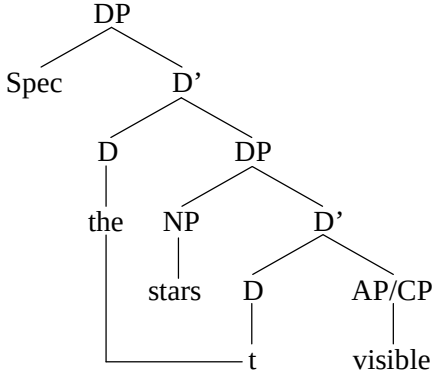
(107) a.



In Larson's D-shell theory, the D that is phonetically realized originates under the lowest D head, and is then moved upwards to the topmost D (leaving a trace in every intermediate D position it passes through). It is in this way that the order Art-N is derived in the first place. Notice that under this theory only D moves, not N.

Intersective adjectives originate in either a clause (CP) or just an AP which is the complement of D.

(107) b.



The adjective in this structure stays in situ (*the stars visible*). Under the assumption that D-modifiers are underlyingly D-complements, the outer prenominal position (*the blonde beautiful dancer*) must be a derived one. Accordingly, additional operations have to be assumed for those intersective adjectives in English that do not (or may not) appear postnominally (*the blonde dancer*).

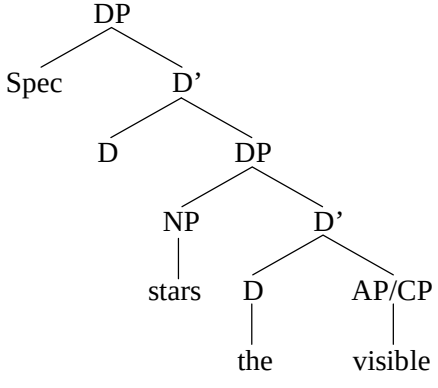
Larson proposes that movement of D (cf. (108)) carries other material (i.e. the adjective that follows it in (108)) along:

(108) a. $[_{DP}\ \ [_{D'}\ [_{D}$ the $[_{AP}$ visible]] $[_{DP}$ stars $[_{D'}$ t $[_{DP}\ \ [_{D}$ t]]]]]]

Alternatively, he assumes that leftward adjective movement is triggered by features of functional projections above N and above D, in the spirit of Cinque (1994). Movement of the postnominal adjective is triggered by the triggering features of functional projections above N (F1, F2) and above D (G1, G2…):

(108) b. $[_{DP}$ the $[_{GP2}$ visible G2 $[_{FP2}$ visible F2 $[_{NP}$ stars t]] t]]

c.



Larson does not propose an explicit syntactic analysis for non-intersective adjectives (which in English appear exclusively prenominally). In Larson (2000) the suggestion is made that even adjectives that modify the noun itself – i.e. inner modifiers – may originate in a relative clause as long as the relative clause combines with the event structure of N. This suggestion is based on Takahashi's (1997) observation that prenominal RCs in Japanese follow a strict ordering, depending on whether they have stage-level or individual-level properties. Moreover, adjectival relatives marked with *-ta* (the past morpheme) require closeness to N. Let us note at this point that older

accounts did assume a postnominal position for these adjectives too (e.g. Levi (1978), for all the relational and classificatory nouns).

Larson's crucial claim is that N-modification is generic, and he further follows Chierchia (1995) in suggesting that the 'inner' adjective is within the scope of a generic operator – the noun itself being the restrictor. The LF splitting of *(Olga is a) beautiful dancer* with a postnominal source for the adjective is as follows:

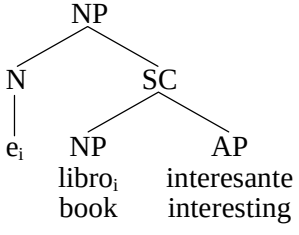
(109) Olga $[_{NP}$ dancer [beautiful]]
Generic O | Restriction | Scope

Larson (1997) derives the surface order A+N through a number of head movements of both the A and the N for reasons of feature checking, which need not, however, occupy us here.

5.3. Demonte 1999

Demonte also assumes a clausal origin for certain adjectives and she assumes a non-uniform analysis for DP-internal adjectives. Her claim (1999: 56) is that pre- and postnominal adjectives have different underlying representations and syntactic derivations. She subscribes to a 'mixed analysis' (see section 9 below). According to her, postnominal adjectives originate either in a clausal structure or in adjoined positions in the DP. Her analysis runs along the following lines. Based mostly on Spanish data, she argues that the lexical domain in which adjectives originate is a small clause that is a sister of the head of the NP. This N is empty and is coindexed with the NP that is the subject of the small clause (1999: 70):[50]

(110) a.

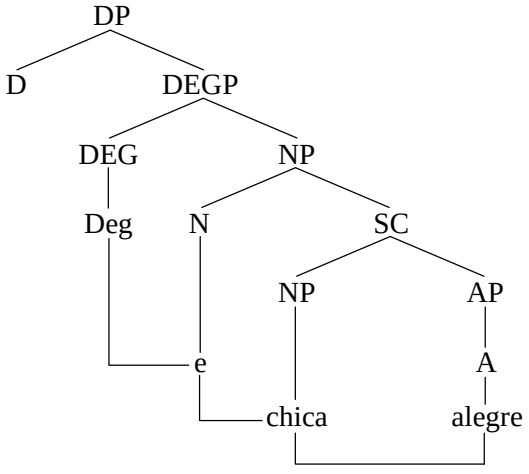


Adjectives that can appear prenominally are evaluative or gradable adjectives. They are assumed to come from the lexicon with an (optional) degree

[50] Anticipating a later section, observe that structure (121) below is similar in spirit, but somewhat different in implementation compared with (110).

feature, which, when it is selected, is strong. Being strong, the degree feature has to be checked, following standard minimalist assumptions. Checking of this feature takes place when the adjective moves to the head of a Degree Phrase situated between D and NP (110b). The presence of this category is induced by the Deg feature. Demonte further assumes that on its way to the Deg head, the adjective first adjoins to the N head (to avoid a violation of the minimal link condition) and then these two together move and adjoin to Deg. This operation, slightly simplified (see Demonte 1999: 57), is depicted in (110b):

(110) b.



By raising to Deg head the adjective is found in a head position relative to the noun. Recall that qualitative, evaluative adjectives have a relative interpretation with respect to the noun – in particular they target some subelement of the sense of the noun[51]. Demonte captures the fact that qualitative/evaluative (*good*, *happy*) adjectives are given a relative interpretation with respect to the noun by having the raised adjective as a noun selector and theta-marker, in the sense of Higginbotham (1985)[52].

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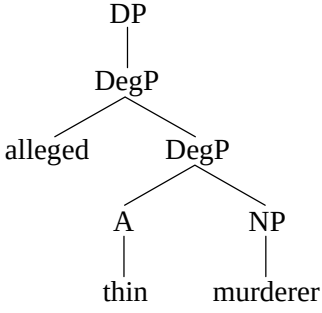
[51] For this reason they are called subsective, as we mentioned earlier in this chapter.

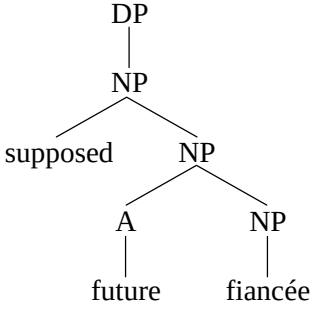
[52] Cf. "In the usual case of theta-marking, the reference of the theta-marked expression becomes the value of an open position in the theta marker; but in the case of modification, I suggest, what is theta-marked, the phrase marker with root N, is itself the value. For this reason this type of theta-marking will be called autonymous." (Higginbotham 1985: 564). (See section 2.5.)

Demonte takes all non-scalar adjectives that are non-intersective – i.e. intensional, circumstantial and modal/epistemic ones – to be adjoined to either NP itself or to DegP or to both. Being essentially adjuncts, the order among these adjectives is predicted to be free (see also section 3.4.2). (110c) illustrates the structure of *the alleged thin murderer*: the two adjectives are adjoined to DegP. (110d) is the structure of the *supposed future fiancée*: the two adjectives are adjoined to the NP (Demonte 1999: 58):

(110) c.



d.



Having summarized a couple of the more recent analyses that try to account for the problem of the distribution, origin and interpretation of DP-internal adjectives, we conclude this section by pointing out, once again, that the interpretational differences of pre- and postnominal adjectives outlined in the previous subsections can only follow from analyses which treat prenominal adjectives as distinct from postnominal ones.

We will not favor any particular analysis of those presented above, leaving the task – but also the pleasure – of the optimal choice to the reader.

6. More on DP-internal phrasal movement

We saw in the preceding discussion that maximal projections such as DP/NP and AP may undergo DP-internal leftward movement. Leftward AP movement is often referred to as predicate-fronting or predicate-raising. Such an approach is in itself in line with the assumed analogy between the nominal projection and its clausal counterpart. Both nominal projections and APs can be fronted in the clause. In this section we offer further illustrations of DP-internal movement of maximal projection (6.1). In section 7 we will discuss another kind of movement, so called snowballing movement, an operation in which a constituent moves to the specifier of a higher projection and then pied-pipes the containing projection in the next cycle of movement.

6.1. D-complementation and Greek polydefinite DPs

Recall that at the beginning of this chapter we already pointed out that in Greek all adjectives are prenominal. In this respect, Greek differs not only from the Romance languages, in which adjectives are mainly postnominal, but also from English, in which adjectives are mainly prenominal but in which a restricted class of adjectives (may) appear postnominally. In this subsection we will see that Greek in fact does have one construction which allows the adjective to appear postnominally.

It is a characteristic of Greek definite DPs that multiple occurrences of the same definite determiner in the noun phrase are possible. This is illustrated in (111), in which both the noun and the adjective that modifies it are accompanied by their own determiner. This phenomenon[53] has been labeled 'Determiner Spreading' (DS) by Androutsopoulou (1996) and the pattern illustrated in (111a) with the order Def.Art+N+Def.Art+Adj is called a 'polydefinite construction' (Kolliakou 1997, 2003, 2004; Campos & Stavrou 2004).[54]

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[53] Notice that although DS in Greek seems to be similar to construct states in Hebrew, Arabic and some instances in Scandinavian, on closer inspection it turns out to be a different phenomenon (see Alexiadou 2003; Giusti 1994, 2002). No doubt, the whole issue of the typology of DS deserves much more study.

[54] Several researchers have examined the phenomenon of DS. See also Androutsopoulou (2001), Alexiadou (in preparation), Alexopoulou & Kolliakou (2002), Ioannidou & Den Dikken (2006), Kariaeva (2004), Leu (2006), Manolessou (2000), Marinis & Panagiotidis (2004), Ntelitheos (2004), Stavrou (1995, 1996).

(111) a. to vivlio *(to) kokino
the book the red
b. *(to) kokino to vivlio
the red the book
'the red book'

Observe that DS is restricted to definite DPs. The ungrammatical (112) shows that neither definite nor indefinite article can be doubled in an indefinite DP.[55]

(112) a. *ena vivlio ena kokino
a book a red
b. *to vivlio ena kokino
the book a red

In the polydefinite construction the determiner is obligatory with the adjective both in pre- and postnominal position. In other words, there are no real postnominal adjectives in Greek; rather, there are postnominal determiner-adjective sequences. This means that the generalization (section 1.2) that modifying adjectives in Greek DPs are exclusively prenominal is not canceled. It is simply the case that the language exploits an additional pattern (Determiner+Adjective) to express what postnominal adjectives in other languages (e.g. Romance languages) do. As we will see below, some striking parallelisms between DS in Greek and postnominal adjectives in the Romance languages can be established.

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[55] Some Germanic languages display doubling of the indefinite article. See, for instance Delsing (1993a) for Norther Norwegian, Julien (2005) for Scandinavian dialects, Penner and Schoenenberger (1995) for Swiss German, Brandner (2006) for Allemanic, Kallulli & Rothmayr (2006) for Bavarian, and Corver & van Koppen (2006) for Dutch dialects. Alexiadou (in preparation) attempts a comparsion of the two phenomena, see also Leu (2006). Note that in the Germanic languages indefiniteness doubling does not uniformly involve adjectives. That is, while certain Scandinavian and Dutch dialects show doubling with adjectives (e.g. of the type *a big a book*), Swiss German and Bavarian, as well as other Dutch dialects show doubling only in the presence of quantificational elements (e.g. of the type *a such a good book*). Though a preliminary investigation in Alexiadou (in preparation) suggests that similarities exist between definiteness and indefiniteness doubling, we do not discuss the latter case in detail here.

Obviously, the phenomenon of DS merits our attention. We will show that, contrary to what has been claimed in traditional grammars, DS is not simply a (stylistic) variant of the non-DS-adjective+noun sequence. Greek DS does have some interpretive impact, which is related to the focus-presupposition distinction: DS implies a clear contrast. (See Kolliakou 1999, 1997, 2004; Campos & Stavrou 2004; Alexiadou 2001b, 2003; for detailed discussion and relevant data.) We will very briefly take a look at these properties of DS in section 6.1.1.

6.1.1. Interpretive differences between a monadic DP and DS

It is argued (Campos & Stavrou 2004) that DPs manifesting determiner spreading are different constructions from DPs with prenominal adjectives (called here for ease of exposition and comparison 'monadic' DPs, after Kolliakou 2004). Kolliakou (2003) and then Alexiadou (2003) and Campos & Stavrou (2004) after her, discuss evidence that conclusively shows that DS has different syntactic, semantic and phonological properties from simple DPs. Here we will mention the main semantic properties that set DS apart from simple DPs. The reader may find data and discussions in the references cited here.

DS is used only when the adjective is interpreted as a restrictive modifier. Moreover, DS conveys the fact the head noun is necessarily backgrounded so that the adjective can be foregrounded. In DS, the article-noun sequence constitutes the context or presupposition and the article+adjective sequence constitutes the focus (or the 'assertion,' cf. Zubizarreta 1998). The overall effect of the construction is one of contrast or selection among the referents of the denotation of the noun which, by not being stressed itself, constitutes the context or a contextually retrievable set. The following data from Campos & Stavrou (2004), forming a dialogue between a person A and a person B, illustrate this (Kolliakou (2003, 2004) was the first to cite these data; see also Campos & Stavrou (2004) for more details on the syntactic differences between monadic and polydefinite DPs).

Consider the following exchange:

(113) A. Ti tha paris tu Petru-to fako i tin pena*?*
which will buy- you the Petro-the torch or the pen

B. Tin pena.
the pen

A Ala pja pena-ti xrisi i tin asimenja?
but which pen -the golden or the silver (one)

B. Nomizo tin asimenja tin pena./ #Nomizo tin asimenja pena.
I think the silver the pen / #I think the silver pen

After the first exchange, the noun is established in the universe of discourse – the speaker and the hearer both know that the present which Petros will receive at some point is a pen (as opposed to a torch or anything else). The referent of *pena* ('pen') is therefore given and conversationally backgrounded. What is foregrounded in the exchange is the kind of pen – silver or golden. So it is the adjective that becomes informationally prominent. Syntactically, this interpretive effect is achieved via the presence of a definite article associated with the adjective. Note that the anomalous second exchange of B (marked as #), becomes acceptable if the adjective bears contrastive stress: *Nomizo tin ASIMENJA pena*. By being stressed, the property the adjective denotes is contrasted to any other property-quality of the pen in question. A polydefinite construction then is an alternative to a simple DP in which the prenominal adjective is contrastively stressed (Kolliakou 1997, 2004).

Adjectives in DS thus encode the distinction between given/new DP-internally. In this function they have been considered as similar to clitic left dislocation constructions (114a) or to clitic doubling constructions (114b) (Anagnostopoulou 1994; Campos & Stavrou 2004):

(114) a. to vivlio to oreo
the book the nice

a.' To vivlio to dhjavasa.
the book it read.1SG-PAST
'The book I read.'

b. to oreo to vivlio
the nice the book

b.' To dhjavasa to vivlio.
It read.1SG-PAST the book
'I read the book.'

In both (114a) and (114b) we observe the same backgrounding effect. In the DP of the non-primed examples, a constituent that would be otherwise stressed (the N, i.e. *to vivlio* ('the book')) is destressed so that another constituent (here adjective *oreo)* receives prominent stress. Similarly in the primed doubling constructions the object DP *to vivlio* ('the book') is destressed and the verb *dhjavasa* ('read)) receives prominent stress. In both

primed examples the doubling construction serves to show that once it has been doubled by the clitic (*to dhjavasa*), the object DP (*to vivlio*) can precede or follow the verb+clitic cluster which represents old information. Similarly, in the polydefinite constructions: the article+adjective sequence may follow (114a) or precede (114b) the noun, which again consitutes old or given information. Like doubled DPs and pronominals, definite nouns modified by an articled adjective cannot be interpreted as novel (Anagnostopoulou 1994); they are D-linked elements.

Furthermore, Alexiadou (2004a) and Campos & Stavrou (2004) note that in the DS construction, adjectives which are potentially ambiguous between an intersective and a non-intersective reading, in DS only get the intersective reading:

(115) a. i orea xoreftria (monadic DP)
the beautiful dancer
i. the dancer who is beautiful
ii. the dancer who dances beautifully

b. i orea i xoreftria (polydefinite DP)
the beautiful the dancer
i. the dancer who is beautiful
ii. *the dancer who dances beautifully

This is a particularly interesting case as it is reminiscent of the ambiguity that a prenominal adjective gives rise to in English, which contrasts with the fact that there is not such an ambiguity in postnominal position (cf. section 2.3).

Another important interpretational effect concerning DS, from which the above facts are derived, is that polydefinites necessarily narrow down the set that constitutes the denotation of the noun. This effect seems to stem directly from the primary function of the adjective in DS as an intersective modifier.[56] The adjective in a polydefinite DP is always interpreted intersectively with regards to the noun it modifies, whereas adjectives in monadic DPs can be either intersective or non-intersective. Consider (116):[57]

(116) a. O dhiefthindis dhilose oti i ikani erevnites
the director declared.3SG that the efficient researchers
tha apolithun. (simple DP)
will fired.3PL.PASS

[56] See also Kolliakou (1995, 1999) and Manolessou (2000).
[57] Example from Kolliakou (1999).

b. O dhiefthindis dhilose oti i ikani i erevnites
the director declared that the efficient the researchers
tha apolithun. (polydefinite)
will fired.3PL.PASS
'The director declared that the efficient researchers will be fired.'

The monadic DP in (116a) is ambiguous between what Kolliakou calls an 'insane reading' and a 'life is tough' reading. In the 'insane' reading, out of the set of researchers, only the efficient researchers will be fired. In the 'life is tough' reading, a set of researchers will be fired and the efficient researchers happen to be part of that larger group that will be fired. (116b), however, is not ambiguous. It only has the 'insane' reading, that is, the reading that out of the set of researchers, only those researchers that are efficient will be fired. This shows that in polydefinite constructions the article+ adjective, by being intersectively interpreted, necessarily restricts or constrains the set denoted by the noun: it is, therefore, a restrictive modifier.

On the basis of the data discussed in the preceding sections, and in the spirit of the discussion in Kolliakou (1997, 1999, 2003), the following generalization holds concerning the type of adjectives that can participate in the DS construction (Alexiadou 2003, in preparation).

(117) DS is restricted to adjectives that permit intersective readings, which can be restrictively interpreted and bear contrastive focus.

6.1.2. Deriving the DS effects

Given that in Greek the definite determiner is not an inflectional affix, but a free-standing morpheme, a purely morphological account which would consider the free-morpheme article as somehow 'prefixed' to the adjective, is ruled out. An alternative syntactic hypothesis could be that additional determiners are inserted derivationally in (111) to meet some syntactic requirement (perhaps along the lines of *of*-insertion, triggered by the Case Filter).[58] However, at first sight we cannot identify a particular principle of grammar that might trigger such a rule of D-insertion.

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[58] An approach along those lines is advocated for determiner doubling in Swiss German in Penner and Schoenenberger (1995). In their case the determiner seems to be required in order to rescue a left-branch extraction violation. We refer the interested reader to their paper for details.

Another alternative analysis might involve applying the 'extended projection' idea (Grimshaw 1991) to adjectives. Since lexical categories generally occur as the complements of an associated functional head, perhaps the extra determiners in the DS constructions could be seen as instances of functional elements within the extended projection of A. This idea is explored by Androutsopoulou (1996). However, the particular proposal does not fit easily with independent proposals concerning the extended projection of APs, according to which the heads involved are those that make up the degree-modifier system (cf. especially Corver 1997). Semantically at least, DS appears at first sight to have little to do with degree modification.

Another way of looking at the structure (Alexiadou & Wilder 1998) is to propose that Greek DS ultimately results from an underlying D-complementation, along the lines sketched above. D-complementation is basically a predicative structure. In the D-complementation analysis A-N orders are derived through predicate (AP) raising and N-A orders are derived by 'head' (DP) raising. The relevant structures are given below:[59]

(118) a. $[_{DP}$ D $[_{CP}$ $[_{IP}$ DP AP]]]
b. $[_{DP}$ D $[_{CP}$ DP_j $[_{IP}$ t_j AP]]] DP-raising
c. $[_{DP}$ D $[_{CP}$ AP_j $[_{IP}$ DP t_j]]] AP-raising

Obviously, APs which cannot be predicative will not be able to enter the predicative structure that is at the basis of D-complementation (118a) and hence will not be input to AP-raising (118c). Given a D-complementation analysis of DS we would expect that only predicative adjectives will be able to modify nouns by D complementation and hence we correctly predict that DS will be restricted to intersective, non-intensional or subsective adjectives; recall (section 2.2.1.) that intersectivity amounts to 'predicate conjunction'.

The D-complementation analysis of DS thus leads to the immediate prediction that adjectives that cannot be used predicatively (in copular sentences, etc.) should not permit DS in attributive use in Greek. This prediction is borne out (119). Recall that we have seen that non-intersective adjectives like *ipotithemenos* ('alleged'), *kirios* ('principal') and the like are not compatible with a predicative use (119) (Manolessou 2000; Alexiadou 2003; Campos & Stavrou 2004):

---

[59] Kayne (2004) makes use of the ingredients of the analysis proposed by Alexiadou & Wilder for Greek DS in his discussion of similar patterns in French:

(i) le livre le plus court
the book the most short

(119) a. i kiria (*i) etia
the main the reason

b. o ipotithemenos (*o) dholofonos dhrapetefse
the alleged (*the) murderer escaped

c. *o monos tu o erotas ine i dhulja tu
the only his the love is the work his

d. *ta {kapja, tria} ta vivlia
the {some, three} the books

(120) a. *I etia tis apoxorisis tu itan kiria.
the reason the-GEN departure-GEN his was principal

b. *O dholofonos itan ipotithemenos.
the murderer was alleged

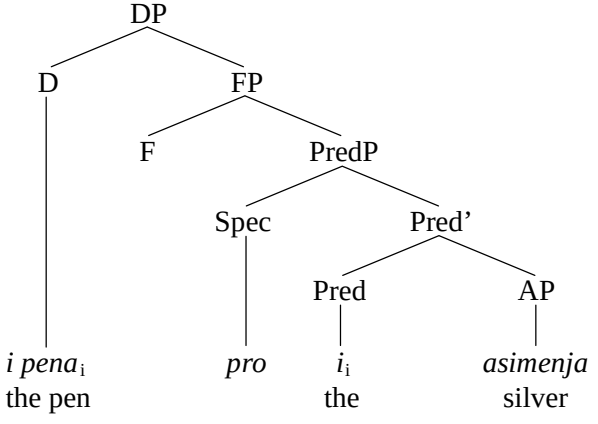
c. *O erotas (aftos) ine monos.
the love (this) is only

d. *Ta vivlia ine {kapja, tria}.
the books are {some, three}

As predicted by the D-complementation analysis, both adjective types are incompatible with DS.

An account similar in spirit, yet quite different in its implementation, is the account in Campos & Stavrou (2004). Echoing Demonte's structure (110a) and in the spirit of Eide & Åfarli (1999), Campos & Stavrou propose the following structure for polydefinites:

(121)



The adjective *asimenja* (‘silver’) originates in a small clause, labeled PredP, whose head hosts the (adjectival) definite article *i* (‘the’). In the spirit of Eidi and Åfarli (1999), this determiner is considered to be the realization of the predication operator, namely the nominal counterpart of the sentential copula, which denotes a function from the property denoted by the adjective to a new function from the pronoun *pro* (referring back to *i pena*) to a proposition (i.e. ‘the pen is silver’). It is therefore anaphorically linked to (and hence, coindexed with) the lexical subject of the predication, which is generated under the D head.

The subject of predication is *pro*, a silent pronoun that is identified and licensed by the head Pred, namely, the definite article, under spec-head agreement. *Pro* retrieves its descriptive content from the noun in D. According to Campos & Stavrou the reason why the subject of predication is merged outside PredP rather than at its specifier is that in fact this specifier position may host not only a ‘silent’ pronominal subject (i.e. pro), but also an overt pronominal, which may be spelled out in Greek as the logophoric pronoun *aftos* (‘this one’).[60] FP is an agreement projection existing independently of the particular construction and accounting for the agreement relationships within the whole DP (see Part II, Chapter 3).

An important fact about DS is that the art+adj sequence can either precede or follow the art+noun sequence. In the structure given in (121) the latter option is illustrated. This is considered to be the basic structure of a polydefinite construction. Campos & Stavrou further assume that the feature [Foc] on the predicative adjective may be checked either via intonation alone or via intonation and movement, in line with general properties of Greek (Tsimpli 1995). The assumption is that movement of the [art+adj] marked as [+Foc] is either to SpecDP or to a FocusPhrase (see Chapter 1 of Part II, section 5.3.). To derive the sequence in which art+adj precedes art+noun one Campos & Stavrou (2004: 163) assume the following derivation, based on the structure in (121):

(122) $[_{FocP}[_{Foc}$ tin asimenja$]_i$ $[_{DP}$ t_i tin pena $[_{FP}$ t_i $[_{PredP}$ pro t_i $[_{AP}$ $t_i]]]]]$
$[_{FocP}[_{Foc}$ the silver$]_i$ $[_{DP}$ t_i the pen $[_{FP}$ t_i $[_{PredP}$ pro t_i $[_{AP}$ $t_i]]]]]$

---

[60] See Campos & Stavrou for evidence that shows that this logophoric pronoun is homophonous but distinct from the demonstrative *aftos* (‘this’) in Greek – both phonologically and syntactically; and similarly in Aromanian, a Romance Balkan language, and in Romanian. See Chapter 1 of Part II (section 4) for details regarding this logophoric demonstrative in Greek.

The presence of pro in SpecPredP should block movement of the AP to SpecFocP. This means that head-movement is the only option for the AP to reach FocP. The adjective moves as a head from A to Pred (picking up the determiner) to F to D (incorporating to the head *i pena* 'the pen') and then it excorporates to Foc. The derivation in (122) predicts that the adjective is a head, a prediction borne out by the facts presented by Campos & Stavrou (2004). The 'double' behavior of the art+adj sequence as a head and as a phrase, in so far as the adjective can be complemented and/or modified only in postnominal position, is reminiscent of the status of clitics as displaying both phrasal (DP) and head behavior (Chomsky 1995). However, a better analysis for the preposed 'definite' adjective which is tentatively proposed here is to consider that the whole PredP is moved to FocP. This analysis means we needn't have recourse to excorporation.

Whatever the correct analysis for the preposed adjective in DS is, such focal movement is not observed in Aromanian, nor in Romanian (Dimitrova-Vulchanova & Giusti 1998). It is also reported in Manolessou (2000) that it was not the case in older stages of Greek either. This could be taken to suggest that in these languages a FocP was/is not available (Campos & Stavrou 2004).

Note that there seems to be an interesting cross-linguistic phenomenon behind Greek DS: DS is very much reminiscent of adjective modification involving the morpheme *de* in Mandarin Chinese (see section 3.4.1). As said there (section 3.4.1.), according to Sproat & Shih, *de*-adjectives are instances of indirect modification, i.e. the adjective modifies the noun indirectly by binding the empty operator in a relative clause, which is coindexed with the (empty) nominal that is relativized. The similarity between DS and *de*-adjectives in Mandarin Chinese, provides good support, on cross-linguistic grounds, to the clausal analysis of the former. Moreover, it is reasonable to assume that indirect modification is a pattern that occurs cross-linguistically to accommodate adjectives interpreted intersectively. In the following subsection we will attest certain parallelisms holding between DS and postnominal adjectives in Romance.

6.2. Greek DS and adjectives in Romance

In the polydefinite construction in Greek a morpheme identical to the definite article licenses the postnominal position of the adjective. The construction gives rise to a uniquely intersective and restrictive interpretation of the combination of a definite article and an adjective. This interpretation is

reminiscent of the kinds of interpretation associated with postnominal adjectives in the Romance languages[61] and also of the restricted set of postnominal adjectives in English. Let us therefore explore the hypothesis that the adjective in the Greek DS construction in fact parallels postnominal adjectives in the Romance languages, a proposal developed in Alexiadou (2001b), and also the (restricted) cases of postnominal adjectives in English. Such a parallelism, if verified, can be shown to have implications for the derivation of the word-order pattern in the Romance DP.

As we have said, strictly intensional, non-intersective adjectives in Romance can only appear prenominally. Examples (61), first given in section 4.2, are repeated here as (123a–d):

(123) a. un mero accidente (*un accidente mero) (Italian)
a mere accident

b. il principale motivo (*il motivo principale)
the main motive

c. l'altra persona (*la persona altra)
the other person

d. l'autre maison (*la maison autre)
the other house

In (118) above we saw that similar adjectives in Greek (intensional, numerals) are not allowed in the polydefinite construction. These adjectives occur only prenominally in a monadic DP. Alexiadou (2001b) argues that this comparative piece of evidence suggests that the polydefinite pattern in Greek seems to match the behavior of postnominal adjectives in the Romance languages (keeping in mind the remark in note 61), and, at the same time, prenominal adjectives in Romance parallel the distribution of adjectives in a simple ('monadic') DP in Greek.

Another relevant observation concerning Romance adjectives, (cf. section 4.2), is that the equivalents of adjectives like *ancient* 'old' and *grand* 'tall' receive two types of interpretation. Recall that the so-called narrow-

[61] Following a suggestion by Guglielmo Cinque (p.c.), the correct generalization to be drawn for the parallelism between DS in Greek and postnominal adjectives in Italian is that DS corresponds exclusively to postnominal adjectives in Italian but that the reverse does not hold; in other words there are postnominal adjectives in Italian that do not correspond to DS in Greek but to prenominal adjectives in simple ('monadic') DPs.

scope interpretation is related to a specific aspect of the meaning of the noun these adjectives modify, rather than to the whole entity. In the wide-scope interpretation, the adjectives modify the referent as a whole. Examples (59), (66) and (68) were given above to illustrate this significant fact of Romance. We can add to those examples the contrast in the interpretation of *grand* in (123e) and (123f).

(123) e. un grand homme
a great man
narrow scope 'great man'

f. un homme grand
a tall man
wide scope 'tall man'

We saw in section 4.2. that when such adjectives in French appear postnominally (123f), they only have the wide scope interpretation, that is when they are postnominal, these adjectives are interpreted as referent-modifying, that is they are predicative and intersective. On the other hand, when prenominal (123e), the adjectives under discussion are interpreted as reference-modifying, hence non-intersectively and non-predicatively.

Interestingly, adjectives associated with DS in Greek parallel postnominal APs in French (and the Romance languages more generally) in their interpretation (cf. examples (115)–(116) above) and, crucially, they never correspond to adjectives which can only be prenominal in the Romance languages (but see note 61). Predictably, then, *palios* ('old'), a rough analogy of the French adjective *ancien*, will only be associated with the wide scope reading in DS. This is shown in (124):

(124) a. i eklisia i palia
the church the old (old, *former)

If prenominal in a simple/monadic DP the adjective *palia* ('old') gives rise to the expected ambiguity between a narrow and a wide-scope reading:

(124) b. Na i palia eklisia!
here is the old church (old, not well preserved, and also former)

Finally, we add that the postnominal position in the Romance languages gives rise to a contrastive reading in much the same way that DS in Greek leads to contrastive readings, as we saw above (though in Italian this seems

to hold in a more relaxed way). This follows simply from the restrictive (also extensional, intersective) reading postnominal adjectives usually get. In (125a) the adjective establishes a contrast between stones that are precious and stones that are not precious. But in (125b) it merely provides a characterization for/type of stones without implying any contrast (unless contrastively stressed):

(125) a. i pietre preziose (Italian)
the stones precious
b. i preziosi pietre
the precious stones

The fact that, together with the noun, the adjective in (125b) may be said to form a syntactic compound denoting a unitary concept, a kind-term, is due, as we pointed out above (for instance in 4.2.1), to the fact that the adjective here targets the characteristic function of N, creating with it a complex property. In section 8 we will come back to this reading when we discuss Bouchard's (2002) account of pre- and postnominal adjectives.

We saw that postnominal adjectives in the Romance languages (and in English, for that matter) and adjectives in polydefinite DPs are interpreted in a parallel fashion. We also mentioned that adjectives in polydefinite DPs are different from their prenominal counterparts in monadic DPs. Now, by combining these two points, we obtain additional, independent motivation for our previous conclusion that the pre- and the postnominal positions should be kept apart.

The similarity in interpretation of postnominal adjectives in the Romance languages (and in English) and of Greek DS adjectives further justifies a unified derivation on the basis of D-complementation, or, in general, of a postnominal (predicative) structure. In the preceding sections we showed that adjectives which must be prenominal in the Romance languages resist DS in Greek. This suggests that their prenominal position is not derived by predicate fronting. On the other hand, as a rule, postnominal adjectives in Romance are compatible with the D-complementation analysis.

As a general conclusion to sections 5 and 6, we can say that, cross-linguistically, it seems to be the case that the essential difference between adjectives that modify the noun intersectively/predicatively, and those that do so subsectively/intensionally is expressible in the various languages through a number of ways. For example, this difference is encoded by the relative order A-N / N-A (English, French), or by exploiting the existence of clausal structures (Mandarin Chinese, Greek for DS) for the former type

of modification. Crucially for our general discussion, we conclude that modification of a noun by an adjective is not a unitary phenomenon but that various patterns seem to emerge.

Below we will survey two more recent accounts of adjective-noun meaning contrasts The first (section 7) makes extensive use of a re-interpretation of phrasal movement. The second (section 8) relies on the different ways the semantic category of Number is encoded in the various languages.

7. Snowballing movement

7.1. Noun-initial DPs and the directionality parameter

So far we have mainly dealt with languages in which the determiner precedes the noun. There are languages, though, in which the determiner is the final element of the DP, and some of these display a linearization in the DP which is markedly different from the linear orders we have looked at so far. Gungbe and Fongbe, two African languages, are a case in point (Aboh 1998). Consider the patterns in (126):

(126) a. távò lò
table the
'the table'

b. távò xóxó ló
table big the
'the big table'

c. távò xóxó dàxó ló
table old big the
'the big old table'

d. távò xóxó dàxó éhè ló
table old big this the
'this big old table'

e. távò xóxó dàxó éhè ló lɛ
table old big this the-PLURAL
'these big old tables'

In Gungbe, the head N *távò* ('table') is the initial constituent of the NP and the determiner *ló* occurs towards the right periphery of the NPs in (126). The determiner is not necessarily the final element. In the plural, the determiner *ó* is followed by the plural marker *lɛ*. The order of the Gungbe con-

stituents in (126) is the mirror image of their order in English, as can be seen when we compare the Gungbe examples with their English translations. The Fongbe data are very much parallel to those in Gungbe (data from Brousseau and Lumsden 1992).

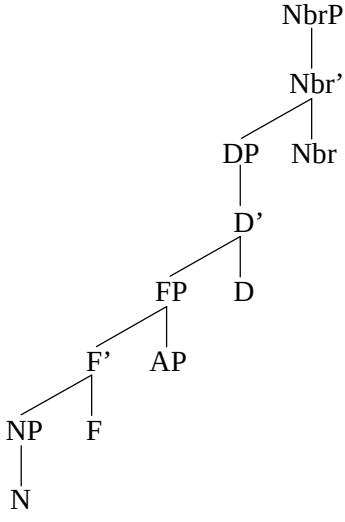
(127) a. dìdè dàgbé ó
sketch good the

b. dìdè dàgbé ó lɛ
sketch good the-PLURAL

Brousseau and Lumsden (1992) propose that the linear order in the Fongbe DP and its difference from English or French be derived by postulating parametric variation in the directionality of the projection. The idea is that there is a fundamental cross-linguistic difference with respect to the linear order of the head and the other constituents of the projection (specifier and complement). See section 8 below for a similar idea argued for by Bouchard.

Based on the linear ordering of the constituents, one might propose a structure as that in (128), where the plural morpheme heads a projection NbrP which dominates DP. The AP is generated as the specifier of a functional projection (FP):

(128)



Brousseau and Lumsden propose that Fongbe is consistently left-branching and that complements precede heads, while specifiers follow the head. In terms of the linear order, a constituent which takes scope over another con-

stituent and which will be higher than that constituent, will therefore follow it. If the plural marker *lɛ* is an instantiation of the projection NumP (which we discussed in Chapter 3 of Part II), then it would in fact be more plausible to assume that NbrP/NumP is dominated by DP. This is also what Lumsden and Brousseau end up proposing on the basis of additional evidence:

(129) a. [[[[noun $_{NP}$] adjective $_{FP}$] lɛ $_{NumP}$] ò $_{DP}$]

To derive the surface order (129b), in which *lɛ* follows *ò*, Brousseau and Lumsden propose that Num undergoes head movement and right-adjoins to *ò*, leading to the sequence determiner-Number. In a consistently head-final language, adjunction would correctly be taken to be to the right

(129) b. [[[[noun $_{NP}$] adjective $_{FP}$] t $_{NumP}$] ò lɛ $_{DP}$]

Though this analysis is descriptively adequate, and internally consistent, it becomes problematic in general theoretical terms and in particular in terms of the antisymmetric hypothesis (Kayne 1994) that there is a universal base order in which heads consistently precede complements, in which specifiers consistently precede heads, and in which all movement is leftward. Such an approach does not allow for the directionality parameter to distinguish head-complement languages from complement-head languages. All word-order variations must be derived by leftward movement.

7.2. Antisymmetry and mirror image word order in the DP

Dealing essentially with Gungbe data, which are very similar to the Fongbe data discussed above, Aboh (1998) proposes an analysis along antisymmetric lines. He also adopts Cinque's spec analysis: adjectives are specifiers of specialized projections (FP in (130)) (see also Cinque 1994, 1999, 2005 and section 4.3.). Aboh proposes that the underlying structure of the Gungbe DP is no different from its English or French counterparts. He adopts the same hierarchy as Brousseau and Lumsden (130a) but assumes a head-initial structure (130b).

(130) a. [[[[noun $_{NP}$] adjective $_{FP}$] lɛ $_{NumP}$] ò $_{DP}$]
b. [$_{DP}$ ò [$_{numP}$ lɛ [$_{FP}$ adjective [$_{NP}$ noun]]]]

To derive the surface orders in the nominal projection, Aboh proposes a derivation that is very similar to that elaborated in independent work by

Pearson for the Malagasy clause (Pearson 2000). The N-initial order is derived by leftward movement of maximal projections. NP first moves to the right of the AP, to the specifier position of a functional projection, say FP1. NP moves further up and pied-pipes the containing constituent. Hence FP1 as a whole moves up to the specifier of DP, via the specifier of NumP.

(131) a. $[_{DP}$ ò $[_{NumP}$ lɛ $[_{FP1}$ $[_{NP}$ noun] $[_{FP}$ adjective $[_{NP}$ t]]]]]
b. $[_{DP}$ ò $[_{NumP}$ $[_{FP1}$ $[_{NP}$ noun] $[_{FP}$ adjective $[_{NP}$ t]]] lɛ $[_{FP1}$ t]]]
c. $[_{DP}$ $[_{FP1}$ $[_{NPj}$ noun] $[_{FP}$ adjective $[_{NP}$ t_j]]] $[_{Det}$ ò] $[_{NumP}$ t_i lɛ $[_{FP1}$ t_i]]]

This type of movement has been described as 'snowballing' movement.[62] It is clear where the name 'snowballing' movement comes from: phrasal movement entails pied-piping of all the material it has collected along the derivation; the effect is "of a snowball gathering weight and size as it 'rolls' to its target" (Shlonsky 2004: 1483).

In Gungbe, snowballing is restricted to the adjectival domain and does not apply to NumP. The data in (132/133) show the output of snowballing in a larger DP: compare the word order in the English DP in (132a) and (132b) to their Gungbe counterparts in (133):

(132) a. these three big dogs
b. the nice black dog

(133) a. àvun dàxó àtón éhé ló lɛ
dog big three this the PLURAL
b. àvun yù dàgbèdàgbè àtón ló lɛ
dog black nice three the PLURAL

Let us observe that, while in keeping with antisymmetric guidelines, Aboh's analysis does not use the D-complementation approach to derive adjectival positions. For an analysis of the Romance adjective-noun patterns using the snowballing movement see further Laenzlinger (2000, 2005) for French and also Cinque (2005) for a radical 'antisymmetrical' approach to the problem of adjective placement with emphasis on the operation of leftwards NP movement.

Another antisymmetric approach to adjectival order which is inspired by Aboh's analysis in terms of snowballing movement is that elaborated by

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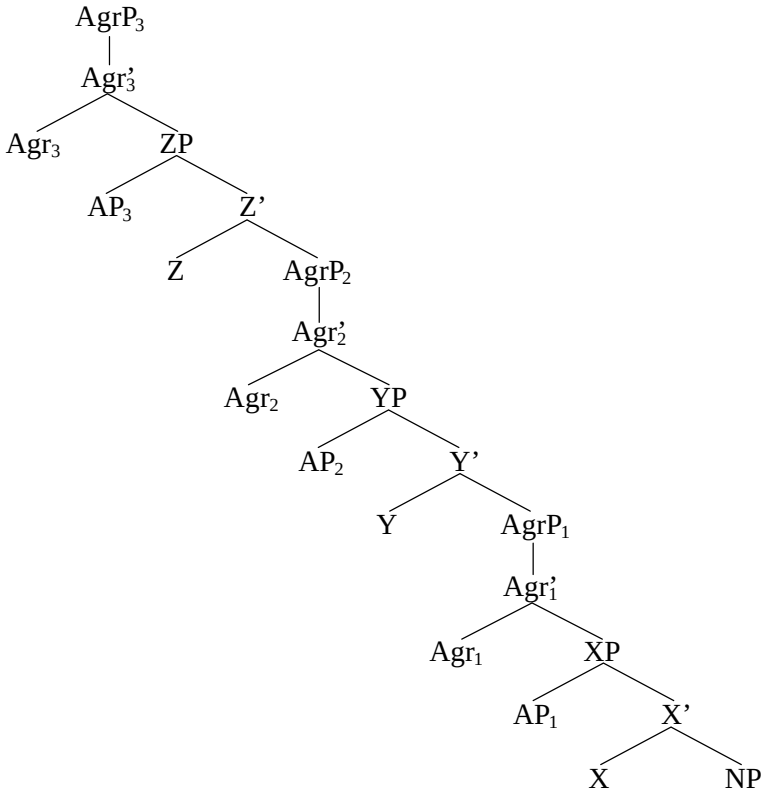
[62] The term is originally due to Chris Collins (Enoch Aboh, pc). For general discussion of snowballing movement see also Travis (2006).

Shlonsky (2004) for Hebrew. Shlonsky (2004) extensively discusses Hebrew data in which all adjectives as a rule follow the noun. Moreover, the order of the adjectives in Hebrew is the reverse order that occurs in English. Shlonsky presents arguments against the mechanism of N-movement as a means to derive the adjective ordering in Hebrew. Instead he adopts the mechanism of snowballing or roll-up phrasal movement.

According to this type of movement, a projection first moves to the specifier of a higher domain and then, in the next cycle, the projection moves on and pied-pipes the containing domain. The analysis is like that proposed by Aboh (1998). The effect of 'snowballing' movement is again that the order of constituents is inverted. As an illustration consider the following diagram adapted slightly from Shlonsky (2004: 1483):

(134)



The derivation proceeds as follows: first NP is merged and a head X is merged projecting XP. AP is merged in the spec of XP. Shlonsky assumes that (like all the projections that host APs) the projection XP is a functional

projection that carries the semantic features of the hosted adjective (Cinque 1994) plus *phi* features. Subsequently, a head is merged above XP. This is an agreement projection that ensures the agreement between the adjective and the noun. X moves to Agr1 while NP moves to the spec of this Agreement Phrase. In the same fashion, the merger of every adjective is followed by movement of the entire phrase under the AP to a higher specifier position. In other words, on its way to SpecAgr1 the NP collects the lowest adjective; on its way to SpecAgr2 it collects the adjective hosted in YP. And when it moves to SpecAgr3 it pied pipes all three adjectives. At the end of the derivation the order will be:

(135) a. N AP_1 AP_2 AP_3

Notice that if N had cyclically moved as a head (or as a phrase from spec to spec but without pied piping of the material on its right) the order would have been as in (135b), that is the mirror image of (135a).

(135) b. N AP_3 AP_2 AP_1

As Shlonsky (2004) points out:

> If As are in left specifier positions the only way to derive the inverse order of postnominal APs is by raising NP to a specifier preceding XP which harbors the lowest AP, merging next the following AP in the next specifier up and then snowballing upwards the entire phrase below the merged adjective.
>
> (Shlonsky 2004: 1487)

Let us illustrate Shlonsky's proposal by means of examples from Hebrew. We must bear in mind that all modifying adjectives are strictly postnominal in Hebrew and that moreover the order of adjectives is the mirror image of that manifested in English.

Consider now the following case:

(136) a. the old round hat (Age<Shape)

b. *ha-kova ha-yašan ha'-agol (Hebrew)
the-hat the-old the-round

c. ha-kova ha'-agol ha-yašan (Shape<Age)
the-hat the-round the-old

The claim is that rather than hypothesizing a parameterized basic order (in terms of both head-specifier/specifier-head and also of functional categories hosting various types of adjectives), there is a universal ordering and any

disturbances of this universal order are obtained through leftward phrasal movement crucially involving pied-piping. So *ha-kova* ('the old') moves upwards from spec-to-spec but dragging along, as it were, the adjectives that it meets on its path.

8. 'Separationism'

The accounts discussed in the preceding sections are not reductionist at heart, though they do assume some derivational relation between different adjectival positions. In this section we turn to a radical separationist account of pre- and postnominal adjective positions.

Bouchard's analysis (1998, 2002), as well as its further implementation by Dimitrova-Vulchanova (2003), reflects the hypothesis that pre and postnominal adjectives ARE quite different entities.

Bouchard starts from two fundamental points. The first is the observation of the strong dependency of semantic relations on linear order, which has to do with properties of the sensoric motor system. The temporal relation 'order' provides a perceptual form to a semantic relation. The use of ADJ-N vs. N-ADJ affects the semantic relation expressed. For Bouchard, the orders ADJ-N and N-ADJ have a theoretical status: they are meaningful entities.

The second hypothesis concerns the crucial involvement of number in regulating the order adjective-noun cross-linguistically. The interplay between order and number can explain cross-linguistic asymmetries. Number has different realizations across languages: it may be morphologically marked on D, on N, as a separate morpheme, etc. It is argued that in French number is encoded on Det (also Lamarche 1991) (e.g. *le, la, les*), whereas in English it is encoded on N (*cat-cats, woman-women*), the article *the* remaining invariable as for number.

Bouchard uses the terms 'functor' (equivalent to 'head') and 'dependent' to refer to the two elements involved in modification, noun and adjective respectively. *Linearization* is a natural means to indicate which of an element A and an element B is the functor (head) in the semantic combination. Bouchard supposes that the following Linearization Parameter is at work:

(137) a. *Linearization Parameter*
The functor precedes or follows its dependent. (Bouchard 2002: 60)

French (and English) set the parameter as in (137b):

(137) b. In French, the functor category precedes its dependent.
(Bouchard 2002: 61)

Recall from section 2.3.1 that semantically a common noun is a network of the interacting components that make up its sense; these components are the subfunctions of N. The network of these subfunctions is unified into a lexical item, which functions as a whole with respect to all syntactic operations and relations – e.g. selection, Merge. Bouchard highlights the following crucial point in his approach:

> When an N acts as a functor category and merges syntactically with some modifier, it does so as a fully specified set of descriptive features which are closed off, and this functor category gets modified as a whole. (…) Thus the parameter in (137b) directly determines the order between an ADJ and a N in French when the set determined by the ADJ narrows down the main set determined by all the subfunctions of the N. (Bouchard 2002: 61)

We saw in the preceding discussion that postnominal adjectives are interpreted intersectively with the N and that this effect holds probably cross-linguistically. This relation of set intersection (see section 2.2 above) is part of this picture. Under this interpretation the N is fully specified and is modified by the adjective as a whole. "This whole-to-whole relation is isomorphic with the relation between the two forms being combined, therefore the head N must precede the dependent ADJ according to (our – *A-H-S*) [137b]" (Bouchard 2002: 61).

If an adjective targets not the whole N "as a full closed-off functor category" (Bouchard 2002: 63) but just some subparts of it, then N follows ADJ. This is the case, as we have also seen, with intensional non-intersective adjectives as well as with evaluative adjectives that modify some element of N (as in *good wife*, *good painter*). If there is a relation between a modifier and a subpart of N, (137b) cannot hold, because (137b) signals a relation between a head N and a dependent, but now the relation is different from that between a functor N and a dependent adjective. In this case (137b) applies in an Elsewhere fashion: the relation between a subpart of N and an adjective must be encoded by a different ordering – and there is only one other possible order – namely ADJ+N. So when we have an order different from N+ADJ in French, we know that the adjective modifies a subpart of N. Quoting Bouchard (2002: 64):

> More generally, the Elsewhere application of (137b) predicts that any element that holds a homomorphic relation of whole-to-part(s) rather than whole-to-whole should appear in pre-head position.

For Bouchard, all adjectives are intersective. But whereas there are adjectives that intersect with the whole of N (traditional intersectives), there are

others that intersect with just a subpart of N (intensional/ subsective), so they combine with just this subpart, and others that intersect and thus combine with either the subpart or the whole of N.[63] Bouchard assumes that this varied flexibility of adjectives does not imply different types of adjectives but constitutes a lexical characteristic of each adjective. Cf.: "the fact that the semantics of a certain ADJ is applicable to the time interval *i* of N, for example, is on a par with the fact that the semantics of some ADJs is compatible with an N such as *person*, others with *table*, others again with *idea*" (2002: 65).

To account for the difference between French and English, which share the setting in (137b), as far as the position of adjectives is concerned, Bouchard makes the following crucial assumptions: a bare (i.e. complementless) adjective must be in the scope of number in the nominal projection. Number is the means to atomize a set and provide access to individuals – in other words, it determines the extension of the nominal expression, which thus can function as an argument (see Chapter 2 of Part II). Bare adjectives are part of what determines the extension of the nominal expression, therefore such adjectives must be in the scope of number (Bouchard 2002: 171–173). Complemented adjectives must not be in the scope of number.

Bouchard, in the spirit of Lamarche (1991), assumes that number in French, being realized on the determiner, i.e. on a separate head, has wider scope than in English,[64] thus allowing for adjectives to appear on the right of the noun in the former but not in the latter. He further compares the class of *celui* nominals in French with common nouns in English and shows that both types of nominals do not allow for postnominal complementless adjectives (except for the cases of past participles – see section 2.3). Cf. (138)–(139) (from Bouchard: 174):

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[63] In such an approach, we can explain why adjectives like *good*, *happy* etc. – i.e. subsective ones – which are always construed according to some understood noun and are not construed absolutely, can still be used predicatively. If in any case what we get is conjunction of properties (either a whole network or some of them), then it is only expected that the relevant adjective can be used with a copulative verb, given that in such cases what is involved is predicate conjunction (see 2.2).

[64] This is due, according to Lamarche, to Number being on the N as inflection; being a word-final morphological head, it can have scope over elements to its left.

(138) a. *Celui fier regardait Paul.
b. *The one proud looked at Paul.
a'. Celui fier de son fils regardait Paul.
b'. The one proud of his son looked at Paul.

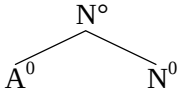
(139) a. Ceux présents auront droit à un rabais.
b. Those present will have the right to a rebate.

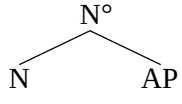
Therefore in the two languages these nominals must share some common property. Both are atomized elements – argument-like elements; this is due to the number marking both types bear. And this is what allows both to take postnominal complemented adjectives.[65]

Since number in English is on N, a bare postnominal adjective cannot modify the N alone (as is the case in French and as would be expected given what we have said so far), so inevitably it modifies the atomized N+number. As a result, only a special kind of adjectives can appear in this position in English – those with the appropriate semantics that enables them to modify an element with the semantics of an atomized N, namely stage-level ones (Bouchard 2002).

Summarizing, French and English differ in the extent they allow for postnominal adjectives, because postnominal adjectives do not modify the same entity in the two languages. Because of the different realization of the category number, in French on D, in English on N itself (*cat-cats, woman-women*), the postnominal adjective in the former modifies N, but in English it modifies N+Num. With this cluster, only a limited subclass of adjectives are compatible: certain stage-level ones and adjectives bearing a complement.

In an earlier discussion which was also cast in a genuine separationist track, Lamarche (1991) argues for a head vs. phrase distinction for French adjectives. Prenominal adjectives are zero-level entities and together with the noun they form an N^0. Postnominal adjectives are maximal projections and come out as daughters of N'. (140), from Lamarche (1991: 227), illustrates the difference:

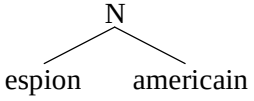
(140) a. 

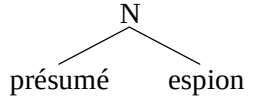
b. 

[65] Bouchard assumes that complemented and stage-level adjectives that appear postnominally in English have an open (argumental) position which can be saturated by the noun in English and by *celui* in French, because these nominals are argument-like, bearing number markings.

For (140b), Lamarche assumes that the lexical features of the adjective combine with those of N – thus giving rise to a wide scope reading ('old church'). In (140a) the adjective modifies the internal structure of N the A+N sequence being interpreted as a unit. This gives rise to the narrow-scope reading ('former church') (see also Sadler & Arnold 1994).

Bouchard claims that the syntactic impact of the pre-/postnominal adjective in French is minimal, as the syntactic structures involved in the two cases are not distinguished by different bar levels or by different types of syntactic combinations. Bouchard gives the following trees for *espion américain* ('American spy') and *présumé espion* ('alleged spy'):

(140) c. 

d. 

The Linearization Parameter and the setting in (137b) are at work here interpreting the specific combinations along the lines described above.

We next turn to how we can combine the various approaches and traits outlined so far with the facts provided by our cross-linguistic data.

9. Tying together the lines of inquiry

We are now in a position to try to bring together the observations and assumptions we have been discussing so far by proposing specific ways of accounting for the distribution and interpretation of DP-internal adjectives, in particular for the prenominal and the postnominal positions.

In all of the preceding discussion we have presented and reviewed evidence that quite convincingly argues against a 'unified' approach to pre-and postnominal adjectives (in the Romance languages). Similar conclusions can be drawn from the analysis of adjective distribution in English, where the postnominal occurrence of adjectives is much more restricted and confined to well delimited cases.

In this subsection, we propose specific syntactic ways for approaching post- and prenominal adjectives. The core idea is that postnominal adjectives are in one way or another related to a clausal/predicative structure. This structure is responsible for their interpretation as intersective restrictive modifiers, denoting a stage-level property of the referent of the noun they modify, commonly associated with some contrastive reading and stress. Prenominal adjectives on the other hand are mostly modifiers of the

sense of the noun (as opposed to the referent), attributive, non-intersective (intensional) and usually encode the speaker's judgment or evaluation. It can hence be proposed that prenominal adjectives in the Romance languages and their English and Greek analogies are related with functional projections intervening between DP and NP.

9.1. A mixed approach to pre-and postnominal adjectives

In our preceding discussion we mentioned recent proposals according to which some prenominal adjectival modifiers are analysed as heads taking (extended) NP (or NumP)-complements, others are maximal projections adjoined to NumP or to NP,[66] and others still are found in a specifier position (usually of functional categories). We also mentioned analyses whereby some APs are base-generated prenominally and others are moved there from a postnominal position. Assuming that the head analysis implies base generation, combining these two proposals leads to adjectival modification falling into three types: (i) base-generated heads, (ii) base-generated XPs, (iii) fronted XPs.

On the basis of the discussion above, a syntactic account reflecting the distinction between non-intersective (subsective and intensional) adjectives and intersective adjectives seems warranted. We are hence led to adopt some kind of mixed analysis, i.e. an analysis that employs different means to account for prenominal adjectives and for postnominal adjectives. In general lines, we assume that those adjectives whose analogies are licit in the Greek DS construction have a predicative source. For instance, many Romance postnominal adjectives are candidates for this analysis (141).

(141) $[_{DP}$ el $[_{CP}$ $[_{DP}$ chico $]_j$ C° $[_{IP}$ t $_j$ … $[_{AP}$ pobre]]]]

Similarly, the English analogies of those Greek adjectives that enter into the DS construction could also have such a postnominal source.[67] They would be moved to their prenominal position by predicate raising.[68]

On the other hand, for the reasons discussed above, non-intersective (subsective and intensional) adjectives should not be derived from an under-

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[66] For instance, Bernstein (1993) advances this particular position.

[67] Cf. Larson's analysis discussed in section 5.2.

[68] Of course, the small subset of postnominal adjectives in English need not be affected by predicate-raising.

lying predicative structure. Such adjectives are obligatorily prenominal in the Romance languages and resist DS in Greek. It is proposed that such adjectives are related with functional projections intervening between DP and NP, as in (142) (as also proposed by Demonte (see 5.3)):[69]

(142) $[_{DP}$ D° $[_{FP}[_{AP}$ pobre] $[_{NP}$ chico]]]

Details aside, (142) seems to be an accurate representation for other types of prenominal adjectives in Romance too. Two arguments could be put forward for generalizing (142) to all prenominal adjectives: (i) French prenominal adjectives always trigger *liaison* (143a) (see Valois 1991a). *Liaison* is optional when the adjective occurs postnominally (143b) (Lamarche 1991).[70]

(143) a. les frequentes ([z]) invasions de Jupiter (liaison)
the frequent invasions of jupiter

b. les voitures americaines
the cars american

[yrza]	liaison
[yra]	no liaison

(ii) A second argument might be that in French, prenominal adjectives can never be accompanied by a complement:

(144) a. l'invasion improbable aux yeux des Terriens de Jupiter
the invasion improbable to the eyes of the Earthlings of Jupiter

b. *l'improbable aux yeux des Terriens de Jupiter invasion

However, it is not clear that the second argument is conclusive evidence for a head analysis of prenominal adjectives. If not having a complement leads us to postulate a head analysis, all prenominal English adjectives would have to be derived by the head analysis. This would mean that they could not have a predicative source, contrary to what we have just proposed. Moreover, in languages such as Greek and German, prenominal adjectives do appear with their complements. This was shown in (92a), repeated here as (145):

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[69] Note that Cinque (2005) assumes a mixed analysis as well, according to which some adjectives are DP-internal specifiers, while others are reduced relative clauses.

[70] Lamarche (1991) also attributes the difference to a structural difference.

(145) a. i [periphani ja to jo tis] mitera (Greek)
the proud for the son her mother

b. die [auf ihren Sohn stolze] Mutter (German)
the on her son proud mother

For these cases we will continue to assume that the prenominal position of the AP is derived from the underlying structure (146a) via predicate fronting of the adjective, as in (103)–(104) above (see Fanselow 1986). (146) provides the relevant representations:

(146) a. $[_{DP}\ [_{CP}\ [_{AP}$ Adj+compl $]_j$ C° $[_{IP}$ DP t_j …]]]

b. $[_{DP}$ i $[_{CP}\ [_{AP}$ periphani ja to jo tis $]_j$ C° $[_{IP}$ mitera t_j …]]] (Greek)
the proud for the son her mother

c. $[_{DP}$ die $[_{CP}\ [_{AP}$ auf ihren Sohn stolze $]_j$ C° $[_{IP}$ Mutter t_j …]]]
the on her son proud mother (German)

Summarizing, the preceding discussion leads to a mixed analysis in which postnominal adjectives are derived as predicates of reduced relatives. Prenominal adjectives, on the other hand, may have two sources. They may be derived by predicate fronting of the predicates of the reduced relatives. This applies to prenominal adjectives in English whose Romance counterparts are postnominal. Or they are base generated – as heads or maximal projections – in prenominal position. This analysis applies to prenominal adjectives in Romance as well as to their English and Greek analogies. At this point we remain neutral as to whether intensional adjectives should be heads taking NP or NumP as their complement, as argued by Bernstein (1993).

9.2. A note on classifying adjectives (see also section 3.3.)

The case of postnominal classifying adjectives in the Romance languages, as discussed in sections 3.3 and 4.2, merits special mention. As shown by the data in (62)–(63) these adjectives cannot be derived from a predicative source. Still they are systematically postnominal in the Romance languages.

Though we do not have an analysis to offer for such adjectives, it is likely that they will have to be derived from a non-predicative source. But do we also need a mixed account for (postnominal) classifying adjectives? As we said above, classifying adjectives are non-intersective. But their non-

intersectivity appears to weaken the claim that we have been making so far, namely that postnominal adjectives are always and universally intersective (and therefore referent-modifying and restrictive). As we also mentioned above (section 4.2), the hypothesis of N-movement can provide a straightforward solution to the problem of the (exclusively) postnominal position of these adjectives. However, given that here we do not favor N-movement, primarily for lack of independent motivation, as we explained under 4.3 and 4.4, we must think of a different kind of approach to the syntax of these adjectives. At this point, we can only offer some indications of potential analyses.

Bouchard's analysis can straightforwardly account for the postnominal occurrence of classifying adjectives in the Romance languages: they assign concrete properties to the intended referents – i.e. to individuals/entities in a set determined by the whole network of components of N. As we said above (3.3), the semantics of these adjectives relate two entities, a fact that explains, among other things, why they don't get a degree reading (147a) and can only be conjoined with adjectives of the same class but not with other adjectives/adjective types (147b).[71]

(147) a. *Ce pays a un traffic extrêmement ferroviaire.
this country has a traffic extremely rail (from Bouchard 2002: 102)

b. #un directeur commercial et aimable
a commercial and friendly director (from Bouchard 2002: 102)

Bartning (1976) shows, however, that certain (sub)classes of relational adjectives can be used predicatively in the Romance languages too: [72]

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[71] Interestingly, there are (relatively rare) cases where these adjectives occur prenominally:

(i) Je dessinais d'épileptiques bonhommes que j'enluminais férocement.
I drew epileptic figures that I colored ferociously. (Bouchard: 101)

However, in these cases the adjective is not classifying but takes on a figurative meaning, related not to the whole denotatum but to some aspects of the sense of the noun. In (i) 'bonhomme' is not epileptic but looks like an epileptic, is crooked, clumsy (Bouchard 2002: 101).

[72] Levi (1973) also lists several such cases:

(i) a. nervous system
b. *The system is nervous.

(ii) a. nervous manner
b. His manner is nervous.

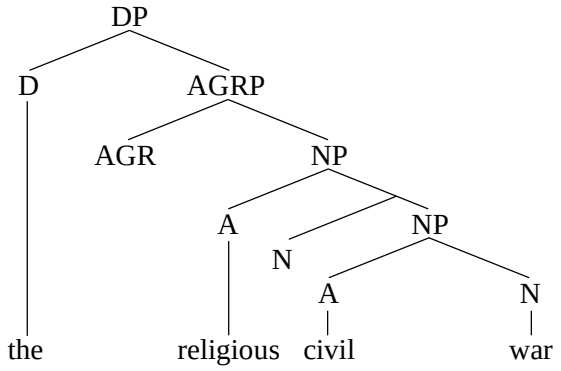
(148) a. Les réunions de lundi sont syndicales.
the meetings of Monday are of the syndicates
b. Ce problème est agricole.[73]
this problem is agricultural

Bartning proposes a highly articulated system of subtypes of classifying adjectives, in which the adjective and the noun establish a different semantic relationship depending on a number of factors, the crucial ones being the nature of the noun (eventive/non-eventive) and the (thematic) role of the adjective (path, location, instrument, etc.). Bartning's central hypothesis is that there is a correlation between the possibility of a predicative relationship between the noun and the adjective and the presence/absence of a grammatical (i.e. thematic) relationship between them. If the adjective receives a theta role (external or internal) from the noun, it cannot participate in a predicative clause. If it does not, it can function as a predicate next to the copula. To a large extent echoing Levi (1973), Bartning takes these adjectives at a 'deep' semantic level to originate in abstract sentential schemata containing abstract predicates/operators (BE, HAVE, MAKE, CONCERN, LOC) according to the exact semantic relationship with the noun. In relation to the discussion in the present chapter, this view can be taken as being in line with the view of postnominal adjectives (in the Romance languages) being related to a clausal structure.

In an account of postnominal adjectives in Spanish noun phrases Bosque and Picallo (1996) take all relational adjectives (including classifying adjectives) to be specifiers of the lexical NP projection. Crucially for these authors, the NP is a layered projection, projecting as many layers as there are (relational) adjectives to be hosted. The proposed structure is as in (149) and it is the structure that underlies a noun phrase such as *religious civil war*:

[73] The contrastive role of the adjective in examples like (148b) plays a crucial role too: a problem concerning agriculture is here contrasted to other problems that may concern education, transport, etc.

(149)



(tree simplified from Bosque & Picallo 1996)

The lowest NP is the one that is lexically realized; NP that dominates it has an empty N head. Bosque & Picallo presuppose that N moves past all relational/classifying adjectives to a higher functional projection.

Ralli & Stavrou (1997) assume a similar structure for relational/classifying adjectives, in which, due to their minimal character (they are uncomplemented and unmodified), they constitute zero heads merged with the NP. For Greek (and apparently for English too) a structure such as (149) holds independently of whether or not N-movement is also presupposed. Ralli & Stavrou further assume that in a structure like (149) with classifying adjectives, the modified noun is also a zero category, because it too appears without a complement and is unmodified. The net result is that the combination of a classifying adjective and a (bare) noun constitutes a unit externally identical to a compound consisting of an A and a N. Ralli & Stavrou argue that such (classifying) A and N clusters are in effect compounds created in the syntax – labeled for this reason syntactic (or two-word) compounds.

The issue of the syntax and semantics of classifying adjectives calls for a future thorough study.

10. Summary

In this chapter we have discussed some aspects of the syntax of DP-internal APs, in particular their pre- and postnominal position. We discussed cross-linguistic data that point to semantic differences between the two positions. We reviewed older accounts that aimed at relating the two positions, but also recent ones that argue in favor of their dissociation. On the basis of the

argumentation provided we have opted for a mixed approach whereby certain adjective classes are derived through a clausal structure, whereas others are merged directly in the functional domain of the DP.

A question that remains open is why various languages have to resort to different means (order, excessive articles, morphology) in order to encode different interpretations of adjective-noun combinations. Or, more generally, for that matter, why do interpretational differences arise in the first place? It seems that one should look for some deeper, underlying, principle which could unify the cross-linguistic asymmetries, or which regulates these differences. Cinque's (1994, 2005) work, grounded in the general antisymmetry framework, has opened up a new line of research, and Bouchard's (2002) analysis based on the cross-linguistic differences in the expression of the semantic concept of number also offers a new solid base for further explorations in the field of adjectival modification.

Chapter 2

Semi-functional categories: The *N-of-N* construction and the *Pseudo-Partitive* construction

1. Introduction: the data

The discussion in this chapter will focus on the properties of two interrelated constructions which have received a fair amount of attention over the last twenty-five years and have been syntactically accounted for within various versions of the generative paradigm. The constructions to be discussed in this chapter, illustrated in (1) below, have been labeled 'Pseudopartitive' constructions (abbreviated here as *PsP*) – (1a) – and the 'N-of-a N' (abbreviated as *NoN*) construction – (1b).

(1) a. a [$_{N1}$ glass] of [$_{N2}$water]
b. that [$_{N1}$ idiot] of a [$_{N2}$ doctor]

The theoretical implications of the presentation of the properties of the Pseudopartitive construction will once again bear on the question to what extent the DP structure can be aligned with clause structure. In particular, the theoretical issue boils down to the specific question to what extent DP-internal predicational (or predicative) relations should be syntactically represented.

The exploration of this question also brings into the discussion a theoretical issue which occupies a distinguished position in the most recent literature. It is a standard assumption that an opposition exists between functional heads and lexical heads (see Introduction to this book, section 2.3). However, as van Riemsdijk has shown (see van Riemsdijk 1998, Corver and van Riemsdijk 2001 for discussion and references), the question arises whether such a clear-cut dichotomy is tenable and, if it is not, how to handle 'hybrid' categories which are semi-lexical/semi-functional. This chapter will examine the status of categories which seem to be on the boundary between lexical categories and functional categories and which are referred to as semi-functional categories or semi-lexical categories (see van Riemsdijk & Corver 2001).

At first sight the examples in (1a) and (1b) might be taken to illustrate a construction type in which a nominal head (N1) selects a PP complement, and they might be taken to be analogous to the examples in (1c):

(1) c. a [$_{N1}$ picture] of my [$_{N2}$ parents]
the [$_{N1}$ analysis] of the [$_{N2}$ problem]

However, it is clear that, on the one hand, both (1a) and (1b) differ from (1c) in their syntactic behavior[1] and that, on the other hand, (1a) and (1b) are themselves to some extent similar. Below we compare the three constructions (viz. 1a–c) with respect to a number of properties.[2]

A first property that distinguishes the constructions in (1a,b) on the one hand and (1c) on the other concerns extraction. While the PP complement in (1c) can be extracted (see also Chapter 2 of Part IV) for discussion and data), this is not possible for the constructions in (1a,b) (see Abney 1987: 297). Neither the *NoN* construction (1a) nor the *PsP* construction (1b) permit removal of the *of*-phrase. In (2), this restriction is illustrated for fronting, in (3) for extraposition.

(2) a. Of his parents, John does not have any pictures.
b. *Of a machine John bought a monster. (*NoN*)
c. *Of flowers John bought a bunch. (*PsP*)

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[1] Napoli (1989) argues extensively in favor of collapsing (1a,b) together with (1c). Here we will not present Napoli's arguments, but we refer the reader to her work for assessing her argumentation.

[2] Another construction which resembles (1a) is the partitive construction exemplified in (i)

(i) a lot of the students

However, the partitive construction is also quite different from the pseudopartitive construction. Jackendoff (1977) discusses several distinctive properties that differentiate the two constructions. Vos (1999) calls cases such as (i) Strong indirect Partitive Constructions and she also sets them apart form pseudopartitives. Here we will not deal with partitives at all. For our purposes suffice it to say that partitives are distinguished from the the other two constructions we will deal with here (1a,b), by the very fact that while partitives involve two referents ('the students' as one set, and a subpart denoted by *lot* as a second set), the pseudopartitive contains just one. This is a major feature of the pseudopartitive on which we capitalize in the discussion to follow.

(3) a. John has three pictures on his desk of his parents.
b. ?*John bought a monster yesterday of a machine. (*NoN*)
c. ?*John bought a bunch yesterday of flowers. (*PsP*)

A second characteristic shared by (1a) and (1b) concerns the selection behavior: while in (1c) the governing predicate (say a verb governing the DP) essentially selects N1, in (1a, b) selection is between the main predicate and N2. This is illustrated in (4). In (4a) the activity expressed by *destroy* affects an entity denoted by the N *picture* and does not affect the entity denoted by the N *general.*

(4) a. John destroyed a picture of the general.

As shown in (4b), the *NoN* construction *a monster of a truck* can be the complement of the verb *drive*, which typically selects inanimate means of transport (e.g. a truck), but not of the verb *ride*, which typically selects animate means of transport (e.g. a horse, a monster). In (4b) the activity expressed by *drive* essentially affects an entity denoted by the N *truck* and does not affect an entity denoted by the N *monster.*

(4) b. John drives [a monster of a truck].
c. #John rides [a monster of a truck].[3]

The same semantic selection behavior is found with pseudopartitives. In (5a) and (5b), the verbs *dissolve* and *taste* semantically select *sugar* and *wine*, respectively. That is, John does not dissolve the metal of the spoons, nor does he taste the glass of the bottles. In (5a) the activity expressed by *dissolve* affects an entity denoted by the N *sugar* and does not affect the entity denoted by the N *spoons.* Similarly, in (5b) the activity expressed by *taste* affects an entity denoted by the N *wine* and does not affect the entity denoted by the N *bottle.*

(5) a. John normally dissolves [two spoons of sugar] in his coffee.
b. John tasted [two bottles of wine].

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[3] The symbol # means that this sentence may be grammatical but with a different and marked interpretation, according to which John rides a monster that has some relation with a truck. Cf. also the slightly less implausible (i):
(i) John rides a monster, Mary rides a dragon.

The fact that the governing predicate selects N2 'across' N1 suggests that the latter is somehow transparent for selection.

A third property shared by the *N of a N* construction and the *PsP* construction and opposing them to constructions such as those in (1c) is also related to this apparent transparency of N1 (see also below section 2.3.2 for further discussion). While in (1c) an adjective preceding N1 will modify N1, adjectives preceding N1 in (1a,b) can enter into a modification relation with N2 across N1:

(6) a. a lovely picture of her father
'the picture is lovely, her father need not be'
b. an expensive painting of the house
'the painting is expensive, the house need not be'

(7) a. an expensive monster of a machine
'the machine is expensive'
b. a nice bear of a fellow
'the fellow is nice'
c. another bitchy iceberg of a woman (Aarts 1992)
'the woman is bitchy'
d. a polite jewel of a child
'the child is polite'

(8) a. a useless couple of days (Jackendoff 1977)
'the days were useless'
b. a marvellous glass of wine
'the wine is marvellous'
c. a nice box of cigars
'the cigars are nice'
d. a tasteless cup of coffee
'the coffee is tasteless'

A fourth property which the *NoN* construction and the *PsP* construction have in common and in which they differ from 'ordinary' DPs with a PP complement is the fact that the second nominal cannot be realized as a fully-fledged DP but that it remains restricted to a projection of N, a lexical projection. The obligatory absence of a DP-layer for N2 is suggested by the contrast between (9) and (10), an *NoN* example, and (11) a *PsP* example: in the latter two definite determiners or possessives are incompatible with N2.

(9) that picture of my doctor/ this church
(10) * that idiot of the/that/this/my doctor
(11) * that bottle of the/that/this/my wine

A fifth property shared by the two constructions in (1a) and (1b) also concerns extraction, and more specifically preposition stranding. As shown in (12a), it is sometimes possible to strand the preposition which heads an N-complement:

(12) a. I will move to my new flat, which this is [quite a good picture of _].
b. You should read Chomsky's *Syntactic Structures*, which this is [a summary of _].

Comparison of (12) and (13)–(14) shows that the *NoN*-construction and the *PsP*-construction again are distinct and that the extraction of the nominal which superficially follows *of* in both constructions is impossible.

(13) a. *John is a doctor, which Sue is [an idiot of _].
b. *John became a linguist, which Mary was already [a hell of_].

(14) a. *These are chocolates, which this is also [a box of _].
b. *These are fools, which I just met [a pack of _]

Examples such as (1c) are standardly taken to involve complementation of N1 by the *of*-PP containing N2. Examples such as those in (1a,b) have received a different analysis, in which N1 has been taken to involve some DP-internal functional category. This idea has received a number of different executions.

There is clearly a predicative relation between N2 and N1 in the *NoN* construction (1b) which can be paraphrased by 'that doctor is an idiot'. Given this interpretation, there seems to be a fair amount of consensus as to how this construction type must be analysed (but see Napoli 1989, Matushansky 2002, van Riemsdijk 2005), with all accounts essentially capturing the DP-internal predication relation in terms of a functional projection relating a subject and a predicate. The relevant projection is taken to be a DP-internal *Predicate Phrase* (PredP) (or whatever functional projection small clauses are taken to be manifestations of). Crucially, PredP is the category responsible for the predicative relationship holding between a predicate (of any syntactic category) and an argument (Bowers 1993, 2001).

On the other hand, two major accounts dominate the research field with respect to the construction in (1a). The first is based primarily on the English-

type *PsP*, in which the two nominals, N1 and N2, are linked by a formative (the morpheme *of* in English). This approach assimilates (1b) to (1a), and assumes that there is also a predicative relationship between N1 and N2 in (1b). We will refer to this approach as the 'Predicational approach' to *PsP*. The Predicational approach would actually unify the two constructions in (1a,b) as it interprets both constructions in terms of a predicational relation.

The alternative account for the pseudopartitive construction in (1b) sets this construction off from (1a). It has mainly developed from an examination of the *PsP* constructions in those languages in which no linking morpheme is realized, and in which the *PsP* construction is the result of juxtaposing N1 and N2. This approach proposes that in (1b) the second nominal, N2, which is a mass noun, i.e. it is [–count], is turned into a [+count] noun by the mediation of the first nominal, N1, specifically as a result of being selected by N1. We will call this the Monoprojectional (MP) approach. According to this account a DP-internal semi-functional (or semi-lexical) category, Classifier (or Measure) Phrase, is assumed.

These two proposals for the *PsP* obviously make different claims concerning the degree of parallelism between the functional structures of *PsP* noun phrases and of clauses. Postulating a DP-internal PredP would be one more illustration of the parallelism between DP and clause, since PredP has been independently postulated for the clausal domain (Bowers 1993, 2001; Moro 1997). On the other hand, postulating a Classifier (Measure) Phrase would be DP specific.[4]

In what follows we will examine these two proposals with reference to the properties of the *PsP*. However, when dealing with the Predicational approach to the *PsP* construction we will first turn to the *NoN* construction, to which the Predicational approach has been primarily applied and for which it has given interesting results.

2. The Pseudopartitive Construction: cross-linguistic variation

We start our discussion with examples (1b) above and (15) below, both of which illustrate the pseudopartitive construction (*PsP*):

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[4] Note though that Jackendoff (1977) draws attention to the strikingly similar function of what he calls measure phrases in all major syntactic categories NPs, PPs, APs, a claim consistent with/following from the very nature of X'-theory – a theory whose goal is to capture as many cross-categorial parallelisms as possible.

(15) a. a (surprisingly high) number of people
b. a bottle of wine [5]

The *PsP* construction is instantiated cross-linguistically in two variants: one in which the two nominals are separated by morphemes/formatives similar to English *of,* (Italian *di,* French and Spanish *de*) and a variant in which no such morpheme intervenes, the two nominals being simply 'juxtaposed' and in which they display case agreement if the language has the relevant overt case morphology. Thus, next to cases like those in (1), (15a,b) and in (15c–e) below, we also find cases like (16):

(15) c. une bouteille de vin (French)
d. una fiasca di vino (Italian)
a bottle of wine
e. un vaso de vino (Spanish)
a glass of wine

(16) a. een fles (*van) wijn (Dutch)
a bottle (of) wine
b. ena bukali (*apo) krasi (Greek)
a/one bottle (*of) wine

In the Dutch and Greek *PsP* construction, the equivalent of the English linking morpheme *of* is obligatorily absent. The two nominal elements are simply linearly adjacent. We will refer to the patterns in which no linking morpheme intervenes between the two nominals as 'juxtaposed pseudopartitives'.

As we will see below, each of the two surface patterns of the *PsP* lends itself to a different kind of analysis. Whereas the variant with the linking morpheme *of* seems to be more successfully accounted for by the Predicative analysis, for the juxtaposed variant the Monoprojectional analysis instantiating a semi-functional type of projection yields promising results. In section 2.1 we first survey the prominent features of the *PsP* and in the later

[5] The first systematic generative accounts of these phenomena (Jackendoff 1977; Selkirk 1977; Akmajian & Lehrer 1976) were formulated as a way of exploring the earlier versions of X' theory. The analyses were primarily conceived in terms of the basic tenets of the Extended Standard Theory and were seen as offering direct support for its fundamental assumptions.

sections we show how a Monoprojectional analysis, which assumes that N1 is a semi-functional element that acts as a classifier with respect to N2, accounts for these properties.

2.1. Basic properties of the construction

2.1.1. N1

Let us first highlight some of the characteristic properties of the nouns that instantiate N1 in the *PsP*. Concerning N1, it is typically drawn from one of the following noun classes:

(a) cardinal nouns (*dozen, million*),
(b) quantifier nouns (Greek *zevgari* 'pair', *arithmos* 'number', cf. van Riemsdijk 1998: 13),
(c) container nouns (*box, bottle*), group collective noun (Greek *plithos* 'crowd'; *sminos* 'swarm') or consistive/material nouns (cf. Jackendoff 1977: 121) (Greek *buketo* 'bunch', *matsaki* 'small sprig'),
(d) measure/unit nouns (*kilo*),
(e) partitive nouns (Greek *komati* 'piece', *feta* 'slice').

For Vos (1999) the distinctive property of all the subtypes of N1 is cumulativity (or, equally, of divisibility). This means that a set of entities have a denotation that does not change when "another set of entities with the same denotation is added to this set." (Vos 1999: 27). If one has a set of apples and adds to it another set of apples, one still has a set of apples.[6]

There is agreement on the fact that noun classes (a–e) behave alike with respect to the following two points:

(a) they designate a certain quantity, or amount or number, taken from the denotation of the lexical noun;
(b) they are relational in that they require the presence of a noun complement the referent of which they measure or quantize. N1 in this sense is

[6] The result is the same if one relies on the notion of divisibility. If one divides a set of apples, one still has (a set of) apples; by contrast, dividing a single apple results in half an apple (cf. Vos 1999: 27).

thus always complement-taking (Chierchia 1998a: 72;[7] Corver 1998; Löbel 1999).

Quantifier nouns, container nouns and consistive nouns correspond roughly to what are usually called 'classifiers' with reference to classifier languages such as Chinese (see also Chapter 2 of Part II).[8] Löbel (1999) uses the term 'quantity' noun for all of (a) to (e) above.

We will use the terms 'measure noun' and 'classifier nouns' interchangeably here, but attention must be drawn to the fact that the use of the term 'classifier' in the present context is non-technical. In fact, in the specialized literature on classifier languages, a distinction is made between classifiers and measure nouns: in particular, classifiers denote natural units – i.e. their denotation is inherent to the meaning of the noun – whereas measure nouns denote "arbitrary, conventionalized units" (Löbel 1996: 294). But since this distinction is only relevant with respect to classifier languages, we will not adopt it here. The similarity between classifiers and the nouns driving the *PsP* in non-classifier languages has been discussed by several linguists (see Löbel 1999 and references therein).

2.1.2. N2 and the relationship between N1 and N2

To highlight the role of N1 in the pseudopartitive construction, we must also examine the denotation of N2. In the *PsP* construction, as shown by the examples above, N2 is typically a mass/[–count] noun. N2 can also be a plural [+count] noun ('bare' plural, see Chapter 2 of Part II), but N2 can never be a singular [+count] noun.

When N2 is a mass noun, N1 in the pseudopartitive construction somehow ensures the countability of N2. In particular, the use of a member of any of the noun-classes mentioned above as N1, in combination with an indefinite article, a cardinal numeral, or Q adjective serves the purpose of 'counting' what is denoted by the [–count] mass noun, N2. N1, the classifier, measure or Q noun thus contributes to N2 being felicitously preceded by a numeral (i.e. 'it can be counted'). (17a) illustrates this point in Greek.

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[7] Chierchia (1998a) distinguishes measure nouns from classifiers basically on semantic grounds, although, as he states, "they are similar in so far as both are relational and both allow us to quantize a certain domain of objects" (Chierchia 1998a: 73).

[8] For a discussion of group nouns, see Löbel (1996, 1999).

(17) a. *Thelo ena krasi.[9] *vs* Thelo ena potiri krasi.
want-1SG one (a) wine want-1SG one (a) glass wine
'I want a glass of wine.'

When N2 is a plural noun, N1 maps the individual reference of this noun (a 'plurality') into a cumulative one (17b), that is the plural count nouns can be treated as aggregations of items rather than as sets of individually identifiable items.[10]

(17) b. Aghorasa tria triantafila. *vs* Aghorasa tria buketa triantafila.
bought-1SG three roses bought-1SG three bunches roses
'I bought three roses.' 'I bought three bunches of roses.'

[–Count] nouns like *krasi* ('wine'), *tiri* ('cheese'), *nero* ('water') – i.e. mass nouns – must be preceded by a measure or classifier noun in order to be 'counted' – viz. in order to be preceded by a numeral. On the other hand [+count] plural nouns like *flowers*, *matches*, *newspapers*, *books* as such can be counted but with the insertion of the appropriate classifier noun (*bunch*, *sprig*, etc.) they may acquire a cumulative reference and be treated as aggregations of items rather than as sets of individually identifiable items. The classifier helps to measure or number (with the aid of a numeral) by providing a (pragmatically) appropriate measure unit: "Classifiers double up as measure phrases" (Chierchia 1998a: 73). An indefinite article, a numeral or a Q is thus obligatory with measure nouns or classifiers (cf. Chierchia 1998a: 55). This is why, when functioning as an introducer of a *PsP*, N1 is always accompanied by an indefinite article, a quantificational or cardinality element:

(18) a. ena potiri nero *vs* b. *potiri nero
a/one glass water glass water

As a confirmation and further illustration of the evidence provided by (18a, b), let us also note that a *PsP* without a numeral would be ungrammatical in

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[9] Note with regard to (17a) that when the indefinite article is missing the sentence is grammatical because *krasi* ('wine') is simply a mass noun (see Chapter 2, Part II for a discussion why mass nouns are allowed 'bare' as arguments (i.e. objects) of verbs). Cf. also (18b).

[10] Quoting Chierchia: "…classifiers are partial functions from pluralities into sets of atoms constituted by members of the pluralities" (Chierchia 1998a: 72).

exactly those contexts in which a bare mass noun would be possible. Consider the sentences in (18c,d):

(18) c. Thelo *(ena) potiri nero. (cf. (17))
want-1SG *(a) glass water
'I want a glass of water.'

d. Thelo nero.
want-1SG water

What (18) (along with (17)) shows is that the measure/classifier noun (N1) behaves like an ordinary count noun in that it too needs to be accompanied by a cardinality marker in order to be able to function as an argument.

Nevertheless, we take the Greek examples in (17) and (18), together with the fact that the definite article is not allowed in the *PsP* construction in Greek (cf. (56b) and the discussion in section 2.4), to point to a finer property of the construction which is its indefinite character when it has a measuring/counting function. We will come back to this issue in 2.4 and 2.5. In any case, what must be emphasized at this point is that N1 has a measuring function in both subtypes of the *PsP*, i.e. those with a linking element like English *of*, and those in which N1 and N2 are juxtaposed. However, as already mentioned and as will become clear from the discussion to follow, the two patterns instantiating the *PsP* have actually been used to elaborate two widely different syntactic analyses for the *PsP*. In this section we focus on the Monoprojectional analysis of the juxtaposed *PsP*, which crucially exploits the facts illustrated in (17)–(18). In sections 3 and 5 we turn to the other *PsP* pattern, the analysis of which has been explicitly related to that of the *NoN* construction in (1a).

2.1.3. The relational character of N1

An important property of N1 which unifies the analyses proposed is the fact that N1, the quantity-designating noun, is a relational noun, i.e. a noun which presupposes the presence of another noun that can be quantized (see Chierchia (1995) for discussion). Or, to be more precise, the denotation of N1 requires a certain domain of objects denoted by N2. The relational nature of N1 is confirmed by the fact that it is rather odd when used without an *of*-phrase. This is shown in (19). If such an 'independent' use of N1 is at all acceptable, it will be because a *relatum* is implicitly understood, as in discourse fragment (20).

(19) A: What did John buy?
B: #John bought a bunch (*cf.* John bought a bunch of flowers.)

(20) A: Do you like flowers?
B: I buy three bunches every week.

2.2. An excursus to the older accounts of *PsP*

Before we actually turn to a discussion of one current analysis of the Pseudopartitive construction, it may be useful to make a brief excursus to its predecessors.

Within the earlier generative literature, a number of approaches to the *PsP* can be distinguished: in one, first argued for by Jackendoff (1977), the first noun, N1, together with the article, the quantifier or the numeral is taken to form a constituent which is part of the specifier system of the nominal projection. At that stage of the theory, X'-Syntax was taken to distinguish three hierarchical levels, this was the so-called *Uniform Three Level Hypothesis*. In this approach, the string article/numeral/quantifier+N1 in the *PsP* construction was generated as a constituent in the specifier position of the second bar level (N'') of N2, cf. (21a). The second bar level (X'') was taken to be dominated by the maximal projection (X'''). In this position, *a glass*, *a bottle*, *a bunch* and similar expressions were taken to be on a par with Quantifier Phrases like *many*, *a few*, *several*, etc. which Jackendoff assumed were also generated in the specifier of N'' position (21a). Observe that just as N''' is a projection of the head noun *books* in (21a), it is a projection of the head noun *water* in (21b).

(21) a. $[_{N'''}\ [_{N''}$ [many] $[_{N'}$ books]]]
b. $[_{N'''}\ [_{N''}\ [_{NP}$ a bottle] of $[_{N'}$ water]]]

The same basic structure is adopted by Selkirk (1977), who was actually more interested in distinguishing the pseudopartitive reading of the construction under examination from what has recently been labeled the 'container'[11] reading. The pseudopartitive reading is the reading we have been discussing so far; it is the reading under which N1 'counts' N2. The 'container' reading is a second reading, according to which the *denotatum* of the construction in (1a) is not a measure of N2 but rather N1 provides a con-

[11] Also referred to as the 'consistive' reading.

tainer (sometimes metaphorically) for the referent of N2. Selkirk also refers to the second reading as the 'noun complement' reading because in this reading the PP containing N2 is taken to be a real complement of N1 .We return to a discussion of the container reading in section 6.

In the 1980s, within the framework of what became known as *the Government & Binding Theory* (Chomsky 1981, 1986), Löbel (1989) argued that the quantity-designating (N1) element in the *PsP* heads a functional projection QP within the extended projection of N2. Quantity-designating nouns select a lexical NP headed by N2 (*of wine*, *of water*, etc.). The specifier of QP is the numeral/quantifier that regularly accompanies measure/unit N1, as discussed above. When N1 is preceded by an indefinite article, this is taken to be the specifier of the dominating DP. For the English string *a bottle of water*, Löbel's approach would lead to the following structural representation. The analysis leaves out of the discussion the nature of the formative *of*, a point to which we return below.[12]

(22) a. $[_{DP}\ [_{QP}$ two $[_{Q'}$ bottles $[_{NP}$ water]]]]
b. $[_{DP}$ a $[_{QP}\ [_{Q'}$ bottle $[_{NP}$ water]]]]

Once again, note that the DPs in (22) are headed by the N *water*.

Abney (1987: 296) was the first to introduce the Predicational approach to account for the pseudopartitive construction. He assumes the following structure for pseudopartitives:

(23) $[_{DP}$ a $[_{NP}$ bottle $[_{PP}$ of water]]]

With respect to the status of the *of*-PP in (23), Abney argues that it does not act as an argument to the noun *bottle*, but rather that it should be treated on a par with *of*-phrases in such nominal constructions as *a monster of a machine*, i.e. the nominal constructions which we labeled *NoN* above and which are illustrated by (1b). For Abney the nominal following *of* in the pseudopartitive construction is the predicate. We return to this type of analysis below.

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[12] See Vos (1999) for specific shortcomings in Löbel's account. Barbiers (1990) assumes a DP-internal functional category which is headed by cardinal numerals, roughly equivalent to Num or Quantifier (see Chapter 3 of Part II). This category either selects NP as a complement, in which case ordinary, non pseudpartitives are derived (*two bottles*), or it selects another such category (recursion), in which case the PsP emerges (*two bottles of wine*).

As is clear from the preceding brief survey of some of the earlier literature, the proposals encode the relationship between the two nouns in (1a,b) in different ways: (i) a modifier-modifee relation (Jackendoff, Selkirk), whereby N1 is assumed to occupy a specifier position within the broad noun phrase, (ii) a (functional) head-complement relation within the broad DP, whereby a N2 is selected by the functional head N1, (iii) a predication relation (Abney). We return to recent executions of the Predicational analysis in sections 3 and 4.

Concerning (i) and (ii) we hypothesize that they can be collapsed and referred to as the Monoprojectional (MP) analysis. (i) and (ii) basically endorse the same underlying idea, viz. that N2 is the head of the construction while the status of N1, being quantifier-like, is somehow between that of a lexical head and that of a functional head, something that renders it transparent. Being transparent N1 does not block the selection (and case) requirements of the higher predicate. The different implementations in (i) and (ii) can be ascribed to the fact that they were developed at two different stages of the theory. In particular, the notion functional category was not (syntactically) available in the seventies; hence, within an endocentric NP, measure nouns preceding N2 could only be argued to occupy specifier positions of the head N2. Constituents that are nowadays more naturally interpreted in terms of functional heads in the spirit of the Monoprojectional (MP) approach would have been located in a specifier position in earlier approaches (i) as there was simply no other position available. Thus the earlier specifier analysis, reinterpreted in the context of a theory using functional categories, has more recently given rise to the concept of semi-functional category and the concomitant Monoprojectional analysis, as will become clear in the discussion to follow.

In this chapter we will first present the Monoprojectional approach. Under the Monoprojectional (MP) approach, N1 in the *PsP* is taken to be semi-functional. As mentioned above, one of the goals of this chapter is also to highlight the nature and properties for what have come to be called semi-functional or semi-lexical categories (see the Introduction to this book, section 2.3.). We will start with a presentation of the arguments and the evidence for the Monoprojectional account. At a later stage we will compare the Monoprojectional approach with the Predicational approach.

2.3. Juxtaposed pseudopartitives and the Monoprojectional analysis

As mentioned at the beginning of this section, pseudopartitives fall under two subtypes: (i) the English subtype contains a linking morpheme similar to the English preposition *of;* (ii) the juxtaposed *PsP* lacks any such linking element. The latter type is illustrated by Dutch (24) and Greek (25): N1 and N2 are juxtaposed without any intervening element.

(24) a. een fles (*van) water
a bottle (*of) water

b. twee flessen (*van) water
two bottles (*of) wine

(25) ena kuti (*apo) spirta
one[13] box (*of) matches

An important feature of these juxtaposed *PsP*, as will be further discussed presently, is that in Greek, a language with case morphology, there is case agreement between the two juxtaposed nouns. Case agreement has been taken as suggestive evidence for the Monoprojectional (MP) analysis. Under the Monoprojectional analysis the *PsP* construction is considered as a single nominal projection with a single referent, despite the presence of two nouns. Within this nominal projection, the two nouns may enter into an agreement relationship; this agreement relationship is syntactically realized through the Monoprojectional (MP) relation.

Pursuing this line of thinking, we will start by pointing out certain similarities between the sequence cardinal+N1 (so-called measure/classifier phrase) in the *PsP* construction and simple prenominal quantificational adjectives such as *many*, *much*, *some* in a simplex nominal projection.

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[13] The morpheme for the cardinal 'one' and that for the indefinite article 'a' in English coincide in Greek. Being consistent with the analysis we are proposing for the *PsP* later in the chapter we do not commit ourselves to the status of *ena*(*s*) as an article or as a numeral. However, even if it also doubles as an indefinite article, it can still be taken to encode a cardinality marker. In Chapters 1 and 2 of Part II we referred to Lyons (1999) who claims that the indefinite article in English is a cardinality marker heading a Cardinal Phrase, lower than D(ef) itself. See also the following footnote.

2.3.1. Measure/Classifier phrases are like simplex Qs

In this subsection we provide some data which highlight the distributional and interpretational similarity between the sequence 'numeral[14] + measure noun' in the pseudopartitive construction and simple quantifiers in an ordinary quantified nominal projection. The intuition underlying the discussion here is that the sequence *a bunch* in *a bunch of flowers* has the same basic function/distribution as the quantifier *many* in *many flowers*; in both instances we have an amount or a quantity of flowers. It should be emphasized from the start that this similarity is taken to be due to the presence of the measure or classifier noun, which will be interpreted as a semi-functional category, a category which has some of the lexical properties of N1, but which also has some functional properties (see discussion in the Introduction to the book, section 2.3.).

For the sake of completeness, let us point out here that *a bottle of wine* is in fact ambiguous between the quantity reading just described and the container reading whereby N1 is a fully lexical noun which denotes an object (the container) and N2 denotes what is contained in the denotation of N1.[15] We will come back to this issue in more detail when accounting for the properties of the *PsP* syntactically and also in section 6.2.

As already mentioned, the first piece of evidence that pseudopartitives are to be represented as the projection of N2 is the observation that the two nouns (N1 and N2) always share the same case, which is assigned to them by a single case assigner (P, V) which takes the whole nominal phrase as its complement. If N2 were part of a separate projection it would be expected to be able to have its own case, which would have to be independently assigned to it. In Greek (26a,a'), for instance, *buketo* ('bunch') or *matsaki* ('little sprig') on the one hand, and *iakinthus* ('hyacinths') or *maidano* ('parsley') on the other, are both in the accusative, a case assigned by the transitive verb *prosfere* ('offered') and *aghorase* ('bought') to their DP complement:

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[14] For our purposes in this chapter 'numeral' is used as a cover term for the indefinite article (i) and the cardinal numeral (ii):

(i) a bottle of wine
(ii) three bottles of wine

[15] See Vos (1999, esp. ch. 8) for discussion of the corresponding data in Spanish. Vos points out that in Spanish *un vaso de vino* ('a bottle of wine') is also given the quantity and the container interpretation. See also Stavrou (1983) for extensive discussion of this ambiguity of the construction in Greek.

(26) a. Tis prosfere ena buketo iakinthus.
her-DAT offered-3SG a-SG.ACC bunch-SG.ACC hyacinths-PL. ACC
a.' Aghorase ena matsaki maidano.
bought-3SG PERFV a little sprig-SG.ACC parsley-SG.ACC

We take the case agreement property of the construction to strongly suggest that in (26a) the sequence *ena buketo* as a whole is on a par with a simple quantifier (*polus* 'many', *lighus* 'a few') of the noun, and this both on (morpho)syntactic as well as on semantic grounds.[16]

As can be seen in (26b), prenominal modifiers, just like prenominal adjectives and determiners, always agree with the head noun. In (26b) the quantifier *polus* ('many') agrees in number (plural) and case (accusative)[17] with the head N *iakinthus* ('hyacinths'):

(26) b. Tis prosfere polus iakinthus.
her-DAT offered-3SG many-PL.ACC hyacinths -PL.ACC

As shown by (27), ordinary quantified nominal projections (27a) and juxtaposed pseudopartitive constructions (27b) behave alike with respect to 'Split topicalization'.

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[16] Number agreement between N1 and N2 is not expected, as N2 is either a mass noun (hence singular) or plural. As for Gender agreement, given the lexical origin of Gender, and the semi-functional nature of N1, N1 is inherently marked for Gender, therefore discrepancy in Gender agreement between N1 and N2 is expected.

[17] Vos (1999) notes departures from case agreement in German.

It is also worth pointing out that the possibility in Greek of genitive case on N2 with certain N1, in particular with measure and container nouns, (*bottle, wine*) signals a different construction. This construction is an instantiation of a lexical noun taking a genitive of property, illlustrated in (i)a which is equivalent to a nominal compound (i)b:

(i) a. *potiri krasiu*
glass wine-GEN
'wine glass'
b. *krasopotivo*
'wine glass'

See Chapter 2 of Part IV, notes 2, 40 and 41 for some discussion; see also Vos, Chapter 8 for similar facts in Spanish.

(27) a. Vivlia aghorase [pola _] fetos.
books bought-3SG many this year
'S/he bought many books this year.'

b. Vivlia aghorase [mia kuta _] fetos.
books bought-3SG one box this year
'S/he bought a hard box of books this year.'

In (27a) *vivlia* ('books') is topicalized out of a simplex nominal projection, stranding the quantifier *pola* ('many'); in (27b) topicalization of *vivlia* from a *PsP* construction strands the sequence numeral +N1, *mia kuta* ('a box').

Numerals or Qs as well as measure nouns accompanied by a numeral can serve as the answer to a question concerning quantity:

(28) a. Posa vivlia dhjavases to kalokeri?
how-many books read-2SG the summer
'How many books did you read this summer?'

b. Pola/tria/ena rafi.[18]
many/three/a shelf

Numerals or quantificational adjectives (29a) as well as measure nouns accompanied by a numeral (29b) can occur as the complement of the copula in copulative sentences:

(29) a. Ta vivlia pu aghorase me to xartziliki tu ine {pola, deka}.
the books that bought-3SG with the pocket money-his are {many, ten}

b. Ta vivlia pu aghorase me to xartziliki tu ine mia kuta.
the books that bought-3SG with the pocket money-his are one box

Both numerals or quantificational adjectives (30a) and measure nouns accompanied by a numeral (30b) can license nominal ellipsis:

(30) a. I Maria aghorase ena forema fetos ala i aderfi tis
the Mary bought one dress this year but the sister-her
pola/djo [~~foremata~~].
many/two [~~dresses~~]

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[18] See Vos (1999, chapter 4) for similar data and dicussion for Dutch.

b. I Maria aghorase ena forema fetos ala i aderfi tis mia
the Mary bought one dress this year but the sister-her one
dulapa [~~foremata~~].
wardrobe [~~dresses~~]

In the spirit of earlier work on ellipsis, by, among others, Lobeck (1995) and Kester (1996), Giannakidou and Stavrou (1999) assume that in Greek the ellided N can be licensed by an overt specifier (adjective, quantifier, numeral). The basic assumption is that the ellided N and the overt specifier agree in the relevant morphosyntactic features, so that the formal features of what is ellided can be recovered through the formal features of what is overt. (30b) supports Giannakidou and Stavrou's claim in so far as the sequence numeral + measure noun is claimed here to behave on a par with quantificational adjectives. Since in (30b) there is no number and gender agreement, but crucially there is case agreement, this example may be taken to suggest that that the feature relevant for the licensing of the ellided N in Greek is actually case (see Giannakidou and Stavrou (1999) for more discussion).

Finally, let us consider the data in (31):

(31) a. Kathe proi ton parakoluthun dhio astinomika.
every morning him follow-3PL two police cars
b. Ta dhio astinomika pu ton parakoluthun kathe proi……
the two police cars that him follow-3PL every morning (have been ordered to do so by the FBI)

(31) illustrates the difference between a real quantifier and an (homophonous) adjective that simply has some quantificational meaning, as discussed at length by Giusti (1991, 1997) and by Cardinaletti & Giusti (2002). The cardinal *dhio* ('two') is a quantifier in (31a); in (31b), it follows the (definite) determiner, and it is like any prenominal adjective that happens to have a meaning referring to a quantity (like other adjectives have a meaning referring to a property, etc.). We claim that the contrast between (31a) and (31b) is paralleled by that between (32a) and (32b):

(32) a. I sintaji lei ena potiri zaxari…
the recipe says one glass sugar…
b. …ala to ena potiri zaxari ine ligho.
…but the one glass sugar is little

In (32a) the sequence num+N1 functions like a quantifier (i.e. like *dhio* in (31a)), in that it 'counts' or takes a specified quantity out of what N2 denotes (here 'sugar'), whereas in (32b) the numeral in the sequence definite art+num+N1 functions like a descriptive adjective that refers to a quantity. Observe that in (32b) the predicate *ligho* ('little') is predicated of N1, *potiri*, suggesting that this is the head of the construction. We capitalize on this difference between (32a) and (32b) to propose a structure for the *PsP* which crucially is an indefinite DP in which the quantifier or the numeral is a head selecting a (semi-functional) NP. More in particular, we will claim that while (32a) instantiates the real quantificational reading of the *PsP*, (32b) is a case of an ordinary, not quantificational DP, in which the numeral occupies a specifier (i.e. modifier) position.

2.3.2. The PsP is a unitary nominal projection with a single referent

Having examined the similarity in distribution and interpretation between quantifiers in simplex nominal constructions and measure/classifier phrases in the *PsP* construction, let us now explore the basic claim of the Monoprojectional (MP) approach according to which the *PsP*, although it contains two nominals, is nevertheless a single nominal projection with a single referent. The semantic motivation for this proposal would be the observation that the two nouns in the *PsP* construction do not each establish their own referent but that they jointly refer to one referent.[19,20]

2.3.2.1. Determiners, quantifiers and relative clauses in the PsP

The MP approach entails that neither N1 nor N2 is the head of an independent nominal projection. There is clear evidence for this. First, no determiner, quantifier or relative clause (RC) can intervene between the two nouns in the *PsP* construction (33). If N1 was the head of an independent projection, we would expect that it would be able to be modified by a RC.

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[19] Data from sentences containing verbs of motion followed by a lexical verb have led Cardinaletti & Giusti (2001) to a conclusion parallel to this one concerning monoclausality and single 'eventhood' of sentences containing such a lexical verb + verb of motion sequence, as in *I go buy bread* (American English see Jaeggli and Hyams 1993; Pollock 1994). According to C&G the motion verb that is adjacent to the lexical verb instantiates a semi-functional category.

[20] For other constructions with this property see Chapters 1 and 2 of Part IV.

Similarly, if N2 were the head of an independent nominal projection, it might be expected to have its own determiner(s)/modifier(s) (see also Jackendoff 1977: 121). As Löbel (1999) points out, the assumption that there is a single referent associated with the *PsP* can be directly related to the obligatory absence of any determiner or determiner-like element to the left of N2.

(33) a. *(…) ena buketo pu aghorase xtes iakinthus
(…) a bunch that bought-3SG yesterday hyacinths
b. *(…) ena buketo tus/olus tus/aftus tus/merikus/arketus iakinthus
(…) a bunch the/all the/these the/some(pl)/several hyacinths

These data contrast with a regular nominal projection containing two nouns that project separately, illustrated in (34), in which the second noun heads its own projection embedded in a PP. In such examples, nothing prevents each of the two nouns involved from having its own determiners or being modified by a relative clause:

(34) a. Tis prosfere ena [$_{N1}$buketo] pu aghorase xtes
her-DAT offered-3SG a bunch that bought-3SG yesterday
me [$_{N2}$iakinthus].
with hyacinths
b. Tis prosfere ena [$_{N1}$ buketo] me polus/olus tus/arketus [$_{N2}$iakinthus].
her-DAT offered-3SG a bunch with many/all the/several hyacinths

Data such as these suggest that in the *PsP* N1 and N2 are not on equal footing and that while N2 is the lexical head of the projection, N1 has a more functional role, similar to that of other prenominal quantifiers. In the same spirit, the prevailing functional character of N1 would account for the fact that it cannot be followed by a modifying PP (35): lacking descriptive bulk, N1 cannot take a prepositional modifier.

(35) *ena bukali me psilo lemo nero
a bottle with long neck water

The only modifiers that can precede N2, thus intervening between N1 and N2, are adjectives. But not just any adjective can intervene: adjectives that can intervene are those that appear to sub-classify the reference of the N2. These are the so-called classifying adjectives and are argued to be NP-in-

ternal (Bosque & Picallo (1996), Sleeman (1996), Ralli & Stavrou (1997), Stavrou (1999), see also Chapter 1 of Part III, sections 1.2, 3.3). Observe also that, as shown in (36), classifying genitives too can precede N2 (see Chapter 2 of Part IV). But that is to be expected since the classifying genitive arguably occupies a lower position in the nominal projection:

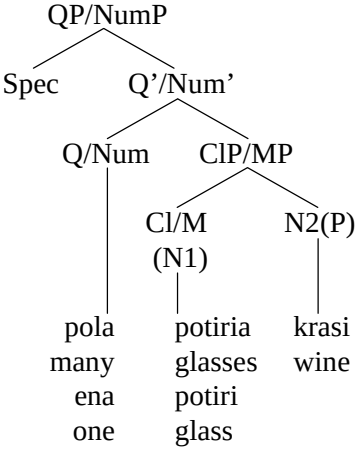
(36) a. that bitch of a doctor's wife
b. some boxes of women's magazines

That the classifying genitive occupies a lower position than the possessive genitive is shown by the fact that the classifying genitive typically follows adjectives and that the possessor and the classifying genitive may in fact co-occur:

(37) a. I never read those glossy women's magazines.
b. My women's magazines are all in the spare bedroom.

Given these considerations, Stavrou (2003) proposes that N1 is a semi-functional head. Anticipating the discussion in section 2.4, the structure proposed is as in (38):

(38)



Where ClP=Classifier Phrase, MP=Measure Phrase, QP=Quantifier Phrase, NumP=Numeral Phrase.

2.3.2.2. Adjectival modification in the PsP

The structure in (38) directly accounts for the absence of quantifiers and descriptive or qualifying adjectives as modifiers of N2, because what is selected by the semi-functional head N1 is an N(P) and not a full DP. Classifying adjectives such as *kokino* ('red'), *aspro* ('white'), *xiro* ('dry') (in 39a) introduce taxonomies, categories of wines/cigarettes/chocolates etc. and as such can be taken to be part of N2P (see Part III, Chapter 1, section 3.3.). We expect that such adjectives will be able to intervene between N1 and N2. On the other hand, descriptive and qualifying adjectives such as *oreo* ('nice') and *nostimo* ('tasty') in (39b) are standardly assumed to occupy positions higher than the category NP.

(39) a. ena potiri kokino/aspro/ksiro krasi (Greek)
a glass red/white/dry wine

b. ??ena potiri oreo/nostimo krasi
a glass nice/tasty wine

Likewise, in (39c–d) *elafria* ('light') *amerikanika* ('American') and *afiltra* ('without filter') are classifying adjectives and can occur between N1 and N2, while *frixta* ('terrible') is not a classifying adjective and cannot modify N2:

(39) c. ena paketo elafria/amerikanika/afiltra tsighara[21]
a box light/american/without filter cigarettes

d. *ena paketo frixta tsighara (vs. ena paketo *me* frixta tsighara)
a pack terrible cigarettes (vs. a pack *with* terrible…)

What is also excluded, as said already, is a quantificational adjective/quantifier on N2:

(40) *ena potiri ligho krasi (Greek)
a glass little wine

This is also expected under the analysis proposed here: the measure or classifier phrase is seen as being in complementary distribution with quantificational or quantifier-like constituents, since it serves the same function as the

[21] More adjectives may modify N2 in so far as they are taken as subclassifying its referent – including adjectives like 'good' or 'nice', if they are conceived of as forming a natural basis for distinguishing types of N2s (Sleeman 1996: chapter 2).

numeral or quantifier in an ordinary DP. The measure or classifier phrase is the only way to measure a non-count noun (see also Chierchia 1998a).

What about modification of N1 by adjectives? N1, being a noun, is expected to be able to be modified by an adjective. As Vos (1999: chapter 6) discusses at length, this ability co-varies along with the nature of N1. If N1 is functional it rejects adjectival modification, if it is lexical it accepts it:

(41) een *talrijke/*leuke/*nieuwe/*grote/*rode/*houten/*Franse
a numerous/nice/new/big/red/wooden/French
boel poppen (Dutch; Vos, 1999: 168)
lot (of) dolls

Vos explains the pattern in (41) by assuming that the noun *boel* ('lot') is functional in that it lacks the R-role (Williams 1980; Higginbotham 1985) and as a consequence theta-identification between the adjective and the noun (see previous chapter) cannot go through. Vos writes:

> I claim that we have to distinguish between functional Ns, which lack an R-index, and lexical Ns, which do have an R-index. What we expect is that an N1 which lacks an R-role cannot be modified by any of the lexical As. Such Ns cannot be modified because the theta role of A cannot be discharged. The As modifying *boel* in [41] are semantically incompatible with a QN, because the lexical conceptual structure of a QN lacks the relevant semantic features to be compatible with these As. (Vos 1999: 168)

However, things are not so clear-cut or simple. Some nouns appear to be ambiguous between being lexical and being functional. *Aantal* ('number') in Dutch is such a case. As a functional N *aantal* can only be modified by an evaluative adjective like *leuk* ('nice') (which in this case has the meaning of a size adjective):

(42) a. een leuk aantal poppen (Dutch; Vos 1999: 169)
a nice number (of) dolls

In (42a) *aantal* is functional because it can license quantitative *er* (Vos 169):

(42) b. Ik heb er ook een leuk aantal.
I have ER also a nice number.

If *aantal* is lexical it has a R-role which can be identified with the theta role of an adjective – but of an appropriate adjective, namely one that is compatible with the semantic features of *aantal*. For instance, *leuk*, *groot* ('big')

and *nieuw* ('new') are, whereas *Frans* ('French'), *rood* ('red') or *houten* ('wooden') are not.

Similarly in Greek, (43a,b) shows that although certain adjectives – here denoting material – that precede N1 are as such compatible with it, the result is ungrammatical:

(43) a. *ena metaliko kuti sokolates
a/one metal box chocolates

b. *ena kristalino potiri nero
a crystal glass water

(43) thus suggests that *kuti* ('box') and *potiri* ('glass') are functional and as such lack an R-role. As a consequence, and in the spirit of Vos, they cannot be modified by an A. On the other hand, like in Dutch, certain N1s can be modified by size adjectives:

(43) c. ena meghalo kuti sokolates
a big box chocolates

The proper reading of (43c) is that of a big number of chocolates, not that of saying that the size of the box itself is 'big'. See also the comment concerning the Dutch example (42) immediately above.

In the same context, note that there are cases involving adjective modification in which N1 is modified by an adjective which actually semantically modifies N2. Consider (44):

(44) ena kokino/malako zevghari paputsia
a red/soft pair shoes

(44) shows it is possible to also have the adjective which modifies N2 to the left of N1. It is clear that an adjective like *kokino* ('red') or *malako* ('soft') is not as such compatible with a noun like 'pair'. We can account for this by saying that N1 lacks a R-role and is therefore light in descriptive content. It thus allows the associated adjective to 'see' N2 through N1.

Also in Dutch even an adjective of the evaluating or speaker-oriented type (see Part III, Chapter 1) can precede N1 while modifying N2 (Vos (1999) discusses such data in Dutch in her Chapter 6). Consider the Dutch data in (45a,b) and the Greek example (45c):

(45) a. een heerlijk glas wijn (Van Es & Caspel 1971–1974[22])
a delicious glass of wine

b. wat een lekker kistje sigaren (Van Es & Caspel 1971–1974)
what a tasty box of cigars

c. ena nostimo piato fai (Greek)
a tasty plate food

Concerning the adjectives in (45a–c) it can be rather safely inferred that they still modify N2.

In sum, it seems to be the case that if an adjective appears in front of N1 in the *PsP* it definitely modifies N2: this is so because N1 is quite light in descriptive content and allows for this 'transfer' to go through. Alternatively, it can be assumed, in the spirit of Giusti and Turano (2002) that the adjective preceding N1 in fact modifies the whole of [N1+N2] taken together as forming a kind of complex noun.

Note in passing that the transparency of N1 observed here for the juxtaposed pseudo partitive construction in Greek and in Dutch is a general property of the construction. It is also found in the pseudopartitives with linking elements such as English *of*, as shown by (46):[23]

(46) a. a delicious box of Belgian chocolates
b. a nice cool glass of wine

Such data provide us with good evidence that N1, i.e. the measure and classifier nouns, should not be considered as either lexical or functional, but rather as being of a hybrid nature between the two categories. They can thus be seen as semi-lexical or semi-functional (van Riemsdijk 1998). Accordingly we can assume that such nouns are 'light', thus 'transparent' (cf. Veloudis 1982, 1985) to adjectival modification. An adjective that linearly precedes N1 can modify N2, which is referential: it has an R-role. Certain nouns in the position of N1 in the pseudopartitive construction then do not 'count' as 'full' lexical nouns for adjectival modification.

However one chooses to express the generalizations illustrated here, i.e. either by saying that N1 is transparent and that the adjective to the left of it

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[22] For Dutch see also van Riemsdijk (1998), Vos (1999).

[23] While classifying genitives may precede N2 in English, determiner-type of possessive genitives cannot do so:

(i) a. a box of women's magazines
b. *a box of my friend's magazines

can look through it to N2, or that the adjective to the left of N1 modifies N1 and N2 taken together, the fact remains that in such cases the adjective to the left of N1 is construed with the lexical N2. Semi-functional measure/ classifier nouns are once again on par with simple Qs and, as a consequence, the *PsP* forms a single maximal nominal projection.

One prediction of this approach is that there is a co-variance of the degree of lexicality of N1s and their possibility to sustain adjectival modification of the appropriate kind. If N1 were to be interpreted as (more) lexical, then its ability to have its own adjective modification would increase. This is borne out, as shown in (47):

(47) a. mia endhjaferusa siloji LPs (Greek)
an interesting collection LPs

b. a interessante verzameling LPs (Dutch)
an interesting collection LPs

In both (47a,b), the LPs themselves may be awful and still the collection *as such* might be interesting (in terms of size, range, period, etc.). In other words, if N1 has lexical content, then it can easily be modified by a descriptive adjective.[24] This observation again extends to *PsP* constructions with a linking morpheme:

(47) c. an interesting collection of LPs

d. une collection intéressante de livres (French)
a collection interesting of books

But if 'collection' is read as functional, then the adjective that precedes it will in essence modify N2:

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[24] This behavior of collective Ns is reminiscent of the process of grammaticalization. Notice that the fact that N1 can be grammaticalized (in English along with the formative *of*) is seen in examples like (i), in which *cup of* is reduced to *cuppa*.

(i) Why don't you come over for a nice cuppa tea?

Observe that verbs may also be grammaticalized, meaning that they shift from being lexical V to auxiliaries (see Haegeman 2005, 2006).

For a generative approach to grammaticalization see Roberts & Roussou (2003) and the references cited there. The notion of transparency is also used by Veloudis (1982, 1985) with respect to the 'transparency' of modal verbs as regards negation.

(47) e. Electra is labeling/cleaning/classifying an interesting collection of LPs.
f. I Ilektra taksinomi/katharizi mia endhjaferusa siloji LPs. (Greek)
Electra is classifying/cleaning an interesting collection of LPs

We will see in section 6 below that the *PsP* involving container nouns is also prone to the container reading: in this interpretation, the first noun-(N1)-has an R-role and denotes a 'container', while the second noun-(N2)-what is contained in it. In this reading, since the first noun is the (lexical) head, it is expected that it can be modified by its own adjectives.

2.3.2.3. Selection in the PsP

The transparency/semi-functionality of N1 can be observed when we consider how the pseudopartitive construction is selected. The verb selecting the *PsP* as its internal argument appears to semantically select either N1 (48a) or N2 (48b).

(48) a. Espase tria vaza marmeladha se ena proi.
broke-3SG three jars marmalade in one morning
b. Efaje ena vazo marmeladha se ena proi.
ate-3SG a jar marmalade in one morning

Clearly, in (48a) the activity expressed by *espase* ('broke') essentially affects an entity denoted by the N *vaza* ('jars') and does not affect an entity denoted by the N *marmeladha* ('marmalade'). Conversely, in (48b) the activity expressed by *efaje* ('ate') essentially affects an entity denoted by the N *marmeladha* ('marmalade') and does not affect an entity denoted by the N *vazo* ('jar').

The fact that in (48b) in selecting its complement the verb can again 'see' N2 'through' N1 means that N2 must be accessible to it. If N2 belonged to a separate phrase (PP or DP), such a non-local selection would be unexpected. The selectional properties manifested in the *PsP* construction also show that N1 is 'transparent', which amounts to some of its descriptive/lexical content being missing. In (48b) *ena vazo* ('a jar') resembles a simple quantifier like *poli* ('much').

The same facts are attested in Dutch, in (49a) the activity expressed by *uitgegoten* ('poured out, emptied') essentially affects an entity denoted by

the N *bottle* ('bottle') and does not affect an entity denoted by the N *wijn* ('wine'). In (49b), conversely, the activity expressed by *goot* ('poured') essentially affects an entity denoted by the N *wijn* ('wine') and does not affect an entity denoted by the N *fles* ('bottle').

(49) a. Jan heeft twee flessen wijn uitgegoten.
Jan has two bottles of wine out-poured
'Jan emptied two bottles of wine '

b. Jan goot een fles wijn in de saus. (Dutch)
Jan poured a bottle wine in the sauce

Although N1 is defective in that it lacks its full descriptive content, it nonetheless seems to retain some lexicality, hence it is also labeled as 'semi-lexical'. The observed 'freedom' of choice for the verb to select either of the two nouns within a single nominal argument follows from the semi-lexical character of N1 in the pseudopartitive construction; N1 is neither fully lexical nor entirely functional. This can also straightforwardly explain ambiguities of the type exemplified in the English example (49c):

(49) c. He overturned a tray of pastries.[25]

(see van Riemsdijk 1998 for more on this).

2.3.2.4. Number agreement in the PsP

Another indication of the relation between N1 and N2 and the single projectionhood of the *PsP* may be inferred from the agreement properties of the *PsP* construction. [26] In Greek the verb may agree either with N1 or with N2:

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[25] We thank Henk van Riemsdijk for this example.

[26] Examples like (48) and (49) have been taken by Selkirk (1977) and Jackendoff (1977) to reflect the structural ambiguity we mentioned in 2.2: under one interpretation, the quantificational one, the head is the second noun, the first being a specifier/modifier; under the second, the head is the first noun and the second noun is its complement (Jackendoff's and Selkirk's *consistive* or *noun-complement* reading, Corver's (1998) *container* reading). In this line of thought, in the genuine *PsP* the verb selects the second noun, whereas when the container or 'noun-complement' reading (Selkirk 1977) is obtained, the verb selects the first noun (for discussion see Corver (1998), Selkirk (1977), Stavrou (1983) for Greek).

(50) a. Iparhun/iparhi mia sira diavathmisis. (Greek)
are/is a range-SG gradations-PL
'There are a number of gradations.'

b. Ena buketo luludja itan pesmen-o/-a sto patoma.
a bunch flowers was/were thrown on-the floor

In Dutch, as Vos argues, it is the lexicality vs. functionality of N1 that plays a role in agreement with the selecting predicate.

(50) c. Drie kannen thee is/zijn voldoende. (Dutch)
three cans tea is/are sufficient

While the behavior in (50a–c) is expected, given, as is assumed here, that the *PsP* constitutes a unitary phrase involving two nominal constituents, in (50d–g) the verb may agree only with N1 (50d,f) or N2 (50e,g).[27]

(50) d. Iparxi/*iparxun ena kuti tsighara sto trapezi. (Greek)
there is/*are one box cigarettes on-the table

e. Iparxun/*iparxi eksi bukalia krasi.
there are/*is six bottles wine

f. Er is / *zijn één doos sigaren gerookt. (Dutch)
there is / are one box cigars smoked

g. Er *is/zijn zes glazen wijn gedronken.
there *is/are six glasses wine drunk

A prediction implied by the whole approach is that the lack of agreement between the verb and the first noun is more likely if the degree of functionality of this noun is high. This prediction is borne out, cf. (51):

(51) Ena soro rodhakina petaxtik-an/*-e apo tus aghrotes.
a (whole) lot peaches were/*was wasted by the farmers

As we will further see in section 6, in the present framework the 'container' reading is licensed by the lexical semantics of N1. But the fact illustrated in (48–49) is more general and true for the quantity reading of the *PsP* as well; in other words the *PsP*s prone to the container reading are only a subset of the strings prone to the quantity reading.

[27] Vos (1999: 63–64) shows that there are a number of independent factors that play a role in determining agreement, like the nature of the predicate and the make up of the *PsP*.

In combination with a numeral, *soro* ('pile'), related originally to the masculine collective noun *soros* ('pile'), is sliding gradually to become like a quantifier. This shift is even more obvious in the 'loss' of the masculine Gender marking [*s*] of the original *soros*. In its use as a quantifier *soro* is incompatible with a singular verb.[28]

In a simplex, non-pseudo-partitive nominal phrase, agreement would be of course with the (unique) head noun:

(52) a. Pola bukalja itan pesmen-a/*pesmen-o sto patoma.
many bottles were/*was fallen on the floor

Similarly, if N2 heads an independent projection which is part of the PP complement of N1 then subject agreement, as well as agreement in semantic features, is again with N1.

(52) b. Ena kuti me sokolates itan pesmeno/-*es sto patoma.
a box with chocolates was/*were fallen on the floor

What is important from our point of view is the observation that in the *PsP* construction N2 may trigger agreement in spite of the fact that it seems at first sight to be embedded as the complement of N1. The Monoprojectional structure (38) (further discussed in 2.4 below), which assumes that N1 is a semi-lexical element, allows us to capture the fact that N2 is the syntactic (and semantic) head of the nominal projection and hence determines agreement and selection. The variation in agreement and selectional properties can then be related to the fact that N1 is semi-functional, hence also semi-lexical, it retains some of its lexical properties and when these are prominent N1 can trigger agreement and be selected.

2.4. The syntax of the juxtaposed *PsP*

2.4.1. PsP is not a DP

According to the Monoprojectional analysis, N1 is a classifier and N2 is the head of the whole nominal projection that instantiates the *PsP*. This lexical head (N2) is always a mass noun or a bare plural. As we have seen, it is

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[28] This fact finds an exact parallel in English, concerning the exclusion of a singular verb when its noun phrase subject contains *a lot*:
(i) A lot of peaches were/*was thrown away by the farmers.

preceded by a sequence consisting of a numeral plus N1. At this point we can generalize by saying that N2 is preceded by some cardinality marker, in the sense of Lyons (1999) – see Chapter 1 of Part II.

This restriction on the distribution of N2 means that we cannot assume that N2 heads a DP with an empty D, which would be licensed under the conditions standardly stated in the relevant literature (Longobardi 1994, among others; see Chapter 2 of Part II) and which would be interpreted under the conditions that obtain for bare mass nouns and bare plurals. A *PsP* without a numeral or cardinality expression is ungrammatical in contexts where a bare mass noun would be possible – cf. the discussion around example (18) repeated here under (53):

(53) a. Thelo *(ena) potiri nero. *vs* Thelo nero.
want-1SG *(a) glass water *vs* want-1SG water
'I want a glass of water.' 'I want water.'

b. Iparxi sto trapezi *(ena) bukali krasi. *vs* Iparxi sto trapezi krasi.
is on the table (a) bottle wine *vs* is on the table wine
'There is a bottle of wine on the table.' 'There is wine on the table.'

At this point one might make the counterproposal that what (53) shows is simply that a singular noun cannot appear 'bare' in any argument position in Greek (see Chapter 2 of Part II for bare nominal arguments). However, we observe that a similar restriction applies in the case of plural nouns. Although bare plurals can be used in object position (54b,d), in the *PsP*, a cardinal numeral or a quantifier (54a,c) has to be present, even when N1 itself is in the plural. So, quite importantly, N1 itself is not a 'bare plural'. (54a) shows that as a direct object the *PsP* construction needs a quantifier or a numeral, (54b) shows that this is not required for bare plurals.

(54) a. Aghorasa *(merika/tria/pola) bukalja krasi.
bought-1SG (some/three/many) bottles wine
'I bought ?(some/three/many) bottles of wine'[29]

A lot has apparently also become completely functional in English (cf. also the reduced form *a lota*).

It is worthwhile noticing in this connection that whenever a noun is used with minimal lexical content, the indefinite article that precedes it tends to lose its own grammatical features and so become part of a larger unit which now looks like a completely function word. This is the case with *ena soro* in Greek, or *a lot* in English. They could even be written as a single word.

b. Aghorasa (merika/tria/pola) bukalja.
bought-1SG (some/three/many) bottles
'I bought (some/three/many) bottles.'

(54c) shows that in the existential construction, the *PsP* construction needs a quantifier or a numeral, (54d) shows that this is not required for bare plurals.

(54) c. Exi *(dio/pola) bukalja krasi sto trapezi.
has (two/many) bottles wine on-the table
'There are *(two/many) bottles of wine on the table.'

d. Exi bukalja/vivlia/ruxa sto trapezi.
has bottles/books/clothes on-the table
'There are bottles/books/clothes on the table.'

The significance of (54b), together with the evidence in (18=53) and in (31)–(32) above, will be a determining factor for the structure to be elaborated under (55) (and anticipated in (38)) below.

But there is another important fact that points in the same direction. The definite determiner is excluded from the pseudopartitive construction in its quantificational or quantity reading, cf. (53c):[30]

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[29] Geoff Horrocks (personal communication) informs us that the English equivalent of (54a) without a quantifier in front of *bottles* is rather marginal too and an interpretation can only be forced in so far as the context provides a list of things, 'bottles of wine' being one thing of that list. 'Some' is strongly implied in the English counterpart of (54a).

Another reading of (54a) which would render the particular phrase fully acceptable in both languages is one according to which bottles is heavily stressed – in that case it would mean 'huge quantities of wine', but then the bare plural *bottles* would be independently licensed by a Focus operator. Notice also that (54a) would be fine under a container reading – see section 6 below.

[30] In Dutch one could have (i), with a definite determiner and what seems like a *PsP*. But crucially the construction will have what we refer to as the container reading (see section 6)

(i) a. Ik heb de fles wijn meegebracht. b. Hij had de drie dozen cigaren verkocht.
I have the bottle wine brought he has the three boxes cigars sold

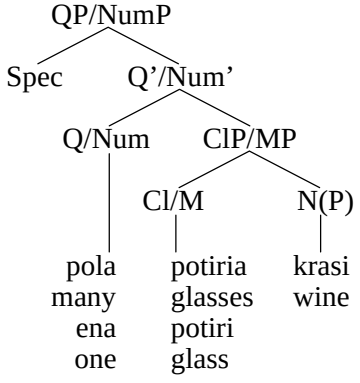
In Greek, one can also find the construction in (ii), which patterns with determiner spreading (see Chapter 1 of Part III, section 6), and has the container reading (see section 6 for discussion):

(ii) Efera to bukali to krasi.
I brought the bottle the wine

(53) c. *Thelo to potiri nero. *vs* Thelo ena potiri nero.
want-1SG the glass water want-1SG one glass water

Crucially, the numeral in the *PsP* construction appears to serve a function parallel to that of a determiner in an ordinary DP, that is a DP without a classifier/measure phrase. Based on the Greek data, the 'complementarity' between the numeral and the definite determiner in front of the measure or classifier noun, N1 (cf. 54a–d), has been taken (Stavrou 2003) to indicate that the highest functional category in the Greek *PsP* must be a NumeralP (or QP) and that it is not a DP. This QP selects a Classifier (or Measure) Phrase as its complement, for reasons that have already been exposed in 2.1–2.3. The Classifier (Measure) Phrase (ClP) in turn selects the lexical noun phrase headed by N2, because its head N1, as we have argued, is a relational nominal constituent, which imposes selectional restrictions on its complement. We may actually assume that such quantity-denoting nouns (i.e. N1 of the subclasses (a), (b) and (d), but possibly also the others – see the discussion in the conclusions of this chapter)) are listed in the lexicon in the way that Löbel (1999) proposes, namely as [$+N_Q$ [{weight, form, substance, container,…}] NP_L] (where *Q*=Quantity, and L=lexical).

(55) a.



Where ClP=Classifier Phrase, MP=Measure Phrase, QP=Quantifier Phrase, NumP=Numeral Phrase

The structure in (55a)[31] is intended to capture the fact that the first constituent of the whole *PsP* is the numeral (or the Q), the head of NumP (or QP)

[31] Cheng & Sybesma (1999) propose a structure similar to that in (55a) (their (39)) to account for Chinese facts. Cheng & Sybesma's structure is (just) a NumP for indefinite noun phrases. See also Chapter 2 of Part II.

and that the whole *PsP* is no more than NumP (or QP). Num (or Q) is obligatory (cf. again (54a–c), in the same way that D is obligatory in ordinary DPs in Greek. For just this reason Num must also be lexicalized, in the same way that D must be lexicalized; hence the obligatory presence of the numeral in the *PsP*. Given the absence of the DP projection, the analysis implies that Num (or Q)P itself must be able to have an argumental status (i.e. it has referential properties) and the head of this category is what receives case from an external case assigner. For the role of Num in determining reference and the status of D see Chapter 3 of Part II.

(55a) can also capture the facts of adjective distribution and interpretation illustrated above (section 2.3.2). Classifying adjectives which, as we saw, can precede N2 (cf. (39)), must be merged with N2 in (55a) as zero level categories: together with N2 they can form a syntactic compound[32] (for classifying adjectives see also Chapter 5, sections 2.3.2 and 3.3). For a complete discussion of this issue which leads to a principled account of A^0+N^0 combinations see Dimitrova-Vulchanova (2003) and Bouchard (1998, 2002). As for evaluative/size adjectives, and in general those adjectives that can felicitously modify N1 (cf. (42), (43c), (44), (45), (47a)), we assume that they are merged in the specifier position of ClP/MP.

As already underlined above, one prominent characteristic of the Mono-projectional (MP) analysis is that the usual DP layer is absent. This is a feature of the *PsP* which is intrinsically related with its inherent indefiniteness (Stavrou 2000). Although indefiniteness is not usually signaled as a property of the *PsP* construction,[33] the Greek facts are particularly revealing in this respect. Consider the following contrast:

(56) a. Dhose mu ena potiri krasi.
give-IMP me a/one glass wine

b. *Dhose mu to potiri krasi (apo ki pano).[34]
give-IMP me the glass wine (from there above)

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[32] Ralli & Stavrou (1997) label this pattern a construct state.

[33] Selkirk (1977: 302), however, says that "the Det under the highest NP will have to be either optionally developed, or null and "indefinite", (see also Chierchia 1998a: 73). See also Note 27.

[34] Recall that in Greek the demonstrative always co-occurs with the definite article (see Chapter 1, Part II). If a demonstrative is also present sequences like (56b) become acceptable:

The ungrammaticality of (56b) suggests that in Greek a measure/classifier phrase must be part of an indefinite construction, a definite determiner being excluded. The interpretation of the *PsP* construction is that of an indefinite non-specific nominal. This is what the structure in (55a) predicts, given that it lacks a DP projection.[35] This assumption is compatible with the account by Lyons (1999), who claims that a DP is associated only with definite determiners, and, therefore, only definite noun phrases will be DPs. "Indefinites can have no D, therefore no DP projection" (Lyons 1999: 299–300).

However, the *PsP* in English and other languages does not display the indefiniteness constraint in the way the Greek *PsP* clearly does (cf. 56d).

(56) c. I drank one bottle of wine.
d. I drank the bottle of wine you offered me.
e. Many students liked the show.
f. The many students that were there liked the show.

We observe that (a) under the assumption put forward here, the English sequence num/Q+N1 in (56c) has the same distribution and interpretation as a quantifier in a simplex DP (56e), as we have argued for Greek and Dutch. Moreover, (b), Giusti (1993, 1997) has argued, as we have already said, that English *many* (along with other quantifiers) in (56e) is different from *many* in (56f), in that in the former case *many* is of category Q(uantifier)

(i) Dhose mu afto to potiri krasi pu kratas.
Give-IMP-me this the glass wine that (REL) hold-2SG
'Give me the glass of wine you are holding.'

The same holds of cases where there is a descriptive adjective or the superlative of an adjective modifying the first noun. We do not have a principled explanation for this rather curious restriction, but we will suggest immediately below that what is involved in such examples is a full DP rather than a *PsP*. One could argue that the two nouns (N1 and N2) form a complex noun in the sense of Giusti & Turano (2002). This would explain the possible occurrence of the demonstrative in (i) and the possibility of adjectival modification, but would still leave unexplained (53c).

[35] It is worth noting that a very similar line of reasoning, in accounting for Chinese facts involving numeral+classifier+noun, is taken up by Cheng & Sybesma (1999), who claim that noun phrases with overt numerals, in both Cantonese and Mandarin, can only be interpreted as indefinite, overt numerals consistently leading to an indefinite interpretation (1999: 528).

whereas in the latter it is just an adjective.[36] This leads us to conclude that even in English (56c) the *PsP* is an indefinite nominal expression and that cases like (56d) should be interpreted as not involving a quantity reading in the technical sense. This means that the genuine quantity reading of the *PsP* is derived from its indefinite form, and that the presence of the definite article in (56b,d) suppresses this quantity reading. In (56a,c) the quantifier/numeral is a head that selects an NP (of the semi-functional type, as we argue). This state of affairs follows directly from Giusti's as well as from Cardinaletti & Giusti's (1992, 2002) analysis, according to which a noun phrase is given a quantificational reading if the quantifier is a head (of a QP).[37] If, moreover, this Q selects a NP, the whole nominal projection gets an indefinite interpretation. On the other hand, when English *many* in (56f) is preceded by the definite article, then *many* is dominated by DP. *Many* occupies a lower specifier position, and functions like an adjective. So, given (55a), the contrast between (56c) and (56e) on the one hand, and (56d) and (56f) on the other, is captured straightforwardly: in (56d) and (56f) the numeral is not in the head Q position but in a position in which adjectives (or APs) appear in the DP, namely in the specifier position of an Agreement Phrase (see Chapter 3, Part II). The definite article is free to show up in this case.

2.4.2. Properties of the PsP construction

The structure in (55a) instantiates a single 'extended' (endocentric) projection (van Riemsdijk 1998): the whole *PsP* is dominated by a unique nomi-

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[36] It must be noticed here that according to Giusti (1991, 1997) and Cardinaletti & Giusti (1992, 2002) QP is always the topmost node in any DP. DP itself is lower, as it is what is selected by Q (as in *all the boys*). But Q may also select something smaller than a DP, e.g. a NP, as in *many students*.
For a different view on *many* see Kayne (2002).

[37] Giusti (1991, 1997) and Cardinaletti & Giusti (1992, 2002) claim that Q assigns partitive case to the complement NP that it selects. Although partitive case seems semantically compatible with the *PsP*, we don't want to claim that the Cl/M noun assigns partitive to N2, because this partitive case would never be realized in modern Greek. Instead we always get case agreement between N1 and N2, much as is the case with any Q in any DP. We leave the issue of case in the *PsP* open.

nal node (QP/NumP) and all the (functional) categories subsumed under it are of nominal character.[38]

This pattern is in accordance with the properties of semi-lexical (or semi-functional) categories as elaborated in the seminal discussion by van Riemsdijk (1999). He proposes that there are two functional features, which he labels [+*F*] and [+*G*]. The following are principles for projection of syntactic constituents:

(57) a. Categorial Identity Thesis:

In the unmarked case the lexical head and the corresponding functional head have the same categorical features.

(van Riemsdijk 1998: 4, 8)

b. 'Functional heads/projections' in the original sense are [+F, +G]; lexical heads are [-F, –G]. This leaves two possible intermediate categories, [+F, –G] and [–F, +G], and hence we have a four-way rather than a three-way distinction. (van Riemsdijk 1998: 25)

c. No Value Reversal (NVR):

"within a projection line, a node which is negatively specified for some …functionality feature may not be dominated by a node which is positively specified for that same feature."

(van Riemsdijk 1998: 25; see also Vos 1999: 33 for examples)[39]

We will see that all three principles apply to our representation. The noun that heads MP/ClP is a noun that is not fully lexical but not fully functional either. Under the assumption that semi-functional (or semi-lexical) nouns can be part of the extended projection, the measure phrase shares the categorial feature [+N, –V] along with the remainder of the projection. Moreover, this semi-lexical/functional nominal category bears the features [+Functional, –Grammatical] (van Riemsdijk 1998). The binary features

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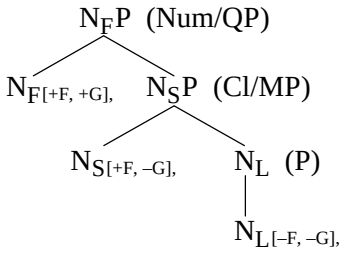
[38] Given case agreement between the head noun and any preceding modifier in every single DP in Greek, one could even argue, along with Giusti & Turano (2002), that N1 and N2 form a complex nominal head in this case, i.e. in a definite DP.

[39] Observe that the condition also applies to projection levels: when a node is specified negatively for the projection level it cannot dominate a note that is positively specified for its projection level and that belongs to the same projection line. In other words, and put informally, this will insure that in the projection line of, say a verb, V° [–Proj] is dominated by VP [+proj].

[+/–F(unctional)] and +/–G(rammatical)] capture the varying degree of functionality of the categories involved.

(55a) captures the agreement between the lexical noun and all the other heads in the extended projection, Num/Q and Measure/Classifier. Agreement between all these heads is a reflex of the Monoprojectional (MP) relationship. Using the labels introduced in (57b), the structure in (55a) can be presented as in (55b) (cf. van Riemsdijk 1998: 39–40):

(55) b.

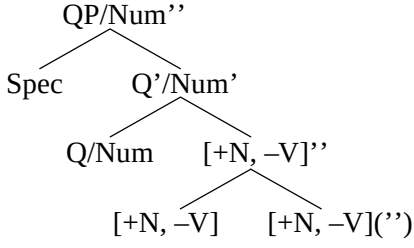


Where F=functional, G=grammatical, S=semi-lexical, L=lexical.

(55b) is in compliance with the No Value Reversal: in (55b) the values [+/–L/F] will not be reversed. The top category is [+F, +G], that below is [+F, –G] (the semi-lexical noun, the measure or classifier noun) and the lowest category is [–F, –G] (the lexical noun). There is thus a gradation of functionality, starting from fully functional, going on to semi-functional, ending with lexical. Observe crucially that [+F] or [+G], the functional features, are not dominated by [–F] or [–G].

Based on categorical features, (55b) can be further revised as (55c),

(55) c.



In (55c), the lexical projection crucially consists of two occurrences of the feature bundle [+N, –V]. Moreover, both occurrences are arguably of zero level, as they cannot be followed or modified by anything (we have said already that the adjective that appears before N2 can be taken as forming a

compound N with it in the syntax).[40] In section 5.1.1 we will further justify the representation in (55c).

2.5. N1: head or phrase?

In view of what we have just said, an immediate consequence of the structure proposed in (55a) is that the measuring or classifier-like N, N1, is taken as a zero category. This conclusion is compatible with the earlier observation that N1 cannot be modified by a RC or by a PP. If N1 was the head of an independently projected nominal, it would be expected to be able to have its own RC or PP modifier. (33b) is repeated here as (58a); (35) is repeated as (58b):

(58) a. *(…) ena buketo pu aghorase xtes iakinthus
(…) a bunch that bought-3SG yesterday hyacinths

b. *ena bukali me psilo lemo nero
a bottle with long neck water

The ill-formed examples in (58) and in our earlier (35), which were accounted for on the basis of the 'deficient' or semi-functional nature of N1, provide evidence against a 'phrasal' analysis of N1: if N1 were indeed phrasal, we would expect it to be able to dominate a modifying postnominal PP.

In section 2.3.2 above, in connection with the examples (33) and (35), repeated here as (58), we pointed out the inability of N1 to be accompanied by a RC or a PP, and we attributed that this to the basically functional nature of N1. We said there that since nouns instantiating N1 lack descriptive bulk (the R-index in Vos's (1999) terms), they are deficient in lexical ('modifiable') properties and cannot sustain a modifier. As discussed here, treating N1 as a category smaller than a DP, perhaps even just a N, is compatible with the facts in (33) and (35) and follows from the Monoprojectional analysis, whereby N1 is a classifier. There would then be a second related reason for N1 lacking modifiers: the projection level required for merging such modifying adjuncts would not be available.

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[40] As mentioned in the preceding note, this leads Giusti & Turano (2002) to assume the two occurrences of [+N, –V] form a 'complex' or compound noun (i.e. a complex [+N, –V]).

However recall that some adjectives, like *nostimo* ('tasty'), *iperoxo* ('marvellous'), i.e. descriptive and evaluative adjectives adjectives, do in fact appear in front of N1. So, how can we accommodate this fact in a way that does not undermine the proposed structure with N1 seen as non-projecting? There are two obvious ways to account for the position of these adjectives. One is to assume that the adjective is found in the specifier position of a nominal agreement projection (see Part II, Chapter 3). Since this type of projection is assumed independently in any DP, it can also be postulated for the *PsP*. But we also have to assume that this agreement projection is located quite high in (55), for instance between QP and Cl/MP. Since descriptive adjectives are also found quite high in a DP, it is plausible to take them to be in the specifier of such a projection. Alternatively, it may be assumed, as we have already done, that the adjectives that appear to modify N1 are in the specifier of the semi-functional projection ClP/MP. However, as we will further discuss in section 5.1.1 below, there is suggestive evidence that the former option is to be preferred.

As for case agreement, which is an important feature of the *PsP*, between Q/Num and the rest of the nominal heads in the entire projection, it proceeds as in every normal DP.

Concluding this section, we have seen that the Monoprojectional account crucially relies on the parallelism between the sequence [numeral + N1] and simple quantificational elements like Greek *poli* ('much') etc. In this line of thought, the whole *PsP* is a single maximal projection. N1, the classifier/measure noun heading ClP, is a special-purpose category, which is essentially nominal in nature but which encodes various degrees of functionality/lexicality. N1 is not a fully lexical noun, as it is used mainly as a functional element without much descriptive content, but neither is it a fully grammatical category, as it does have some content of its own. It displays properties of both lexical and functional categories and lacks properties of both. For example, we have seen that not being fully functional N1 needs the support of a numeral (unlike an ordinary quantifier/quantificational adjective which is in complementary distribution with a numeral), and not being fully lexical it allows an adjective that precedes it to modify the noun that follows it.

Recall that there are two types of *PsP* constructions: juxtaposed *PsP*s without a formative, like English *of* and non-juxtaposed *PsP*s, with such a formative. So far we have concentrated on juxtaposed *PsP*s and proposed the Monoprojectional analysis which echoes the older analyses of Jackendoff (1977), Selkirk (1977) and Löbel (1999).

In the next section we will examine the English type *PsP* by presenting and discussing the Predicational account, which has been widely adopted for non-juxtaposed *PsP*s. We will see that many of the properties of the juxtaposed *PsP*s in fact carry over to the English-type *PsP* construction. We will first go over the basic argumentation and assumptions of the Predicational approach, and after we have done this we will proceed to a comparison between the two analyses. As the reader will see, the Predicational account does not really offer a clear account for the defectiveness of N1 but it does offer an interesting account for the role of the linking element *of* in the English-type *PsP*, which, as we will discuss below, is more problematic in the Monoprojectional analysis.

3. The Predicational approach to the *PsP*

3.1. Evidence for the predicative relationship between N1 and N2

As mentioned repeatedly, the Monoprojectional account has been mainly developed with reference to juxtaposed *PsP* constructions. For the English type *PsP* with a linking morpheme, the Predicational account is more popular.[41] By way of an introduction to the latter approach, this section presents some evidence for the predicative relationship between the two nominals in the *PsP* construction. In line with the literature on this area, the discussion here will be based mainly on English data.

First, we observe that measure nominals can independently appear as predicates (see also Chierchia (1998a: 55). This is illustrated in (59). This observation is obviously in line with proposals that the measure nominal, N1, must be interpreted as a predicate in the *PsP*.

(59) a. A: How much wine is this? (looking at a barrel of wine)
B: I think it is fifty bottles.
b. The amount of coffee I drink every day is three cups.
c. His height is 2 meters. (examples from Corver 1998: 219)

The predicative nature of the measure nominal N1 is also suggested by some of its distributional properties, which it shares with other predicative

[41] But see Matushansky (2002), Vinet (2003) for a recent alternative analysis of the *NoN* Construction which could have implications for the *PsP* construction as well.

nominals (see Corver 1998 for references). In English *what...like*-questions typically ask for a property, and not for the identification of an individual/ entity. This is illustrated in (60). In (61) we see that a measure phrase can be used as an answer to a *what...like*-question:

(60) A: What is Sue like?
B: She is a nice, enthusiastic girl.

(61) a. A: What is the price like?
B: The price is about 200 dollars.
b. A: What's the temperature like outside?
B: It's about thirty degrees. (from Corver 1998: 220)

We further see that in (62) the measure phrase *200 meters* can be felicitously conjoined with an adjective that denotes a property. Assuming that conjoined phrases must be of the same semantic type, we can conclude that *200 meters* is of the predicative type.

(62) The range of these guns is only 200 meters but nevertheless sufficient.
(from Corver 1998: 220)

A third piece of evidence for the predicate nature of measure nominals comes from pronominalization. There are certain contexts in which a pronoun takes as its antecedent a predicate NP/DP. In that case, the pronoun refers to the denotation of the antecedent N. In the case of predicative NP/DPs the pronoun refers to the property denoted by it. In (63a), for example, the pronoun *it* has the noun phrase *a fool* as its antecedent, and in (63b), the pronominal element *so* takes *a hero* as its antecedent.

(63) a. John is a fool, although he doesn't look it.
b. John is a hero and so is Bill.

As shown by (64), measure nominals can also function as antecedents for the *pro*-predicates *it* and *so*.

(64) a. John's weight is *50 kilos*, although he doesn't look *it.*
b. Today's temperature is *30 degrees* and *so* was yesterday's.
c. The depth of this lake is *2 kilometers* and *so* is its width.
(from Corver 1998: 221)

A fourth argument in support of the predicate nature of measure nominals is based on the parallelism between (65) and (66). The measure phrase *45 degrees* in (66) behaves distributionally and semantically like the predicate nominal *a prince* in (65). As shown by the parallelism between (65)–(66), measure nominals can be linked to the subject by a copular verb like *become*:

(65) The frog became a prince.

(66) The temperature became 45 degrees inside the room within minutes.[42]

For reasons of space we will not dwell more on the predicative properties of measure nominals. The discussion above provides us with convincing evidence for the predicative status of the quantity/measure nominals in copulative sentences. This observation leads to the proposal that in the *PsP* construction too the measure noun (N1) is predicative, motivating the Predicational analysis of *PsP*. As mentioned, the Predicational analysis of *PsP* has been based very much on the Predicational analysis of the *NoN* construction illustrated in (1b). For this reason, it will be helpful at this point to discuss the similarities of the *PsP* construction and the *NoN* construction (cf. (1b) above).

3.2. Similarities with the *NoN* construction

In the Predicational approach, the non-juxtaposed pseudopartitive construction is taken to be structurally similar to the *NoN* construction. At first sight, the parallelism between the *NoN* construction and the non-juxtaposed pseudopartitive construction is intuitively appealing since superficially both constructions include the sequence N1 *of* N2. As (67)-(69) illustrate, this parallelism is found in many languages:

(67) a. cet idiot de Jean (French; cf. Milner 1978)
that idiot of Jean
b. une bouteille de vin
a bottle of wine

[42] However, there are verbs that can take predicates but the parallelism in (65)–(66) nevertheless does not hold:
(i) The frog turned into a prince.
(ii) *The temperature turned into 45°.

(68) a. il tuo cretino di fratello (Italian; cf. Napoli 1989)
the your cretin of brother
'your cretin of a brother'

b. una bottiglia di vino
a bottle of wine

(69) a. esta maravilla de niño (Spanish;
this marvel of child cf. Rivero 1980, Vos 1998: ch. 8)

b. una botella de vino
this bottle of wine (Exs from Corver 1998: 216)

In section 1 above we already listed a number of syntactic properties that the *PsP* and the *NoN* have in common. These concern extraction (cf. 2, 3, 12, 13), selectional properties (4, 5), adjectival modification of N1 (7), and determination of N2 (10, 11). These commonalities have led those who favor the Predicational analysis to assign a similar analysis to the two construction types. Before discussing the Predicational analysis to the *PsP* we will first survey the Predicational analysis proposed for the *NoN* construction, which has served as the basis for a Predicational analysis for the *PsP* construction.

4. The *NoN* construction: The category PredP in the noun phrase

4.1. The Predicational analysis: a sketch

Let us first consider the defining properties of the *NoN* construction illustrated by English (70) and by the examples drawn from other languages in (71) (cf. Matushansky 2002, Vinet 2003):

(70) that idiot of a doctor

(71) a. astupida da Flora (Portuguese)
the stupid of+the Flora
'that stupid Flora'

b. la tonta de Juan (Spanish)
the silly of Juana
'that silly Juana'

c. un drôle de type (French)
a strange of type
'a strange fellow'

d. (Wat) een ramp van een opvoering! (Dutch)
(what) a disaster of a performance

e. ta kretod zdravnika (Slovene)
this idiot of doctor (GEN)

f. (Mi)csoda egy nyelv! (Hungarian)
(what) wonder a language
'(What) a wonder of a language!'

g. tuo tohtori-n idiootti (Finnish)
this doctor-GEN idiot

In the literature (see Napoli 1989, and references cited there; Moro 1997; den Dikken 1998 – but see Matushansky 2002) it has been argued that (70) and (71) involve a predicative relationship between the two nominals contained in the complex DP, where the 'subject' of the predication is realized by a PP containing N2 (71a–d) or by N2 (71e–g), and the predicate is headed by N1. While agreeing on the predicational relation N2–N1, researchers differ in the way they structurally implement this DP-internal predication. In an early analysis of this type, for instance, Napoli (1989) proposes that the subject *of N* phrase is a PP sister to the head (the predicate) N. More recent accounts (Kayne 1994; Den Dikken 1995, 1998, 2006) assume a derivation like that in (72).

(72) a. $[_{DP}$ that (…) $[_{SC}$ $[_{N2}$ doctor] $[_{Pred}$ $[_{N1}$ idiot]]]]
b. $[_{DP}$ that (…) $[_{N1}$ idiot$_i$] of $[_{SC}$ $[_{N2}$ doctor] t$_i$]]

N1 *idiot* is a predicate of a small clause (SC) whose subject is N2, *doctor*.[43] The structure of the SC in (72a) is to some extent on a par with that of a copulative sentence such as *that doctor is an idiot*. However, observe that in (72a), the demonstrative *that* is not the determiner of N2, *doctor*, but it selects the full SC as its complement. To derive the surface order the predicate of the SC (N1) is 'inverted' by the raising of the predicate (72b).

In assuming that the structure of the *NoN* construction contains a small clause of which N2 is the subject and N1 is the predicate, Kayne (1994:

[43] Following Bowers (1993, 2001) the SC might be analysed as the projection of a functional head Pred, i.e. a Predicate Phrase (PredP).

106) points out that a derivation along the lines of (72a,b) is capable of "expressing in a direct and familiar way the subject-predicate relation understood to hold between *doctor* and *idiot*" (cf. also Quirk et al. (1985: 1284) for the same view in a traditional approach). In the *NoN* construction, the predicative nominal linearly precedes its subject.

This analysis seems plausible in view of the fact that in an example like (71), the referent of N2, *doctor*, is ascribed the property of being an *idiot*. N1 is an 'evaluative' noun and may be instantiated by various nouns denoting inanimate objects that are commonly used with "a sense of an evaluative judgment" (Napoli 1989: 191; Matushansky 2002), such as *fiore* ('flower') as in *un fiore di ragazza* ('a flower of a girl')). Since N1 gives an evaluative judgment of N2, it is exactly the type of N that can act as a predicate (Napoli 1989:190, referring to Milner 1972 and Rothstein 1983).

If the surface order in the *NoN* construction is a result of movement (as in (72a,b), the question arises whether the leftward movement of N1 is a case of A′-movement (Kayne 1994), or whether it is a type of A-movement. Below we discuss a number of diagnostics distinguishing between the two types of movement. When we apply these tests to the *NoN* construction it seems that the type of movement involved in (72a,b) is of the A-type.

4.2. A-Properties of Predicate Inversion

As is well known, in copulative constructions either the subject (73a) or the predicate (73b) can surface in a pre-copula position. This leftward movement of the predicate is referred to as Predicate Inversion.[44]

(73) a. Our doctor is the biggest idiot in town.
b. The biggest idiot in town is our doctor.

One analysis of the pattern in (73) suggests that while (73a) involves A-movement of the subject of predication to the canonical subject position, (73b) involves A'-movement of the predicate to an initial position (Moro 1997). However, it can be shown that the predicate inversion in (73b) is different from the leftward A′-movement processes such as topicalization or *wh*-movement, and that in fact it largely shares its properties with other manifestations of A-movement. On the assumption that the clause-initial

[44] Predicate Inversion inside the DP is also used to derive possessive constructions, see Part IV, Chapter 2, section 3.2.

constituent of a Predicate Inversion construction as that in (73b) does originate as the predicate of a small clause and ends up in the initial position via A-movement, we would thus have to conclude that Predicate Inversion involves A-movement. We will first discuss some of the empirical evidence that motivates the particular analysis of Predicate Inversion in the clause.[45]

4.2.1. Raising

One indication that Predicate Inversion involves A-movement is the observation (cf. Bresnan 1990; Heycock 1991; Moro 1993, 1997; and many others) that it feeds A-movement, as shown for instance in the raising constructions in (74):

(74) a. The biggest idiot in town turns out to be our doctor.
b. The cause of the riot seems to have been a picture of a politician.

If leftward predicate movement in examples of this type were to be taken as A′-movement, the expectation would be that it would be unable to feed subsequent raising to a higher A-position, which would be a case of what is referred to as 'improper movement.'

4.2.2. Extraction and quantification restrictions

Theoretically less obvious but no less telling are the extraction and quantification restrictions that Predicate Inversion constructions exhibit and which are all centered around the subject of the inverted predicate. The examples in (75)–(76) illustrate the relevant facts. In Predicate Inversion constructions, extraction of the subject is prohibited, as shown by (75), and so is subextraction from the subject, as (76) shows.

(75) a. *A picture of a politician$_i$ was considered the cause of the riot to be t_i
b. *Which picture of a politician$_i$ do you think that the cause of the riot was t_i?

---

[45] The examples in the discussion below are taken from den Dikken (1998: 180), unless otherwise cited. For a new analysis of predicate inversion see also Den Dikken (2006).

(76) a. *This politician$_i$, I think that the cause of the riot was a picture of t_i.
b. *Which politician$_i$ do you think that the cause of the riot was a picture of t_i?

In addition, it is impossible for the subject of an inverted predicate to be quantificational or to consist of or to dominate a Negative Polarity Item (Moro 1997; Heycock & Kroch 1997). This is shown in (77) and (78).

(77) a. *I do not think that the cause of the riot was few pictures of a politician.
b. * Everybody's problem is few pictures of his children.

(78) a. *I do not think that the cause of the riot was any picture(s) of a politician.
b. *Nobody's problem is any pictures of his children.

A'-movement of a predicate around its subject gives rise to no such effects. The contrast between the earlier examples in (75b), (77) and (78) on the one hand, and the A' predicate movement cases in (79) and (80) on the other makes this clear. The degraded status of (79) is due to a weak subjacency violation (the same sentence would be fine as an echo question), but the point of comparison is that the status of (80) is not on a par with the degradations in the examples above.

(79) ??Which picture$_i$ don't you know what to call t_i?

(80) a. ?What can't few(er than six) pictures of a politician possibly be?
b. ?What can't any picture(s) they have of a politician possibly be?

(examples modified from Den Dikken 1998: 180)

4.2.3. The Spell-Out of the copula

The specific distribution of copular element in the Predicate Inversion construction provides further evidence for the A-status of predicate movement (cf. Den Dikken 1998). What is of primary importance for our purposes here is the observation (due to Moro 1990) that Predicate Inversion triggers the obligatory presence of a copular element in contexts in which a copula would not be required otherwise:

(81) a. I consider a picture of a politician (to be) the cause of the riot.
b. I consider the cause of the riot *(to be) a picture of a politician.

While the copula can be freely omitted in (81a) (*consider* can take either a *to*-infinitival complement or a Small Clause), Predicate Inversion as in (81b) renders the insertion of *be* obligatory.

Once again we find that examples of A′-predicate movement pattern differently from Predicate Inversion. As seen in (82), no copula is required in the *wh*-movement construction corresponding to (81):

(82) Provocative, that's what I consider a/this picture of a politician (to be).

The conclusion can be drawn then that if the predicate inversion construction is derived by fronting of the predicate, its landing site is to be taken as an A-position rather than an A'-position.

4.3. The *NoN* construction as an inverted predicative construction

4.3.1. Extraction

To test whether Predicate Inversion is involved in the derivation of the *NoN* construction, one thing we could do is examine whether N2 (the noun which linearly follows *of* and which is the subject of predication) is extractable or not in this particular construction. As we have already seen in the introduction to this chapter (examples (2)-(3)) such extraction is totally ungrammatical. Consider also (83) and (84). While extraction of the complement of N2 is possible in (83b), and (83c), as shown by (84b) and (84c) respectively, such extraction is not possible for the *NoN* construction in (83a), as shown by the ungrammaticality of (84a).

(83) a. This is a hell of a problem
b. This is a good solution of the problem
c. This is a good paper about the problem

(84) a. *a problem which$_i$ this is [a hell of (a) t_i] (Den Dikken 1998)
b. a problem which$_i$ this is [a good solution of t_i]
c. a problem which$_i$ this is [a good paper about t_i]

As argued by den Dikken (1998), on a Predicate Inversion approach to the *NoN* construction, the deviance of (84a) is of the same structural type as

that of (85), in which predicate inversion in copular sentences blocks A-bar extraction of the postcopular subject.

(85) *Which picture of a politician do you think that the cause of the riot was?

Just as in the clause then, there is supportive evidence for postulating Predicate Inversion in the DP domain as well.

4.3.2. Predicate Inversion and the Spell-Out of the copula

We saw above that in copular sentences, movement of the predicate across the subject gives rise to the obligatory spell out of the copula *be*. What about the inversion of the predicate NP in the *NoN* construction, which we have suggested could be identified as the nominal-internal equivalent of copular inversion in sentences? Clearly there is no spell out of the copula *be* in the *NoN* construction as such. We may ask, though, if there might be a constituent in the *NoN* construction whose role can be compared to that of the copula *be*? It has been argued that indeed there is such a morpheme: the morpheme *of*, which separates the fronted predicate (N1) from its subject (N2), has been claimed to be the DP-internal counterpart of *be*. Just like the clausal copula *be*, the 'nominal copula' *of* in the *NoN* construction can be said to be near meaningless. Moreover, although *of* in the *NoN* construction may look like an ordinary preposition, it does not really behave like one. For instance, unlike the preposition *of* introducing the complement to a noun, *of* in *NoN* cannot be stranded, as (84a) has already shown.[46]

Data from other languages offer support that the linking item in question is indeed different from the formally identical preposition. In German, for instance, the element *von* in *NoN* constructions does not obligatorily have a case relationship with the noun phrase following it, as shown by (86b) (taken from Aarts (1992), along with the adapted (a)-example).

(86) a. ein alter Schelm von einem Lohnbedienten
an old villain of a waged servant-DAT

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[46] But see Napoli (1989: 170–72) for arguments that the corresponding *di* morpheme in Italian (i) is a P and that therefore the NP following it is part of a PP.

(i) questo straccio di vestito
this rag of a dress (from Napoli 1989: 169)

b. ein alter Schelm von Lohnbedienter (Den Dikken 1998: 190)
an old villain of waged servant-NOM

In Dutch, prepositions usually allow leftward movement of their pronominal R-complement (see van Riemsdijk 1978), as seen in (87a,b).

(87) a. Ik heb een boek daarover gelezen.
I have a book there-about read
b. Daar heb ik een boek over gelezen.
there have I a book about read

Again, the linking element *van* in the Dutch *NoN* construction does not allow such R-movement to a position to its left:

(88) a. Dat is een ramp van een hoofdstuk.
that is a disaster of a chapter
b. *Dat is daar een ramp van.
that is there a disaster of

We are familiar already with elements that look like prepositions and occupy a head position in the syntactic tree. The filler of the complementizer position is a case in point: Comp may host, for instance, English *for*, Dutch *om*, West Flemish *van* ('of'), French *de* ('of') and Italian *di* ('of') in infinitival clauses. By analogy with this use of the preposition as a complementizer in infinitival clauses, it would seem natural to consider the linking element in *NoN* construction as a Comp-like element. This is what Kayne (1994) proposes. He locates *of* in the nominal counterpart of C, the D-head position:

(i) *[O]f* in the *NoN* construction is the nominal counterpart of the complementizer, in D. (Kayne 1994)

However, this proposal might lead us to conclude that the fronted N1 occupies an A'-position, contrary to what is suggested by the facts (83a) and (85) above.[47] In view of this problem, den Dikken argues that in the *NoN* construction the copula *of* is the nominal counterpart of the clausal copula *be*:

[47] This conclusion is not necessary, though. Observe that given a split CP framework, it can be argued that the prepositional element in infinitival clauses occu-

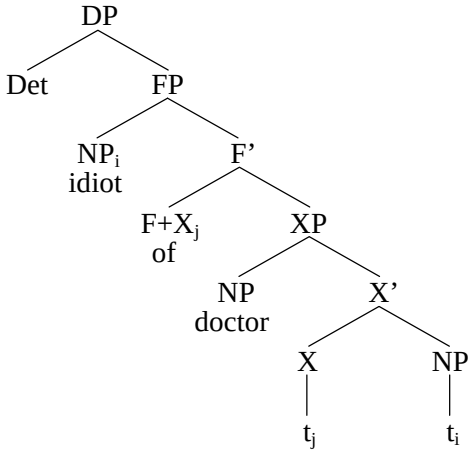
(ii) *Of* in the *NoN* construction is the nominal counterpart of the copula, in F. (Den Dikken 1995b)

According to Den Dikken, in a Predicate Inversion construction the fronting of the predicate gives rise to an extension of the domain by the creation of a functional projection whose head is spelled out by the copula. In the *NoN* pattern, the fronting of the predicate N1 leads to a similar domain extension: a functional projection FP dominates the SC, whose head is spelled out by *of*. Based on the more general structural schema in (89a), the structure underlying the *NoN* construction is given in (89b), following den Dikken (1998). The relevant tree-diagram is given in (89c):

(89) a. $[_{DP}$ Det $[_{FP}$ Spec F $[_{XP}$ NP $[_{X'}$ X NP]]]]

b. $[_{DP}$ Det $[_{FP}$ $[_{Spec}$ $[_{NP}$ idiot$]_i]$ $[_{F}$ F+X_j (=*of*)] $[_{XP}$ $[_{NP}$ doctor] $[_{X'}$ t_j $[_{NP}$ $t_i]]]]]$

c.



(89c) contains a DP-internal small clause with two nominal constituents and a functional head X.[48] Den Dikken assumes that the nominal projection

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pies a lower position. Rizzi (1997) locates Italian *di* and French *de* in Fin. On the other hand, it can be argued that the specifier of Fin in the clausal domain may function as an A-position (Cardinaletti 1992; Haegeman 1996; Haegeman 2004; Van Craenenbroeck and Haegeman 2007). If the specifier of the lower projection in the CP domain may be an A-position, the same could hold for the DP (Haegeman 2004). This could mean that we can maintain that the linking element *of, di, de¸* in the *NoN* construction is a C element in the DP.

[48] As already said, XP could be Bowers' 'PredP' (1993, 2001). See also Den Dikken (2006) for a reinterpretation of his earlier analysis.

which constitutes the DP-internal small clause is not a full DP. His assumption is mainly based on observational grounds: it appears to be impossible to embed full DPs as subconstituents of *NoN* constructions, as shown in (90b):

(90) a. that idiot of a doctor
b. *that idiot of the/that/this/my doctor

On this analysis, the parallelism between clausal Predicate Inversion constructions and their DP-internal counterparts is complete:

(i) in both constructions there is A-movement of the predicate across its subject;
(ii) in both constructions this movement is contingent on domain-extending head movement of X to F;
(iii) in both cases the inversion gives rise to the obligatory surface phonetic realization of a copular element (*be* or *of*);
(iv) Predicate Inversion systematically results in the opacity of the second nominal of the construction.

Attention must be drawn however to at least one asymmetry that appears to hold between Predicate Inversion in the clause and that instantiated in the DP. Clausal Predicate Inversion is optional, in the sense that the non-inverted counterpart, in which the copula is optional, is always available (cf. (74a–b) above). In the DP, on the other hand, Predicate Inversion is obligatory: the *NoN* construction can only emerge if the predicate linearly precedes the subject. This is the reason why *of* is always present. This observed 'asymmetry' could perhaps be seen as a drawback of the predicative analysis.[49] But on the other hand, anticipating the discussion in the next section, observe also that the analysis does elegantly capture another related phenomenon. In languages lacking the clausal copula entirely, there is no nominal copula in the *NoN* either. This is as expected: if Predicate Inversion involves a nominal copula and if the clausal copula is non-overt, then we might expect the nominal copula to also remain non-overt. We will illustrate this point on the basis of the discussion of Hungarian the next section.

[49] For an account of the asymmetry see Den Dikken (2006), who assigns a more complex structure to the inverted predicate than would be assigned to the non-inverted counterpart.

4.3.3. 'Nominal copulas' and cross-linguistic differences in DP

Let us compare the Hungarian example (91a) with its English counterpart, in (91b):

(91) a. csoda egy könyv
wonder a book
b. wonder *(of) a book

The English and Hungarian examples are almost identical, apart from one crucial difference: while English (91b) must contain a token of the linking element *of*, no such element is required or even available in Hungarian (91a).

From the perspective of den Dikken's hypothesis that *of* in English (91b) is a nominal copular element, this distinction between English and Hungarian is expected. In simple present-tense nominal or adjectival predication constructions with a third-person subject, Hungarian does not insert a token of the copula *lenni* 'be', regardless of whether the predicate is inverted or *in situ*. This is shown in (92). Thus, as argued in Den Dikken & Lipták (1997), on the predicative approach to *of* we actually expect not to find a counterpart of English *of* in Hungarian (91a).

(92) a. a fiúk {katonák / kedvesek} (*vannak)
the boys soldiers/nice (*are)
b. {katonák / kedvesek} (*vannak) a fiúk
soldiers / nice (*are) the boys

Under the assumption that the distribution of English *of* in the *NoN* construction mirrors that of the clausal copula *be*, the comparative facts between Hungarian and English follow from the Predicational analysis of the *NoN* construction.

4.4. Conclusion

In this section we have reviewed the Predicational analysis of the *NoN* construction. There is a range of arguments that lend support to this approach in which N2 is taken to be the subject of N1, and in which the linear order of the *NoN* pattern is derived by Predicate Inversion of N1 across the sub-

ject N2. In this approach the linking morpheme *of* (*di, de*) has been viewed either as a spell-out of a DP-internal Comp-node (Kayne 1994) or as the spell out of a nominal copula (den Dikken 1998). We have elaborated the second proposal in some more detail here.

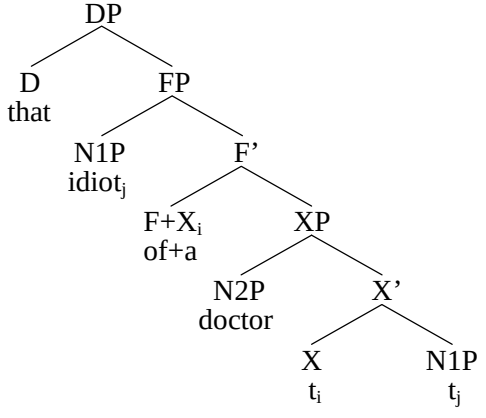
5. The Predicate Inversion analysis of the English-type *PsP*

We have seen that the *NoN* construction can be analysed in terms of DP-internal Predicate Inversion. We have also already presented some evidence to justify the interpretation of the quantity/measure nominal in the *PsP* construction as a predicate, and we have surveyed some of the arguments that have been taken to support a Predicational approach to the *PsP* (3.2, 3.3). Given the availability of the linking element *of* in the non-juxtaposed *PsP* constructions (as found in English, French, Italian) it has been proposed that these too should be interpreted as instantiating a predicational relation. Assuming this approach, let us address the question of how the predicative relationship between the two nominals can be represented structurally.

5.1. The basic proposal

Recall den Dikken's (1998) analysis in (89c) for the *NoN* construction, which is repeated here for convenience:

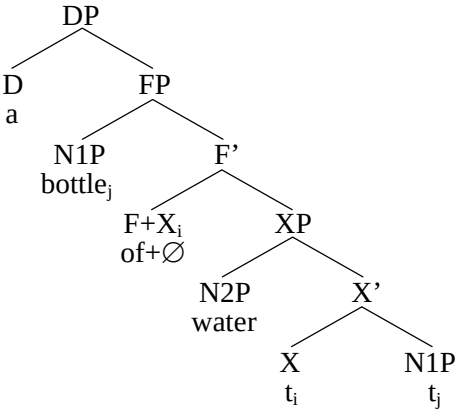
(93)



Corver (1998: 223), extends this analysis to pseudopartitives, and proposes the following representation for a DP like *a bottle of water*. Observe that

Corver presupposes that both the *NoN*-construction and the *PsP* construction are dominated by DP. This constrasts with the Monoprojectional approach, in which the *PsP* is assumed to be a NumP (see (55a)):

(94)



Both in (93) and in (94), N1 in the surface string (*idiot, bottle*) originates as the most deeply embedded noun: N1 is the head of an extended nominal projection. As such, it does not come as a surprise that N1 can enter into a selection relation with the functional head D which closes off the extended nominal projection. In (95), for example, the indefinite article is related to N1, it can combine with *bottle* (*buy a bottle*) but not with the mass noun water (**buy a water*):

(95) a. I bought a bottle of water.
b. *I bought a water.

Moreover, agreement with the finite verb can also be determined by the first nominal element, *viz.* the 'deep' predicate:

(96) a. Two bottles of wine were thrown into the soup.
b. *Two bottles of wine was thrown into the soup.[50]

The data in (96) contrast with the data in (50a–c) above, from Greek and Dutch, where it was seen that the verb may agree in number with either N1 or N2. We said there that the verb can agree with N1 because this noun is

[50] (96b) contrasts with (i) in which *wine* is the head of the construction:
(i) Wine was thrown into the soup.

semi-functional, i.e. it is not yet completely functional, it has a certain amount of lexical content which can trigger verb agreement. The verb can also agree with N2 because, being semi-functional, N1 is 'light', and so it allows the verb to 'see' through it and select N2. Clearly the ungrammaticality of (96b) forces one to seek an independent explanation for this cross-linguistic asymmetry. One plausible explanation seems to be that, as the case within any single language (see sections 2.3.2.2, 2.3.2.4, 2.4.2), the degree of functionality among quantity-denoting nouns varies cross-linguistically.

With respect to the obligatory occurrence of the linking element (*of, de, di*) in the *PsP* (95) Corver claims it is a reflex of the Predicate Inversion operation.

(97) a. I need a bottle *(of) water.
b. J'ai besoin d'une bouteille *(de) vin. (French)
'I need a bottle of wine.'
c. Vorrei una fiasca *(di) vino. (Italian)
'I would like a bottle of wine.'

Predicate Inversion (i.e. (A-movement of the nominal predicate across the small clause subject) necessitates an extension of the functional domain. The domain extension is achieved by (head-) movement of the SC-head to a higher functional head (for reasons of locality) (see den Dikken 1998). The incorporation of the SC-head into the higher (extended) functional head is spelled out in the form of a copular element. Just as the Spell-Out of the copula is obligatory in case of clausal complex inversion, its nominal analogy, the linking morpheme, is obligatory when Predicate Inversion applies DP-internally, as discussed in section 4.2.3. If *PsP*, just like *NoN*, instantiates Predicate Inversion, then we expect that the linking morpheme is obligatorily spelled out.

5.1.1. The bar level of N1 in the non-juxtaposed PsP

In our discussion so far, the Monoprojectional account for *PsP* constructions has been developed mainly with reference to the juxtaposed subtype, and the argumentation was essentially based on data from Greek. For non-juxtaposed *PsP* constructions like those in English, we adopted a Predicational analysis.

However, some ingredients of that Monoprojectional account of *PsP* constructions in fact carry over naturally to the English-type of construction, suggesting that, in spite of the presence of *of*, it might be worthwhile exploring the Monoprojectional account for non-juxtaposed *PsP* constructions. The obligatory presence of *of*, to which we return in the next section, seems to be one of the major stumbling blocks of the Monoprojectional approach.

According to the Monoprojectional approach to the juxtaposed *PsP* N1, the measure noun, does not project and it has the status of a head (see section 2.5.). With respect to the English *PsP*, which includes the formative *of*, Jackendoff's (1977) and Selkirk's (1977) analyses interpreted N1, the measure nominal, as phrasal. More recently, Abney (1987) and Löbel (1989), on the other hand, have proposed that N1 is a head-like category taking *(of)* N2 as its complement. In this section we will provide some evidence for the latter view, which brings the non-juxtaposed construction in line with to the juxtaposed one.

In line with the discussion of the Greek examples in section 2.5, the ill-formednes of the English examples in (98) at first sight clearly provides evidence against the 'phrasal' view: again, if N1 is phrasal, why can it not dominate a modifying postnominal PP? Again, as before, and as shown by (99), such nominal phrases become grammatical, if the modifying PP follows the string *of + water/gasoline*.

(98) a. *a [bottle with a long neck] of water
b. *? a [can bigger than this] of gasoline

(99) a. a bottle of water with a long neck
b. a can of gasoline bigger than this

On the other hand, the ill-formedness of (98a,b) might plausibly be attributed to reasons independent of the bar level of N1. As observed in Emonds (1976; also 1985) and also discussed in Williams (1981), there is a restriction on prenominal (i.e. left-branch) modifiers in English stating – informally – that such phrases are prohibited from terminating in anything other than their head. This restriction is exemplified in (100):

(100) a. a [full (*of water)] bottle
b. a bottle [full of water]

Emonds (1985) accounts for the ill-formedness of (100a) in terms of the *(Right) Recursion Constraint*, which blocks right recursion on certain pre-

head phrases in English, among which modifying attributive APs. Di Sciullo and Williams' (1987: 51, passim. See also Williams 1981) *Head Final Filter* states that left branch phrases that modify a nominal head must terminate in their heads; i.e. *[w X y] N, if $y \neq 0$.

But the phrasal (i.e. XP) status of N1 is also argued for on the basis of its modifiability by some 'left branch' adjunct. Consider (101), a simplex DP. The modifying element *extremely*, for example, can be argued to form a larger syntactic unit with the adjective *full*. This larger constituent is arguably an XP.

(101) an [extremely full] bottle

Along the same lines, one might argue that examples such as (102a) provide evidence for the phrasal status of N1. That is, the fact that the noun can apparently be modified by the left branch adjunct *small* might be interpreted as evidence for a phrasal analysis, with the representation in (102b):

(102) a. a small bottle of beer
b. [a [[$_{??}$small bottle] of beer]]

However, *one*-pronominalization, a standard constituency test for English (see Jackendoff 1977), suggests that *small* in (102a) does in fact not form a constituent with *bottle*, as implied by (102b). Consider, for example, (102a) and the additional example (103b). To account for the string *small bottle of beer* in the framework imposed by the Monoprojectional (MP) structure in (55) we have to assume (cf. section 2.5 above) that *small* occupies the specifier position of an agreement projection intervening between N1 and the higher selecting projection. This assumption can explain the fact that the string *bottle of beer* can be substituted for by the pro-form *one*. The same conclusion applies to the string *bunch of flowers* in (103b).

(103) a. John drank [a small bottle of beer] and Mary [a large *one*].
b. John bought [a fragrant bunch of flowers] and Mary bought [an evil-smelling *one*].

So even though it appears to modify the quantity-designating nominal expression (*bottle/bunch*), the descriptive adjective, *small* in (103a) and *fragrant* in (103b), is in fact located external to it. Assuming that *one* pronominalization affects maximal projections and adopting the Monoprojectional analysis for the English construction, the string *bottle of beer* forms a maxi-

mal constituent, ClP (or MP according to (55a)), which can be replaced by *one*. Rather than the bracketing in (102b) we would then assume that in (104):

(104) [$_{QP}$ a [small [$_{ClP}$ bottle of beer]]]

If this is a plausible approach, we are led to assume that the adjective *small* is in fact part of a projection situated between QP and ClP and is not in the specifier of ClP, as we also assumed – as an option- in 2.5. Notice too that the structuring in (104) is in line with the modified structure in (55c) for the juxtaposed PsP: N1 and N2 are taken to form a constituent.

We conclude then that there is indeed evidence in support of the non-phrasal analysis of N1 in English, for the very simple reason that the modifying AP that appears before N1, just as in the juxtaposed subtype, must be rather taken to be located outside N1 itself in the English-type *PsP* too. Observe that the Monoprojectional account can handle the English facts as described here. Its main drawback is that the obligatory presence of *of* remains unaccounted for. This component is dealt with particularly elegantly in the Predicational account. We return to the role of the linking morpheme in the next section.

5.1.2. The Spell-Out of linking morphemes and the juxtaposed PsP

Having both justified and formalized the Predicational analysis of *PsP*, we return to the presence of the linking element *of. Of* is that aspect of the *PsP* construction which, as we said at the beginning of the section, distinguishes the realization of the construction into two types: the juxtaposed and the non-juxtaposed version and which raises a problem for a Monoprojectional account of non-juxtaposed *PsP*.

The analysis of the linking morpheme *of* has been problematic for most analyses of the pseudopartitive. From the earlier generative analyses on, one might say that *of* has given rise to a question of 'identity': it is unclear what grammatical status should be ascribed to *of* in the surface string *a bottle of water*. For Jackendoff (1977) *of* is a grammatical formative without a specified origin or function. Likewise, in both Selkirk's (1977) and Löbel's (1989) analyses, in which the quantity expression is base-generated in the quantifier head position, the linking element is a purely functional morpheme devoid of meaning and without a clear status. On the other hand, both in Napoli (1989) and Abney (1987), the linking morpheme *of* is a P

heading the PP complement of N1. Löbel (1999) claims that *of* is a case marker representing qualitative or partitive genitive.[51]

Following the Predicate Inversion approach of Den Dikken (1998), Corver (1998) analyses *of* as a nominal copula, the nominal counterpart of clausal *be*. This was discussed in section 5.1. As mentioned, for Corver, linking elements such as *be*/*of* are surface realizations (Spell-Outs) of functional heads. The obligatory Spell-Out of the nominal copula in the English *PsP* is a reflex of the domain extension due to DP-internal Predicate Inversion.

Obviously the generalization of the Predicate Inversion analysis to all *PsP* patterns gives rise to a question. We have seen in section 4.3.3 that the difference between English and Hungarian with respect to the appearance of *of* in the *NoN* pattern was taken by Den Dikken and Liptàk (1997) to be related to the fact that Hungarian lacks a copula. But the same assumption cannot be extended naturally to account for the absence/presence of *of* in all cases of non-juxtaposed *PsP*. There are languages which do spell out a clausal copula but which do not spell out a linking morpheme in the *PsP* construction. In other words, while they display the clausal copula, they lack its nominal counterpart in predicate inversion patterns. Relevant languages are Greek and Dutch, which manifest pseudopartitives of the juxtaposed kind but which nevertheless display a copula in the clausal domain. If the Predicate Inversion analysis were to be extended to the juxtaposed *PsP* constructions such as those in Dutch and Greek, the question would arise why these constructions do not feature the linking morpheme *van* in Dutch or *apo* in Greek. Put differently, why is the Spell-Out of the copula in the nominal domain not obligatory, if it is the reflex of the functional domain extension due to Predicate Inversion? Selkirk (1977) cites some examples which show that *of* can be dropped in certain cases even in (American)English (*a pound cake, I met a larger number of high school students than I did college students*).

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[51] Both in Greek and in Albanian (Giusti & Turano 2002) it is possible for N2 to be marked with oblique case. But the construction will then have a different interpretation, the genitive expressing a property or qualification; thus in Greek (i) would mean *a wine glass*.

(i) ena potiri krasiu
a glass wine-GEN

So Löbel's particular hypothesis about *of* means that cross-linguistically there must be different interpretations of the construction

In the next section we will show how Corver (1998) accounts for the absence of the copula from the Dutch-type *PsP*.[52]

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[52] We would like to speculate on one hypothesis, which we hope can be a fruitful avenue for future research.

The counterpart of the linking *of* in the juxtaposed *PsP* is probably the overt case agreement between N1 and N2. Such a hypothesis would attribute the two sub-types of pseudopartitive to a parametric difference, and in particular to a difference in morphology: languages with overt case morphology (Greek, German) do not display a linking morpheme, whereas languages lacking nominal case morphology do (English, Romance). But now, although such a hypothesis would not necessitate any modification in the Monoprojectional approach, it would do so for the Predicate Inversion approach, to the effect that one would have to explain how domain extension triggered by Predicate Inversion would not be spelled out as a formative corresponding to English *of* in languages with juxtaposed pseudopartitives.

Unfortunately, the data are more complex. Both Dutch (ia) and West Flemish (ib, WF) allow the juxtaposed *PsP* construction:

(i) a. een flesje bier — *een flesje van bier
a bottle-DIM beer — a bottle of beer
b. een flaske bier — *een flaske van bier
a bottle-DIM beer — a bottle of bier

However the overt realization of case is very much reduced in both languages, being close to English. In both, nouns or determiners are not inflected for nominative/accusative/dative (ii) illustrates Dutch, (iii) WF.

(ii) a. De spreker is al aangekomen.
the speaker is already arrived
b. Ik heb de spreker al gezien.
I have de speaker already seen
c. Ik heb de spreker niets gegeven.
I have the speaker nothing given

(iii) a. Den spreker is al angekomen.
the speaker is already arrived
b. K'een den spreker al gezien.
I have de speaker already seen
c. K'een den spreker niets gegeven.
I have the speaker nothing given

Only the pronominal system has overt case markings. While Dutch still has some effects of dative/accusative alternation in the pronominal system (iv), WF (v) seems as impoverished as English in that there is no dative/accusative alternation:

5.2. A Predicational analysis of juxtaposed *PsP*

In the preceding discussion we have presented the arguments for the Predicational approach to the *PsP*, and we have presented the structure that Corver (1998), following den Dikken (1998), offers for the *of*-type *PsP*. Let us now consider how Corver proposes to extend the Predicational analysis to the juxtaposed type of the *PsP*.

As mentioned, languages like Dutch, German and Greek, differ from English, French and Italian with respect to the presence of a linking element in the *PsP*, though these languages do spell out the copula in the clause. In both types of languages, *PsP*-constructions share the distributional characteristic of their nominal components: in both the quantity/measure-designating nominal (N1) precedes the mass noun (N2). Corver proposes that the English *PsP* starts out from the pattern [*a* [*water bottle*]] and is derived by leftward movement of the predicate (*bottle*) to a position preceding the mass noun (*water*), with insertion of *of* to allow the required domain extension. On this hypothesis and given the semantic similarity of the Dutch and English pseudopartitive structures, one could further assume, as does Corver

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(iv) a. Zij zijn al aangekomen.
they are already arrived
b. Ik heb hen al gezien.
I have them-ACC already seen
c. Ik heb hun niets gegeven.
I have them-DAT nothing given

(v) a. Ze zijn al aangekomen.
they are already arrived
b. Ik heb under al gezien.
I have them already seen
c. Ik heb under niets gegeven.
I have them nothing given

These data raise problems for our speculative proposal outlined above. Dutch has slightly more overt case marking, but it is debatable whether the slight difference from English would justify maintaining our hypothesis.

WF is arguably as impoverished in overt case realization as English and it does have the juxtaposed *PsP*. Note, for instance, that like English, WF also seems to allow indirect object passives (Haegeman 1986):

(v) Valère is zijn abonnement afgepakt.
Valère is his season ticket off taken
'Valère's season ticket was taken away from him.'

(1998: 238), that the Dutch juxtaposed pseudopartitive derives from the same underlying order in which the quantity-nominal, N1, starts out as a predicate of a small clause in which the mass noun, N2, is the subject. Corver (1998) therefore derives the Dutch juxtaposed pseudopartitive in a way parallel to that adopted for both the *NoN* construction and the English-type pseudopartitive:

(105) a. English $[_{DP}$ a $[_{FP}$ bottle$_j$ $[_{F'}$ $[_{F+Xi}$ of$]$ $[_{XP}$ water $[_{X'}$ t_i t_j]]]]]
b. Dutch (i) $[_{DP}$ een $[_{FP}$ fles$_j$ $[_{F'}$ $[F+X_i]$ $[_{XP}$ water $[_{X'}$ t_i t_j]]]]]

But, as mentioned in the previous section, this raises the question why the functional head is spelled out as *of* in English (102a), while in Dutch (100b), N1 and N2 are simply juxtaposed.

To answer this problem, Corver proposes a slightly different mechanism for the formation of the juxtaposed *PsP*. His alternative relies on head movement rather than phrasal movement of N1. The idea is that after domain extension has been applied by moving X (the head of the SC) to F and creating the complex [F+X], as in (105b), the predicate nominal (*fles* ('bottle'), in (105b)) raises and adjoins to this complex head. The movement of N1 does not instantiate XP movement, as represented in (105b) but it is a case of head-movement. As a result of N-to-F head-movement the complex functional head [F+X] is already lexicalized and there is no need for a (further) insertion of a linking morpheme such as *of*. (105c) and (105d) show the relevant derivation. Corver provides additional evidence from Hebrew in support of this head-raising alternative possibility.[53]

(105) c. Dutch (iia) $[_{DP}$ een $[_{FP}$ $[_{F'}$ $[F+X_i]$ $[_{XP}$ water $[_{X'}$ t_i fles]]]]]
d. Dutch (iib) $[_{DP}$ een $[_{FP}$ $[_{F'}$ $[_{F+Xi}$ fles$_j]$ $[_{XP}$ water $[_{X'}$ t_i t_j]]]]]

Though this proposal would give the right results, observe that Corver does not explain the nature of the cross-linguistic variation between XP movement with insertion of a linking element and X movement without any such element.

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[53] For a discussion of the Hebrew facts the reader is referred to Corver (1998).

6. Comparing the Monoprojectional and the Predicational approaches to *PsP*

6.1. Summary of the discussion

In the preceding sections we have presented two basic approaches to the *PsP* construction. We are now in a position to summarize and compare the basic features of these analyses.

(a) The predicative relationship between the two nominals in the *PsP* construction, N1 being a predicate in relation to N2, is captured by both approaches. The Predicational approach captures it directly in terms of the DP-internal small clause; the Monoprojectional approach captures the predicative relation between N2 and N1 in terms of the parallelism it postulates between a simple quantifier and the sequence numeral + measure noun. Since quantificational adjectives can be predicational (106) we expect the analogous numeral+measure noun to also be able to be predicational (107) (see also section 2.3.1 for details).

(106) a. The books are {many, few}.
b. How many are the books?

(107) The wine (left) is a bottle.

(b) A weakness of the Predicate Inversion approach is that it has to stipulate the 'defective' character of both the subject (N2) and the predicate (N1) in the DP-internal predicational relation. In particular, the predicational account does not predict that the 'subject' in the *PsP* has to be an NP, a bare N even, and that it cannot be a DP. As a result, the Predicate Inversion approach also does not predict that N2 cannot be freely preceded by adjectival, or in fact of any other, modifiers.

In contrast, the Monoprojectional analysis directly stipulates the idiosyncratic nature of N1, the noun that introduces the construction (the measure/classifier noun) by assigning to it semi-functional (or semi-lexical, for that matter) status.

(c) The Predicational approach requires a DP-internal predication structure, with predicate movement, to account for the facts of the *PsP*. The Monoprojectional approach exploits independently motivated assumptions about the nominal projection without postulating any new structure, the only 'innovation' consisting in the exploitation of the concept 'semi-functional' category (see Introduction section 2.3.1) and the assumption, discussed above,

that argumental nominal projections can be dominated by Nump/QP and do not need DP. However, it is not obvious that the MP account has the advantage over the Predicational account. First, to the extent that the Predicational approach to *NoN* constructions is plausible, the structure that is postulated for the *PsP* is also motivated independently.[54] In addition, the very fact of postulating parallelisms between clausal patterns and DP-internal patterns is a desirable move.

(e) Following on from the previous point, one complication for the Predicational analysis of *PsP*-constructions is that Predicate Inversion itself is not universally attested. However, the *PsP* construction (in one of its two manifestations) is universally attested, and so are classifiers and measure nouns which form an essential ingredient of the Monoprojectional analysis. This observation is a drawback of the Predicate Inversion analysis of *PsP*.

(f) The Predicational, but not the Monoprojectional, approach offers an interesting account for the distribution of the linking morpheme, which is obligatory in the *PsP* construction in a number of languages and absent in others. This is at this point a major weakness in the Monoprojectional approach, which, though suited for the juxtaposed *PsP*, does not offer any particular insight into the treatment of *of* in *PsP* constructions.

(g) One final area in which the two analyses allow for interesting comparisons will be discussed in the following section and concerns the so-called container or consistive reading of the *PsP*.

6.2. The container reading

6.2.1. The ambiguity of the PsP

As we have already said, Selkirk (1977) shows in detail that the phrase *a bottle of water* is ambiguous: it can be interpreted under a quantity reading (i.e. what we referred to as the pseudopartitive or the quantity reading (of the *PsP*)), according to which N1 *bottle* denotes a quantity/measure taken out from *water*. But, as an alternative reading, N1 *bottle* can also be interpreted under a 'container' reading, in which *bottle* does not denote a quan-

[54] DP-internal Predicate Inversion has also been invoked to derive prenominal possessors. See Part IV, Chapter 2, section 3.2.

tity or measure, but rather a concrete container. In the latter reading, N2, *water*, refers to what is (or can be) contained in this container or vessel. So, Selkirk argues, for each one of these interpretations, the nominal projection has a different head. In the *PsP* interpretation the head of the projection is N2, in the container reading the head of the projection is N1. Many nouns (*bottle, box, glass*, …) may function as either heads in a nominal with container reading or as measure nouns in a quantity *PsP* construction.

Selkirk's (1977: 285–316) argumentation is based on detailed consideration of processes that crucially refer to the head noun of the relevant noun phrase. For instance, selection restrictions are imposed on the head of the projection (examples from Selkirk):

(108) a. A cup of sugar was strewn on the floor.
quantity reading: *sugar* is the head.
b. A cup of sugar smashed on the floor.
container reading: *cup* is the head

Agreement between the verb and a nominal constituent is another process which is determined by the head of the nominal projection.

(109) a. That group of crazies really got itself in hot water, didn't it?
group is the head
b. That group of crazies really got themselves in hot water, didn't they?
crazies is the head[55]

Selkirk (1977) proposes that under the container reading the sequence *of water* is a PP and that it is the prepositional complement of the head noun (N1) *bottle*, the head of the whole noun phrase.

6.2.2. The container reading and the Predicational approach

With respect to the type of data and the analysis described above, Corver (1998: 234–236) points out that it remains unclear how the semantic relationship of 'containment' is expressed by the grammar. This seems to follow simply from the stipulation that 'container nouns' have a specific theta role in their thematic grid, which indicates a semantic relationship of contain-

[55] The reader is referred to Selkirk (1977) for more details on the issue.

ment (for an account of measure/quantity nouns along these lines see Löbel (1999), also the relevant section in the Introduction to this chapter; and in section 6.2.3 below).

Corver tries to unify the analysis of what we could call 'quantity *PsP*' constructions and the constructions with container readings. He proposes that both the quantity reading and the container reading involve predicate movement in the DP (see his structures (93) and (94) in section 5.1). In his view the container reading (a semantic property) is a by-product of the analysis, it is a derivative property of the *PsP*, which is seen as a result of the application of Predicate Inversion within DP. Essentially, the quantity reading is derived by a copular 'be' relationship between N1 and N2; the container reading reflects a 'have' relationship between N1 and N2.

Recall that in the Predicational analysis of *PsP* the formative *of* is taken to be the Spell-Out of the nominal copula, the functional head of the predication relation. In the cases we have examined so far, which have the quantity/measure reading of N1, *of* in the nominal projection corresponds to the copula *be* in the clause. In the spirit of Freeze (1992) and Kayne (1993), Corver's assumption is that *have* is the morphological Spell-Out of an incorporation of a preposition into the clausal copula *be*. That is, P+BE = HAVE. Thus, the sentence *the bottle has water (in it)* is presumed to be derived from an underlying representation like 'water BE to the bottle'.

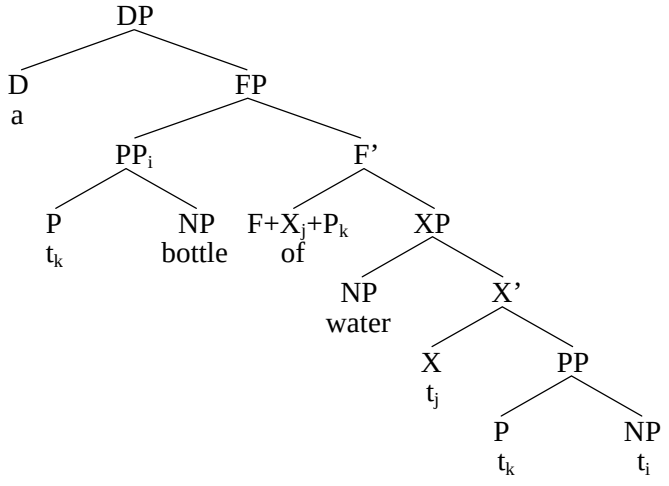
Along these lines, and assuming that nominal constructions also instantiate both copular relations – the basic assumption of the Predicational approach to the *PsP* – it is only natural to further assume that the 'have' relationship derived in the clausal domain from the incorporation of an (abstract) preposition into the copula, can also be manifested in the nominal domain, i.e. that the nominal domain may also instantiate the incorporation of a preposition into the (nominal) copula. Corver proposes such a derivation for the string *a bottle of water* under the container reading. The container nominal, N1, starts out as the complement of a preposition, which may be a dative preposition (say, *to*). This dative PP itself is the predicate of a DP-internal SC-structure, whose subject is N1, i.e. *water* in the string *a bottle of water*. The following initial representation is assumed by Corver (1998: 234):

(110) $[_{DP}$ a $[_{FP}$ $[_{XP}$ water $[_{X'}$ X $[_{PP}$ P_{DAT} bottle]]]]]

A number of movements derive the surface structure. The dative PP inverts with the SC-subject (*water*), an instance of Predicate Inversion. The dative preposition incorporates into the complex head [F+X], which spells out as

the copula *of*, the nominal counterpart of verbal *be*, as already explicated before. The 'have'-reading (i.e. container reading: 'bottle has water') of the nominal copula *of* is thus due to the incorporation of P into the functional complex [F+X]. The derivation of the final string is illustrated in (111):

(111)



In sum, the ambiguity of the string *a bottle of water* depends on the predicate type of the small clause: if it is a bare noun phrase, we have an instance of nominal BE and consequently a 'be'-interpretation ('water is in the quantity of a bottle'); if it is a dative PP, we have an instance of nominal HAVE and consequently a containment reading. What the two constructions have in common is that they both are manifestations of Predicate Inversion (Corver 1998: 235–256).

Note that under the Predicational analysis of the container reading, N1 (i.e. the container noun *bottle*) originates as the syntactic head of the entire extended nominal projection: it is the most deeply embedded noun. It does not come as a surprise then that the determiner enters into a selectional relation with this noun (112b), and not with the one referring to the contained material (see (112c)):

(112) a. A bottle of water was emptied.
b. a bottle
c. *a water

In addition, we also expect that N1 can determine agreement with the finite verb:

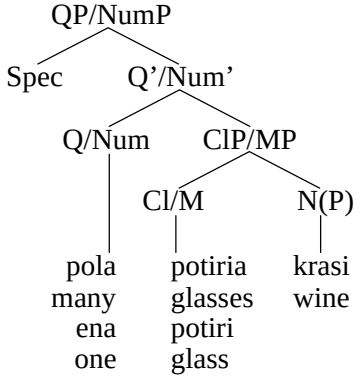
(113) a. Two bottles of water were emptied.
b. *Two bottles of water was emptied.

It should be pointed out, however, at this point that the hypothesis that N1 is the syntactic head of the entire DP is not a particularity of the Predicational approach to the container reading. The container reading also follows automatically from Selkirk's (1977) (and Jackendoff's (1977)) analyses, which assume that N1 is the head of the nominal phrase and what follows it is its PP complement (cf. (108)-(109)). Hence, agreement facts as well as selectional restrictions constraints are equally well captured by both types of analyses.

6.2.3. The container reading and the Monoprojectional approach

The Predicational approach might at this point seem to be offering an advantage over the Monoprojectional analysis in that the Predicational approach also allows for an account for the the second reading of the *PsP*, the so-called container reading. What about the Monoprojectional approach? How can it capture the container reading of the *PsP*? The structure assigned to the *PsP* by the Monoprojectional analysis is repeated here for convenience under (114):

(114)



The structure required for the container reading is actually already available in (114). As in Selkirk's analysis, in this case it is the lexical NP (i.e. N(P)) that serves as the complement of the classifier or measure noun. What is crucial to obtain the container reading in (114) is that the classifier noun (N1) counts as a fully rather than semi-lexical noun. In this line of thought,

the container reading is due to the high degree of lexicality of N1 (the 'container' noun) and does not require a geometrically different structure from that given (114) (i.e. (55)). The container reading is simply licensed by the lexical semantics of N1, which in this case counts as fully lexical, whereas in the quantity reading N1 is more functional than lexical.

A question at this point is whether all the nouns listed under section 2.1.1 have (fully)lexical potential and give rise to the container reading. It seems to be the case that while nouns belonging to the consistive/material group do not naturally give rise to the container reading, the nouns belonging to the container group and classifier nouns naturally do give rise to a 'container' reading. This is because of their high degree of lexicality.[56] Paraphrasing a *PsP* construction with a noun phrase with the same N1 as its head but having N2 embedded in a PP headed by the P *with* can be used as a test for the emergence of the container reading:

(115) a. a bottle of water
a bottle with water

b. a basket of flowers
a basket with flowers

As expected, nouns with a high degree of functionality (e.g. quantifier and measure nouns) do not license the container reading :

(115) c. a pound of tomatoes
*a pound with tomatoes

The nouns of the groups listed in section 2.1.1 that seem to be able to be mapped to what they 'contain', 'consist of', 'include', are those for which the abstract predicates 'CONTAIN', 'INCLUDE', etc. broadly understood, can be used (e.g. CONTAIN (*basket, flower*). Paraphrasability of strings like (115a) and (115b) with a sentence with the verb 'contain' constitutes another reliable test for the availability of the container reading. Such a paraphrase is not available for (115c):

(115) d. a bottle that contains water
e. a basket that contains flowers
f. *a pound that contains tomatoes

[56] Notice that it is these same nouns that can occur without a complement – overt or implied – (i.e. as *non*-relational) in well-formed sentences.

As a result, proponents of the Monoprojectional analysis will say that the contrast between the quantificational and the container readings of the *PsP* follows from the very properties of the building blocks of the structure in (114=55). Whereas the quantificational reading is due to the maximal projection being a Num/QP, the container reading involves an ordinary DP. In section 6.2.4 we will survey the evidence for this claim. Our discussion is based on Greek.

6.2.4. Fully lexical nouns and DP projections

Consider the data in (116). In the juxtaposed construction the definite article *to* ('the') is not possible (see also (53c)). On the other hand, N1 may be preceded by a definite article if we also add a definite article to N2.

(116) a. *to bukali aroma (Greek)
the bottle-NOM/ACCUS perfume-NOM/ACCUS

b. to bukali to aroma
the bottle-NOM/ACCUS the perfume-NOM/ACCUS

Given the data in (116) one may ask whether the complement of N1 should be argued to be a DP (or a PP) rather than a NP or even a single N as argued for so far.

With respect to the structure (55) the ungrammaticality of (116a) (the same as that of (53c)) led us to assume that the *PsP* is basically an *indefinite* construction and that it is a NumP or QP but crucially not a DP.

In fact, as shown above: when the definite article appears in front of N1, then a definite article must also obligatorily precede N2 (116b). But if, as we argued, it is the obligatory absence of the article associated with N2 that renders the *PsP* a unitary projection with a single referent, then how should we analyze (116a,b)? The obligatoriness of the second definite determiner in (116b) suggests that in this case we have to do with a full DP complement of the noun *bukali* (bottle). *To aroma* ('the perfume'), which follows N1, must now be considered as a DP, as it too contains the definite article. Notice also the absence of a cardinal or Q before N1.

There is evidence which corroborates this claim. First the interpretation of (116b) does not involve any indication of a relationship of measuring between N1 and N2. N1 does not measure a quantity taken of N2; N1 simply designates a space/vessel in which the referent of N2 is contained. In

other words, the only available interpretation of (116b) is the container interpretation.

Second, instead of a DP, the complement of N1 can be a prepositional phrase headed by the P *me* 'with' (cf. the data (115a,b) for English):

(117) to bukali me to aroma (Greek)
the bottle with the perfume

(116) and (117) taken together strongly suggest that the container reading here involves a full complement which is either a DP or a PP. N1, the noun which selects this complement is a fully lexical noun which can theta mark it. Admittedly, here we have to do with a peculiar type of complement: differently from other instances of N complementation, this complement displays case agreement with the noun that selects it. Typical nominal complements of nouns receive the genitive case. So case agreement is the property that brings (116b) so close to a *PsP*.[57] Therefore, in the container reading of (116b) what looks like a '*PsP*'-construction is a fully projected DP comprising a D layer and a noun that theta marks its DP complement and 'transmits' to it its own case (see diagram under (120) below).

So the relevant nouns – much as any common noun – are listed in the lexicon carrying information about subcategorization. For instance, the noun *bukali* 'bottle', when it appears in *ena bukali aroma* 'a bottle of perfume' under the container reading, is listed as:

(118) *bukali*: +N, [___DP/PP]

Here the noun has a theta grid by virtue of which it assigns the role 'content' to its complement.

It is worth observing at this point that the obligatory presence of the definite article in cases like (53b) and (116b) is a characteristic feature of Greek 'definiteness agreement' or 'definiteness spreading' (see Part III, Chapter 1, section 6, for data and a possible analysis). Clearly this property is quite widespread in the language, as it also manifests itself in instances of adjectival modification. Definiteness agreement is manifested in several other cases involving even a more 'straightforward' complement. In (119) we see

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[57] Löbel (1999) claims that case assignment can also be performed by agreement, as in (i) in German

(i) *mit einer Flasche rotem Weine*
with a-DAT bottle red-DAT wein-DAT

that there is a correlation between the (in)definiteness of the head noun and that of its complement, be it a PP (119a,b) or a DP in the genitive (119c,d):

(119) a. Irthe enas anthropos me jalja.
came a man with glassses
'A man with glasses came in.'

a.' O anthropos me *(ta) jalja (pu irthe)…
the man with the glasses (that came..)
'The man with the glasses (who came…)'

b. Aghorase ena bukali aroma.
bought-3SG-PERF a bottle perfume
'He bought a bottle of perfume.'

b.' Aghorase to bukali *(to) aroma.
bought-3SG-PERF the bottle *(the) perfume

c. ena sinolo ghramatikon katighorion
a set grammatical-GEN-PL categories-GEN-PL
'a set of grammatical categories'

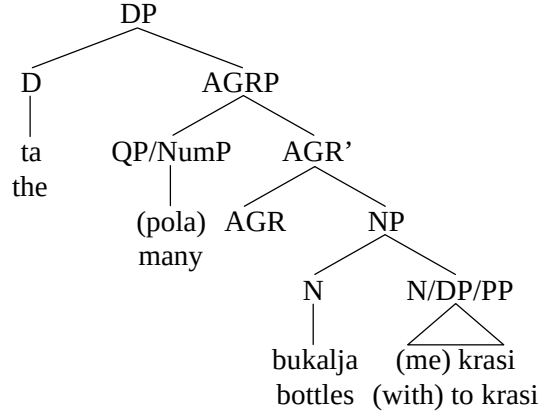
c.' to sinolo *(ton) ghramatikon katighorion
the set the-GEN-PL grammatical-GEN-PL categories-GEN-PL
'the set of grammatical categories (that…)'

In the nominal phrases in (119) the head may be indefinite or definite (as when it is followed by a relative clause for instance), but in the latter case, its definiteness induces the obligatory definiteness of its DP/PP complement (in (119c') the presence of a relative clause means that *ghramatikon katighorion* ('grammatical categories') must be definite, hence *ton* ('the') cannot be left out. So in the light of the examples in (119) – although we do not have an explanation of this curious fact – we can further support our claim that (116b) – as well as (53b) for that matter – involves a real Monoprojectional construction – like the one in (1c) at the beginning of the chapter – with a container interpretation. But if this conclusion is correct, then the whole state of affairs leads us to the conclusion that (119b), represented in (120) below, is ambiguous between (a) the reading associated with N1 when it is selected from one of the classes listed in section 2.1 and is preceded by the definite article[58] (and only optionally by a Num or a Q, which

[58] Following what was said above with respect to the structure in (55a), the numeral or quantifier that may follow the definite article is no longer the head of the whole construction but is to be thought of as an adjective situated at the spec of the (intermediate) agreement projection, optional in this case. In (119b) there is no cardinal or quantifier preceding N1.

then functions as an adjective and not as a Q), but which is a semi-lexical category, and (b) the container reading, whereby the same noun is merged in the syntax as a fully lexical noun. The tree diagram in (120) illustrates the structure of *ta pola bukalia krasi* ('the many bottles of wine'), in which *bukalia* can be either fully lexical or partly lexical and partly functional. The parenthesis around *pola* in (120) show that this element is optional:

(120)



Notice that (120) is a DP and recall that according to Giusti (1991, 1997) and Cardinaletti & Giusti (2002) if a Num or Q is preceded by an article it is no longer a quantifier but a quantificational adjective in the specifier of an agreement projection. (120) is therefore compatible with the assumption we made earlier on, in the spirit of Giusti and Cardinaletti & Giusti, that the Q or Num that may optionally appear in strings like *ta bukalia to aroma* ('the bottles the perfume') in either the *PsP* or the container reading is no longer a selecting head but an adjective at the spec of an agreement projection.

Notice that nothing we have said so far in this subsection hinges on the status of N1 as lexical or functional. However, in accordance with our assumptions, the status of the most deeply embedded noun depends on whether N1 is a fully lexical noun or a semi lexical/functional one. If the former, the complement will be a full DP (or a PP, as we said); if the latter, the complement will be something smaller, a noun, as we suggested above. The structure in (120) is intended to account for all these possibilities at the lowest lexical level.

To sum up: as first noticed by Selkirk (1977) and Akmajian and Lehrer (1976), the string *tria bukalia krasi* ('three bottles wine') is ambiguous depending on whether it has a quantity or a container interpretation. Under the

quantity reading the projection is not a DP but a QP: N1 *bukalja* ('bottles') is of the semi-functional type, *tria* ('three') is in the head position (Q/Num) and selects *bukalia*, which in turn selects the lexical noun *krasi* ('wine'). Under the container reading, N1, *bukalia* ('bottles'), is a lexical noun and selects a DP complement (headed by the noun *krasi* ('wine')). In this latter case we assume the noun *bukalia* is not selected by Q, but by D. When present, the numeral *tria* is just an adjective. The shift from structure (114=55) to that in (120) is a reflex of the shift in lexicality of a noun like *bukalia* ('bottles').

In the case of a definite counterpart of such constructions, as illustrated by *ta tria bukalia (to) krasi* ('the three bottles of (the) wine'), we also have to take into account the different position held by *tria*, according to assumptions independently argued for. Thus, in the presence of the definite article, *tria* (which is now optional) cannot be taken to stand at a Q/Num head position. It occupies a lower specifier position on a par with adjectives. *Bukalia* may or may not be fully lexical. As the data in (118) show, and as the structure in (120) illustrates, the category that it selects when the definite article is present may be a DP, as the second noun is obligatorily preceded by the definite article too. Notice now that the ambiguity between a fully lexical and a semi-lexical N1 is explicit in those environments where selection restrictions are sensitive to either N1 or N2:

(121) a. To bukali to aroma xithike.
the bottle the perfume was spilt
b. To bukali to aroma espase.
the bottle the perfume was broken

In (122) we see how number agreement is combined with selection restrictions:

(122) a. Ta (tria) bukalja to aroma xithike/xithikan.
the (three) bottles the perfume was/were spilt
b. Ta (tria) bukalja to aroma espasan/*espase.
three bottles perfume broke-3PL/*3SG

(122a) shows that when N2 determines selection restrictions, number agreement can be determined by either N1 or N2. This suggests that N1 counts as semi-functional: as we explained in 2.3.2 above, N1, not being lexical itself, 'lets' the verb see through it to the second N. But at the same

time, since N1 is itself to a limited extent lexical, the verb can also agree with it. In (122b) N1 is now an ordinary common noun – i.e. fully lexical – and the head of the entire construction, so number agreement can only be computed on it. In (122b) number agreement with the verb goes hand-in-hand with selection agreement.

7. Summary and discussion

In this chapter we have examined the Pseudopartitive Construction, a construction that has been analysed in a number of different ways within the generative framework.

The theoretical issue focused on in this chapter was the need for postulating so-called semi-functional categories, i.e. of categories that pertain to the extended nominal projection but are neither fully lexical nor completely functional.

We have concentrated on the Monoprojectional analysis (MP) of the *PsP* construction, which relies in particular on the presence of a semi-lexical category in the construction. The MP analysis has been elaborated for juxtaposed *PsP* constructions such as Dutch *een fles wijn* (‘ a bottle (of) wine’) and its exact equivalent in Greek. According to this analysis, N1 *fles* in the *PsP een fles wijn* (‘ a bottle of wine’), together with the cardinality marker that always precedes it, parallels in its distribution and interpretation simple quantifiers (like English *much*/*many*, *a few*, etc.). N1 in combination with a numeral or quantificational element in general denotes a quantity taken of the denotation of the linearly second (N2) noun. According to the MP analysis the whole construction (here *een fles wijn*) is a single nominal phrase with a single referent. The head is the lexical noun *wijn* which is selected by the semi-functional category.

The alternative analysis of the pseudopartitive is the Predicational approach, which postulates a DP-internal small clause. This analysis was initially elaborated for the non-juxtaposed type of *PsP* patterns in which a formative *of* (or its equivalent) appears between the two nouns in the *PsP* construction. In this analysis the predicate of the DP-internal small clause is N1, the noun *bottle* (in *a bottle of wine*) and the subject is N2 *wine*. The predicate shows up as the first noun, preceding the subject, because it has raised from its base position to the position of the specifier of the functional projection dominating the small clause. This movement manifests basic properties of A-movement.

To elaborate the properties of Predicate Inversion in the DP, we have also introduced into our discussion a construction that is standardly examined in parallel with the pseudopartitive in the framework of the Predicational approach. The relevant construction is illustrated by noun phrases such as: *that idiot of a doctor*, *that pearl of a daughter* and the like. Here the predicative relationship between the two nouns is obvious, as is the fact that the predicate noun is not found in its canonical position (cf. *that doctor is an idiot*) but occupies a position to the left of this noun. We have discussed specific evidence underlying the parallel behavior of the predicate in the two constructions.[59]

One major advantage of the Predicational approach is that it offers an interesting account for the distribution of the linking morpheme in the *PsP* construction. Being elaborated essentially on the basis of juxtaposed *PsP* constructions, the MP account has nothing to say about this. This remains then a weakness of this approach.

In the final section of the chapter, we further addressed the traditional 'ambiguity' of the pseudopartitive construction, whereby we can interpret it either under a quantity/measure reading, or under a container reading. In the latter reading, the first noun is the (lexical) head of the whole phrase and the second noun is its thematically selected complement; under this reading the meaning of *a bottle of water* is 'a bottle that has water in it.'

Within the MP approach, the shift from the quantity to the container reading is attributed to the shift (in degree) of lexicality of the first noun (N1): in the quantity reading N1 is half-way between lexical and functional, whereas in the container reading it is fully lexical and so it can license the container reading, whereby it theta marks its complement. While DP complements of N are normally assigned genitive case in Greek, the relevant construction with the container reading displays the rather unexpected property that the two nouns, N1 and N2, agree in case.

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[59] Another construction falling together with the *PsP* and the *NoN* is the construction exemplified by (i):

(i) a. the city of London
b. the island of Rhodes
c. Mount Athos

A novel approach to this construction is proposed by van Riemsdijk (1998). See also Löbel (1999).

A Predicate Inversion account is also proposed for possessors in prenominal position, see Part IV Chapter 2, section 3.2.

The discussion in this chapter does not take a definitive position with respect to either of the two approaches to the Pseudopartitive. It seems to us that at this point both approaches offer interesting insights and for both there remain a number of drawbacks. We hope that future research will provide arguments for a choice between the two or that it will yield yet another promising analysis, perhaps combining the two already available.

In any case, the MP approach may be taken to raise interesting questions concerning the position of semi-functional (or –lexical) categories in the grammar. We have discussed evidence that shows that some nouns, those listed under (a)–(e) in 2.1, behave in a peculiar way, namely in a way that is not typical of ordinary nouns, but is not of typical of functional categories (like quantifiers) either. Abney (1987) situates such elements in a 'grey area'. While many linguists agree that there are categories of the semi-functional (or -lexical) type, the question of their identification remains to be dealt with in full. The question also arises how they are integrated in the grammar and the lexicon. Are measure nouns of the kind that give rise to the *PsP* marked as semi-functional in the Lexicon, as implied by van Riemsdijk (1998)? Or is semi-functionality a derivative concept, a property of certain nouns that is the by-product of certain syntactic structures, as Cardinaletti & Giusti (2001) assume? For one thing, it should be noticed that if certain nouns are to be marked as 'semi-' in the Lexicon, this would have the undesired effect of having them listed twice. Take, for example, nouns like *bottle, glass, basket, plate* and the like – container nouns. *Bottle* in the *PsP* is semi-lexical as we have argued. But *bottle* in *this is a nice crystal bottle* is not, it is a fully lexical common noun. In its semi-lexical function *bottle* is relational, i.e. it always requires a noun next to it, the noun we called N2. But as a fully lexical noun it can stand on its own. Should *bottle* be listed twice as '*bottle1*' and '*bottle2*' for just this reason? Such a move would result in an unnecessary overloading of the Lexicon. The alternative is to assume that *bottle* is just a lexical noun that loses its lexicality – to a varied degree across languages – when inserted in a particular configuration (e.g. the *PsP*). This is a plausible hypothesis, but then it raises the question about acquisition: how can the child know which nouns, of all subsumed in his Lexicon, can be used in the *PsP*, if there is no indication on the noun to this effect? An answer, albeit an implicit one, to such a question is given by Cardinaletti & Giusti (2002) , who assume that semi-lexicality is a property of the (morphologically) least marked element (a motion verb in their case study) chosen from the lexicon to participate in the relevant structure. For our *PsP*, a similar hypothesis is untenable, as the

nouns that can drive the *PsP* are morphologically not less marked than any other noun. But a possible assumption here would be that the child chooses from the Lexicon those nouns that are more commonly used and hence are less semantically marked, i.e. are used as 'cover' nouns. Take for instance the concept 'drinking vessel': in English it has several lexical realizations. In the *PsP* it seems that the most commonly encountered is used routinely, as the unmarked case – namely *glass*, as in *a glass of wine*. But for a specific association with 'wine' the noun *goblet* could in principle be routinely used, as could *tankard* for beer. These two nouns would be the marked case, one reserved for co-occurrence with *wine*, the other for *beer*. So, apparently, the noun that is picked up form the Lexicon to head the *PsP* is a noun that is very little marked semantically. That is a safe 'guess' on the part of the language learner (of course the choice is also pragmatically conditioned).

On the other hand, it can be argued that cardinal, quantifier nouns and measure/unit nouns, those that do not lend themselves to the container reading, could be marked in the Lexicon as quantity nouns, in particular as N[+Q] along the lines of Löbel (1999). These nouns have only a relational use, they can never stand on their own in a sentence.

Part IV

Dp-Internal Arguments

Chapter 1

Argument Structure in Nominals

1. Introduction

Nouns are traditionally divided into two classes: relational and absolute nouns. Relational nouns have an inherent relation to the nominal constituents that accompany them; absolute nouns may have relations to the nominal constituents that appear together with them but the relation is not inherent. Relational nouns comprise three prominent classes, illustrated in (1): derived nominals (1a), kinship nouns (1b) and nouns with inherent part-whole relations (1c). (2) contains some examples of absolute nouns:[1]

(1) a. Caesar's destruction of the city
b. John's sister
c. the chair's legs

(2) a. Kelly's box
b. this year's fashion

In this chapter we will be concerned with deverbal relational nouns as in (1a). In the next chapter we will examine the properties of possession constructions, by focusing on examples such as those in (2).

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[1] Thus relational nouns go together with inalienable possession and absolute nouns with alienable possession.

The example in (1a) is an instance of a derived nominal that shows argument structure relations similar to those displayed by verbs. Native speakers of English tend to interpret this nominal construction as sharing some basic semantic properties with its clausal counterpart in (3).

(3) Caesar destroyed the city.

In (1a), though a noun, *destruction* seems to have verb-like properties in that it takes arguments (*Caesar, the city*). In particular, in both (1a) and (3) *Caesar* is felt to be the Agent of the act of destruction, and *the city* is interpreted as the Theme of the act of destruction. One syntactic difference between the two examples relates to case-assignment: while the verb *destroy* assigns accusative to its internal argument, the noun *destruction* does not seem to be able to do so, hence the DP *the city* is introduced by the preposition *of*. The question that arises is whether nominals such as that in (1a) actually inherit the argument structure of the verb they are derived from, and, if so, how this is achieved. This issue has preoccupied generative literature at least since Chomsky (1970).

In this chapter we will discuss the thematic relations in nominals in detail. The question of the case-assigning properties of nouns, however, will not be central to our discussion. The link between the argument assigning properties of verbs and the argument properties of the related deverbal nominals will constitute the main focus of this chapter. Within most approaches formulated in the spirit of what is known as the *Government and Binding* (GB) theory, the syntactic nature of structures showing categorially ambivalent behavior has not been easy to capture. It raises the question whether the observed syntactic phenomena result from actual syntactic operations or whether they merely reflect lexical information. The issue of the division of labor between the role of the syntactic component and that of the Lexicon will arise in any approach which assumes a separate lexical component. In the GB framework, the more or less standard assumption has been that the computational system of the grammar operates on items chosen from a/the Lexicon.

The issue of inheritance of argument structure has for a long time been treated as relevant for all types of deverbal formations. More recently, however, Grimshaw (1990) has convincingly shown that only a particular class of nominals show argument structure properties. As a result of her work, it has now become clear that the question of the relative contribution of the syntactic component and that of the Lexicon to deverbal formation is

relevant to a subset of nouns: those that license an argument structure. For nouns that do not license argument structure the issue of 'inheritance' of argument structure obviously does not arise. We will discuss the partitioning between these two sets of nouns in detail in this chapter.[2]

The chapter is structured as follows. In section 2, we outline the background for our discussion with an overview of the debate between lexicalist and syntactic approaches. This section deals with the approaches that do not divide deverbal nouns into two separate classes. We then introduce Grimshaw's partitioning of deverbal nouns into so-called complex event and result nominals in section 3.1. In the subsequent sections of section 3 we discuss a number of approaches to the formation of the two classes of nouns. Finally, in section 4 we discuss the case-assignment properties of nouns.[3]

2. Lexical vs. syntactic approaches to deverbal nouns

In some fundamental respects verbs and nouns seem to share argument-taking properties. This was already established in Chomsky (1970) and is illustrated in (4):

(4) a. The enemy destroyed the city.
b. the enemy's destruction of the city

Apart from the fact that nouns cannot take DP complements, the range of elements that can occur after nouns are closely related to the range of elements that occur after verbs:

(5) a. *CP complement*
The physicists claimed [that the earth is round].
the physicists' claim [that the earth is round]
b. *Infinitival complement*
They attempted [to leave].
the attempt [to leave]
c. *Locative PP complement*
The train arrived [at the station].
the train's arrival [at the station] (Grimshaw 1990: 47)

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[2] For discussion of event nominals in French see also van de Velde (2006).
[3] An overview of the literature on nominalization is offered in Roeper (2004).

Examples like these might suggest at first sight that nouns are governed by the same principles of argument realization as verbs and that the two categories differ only in their case-assigning properties. Hence the questions that are raised are:

(i) Do nouns 'inherit' the argument structure of their source verb?
(ii) If they do, how does this inheritance process take place?
(iii) What accounts for the different case-marking properties of nouns?

In the early stages of the development of generative grammar the only way to express the link between related structures such as verbs and deverbal formations, and hence to offer an answer to questions (i) and (ii), was to assume a syntactic transformational process operating on sentences. By its nature this process accounted for clausal properties of derived nominals (see Lees 1960).

Chomsky's (1970) seminal paper "Remarks on nominalization" was a reaction to the early syntactic approach of Lees (1960). From then onwards, we can identify two main approaches to word formation. For some, word formation is located both in the syntactic component and in the Lexicon; for others word formation is homogeneous and it is either located completely in the Lexicon or it is fully part of the syntactic component.

According to the view that word formation is distributed over the Lexicon and the syntax, the division of labor is as follows. Idiosyncratic patterns (and possibly non-productive ones) are relegated to the Lexicon (Wasow 1977); the interaction of word formation with other syntactic rules is located in the syntactic component. The examples in (6) provide some motivation for this partitioning. (6a) contains a gerund, while (6b) contains a derived nominal:

(6) a. John's destroying the book annoyed us.
b. John's destruction of the book annoyed us.

Though both *destroying* and *destruction* somehow relate to the verb *destroy*, analyzing the formation of both words as a syntactic process raises problems, as signaled by Chomsky (1970).[4] With respect to deverbal nouns

[4] See also Jackendoff (1977) for an overview of the problems of relating a deverbal noun to the related verb transformationally.

such as, for instance, -(*at)ion* nominals like *destruction*[5], Chomsky pointed out that the following properties are problematic for an approach that analyses all types of deverbal formations as being syntactic (in particular transformational):

1. The productivity of derived nominals is restricted. For instance the verb *militate* in (7) can be transformed into the gerund nominal of (8) but not to the derived nominal of (9):

(7) militate
(8) militating
(9) *militation

2. The semantic relations between the associated proposition and the derived nominal are quite varied and idiosyncratic. As Chomsky notes, the properties of the gerunds are transparently those of the underlying verbal element. On the other hand, deverbal nominals such as *laughter*, *marriage*, *construction*, *action*, and so on have individual ranges of meanings and varied semantic relations to the base form.

3. There is evidence that derived nominals have the internal structure of a noun phrase, while gerunds do not. We illustrate this point below.

The prenominal genitive *John's* in (6a) above cannot be replaced by any determiner (10a), while the presence of a determiner is possible with *-(at)ion* nominals (10b):

(10) a. *That/the destroying the book annoyed us.
b. The destruction of the manuscript annoyed the author.

Moreover, the gerund cannot be modified by an adjective, while this is possible with the derived nominal:

(11) a. his prompt answer of the question
b. *his prompt answering the question

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[5] Here we use the general form (*at)ion* to refer to the nominal suffix, which has at least four, or possibly five, forms:

(i) +ation, +ition, +ution, +ion, +tion

The distribution of the individual forms is complex, but as Aronoff (1976) argues in detail, it is morphologically governed. We will not be concerned with the morpho-phonological distribution of these allomorphs.

On the other hand, gerunds can be modified by adverbial modifiers.[6] Derived nominals do not license adverbial modification (12).

(12) a. Pat disapproved of my quietly leaving the room before anyone noticed.
b. *The carefully restoration of the painting took six months.

Under the standard assumption that such adverbs are VP modifiers, while adjectives are noun modifiers, this contrast could be interpreted to mean that gerunds contain internally at least a VP (see also Abney 1987; Kratzer 1994).

Finally, auxiliaries cannot be present within derived nominals, while this is possible with gerunds (13a). Thus only the former but not the latter could be argued to contain Aspect (Chomsky 1970; Borer 1993; Alexiadou 2001a):

(13) a. John's having criticised the play annoyed us.
b. *John's having criticism of the play annoyed us.

4. Transformations that typically apply to sentences (such as 'raising to object', 'raising to subject') are barred from derived nominals, but they are possible with gerunds. An example of raising to subject is given in (14):

(14) a. John appears to be sick.
b. *John's appearance to be sick
c. John's appearing to be sick

Chomsky's conclusion is as follows: "it seems that the transformationalist analysis is correct for the gerundive nominals, and the lexicalist hypothesis for the derived nominals" (Chomsky 1970: 215). In the framework of the time this meant that the derived nominals were not transformationally related to the associated propositions, and the base rules were extended in such a way as to accommodate the derived nominal directly. For Chomsky (1970: 190) *destroy* is in the Lexicon as an item with fixed selectional and sub-categorization features, but free of the information with respect to categorial features (noun or verb).

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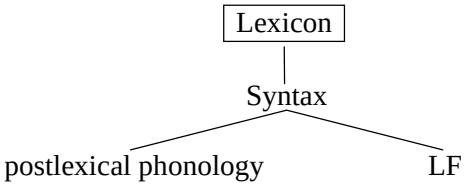
[6] The relevant adverbials will be those that are lower in the adverbial hierarchy (cf. Cinque 1999).

For the sake of completeness we add here that Chomsky signals that there is a separate set of *-ing* nominals, illustrated in (15), which he labels 'mixed nominalizations' (the term 'nominal gerunds' has also been used in the literature). We do not discuss them in detail in this book but we do briefly return to them in section 3.5. Importantly, they are not treated on a par with what we referred to as gerunds in the above discussion. Chomsky observes that mixed nominalizations behave similarly to derived nominals (*destruction, appearance, easiness*) in not being productive.

(15) a. the destroying of the manuscript
b. the reading of the book

As mentioned before, unlike Chomsky, other authors propose that word formation uniformly belongs in one specific place in the grammar. According to Lieber (1980), Levin and Rappaport (1986), Lapointe (1979) and others, word formation belongs in the Lexicon, which is sufficient to explain the uniformity of word formation. On this view, there is an independent word formation component, whose interaction with the syntax is severely restricted. Standardly, the word formation component is ordered prior to D-structure, that is prior to the availability of any syntactic operations. The word formation component and the Syntax interact only at one fixed point: the output of the former is the input to the latter (16):

(16)



In recent years, alternative views to this picture have emerged, especially in the light of Baker's (1988) and Pollock's (1989) work which has led to a syntactic approach to word formation. We will focus here on one such approach (but see Borer 1993, 2003, 2005). Marantz (1997, and subsequent work) and related work within the framework of Distributed Morphology assumes that all composition is uniform and that it is syntactic. The internal structure of words is created by the same mechanisms of construction as the internal structure of sentences. Note here that this view is different from the early transformational approach to word formation in that it no longer assumes that words are formed by sentence-reduction (as was the case in, e.g., Lees 1960). Rather, words and sentences are both created in the syntax.

In the next sections we will discuss further approaches to the formation of deverbal nominals.

2.1. Williams (1981)

Williams is concerned with the regular relation between the argument structures of morphologically related words and in particular with the way morphological rules that apply to a lexical item to derive a new item affect the original item's argument structure. Williams adopts the view that argument structure is a labeled listing of the arguments that a lexical item can have, as in (17), in which the underlined argument is the external argument.

(17) *hit*: (Actor, Theme)

The basic claim is that morphological rules can alter argument structure in only two ways: a rule can either externalize an internal argument or internalize the external argument. These are symbolized as E(X) and I(X) respectively. These two functions specify only the change of argument structure between the input and output of a morphological rule. A morphological rule has an input stem word and it defines an output word. The input word has an argument structure, and the morphological rule specifies the operation on that argument structure that will derive the argument structure of the output word. Williams claims that the operation must be either E(X) or I(X).

Williams discusses in detail the rule I(X), or 'internalize the external argument', which is relevant for both nominalization and causativization. This rule adds one argument to the input argument structure. It acts on argument structure as follows:

(18) I(x):
   a. set the external argument of the input word equal to X in the output word;
   b. add a new external argument, R for nouns and A for verbs.

As a first illustration consider the rule which adds *-ize* to words:

(18) c. I(Th): random $_{A}$ → random$_{V}$ (A, Th)

The argument structure for *randomize* says that it has a new external argument, A, and that its Theme corresponds to the Theme of the input word. This last specification serves to capture the fact that the Theme of *randomize* is the thing that becomes random.

Coming back to nominalizations, at first sight it seems that X in I(X) can be either the Theme argument or the Actor argument. Consider the examples in (19), discussed in William's paper:

(19) a. The lions growl.
b. I(Th): growl_V (A) → growling_N (R, Th=A)
the growling of the lions
c. I(*A*): growl_V (A) → growling_N (R, A =A)
the growling by the lions

What (19) says is that the argument structure for *growling* has a new external argument, R, and that its Theme corresponds to the Theme of the input word. R in the above representations is to be understood as a non-thematic argument which serves as the external argument of nouns. We will come back to the nature and the role of this argument in section 3.3, when we discuss Grimshaw's (1990) approach, which makes use of Williams' R argument.

If we have a transitive verb, then it seems that we want to prevent two *of*-phrases each linked to a role of Theme from appearing in surface structure, as the contrast in (20) suggests. To derive the right result, we would want only I(A) to apply and not (ITh).

(20) a. the shooting of the lions by the hunters
b. *the shooting of the lions of the hunters

To this end, Williams proposes that actually the normal case for nominalizations is I (0), where this is interpreted as in (21a):

(21) a. Add a new external argument, R for nouns.

Since the new argument is external, the external argument of the input word is automatically made internal, by convention. On the basis of (21a), the expected case will be (21b):

(21) b. the shooting by the hunters

In order to derive (21c), Williams suggests that I(Th) could apply as a special alternative or that PP_{of} is a special realization of Actor in NP.

(21) c. the shooting of the hunters

According to Williams (1987), (20a) can be accounted for by assuming that the Agent in English nominalizations is assigned to a *by*-phrase only if there is an active Theme; otherwise it is assigned to an *of* phrase.[7] This also explains the ungrammaticality of (22): in (22) there is no active theme:

(22) *the expression by the patients

Williams points out that derivation by means of the suffix *-(at)ion* works pretty much the same way and does not discuss any other nominalization suffixes.

2.2. Giorgi & Longobardi (1991)

As already outlined in the previous section, Chomsky (1970) rejects the proposal that deverbal nominals derive from sentences via a set of transformations. According to him, derived nominals and the related verbs share the same lexical structure. This means, among other things, that inheritance involves (sub)categorial information. In other words, both (deverbal) nouns and verbs have subjects and complements, and both (deverbal) nouns and verbs assign theta roles to the respective positions in the same way.

Giorgi & Longobardi (1991) develop this assumption further. In their view, various rearrangements of arguments within the nominal and verbal projections can be accounted for in terms of the same principles of grammar, such as for example 'move α'. These principles apply both in the domain of clauses and in the domain of noun phrases. Consider the examples in (23a–d):

(23) a. the barbarians' destruction of the city
b. the city's destruction by the barbarians
c. The barbarians destroyed the city.
d. The city was destroyed by the barbarians.

---

[7] For (21b) we would have to assume that there is an implicit Theme. For discussion see Williams (1987).

The examples in (23a,b) are comparable to the ones in (23c,d) and involve the application of a passive rule.

According to Giorgi and Longobardi (1991), the nominals in (23) are derived by the use of the same mechanism. Their views are generalized into the *Configurational Hypothesis*, consisting of two clauses (Giorgi & Longobardi 1991: 2):

(24) *Configurational Hypothesis*:

1. It is possible to identify, within NPs, definite θ- (and non-θ) positions at various levels of hierarchical attachment: whenever an element of the N frame appears in a position arguably different from the one where it should be projected at D-structure, its displacement must, then, be governed by the general conditions holding on antecedent-trace relationships created by 'Move α'; moreover, the binding of anaphors and pronouns in NPs obeys the same constraints as observed in clauses.
2. The θ-structure of Ns (their θ-grid and the conditions on θ-assignment) strictly parallels that of Vs, so that the differences appearing on the surface must be due to the intervention of other modules of grammar which determine some systematic variation.

The configurational hypothesis assumes complete parallelism between verbs and nouns, and mapping principles regulating the projection of the arguments from the lexicon into the syntax are stated in syntactic terms.

On closer investigation, however, it has turned out that the argument realization in derived nominals depends on a number of semantic distinctions which are ignored in the approaches discussed above. Those who have come to recognize the relevant semantic distinctions differ in what they consider crucial for stating generalizations. We illustrate some of these distinctions below.

Consider, for instance, the examples in (25). Transitive verbs whose object is not affected may undergo passivization (25b). On the other hand, English deverbal nouns derived from verbs with non-affected objects do not have a passive nominal (25d). In this respect *enjoyment* differs from *destruction* which can form a passive nominal (25e):

(25) a. John enjoys the movie.
b. The movie is enjoyed by John.
c. John's enjoyment of the movie

d. *the movie's enjoyment by John
e. the city's destruction by the barbarians

To account for the contrast between verbs and the related nominalizations, Anderson (1984) proposes a constraint that prohibits movement of non-affected objects to the specifier position of an English NP.

The regularity of these patterns inspired other lexicalist 'thematic' approaches to nominalization represented among others by Amritavalli (1980), Hoekstra (1986), Rappaport (1983), or Rozwadowska (1988). The basic claim in these approaches is that the formal realization of arguments is determined by their thematic roles with respect to the head. In other words, it is not the syntactic structure which is directly inherited from the verb by the nominal, but the thematic grid. In the next sub-section we have a closer look at one such approach.

2.3. Thematic inheritance

Chomsky (1970) claimed that complement inheritance involves subcategorial information. In his discussion of Dutch nominalizations, Hoekstra (1986) argues in detail that in nominalization only arguments can be found that are expressed in a way that reflects the thematic role of the argument. The examples Hoekstra discusses include infinitival nominalizations as in (26), which can be considered the counterparts of English *-ing* constructions:

(26) het met een mesje vermoorden van je broer
the with a knife killing of your brother (Hoekstra 1986: 565)

Hoekstra assumes that the verb stem has a thematic grid, indicating the set of semantic arguments. (27) illustrates this for the Dutch verb *vermoord* 'kill':

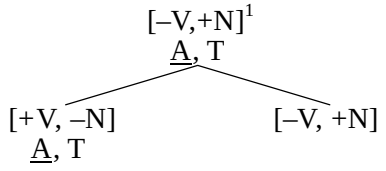
(27) *vermoord* [+V, –N] A, Th

The infinitival affix *-en* transmits the thematic grid of the base, and its representation is given in (28), from Hoekstra (1986: 566):

(28) *-en* [–V, +N] <[+V, –N]_>

The representation in (28) says that *-en* is a noun that attaches to a verb. There is no representation of a thematic grid. The thematic grid of the verb is transmitted to the derived noun. Following Lieber (1980), a percolation mechanism is assumed that expresses the transmission of the thematic grid. According to this mechanism, the product of combining a verb with *-en* will automatically inherit the thematic grid of the base, since the head, the affix in this case, does not possess an independent grid. This process is depicted in (29):

(29)



Let us see how these lexical specifications interact with other elements to account for the constructions in (30):

(30) a, dat Jan zijn broertje vermoordt
that Jan his brother-DIM kills
'that Jan kills his little brother'

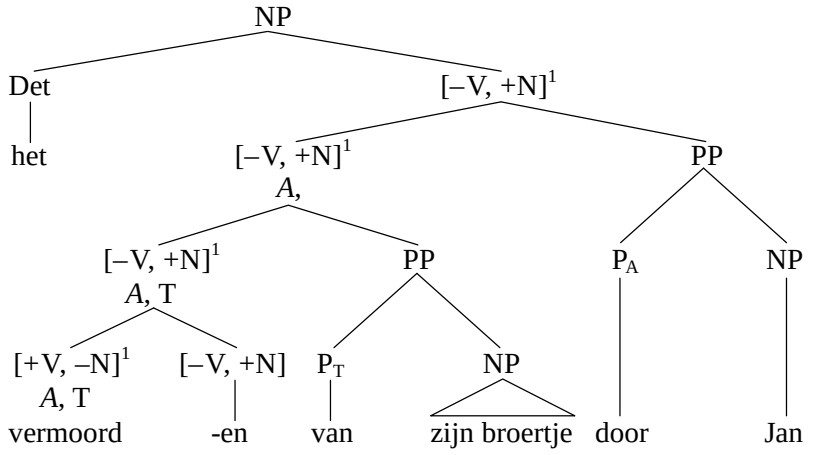
b. het vermoorden van zijn broertje door Jan
the killing of his brother-DIM by John

c. het zijn broertje vermoorden door Jan
the his brother-DIM killing by John

In all three cases *Jan* is the Agent, and *zijn broertje* ('his little brother') is the Theme. (30a) is a verbal construction. The A argument is realized in subject position, in accordance with its specification as the external argument. The Theme is realized as the internal argument. In (30b) both arguments of the verbal stem are inherited by the nominalization. Since the output of this process is actually a nominal expression, neither of the arguments can receive case and hence the presence of prepositions is required. These prepositions must match the thematic grid specification (we come back to the case-assigning properties of nouns in section 4).

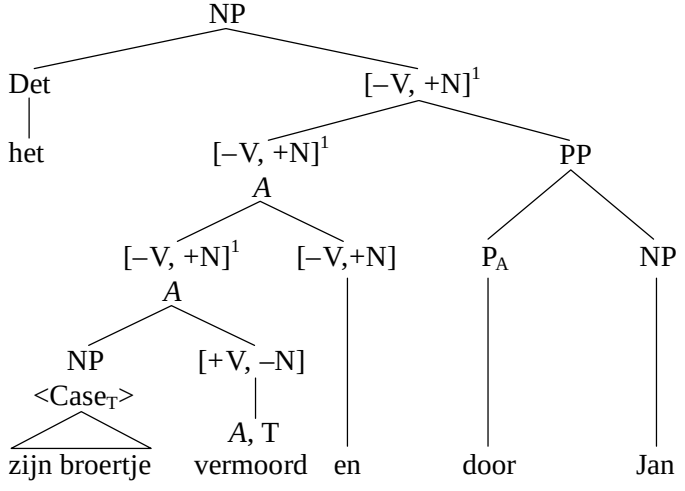
There is no subject position, hence the designated external argument has to be realized as an internal argument and it has to be marked by the preposition *door* ('by'). According to Hoekstra, the argument index of the thematic grid is no longer inheritable if it is matched by an argument. The structure of (30b) is as in (31):

(31)



The notations P_A and P_T are meant to indicate that the relevant prepositions match the index in the representation of the predicate expression. The difference between (30b) and (30c) has to do with the level at which affixation takes place. In (30c) the affix attaches to the combination of *vermoord* and an NP expressing the Theme. Since the Theme argument is matched, it is not inherited. (32) represents the structure for (30c):

(32)



Hoekstra's proposal is expressed in terms of a 'deverbalizing' effect that applies at different levels of projection, an idea that we will find in some of the more recent syntactic approaches in section 3. According to this approach, the affix may combine directly with the verbal stem (zero level) or

with the verb together with its internal argument NP or PP. Note, however, that in such an approach the affix is considered to be a lexical item, containing both phonological and morphosyntactic features in the spirit of Lieber (1980). The properties of affixes will preoccupy us again in the next section and most importantly in section 3.

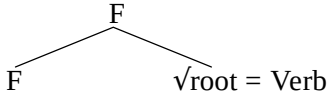
In the next sub-section we will present the Distributed Morphology approach to nominalization. This approach attempts to re-capture the distinctions made in Chomsky (1970), and dispenses with categorial distinctions. However, it should be kept in mind that syntactic approaches to nominalization can be expressed independently of the framework of Distributed Morphology, as in fact is the case with a number of the approaches that we will discuss in section 3.

2.4. Distributed Morphology and Nominalization

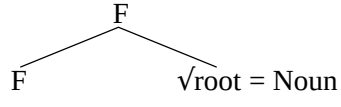
In recent years, and especially within the framework of Distributed Morphology (DM), (cf. Halle & Marantz (1993), Marantz (1997)), strictly transformational analyses to word formation have been re-introduced. It is argued that syntactic structure is constructed freely on the basis of abstract categories defined by universal features. In this theory, there no longer remains a Lexicon in which morpho-phonological expressions having related argument structures can be related. Importantly, unlike other theories, DM explodes the Lexicon and includes a number of distributed, non-computational lists as Lexicon replacements (narrow Lexicon containing roots, Vocabulary and Encyclopedia listing special meanings of roots), see also Embick & Halle (to appear), Embick & Noyer (2004).

In this system, what we call 'Lexical' categories, i.e. verbs and nouns, are reinterpreted as (category neutral) roots (√) augmented with some functional layers.[8]

(33) a.



b.



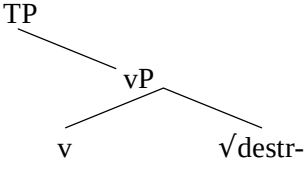
In such a system nominalizations are created by inserting category-neutral roots into a terminal node governed by nominal functional projections.

[8] With regard to a number of properties, Borer (2002, 2005) is in agreement with the proponents of the DM approach, but she also departs from them in a number of points. Hence we will present her proposals separately in section 3.4.2.4.3.

When the same root is inserted into a terminal node governed by verbal functional material then the outcome is a verbal predicate.

A crucial part of this research program is to find out what exactly the relevant functional nodes (F) could be, see e.g. Harley & Noyer (1998), Embick (2000) Alexiadou (2001a), Marantz 1997, cf. Borer (2003, 2005). In Marantz (1997), and Harley & Noyer (1998), F corresponds to v for the verbal domain as in (34):

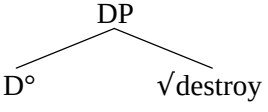
(34)



Observe that in (34) T does not directly embed a root. Presumably for reasons of temporal event-structure, T must embed something that already refers to an eventuality. But assuming that roots cannot be classified as denoting events, they can acquire an event interpretation only in the context of v. Recall that, as we mentioned in the Introduction to this book, section 2.4. v is associated with a number of properties, one of them being that it contains event and agentivity features.

In the nominal domain F corresponds to D as in (35):

(35)



Morphological re-adjustment rules will spell out *destroy* as *destruct*.

(36) *destroy* → *destruct* / when governed by D.

The re-adjustment rules will also add the suffix *-(at)ion* to form *destruction*. The way affixation is meant to work in this case corresponds to the insertion of an agreement morpheme in the verbal system, where the agreement morpheme is inserted at the level of morphology and is not present as a syntactic terminal node.[9] We will come back to this issue in section 3.4.2.3.2.

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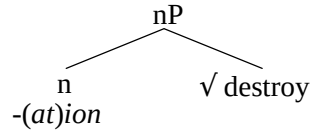
[9] The morphological structure provided by Halle & Marantz (1993: 136) for the example in (i) is given in (ii) below:

This view entails that not every morpheme corresponds to a syntactic terminal, although ideally for the DM framework one would expect that the pieces of morphology are terminal nodes of the syntactic derivation.

In view of that, and also in order to capture the semantics of nominalization, in subsequent work Marantz (1999) proposes that the nominalization affix is situated in the head of light nP, as in (37), and roots become nominal in the environment of a light n (see also the next chapter for discussion of the status of light n):

(37)

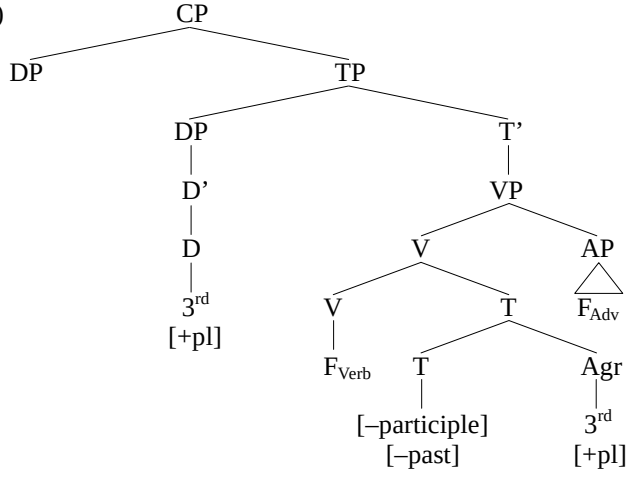


This view is consistent with the assumption that all pieces of morphology are reflected in the syntax. Observe that it also brings nominals more in line with verbs, since for verbs the relevant environment was taken to be the node v.

As Davis & Matthewson (2000) point out, however, the structures in (37) and (34), can be seen as shifting the problem of categorial specification one level higher. The system simply seems to replace the lexical categories N and V by n and v, which are functional, and one has simply redefined the traditional lexical categorial distinctions as functional categorial distinctions.

(i) They sleep late

(ii)



Tense merges with the verb and an Agreement morpheme is inserted.

As an alternative to light n and to D, others have argued that it is a functional head Number that determines the category status of the root (Alexiadou 2001a). Evidence for this view comes from two types of data in which Number is represented while D is not and which is discussed in Davis & Matthewson (2000). In English, certain roots appear in predicate position necessarily preceded by *a*. This is arguably originally located in Number (38a). The second environment is the case of bare plurals (38b), where number morphology is present without D being represented (see Chapter 2 of Part II for bare plurals). One thus could assume that the functional projection between D and N that carries Number features, namely NumP (see Chapter 3 of Part II for more on NumP), is responsible for selecting and nominalizing the root:

(38) a. John is a teacher.
b. Firemen are brave.

Note that the research developed within the framework of DM raises the question of the status and the inheritance of arguments. Unless one assumes that roots may be associated with an internal argument, as in e.g. Harley & Noyer (1998) and Marantz (1997), it must be assumed that arguments come in from the functional layers contained within the structure. The question then is what is the nature of these functional layers that introduce arguments. A lot of the recent work in the syntax-lexicon interface has been investigating precisely this question.

As was the case with the analyses by Chomsky (1970), Williams (1981), Hoekstra (1986), and Giorgi & Longobardi (1991), the DM approach does not pay particular attention to the fact that noun phrases optionally take arguments. This observed optionality in the argument-taking properties of nouns has been discussed in detail elsewhere in the literature, yielding different solutions to the problem of argument inheritance. The next section focuses on this issue.

3. An ambiguity in the nominal system: Complex Event Nominals versus Result Nominals

Recall the examples in (4–5), repeated here in (39).

(39) a. The enemy destroyed [the city].
b. the enemy's destruction [of the city]
c *CP complement*
The physicists claimed [that the earth is round].
the physicists' claim [that the earth is round]
d. *Infinitival complement*
They attempted [to leave].
the attempt to [leave]
e. *Locative PP complement*
The train arrived [at the station].
the train's arrival [at the station] (Grimshaw 1990: 47, her (1)–(2))

As already pointed out, examples like those above suggest at first sight that nouns and verbs are governed by the same principles of argument realization and differ only in their case-assigning properties. Grimshaw discusses two counter-arguments to this view. The first one is that while the subjects of tensed clauses are strictly obligatory, what seems to function as the subject of the noun phrase is strictly optional (40a,b).

(40) a. *Examined the patient.
b. the examination of the patient

A similar contrast concerns non-subject arguments; while non-subject arguments of verbs are also strictly obligatory, non-subject arguments of the noun are also optional (40c,d):

(40) c. *The doctor examined.
d. The doctor's examination was successful.

The examples in (41–42) further illustrate the same point.

(41) a. The enemy destroyed the city.
b. *The enemy destroyed.

(42) a. the destruction of the city by the enemy
b. the destruction of the city
c. the destruction

The above data thus suggest that nouns take arguments only optionally, which makes them quite different in their theta-marking properties from verbs. In fact the very optionality of argument realization with nominals led Anderson (1984), Higginbotham (1983), Dowty (1989) and others to propose that nouns crucially differ from verbs in that they lack arguments and, as a consequence, that nouns lack argument structure altogether.

However, the flexibility exhibited by the nouns in the above examples has been argued to be only apparent due to a fundamental ambiguity in the nominal system. In particular, several researchers have pointed out that some nouns are systematically like verbs in their argument-taking capacities, while others are quite different and in fact take no arguments at all (see Grimshaw 1990; Lebeaux 1986; Roeper 1987; Zubizarreta 1987, and references therein).[10] The situation is obscured by the fact that many nouns are ambiguous between the two classes, but once this ambiguity is resolved, the apparent complexity of the behavior of nouns reduces to a basic distinction between nouns that take arguments and nouns that do not.

Grimshaw (1990: 47ff) provides a series of arguments that deverbal nouns do not form a homogeneous class. Grimshaw proposes that deverbal nouns comprise three distinct semantic classes. Class I contains complex event nominals, Class II contains result nominals, and Class III contains so called simple event nominals e.g. nouns such as *race, exam.* Arguments are only required by deverbal nouns in Class I. As far as their argument-taking properties are concerned, Class II and Class III are similar: the noun does not take arguments. The three-way division is, however, obscured by the fact that nouns such as *examination* in (40b,d) can be three-way ambiguous. Such nouns can have the complex event interpretation associated with Class I. Under this interpretation the relevant nouns take arguments. But a noun like *examination* can also have the simple event interpretation (Class III) as well as the result interpretation (Class II). Under both these readings

[10] Williams (1987) proposed that there is no distinction between nominalizations with and without argument structure. Rather, all nouns are equipped with an argument structure. In fact, as mentioned in Williams (1981) it is proposed that nominalization, which he regards as a morphological rule, applies to verbs to form a new lexical item, affecting the argument structure of these verbs, in that it forces internalization of the external argument, which he labels R.

the noun does not support arguments. In the latter readings the deverbal noun would be similar to absolute nouns (*cat, dog, house*), which are not derived from verbs and which, not being relational, also do not have arguments. In other words, according to Grimshaw, the real distinction is between nouns that have a complex event structure (Class I), and nouns that do not (Classes II and III).

In the next sub-section we first review the diagnostics put forth by Grimshaw (1990) to distinguish between the complex event nominals (Class I) and result nominals (Class II). We will discuss simple event nominals (Class III) in section 3.2.

3.1. Complex event nominals vs. result nominals

Grimshaw concentrates mainly on the distinction between complex event nominals and result nominals, which is shown to correlate with a number of differences. We review these in turn.

1 – Complex event nominals denote an action (or activity); result nominals denote the output of an action, an entity in the world. The noun *examination* refers to an event in (43a), and to a concrete entity in (43b). In (43c) the noun *exam* unambiguously refers to an entity and is not acceptable in contexts requiring the presence of the complex event nominal (43d):

(43) a. The examination of the patients took a long time/*was on the table.
b. The examination was long/on the table.
c. The exam was on the table.
d. *The exam of the patients took a long time.

As the data in (43) show, only under the event interpretation is the presence of the complement required.

2 – The second distinctive property of complex event nominals is that they take internal arguments obligatorily. Result nominals never take internal arguments. Because nouns often are ambiguous between the result and complex event reading this is hard to illustrate. The simplest example to illustrate the obligatory nature of internal arguments is one in which we just look at the behavior of unambiguous nouns. According to Grimshaw, gerunds are unambiguously associated with the complex event interpre-

tation.[11] This point is due to Lebeaux (1986) who cites the nouns *felling* and *destroying* as nouns that only have a complex event reading. These nouns are identical to the corresponding verbs in that both require the presence of their objects.

(44) a. John's felling *(the trees)
b. They felled *(the trees).
c. the barbarians' destroying *(the city)
d. They destroyed *(the city).

With respect to ambiguous nouns, disambiguating is possible, though, because certain modifiers are compatible only with the complex event interpretation of the nouns in question. The presence of such modifiers then means that we can be sure to be looking at the complex event use of the noun. Once we have an unambiguous instance of a complex event nominal we are led to the conclusion that such nouns take arguments.

3 – Complex event nominals are compatible with the same aspectual modifiers as their verbal counterparts, while result nouns do not permit such modifiers (cf. Vendler 1967). Result nouns are not compatible with such aspectual modifiers:

(45) a. the examination of the cat in three hours — *Complex event*
b. *the exam in three hours — *Result*
c. The vet examined the cat in only two days.

4 – Aspectual adjectival modifiers like *frequent* can only co-occur with singular complex event nominals, and they will never co-occur with plural complex event nominals. This is because complex event nominals cannot pluralize in the first place.

Conversely, such aspectual modifiers can modify plural result nouns, and they are ungrammatical within singular result nouns. According to Grimshaw, aspectual modifiers impose this restriction because when they

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[11] Borer (2003), however, points out that *-ing* nominalizations can also be voided of their complex event reading, and this is illustrated in the examples in (i):

(i) a good living, a strong craving, a beating

modify singular nouns, they must be licensed by event structure like other aspectual modifiers.[12]

(46) a. the frequent examination of the cat
b. *the frequent examinations of the cat
c. the frequent exams
d. *the frequent exam

5 – Prenominal genitives associated with complex event nominals are interpreted as Agents, prenominal genitives associated with result nouns have a possessive reading when associated with result nouns. (47) contains the noun *examination*, a noun which is ambiguous between the two readings. Consequently, the possessive that appears together with this noun is also ambiguous. It either has the modifier reading that we find with concrete nouns, or it has the argument-related interpretation that we find with complex event nouns. The possessive *the vet's* in (47b) can refer to the author or taker of the exam, but in (47a) *the vet* refers to the Agent of the action.

(47) a. The vet's examination of the cat took a long time.
b. The vet's examination was long.

6 – Another element that occurs in nominal structures is the *by*-phrase. The *by*-phrase is similar to possessives in that it has two possible readings. In a first reading, the *by*-phrase related to the argument-structure of the nominal (see next section). Hence the prediction is that under this reading, the presence of the *by*-phrase will disambiguate the nominal: it will force the

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[12] However, note that the distinction illustrated above is not absolute. It has been observed that in several languages, e.g. Hungarian (see Szabolcsi 1994), German (see Bierwisch 1989; Ehrich & Rapp 2000) and Greek (see Markantonatou 1992), complex event nominals can in fact be pluralized. The possibility for plural formation is shown to correlate with the aspectual class the nominal belongs to.

(i) I afiksis turiston oli ti nixta itan aprosmeno jeghonos.
the arrivals tourists-GEN all night were unexpected event
'The arrivals of tourists all night long were unexpected.'
(Markantonatou 1992: 57)

As Markantonatou points out, plural nominals are allowed only if they correspond to verbal predicates that have no internal temporal structure, e.g. unaccusatives. (i) refers to an atelic event, and the pluralization of the nominal is facilitated by the fact that the reference of the Theme argument is cumulative.

argument-taking reading and make internal arguments obligatory (Hornstein 1977).

(48) a. the examination *(of the cat) by the vet
b. the destruction *(of the city) by the enemy

Like possessives the *by*-phrase can also occur as a simple modifier not related to an argument structure:

(49) a. An article by Chomsky was reviewed in our local paper.
b. The exam/examination by the junior lecturer was considered too hard.
c. The assignment by Fred was too difficult.

7 – Complex event nominals can take agent-oriented modifiers, while this is not possible with result nouns.

(50) a. the vet's intentional examination of the cat
b. *the intentional exam is desirable

8 – Implicit argument control is possible with complex event nominals, but not with result nominals. In (51a) the implicit Agent of *assignment* controls the subject of *order*. There is no such Agent in (51b) hence there is no controller for the subject of *pass.*

(51) a. the assignment of easy problems in order to pass all the students
b. *the exam in order to pass all the students

9 – Complex event nominals can only be definite, while result nouns may be modified by the indefinite determiners *a*, *one*.

(52) a. *An examination of the cat was interrupted by the fireworks.
b. One exam was rejected because it was written in red ink.

10 – Complex event nouns behave like mass nouns, they cannot pluralize. Result nouns are count nouns, and they may pluralize:

(53) a. *{the, some, a lot of} examinations of the cat
b. one exam, two exams

11 – Complex event nominals do not allow temporal expressions as prenominal genitives, while result nominals do:

(54) a. *this term's examination of two cats
b. This term's exam(ination)/ assignment is difficult.

12 – Complex event nominals cannot appear as predicates, while this is possible for result nouns:

(55) a. *This is an examination of the cat.
b. This is a new exam/assignment.

13 – Complex event nominals do not allow postnominal genitives, while this is possible with result nominals.

(56) a. *I object to the examination of the cat's.
b. I have read an exam/assignment of Bill's.

3.2. Simple event nouns

As mentioned, Grimsaw distinguishes three classes of deverbal nouns: complex event nouns (Class I), result nouns (Class II) and simple event nouns (Class III). We have discussed the distinction between Class I and Class II, and in this section we discuss the distinction between Class I and Class III. What is of interest is that both these classes contain event nouns, and that only the former support argument structure.

Consider nouns such as *trip*, *race*, *exam*, and, in fact, even the noun *event* itself (Zucchi 1988). Informally speaking, all these nouns denote 'events': their denotata are definitely occurrences that can be said to 'take place' and to occur over time. Hence one can modify such nouns by means of expressions like *a long time* or predicates like *last* and *occur*:

(57) a. The event took a long time/took place at 6.00 p.m. (Grimshaw 1990: 59)
b. The race lasted one hour.
c. The trip occurred last night.

The nouns in (57) are event-denoting. In contrast, the noun *table* in (58) is not, which accounts for the ungrammaticality of the latter examples.

(58) a. *The table occurred last night. (Borer 2003)
b. *The table lasted one hour.

If we try, however, to combine event-denoting nominals such as those in (57) with aspectual modifiers, we find that the result is ungrammatical:

(59) a. *the process in five hours
b. *John's trip in five hours (Grimshaw 1990: 59)

Nouns belonging to Class III express events but lack the compatibility with aspectual modifiers that was typical of Class I nouns.

Matters are complex here because in the absence of its arguments a noun such as *destruction* or *examination*, which can belong to Class I (and also Class II) can in fact also be interpreted as denoting a simple event, i.e. as belonging to Class III. This makes nouns of this type three-ways ambiguous: such nouns are either complex event nominals (Class I), 'simple' event nominals (Class III) or result nominals (Class II). In (60) the nouns are used in their simple event reading.

(60) a. The destruction occurred last night.
b. The examination lasted one hour.

In other words complex event nominals (Class I nominals) are not identified simply because of the presence of their temporal extent. Their event denotation is not sufficient to explain the properties that characterize the group of complex event nominals. The proposal is that while complex event nominals have argument structure, simple event nominals lack argument structure. As already discussed in section 3.1, according to Grimshaw, the distinction between complex event (Class I) and result nominals (Class II) is also based on the presence or absence of argument structure.[13]

The question that arises is what is responsible for the presence of argument structure in Class I nominals. We turn to this question in the next section by focusing on Grimshaw's account, which is classified as lexicalist in terms of the distinction in section 2.

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[13] In fact the point that lexical or inherent eventivity might not be related to argument structure can be made on the basis of the following example from Picallo (1991: 291). Derived nominals, like the result nominal in (i), may appear together with NPs thematically related to them in the absence of 'eventive' interpretation.

(i) La demonstracio de'en Joan del teorema de Pitàgores és inconsistent.
'The proof of Joan of Pythagoras theorem is inconsistent.' (Catalan)

3.3. Grimshaw's analysis of deverbal nouns

According to Grimshaw (1990), complex event nominals, simple event nominals and result nominals all have related lexical meanings, but only complex event nominals have an event structure and a syntactic structure similar to that of verbs. The argument structure of complex event nominals licenses and indeed requires arguments. Schematically, one could represent Grimshaw's view as in (61) from Alexiadou et al (2004: 11):

(61) Lexical Semantics → Predicate Argument Structure → Lexical/Syntactic structure

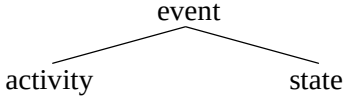
Grimshaw distinguishes between grammatical arguments and semantic participants. Not all semantically relational lexical items have a syntactic structure and take syntactic arguments. Each verb and each noun has a lexico-semantic representation (a lexical conceptual structure) that includes, among other things, the participants in the activities or states described by the verb/noun. Some of these participants are realized as grammatical arguments and are projected as argument-structure representation. Among nouns the ability to project arguments is limited to complex event nominals. Other nouns do not have an argument structure as part of their lexical semantic representation, even though they may have semantic arguments appearing in their lexical conceptual structure definitions.

For Grimshaw, the argument structure of a predicate represents prominence relations among arguments. The version of the THEMATIC hierarchy assumed in Grimshaw (1990: 8) is given below (62).

(62) Thematic hierarchy:
(Agent (Experiencer (Goal/Source/Location (Theme))))

In addition to the thematic relations, a verb is associated with an event structure. The event structure decomposes verbs into aspectual sub-parts. For example, an accomplishment verb like *x constructs y* is analyzed as an activity in which x engages in construction plus a resulting state in which existence is predicated of y (Grimshaw 1990: 26). This can be represented as in (63):

(63)



Argument structure includes an aspectual dimension in that argument relations are jointly determined by the thematic properties of the predicate (i.e. the thematic hierarchy) and by the aspectual properties of the predicate, its event structure. The argument that participates in the first sub-event ('activity') is more prominent than the argument which participates in the second sub-event ('result'). Grimshaw hypothesizes that a predicate lacking an event structure will also lack an argument structure and will never take any grammatical arguments at all.

Concerning deverbal nouns, Grimshaw proposes that the real distinction responsible for their multiple readings is that between nouns that have an associated event structure (the so-called complex event nominals of Class I) and nouns that lack an event structure (comprising both simple event nouns (Class II) and result nouns (Class III)). Complex event nominals are amenable to an event structure analysis and hence are capable of licensing arguments. Complex event nominals select an Event argument, Ev, as their external argument. Result nominals differ from complex event nominals in that they select a referential argument, R, as an external argument (in the sense of Williams 1981, see also section 2.1). The selection of Ev results in an eventive reading of the noun. The selection of R results in the referential reading of the noun. A noun gets Ev as its external argument only if it has an event structure. No noun with R as its external argument can ever have an event structure associated with it. In Grimshaw's account, simple event nouns are like result nominals, that is they lack Ev and hence are not able to license argument structure.

To illustrate this point, consider the derivation of the gerund of *observe* and of the related deverbal noun, as represented in (64) (Grimshaw 1990: 66): the verb is associated with an argument structure in which x is external. The nominal affix *-ing* is associated with an argument structure in which Ev is external; the nominal affix *-(at)ion* also has this entry as one of its possibilities. When the verb combines with the affix, the argument structures of the two are combined resulting in a complex argument structure being formed. Since the affix is the head, the derived form is a noun, and its external argument is the external argument of the whole. (64) represents this process of nominalization.

(64) a. *observe* V (x(y))
b. *-ing* N, (Ev) *-ation* N (Ev)
c. *observing* N, (Ev (x (y)))
d. *observation* N, (Ev (x (y)))

All result nominals have the same argument structure, which contains only an R position. R does not appear as the complement of a head, nor is it the realization of a participant in the lexical conceptual structure of a word there is no sense in which R is a Theme, a Goal or an Agent of a predicate:

(65) a. dog (R)
b. examination (R)

R, unlike Ev, can be bound to a lexical-conceptual structure argument in the base.[14] That is, R is identified with an argument of the base verb. Which argument is identified with R is a function of the affix that is added, so the affix must specify which argument it binds. For instance, the affix *-ee* binds a Patient argument, *-er* binds the external argument, and -(*at)ion* binds something like a Theme (Grimshaw 1991: 67):

(66) a. *detain* (x (y)) detainee (R=x) such that y detains x
b. *teach* (y (y)) teacher (R= x) such that x teaches y
c. *observe* (y (y)) observation (R=x) such that y observes x

The morphological correlates of the ambiguities in the system can be captured by ambiguously specifying some affixes and unambiguously specifying others. For instance, affixes such as -(*at)ion* and *-ment* in English are ambiguous between introducing either Ev or R. The affix *-ing* in nominals is typically specified for Ev. Zero derivation introduces R (67):

(67) Grimshaw: ∅(R), *(at)-ion* ({R, Ev}), *-ing* (Ev)

That null-nominalizers, with few exceptions, do, indeed, give rise to *R*-nominals is very clear from the data in (68), from Borer (2003). In (68), a zero-derived nominal cannot co-occur with arguments:

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[14] In Grimshaw's system this enables R-nouns to accept complements, which in fact she analyses as modifiers. Grimshaw notes that CP complements to nouns such as *decision*, *conclusion* and *arrangement* do occur separated from the head by a copula, as in (i), Grimshaw's (124):

(i) Their conclusion was that there is no relevant data.

Following Stowell (1981), Grimshaw argues that CP complements to nouns are modifiers.

(68) a. *the/John's drive of this car
b. *the/Mary's walk of this dog
c. *the/Kim's break of the vase
d. *the airforce's murder of innocent civilians

According to Grimshaw, the process of nominalization consists in the suppression of the external argument of the base verb much like in the case of passive formation. Sample argument structures are given in (69) (Grimshaw 1990: 108f.):

(69) a. the enemy's destruction of the city
(x-0 (y))
b. The city was destroyed by the enemy.
(x-0 (y))

The possessive and the *by*-phrase in the above examples are treated as a variety of adjuncts, so-called argument-adjuncts. Support for the proposal that these arguments are suppressed comes from the observation that both the possessive and the *by*-phrase are optional.

(70) a. The enemy's destruction of the city was unexpected.
The destruction of the city was unexpected.
b. The city was destroyed by the enemy.
The city was destroyed.

The suppressed external argument can be realized in a *by*-phrase. Grimshaw (1990: 140) assigns two alternative entries to *by*, as in (71):

(71) a. *by*, argument-adjunct, external argument (verbs)
b. *by*, argument-adjunct, Agent (nouns)

It is important to bear in mind here that for Grimshaw the external argument of the nominal does not correspond to the external argument of the base verb, but it is another element, namely Ev. Nominalization both suppresses the external argument and it adds a more prominent argument that then counts as the external.

Grimshaw's analysis has inspired a lot of cross-linguistic research and has raised a lot of controversy. The classification of nominals into three types (i.e. results, simple events and complex events) has been generally accepted. A lot of the discussion in the most recent literature concentrates

on whether the distinction between argument taking and non-argument-taking nominals is one that is reflected in the lexicon (see e.g. Siloni 1997a,b) or a syntactic one, making reference to word formation in the syntax (see Alexiadou 2001a; Borer 1993, 2003, to appear; Schoorlemmer 1998; van Hout & Roeper 1998; Picallo 1991; Engelhardt and Trugman 1999; Alexiadou & Grimshaw, to appear, to mention a few).[15]

In the next section we will examine some alternatives to Grimshaw's approach. We will focus our discussion around the question whether the link between complex event nominals and the related verbs is syntactically derived.

3.4. Syntactic approaches to complex event nominals and event structure

As mentioned in section 3.2., the important question is to determine what is responsible for the presence of argument structure in some nominals. According to some analyses, this is a matter of the lexical entry of the N. For others, the presence of argument structure in a noun is syntactically represented. This proposal is implemented in various ways. Some link nominal argument structure directly to the presence of a VP within the structure of these nominals. On this view, only the category Verb is associated with argument structure. Thus, the properties of complex event nominals observed by Grimshaw necessarily make reference to a VP node which is syntactically active. Others propose that it is the presence of event structure represented in terms of functional layers that regulates the presence of arguments within certain nominals. In this section we discuss some proposals which represent these positions.

3.4.1. Arguments for the presence of a VP in deverbal nouns

The most convincing arguments in favor of the view that a VP is present inside nominalizations would be examples where crucial properties standardly associated with VPs appear with event nominals. Two obvious instances

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[15] Szabolcsi's (1994) analysis is similar to Grimshaw's in that both account for the eventive reading of nominals in terms of the inclusion of an (abstract) event argument. However, she differs from Grimshaw in that she argues against the suppression of the external argument in passive nominals and in favor of its construal as PRO (controlled or arbitrary).

are: (i) adverbial modification and (ii) assignment of accusative case. For gerunds, the presence of a VP might not be controversial (see Abney 1987 and much subsequent work): they allow adverbial modification as well as the assignment of accusative case. Such data may thus be taken to present evidence for the presence of a VP in *-ing* nominalizations.

(72) a. Pat's collecting mushrooms secretly continued all afternoon.
b. Pat disapproved of my secretly collecting mushrooms in the field.

However, with English *(at)ion* nominals things are more difficult: adverbs and objects marked for accusative case do not co-occur with such nominals; the ungrammaticality of (72d) suggests that a VP is absent from derived nominals (see the discussion in section 2, Borer (1993)).[16]

(72) c. I made Pat secretly collect mushrooms.
d. Pat's collection *(of) mushrooms (*secretly) continued all afternoon.

There are languages, however, in which adverbial modification of nominals is possible. Hebrew and Greek (admittedly to a limited extent) permit adverbs in complex event nominals (see Alexiadou 2001a; Alexiadou & Stavrou 1998a for Greek; Borer 1993, 2003 for Hebrew), but disallow them in result nominals. Consider the following examples (Hebrew data taken from Hazout 1995):

(73) a. harisat ha-cava et ha-kfar be-axzariyut
destruction the army ACC the village cruelly
'the army's destroying the village cruelly'
b. i katastrofi ton egrafon prosektika/me prosoxi
the destruction the documents-GEN carefully/with care
c. *i katastrofi prosektika
the destruction carefully

---

[16] Fu, Roeper and Borer (2001: 549, their (1a,2a), and (555, their (8a)) give the following examples in which an adverb modifies a deverbal noun:

(i) a. Kim's explanation of the problem to the tenants thoroughly did not prevent a riot.
b. The occurrence of the accident suddenly disqualified her.
c. His transformation into a werewolf so rapidly was unnerving.

Most speakers, though, find examples such as these are rather marked. See also the discussion of van Hout & Roeper (1998) in section 3.4.2.2.

In both the Hebrew example (73a) and the Greek examples (73b,c) an adverb/adverbial phrase modifies a process nominal. As the ungrammaticality of (73c) shows, when the nominal is used under its result interpretation, as signaled by the absence of the DP complement, the presence of the adverb leads to ungrammaticality. Under the standard assumption that adverbs modify VPs and not NPs (see Jackendoff 1977), and that process nominals have a structure similar to that of result DPs, the presence of adverbs in process nominals appears to be unexpected.

Let us turn to the second piece of evidence for the presence of V in the nominal system. Like a number of other languages, e.g. English and the Romance languages, Greek, does not allow accusative case marking of the DP argument of a nominal.[17] But (73a) shows that Hebrew process nominals permit objects bearing accusative Case, a fact that could be seen as evidence for a verbal component in the nominal. On the basis of similar data, Borer (1993) and others concluded that there must be a VP within Hebrew nominals, and, perhaps, universally.

However, this claim has been questioned. Siloni (1997a) offers arguments against the presence of a VP inside Hebrew nominals. She observes an interesting restriction on the distribution of adverbial modifiers with Hebrew complex event nominals: the adverbial modifiers one finds with such nominals always have a PP structure. This is illustrated by the modifier *be-axzariyut* in (73a), which is introduced by the preposition *be*. Adverbial modifiers lacking a PP structure are not found.

(74) *pinui ha-ca ‘et ha mit naxlim le’at
evacuation the army ACC the settlers slowly (Siloni 1997a: 76, her (17b))

This restriction is unexpected under the view that a VP is present within complex event nominals.

The restriction imposed on adverbial modifiers of nouns in Hebrew does not extend to Greek. Here simple adverbs are found as well as PPs. However, there does remain a contrast with adverbial modification of verbs: so-called ‘light’ adverbs do seem odd in these contexts.[18]

(75) i meleti tu provlimatos ??vathia / √se vathos
the study the problem-GEN deeply / in depth

---

[17] Observe that in the English examples from Fu, Roeper and Borer (2001) cited in footnote 15 above, the complements of the nouns are realized as PPs.

[18] By light adverb we mean at most a bi-syllabic form.

The occurrence of adverbs in these deverbal constructions is syntactically conditioned. As the contrast in the Greek examples in (76a,b) illustrates, the adverb cannot appear in the absence of the remainder of the complement system. In other words, only in (76b) is the adverb acceptable:

(76) a. *i katastrofi prosektika
the destruction carefully

b. i katastrofi tis polis prosektika
the destruction the city-GEN carefully

Second, Siloni argues in detail that the accusative case of the complements of Hebrew deverbal nominals is not a structural case. Siloni (1997a: 84ff) observes significant distinctions between the accusative case associated with transitive verbs and that found in nominal contexts which point to the conclusion that the accusative case within complex event nominals is an inherent case. The most salient distinction concerns the particle *'et*. With respect to the complements of verbs, this particle co-occurs only with a definite object. That is, when a verb takes a definite complement, *'et* must precede the complement. When the verb takes an indefinite accusative complement, *'et* cannot appear, as the ungrammaticality of *et* in (77b) shows. Nouns, on the other hand, can assign accusative case only in the presence of *'et* (77c). Because '*e*t is limited to definite objects, (77d), with an indefinite complement, is ungrammatical:

(77) a. Ha-cava hara *(et) ha'-ir.
the-army destroyed ACC the city

b. Ha-cava haras *(et) 'ir'axat.
the army destroyed ACC city one

c. harisat ha-cava 'et ha-'ir
destruction the army ACC the-city

d. *harisat ha-cava ('et) 'ir axat
destruction the army ACC city one

According to Siloni, since there is no reason to assume that a definiteness requirement is imposed on the complements of complex event nominals (when they receive genitive case they can of course be indefinite), '*et* plays a crucial role in the assignment of this case in the nominal context. The distinction between the complements of verbs and the complements of nouns is completely unexpected under the VP analysis, which attributes the

occurrence of accusative case in nominal contexts to the presence of a verbal head.

Another difference relates to the fact that complex event nominals are unable to realize their object as an accusative pronoun:

(78) a. Ha-cava haras ‘oto.
the army destroyed him

b. *harisat ha-cava ‘oto
destruction the army him

Assuming that the accusative case borne by pronouns is structural, the fact that this cannot occur within a nominal context follows from the hypothesis that the accusative case with these nominals is inherent and not structural.

The above data might lead one to conclude that at the moment there is no direct and uncontroversial evidence for the presence of VP inside the nominal. However, Borer (1993) argues that the ungrammaticality of adverbial modifiers lacking a PP structure in the Hebrew example (74) does not necessarily argue against the VP hypothesis. She suggests that this type of adverbials is excluded in the nominal context because it requires a specific kind of licensing of the sort present in some VPs, but not in VPs embedded under NPs. If particular adverbials require a licensing context that is not available in the nominal context and if others don’t have this requirement, then according to Borer, one will also be able to explain why English differs from Hebrew. English *-ly* adverbials are similar to Hebrew bare adverbials, and like these they are barred from derived nominals.[19] Borer attributes this ban to the independent licensing condition that specifies that adverbs belonging to these classes are not licensed by lexical projections alone, but rather by lexical projections together with their functional correlates, in particular Aspect. Hence, bare adverbials in Hebrew and *-ly* adverbials in English cannot be licensed in a VP which is directly dominated by an NP. On the other hand, adverbial adjuncts not belonging to this class, as those in (74), may occur within derived nominals, licensed by VP alone.

A related explanation is offered in Alexiadou (2001a: 128ff), who attributes the cross-linguistic distribution of adverbials within nominalizations to the presence of AspectP. In particular, Alexiadou observes that there is a cross-linguistic correlation between the presence of Aspect and the presence of manner modification. Recall from the discussion in section 2 that *-ing*

[19] But see note 16 for some examples.

nominals are compatible with aspectual auxiliaries, while other derived nominals such as -(*at)ion* derivations or *-er* derivations are not. This is observed in English by the fact that *-ing* nominals admit adverbial modification, while -(*at)ion* nominals as well as *-er* nominals do not:

(79) a. John's destroying the manuscript carefully
John's having destroyed the manuscript
b. *John's destruction of the manuscript carefully
c. *the destroyer of the manuscript carefully

This is also observed in Greek, where derived nominals accept adverbial modification but the counterparts of *-er* nominals do not:

(80) a. i katastrofi ton egrafon prosektika/me prosohi
the destruction the documents-GEN carefully/with care
b. *o katharistis tu ktiriu prosekitka
the cleaner of the building carefully

A similar contrast is observed in the contrast between Polish verbal nouns vs. Russian nominalizations. The former show true aspectual oppositions (81). This is illustrated in (81) in which the perfective *ocenienie* ('evaluation') in (81a) contrasts withthe imperfective *ocenianie* in (81b). This opposition is not found in Russian (see Schoorlemmer 1995): as shown in (82), though there are two aspectual forms of the verb corresponding to 'destroy': perfective *razrušit* and imperfective *razsušat*, there is only one nominalization *razrušenie*. Schoorlemmer (1995) provides a detailed argumentation for the lack of Aspect in Russian nominals:

(81) a. Ocenienie studentow przez nauczycieli nastapilo szybko. (Polish)
evaluation-PF the students-GEN by teachers occurred quickly
'The teacher's evaluation of the students took place quickly.'
b. Ocenianie studentow przez nauczycieli ciagnelo sie.
evaluation-IMP students-GEN by teachers lasted REFL
przez caly tydzien
through the whole week
'The teacher's evaluation of the students lasted the whole week.'

(82) razrušit-razsušat razrušenie (Russian)
destroy-PERF/destroy-IMP destruction

As Schoorlemmer notes, Russian nominals do not permit manner modification, while Polish ones do:

(83) a. uzucie noza spryntie (Polish)
use knife-GEN cleverly

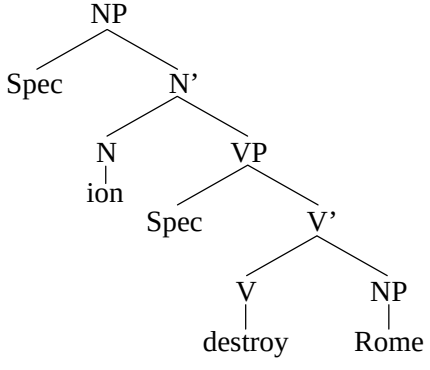
b. *upotreblenie noža xitro (Russian)
use knife-GEN cleverly

The conclusion drawn in Alexiadou's work is that the morphology of adverbial (manner) modification requires the presence of Aspect. This could be understood as suggesting that manner modification requires the presence of events specified in terms of the opposition perfective vs. imperfective. We can then interpret the contrast discussed in Siloni as being due to the lack of Aspect in nominal structure. In fact Borer (1993) argues that there is no Aspect present in Hebrew nominalizations.

The second point at issue concerns the lack of accusative case. With respect to the points raised by Siloni for Hebrew *-et*, Borer argues that '*et* is actually an independent device which is available in Hebrew for the assignment of case. Borer re-interprets the contrasts provided by Siloni as arguing for the status of the particle '*et* as an assigner of accusative case. It is the specific presence of such an independent case assigner which renders grammatical accusatively marked NPs in Hebrew derived nominals. For English, the claim is that accusative is absent because the VP which is the input to nominalization is passive in nature. The derivation assumed by Borer for examples such as the one in (84a) is illustrated in (84b):

(84) a. the destruction of Rome by the Vandals

b.



The verb *destroy* is passivized without overt morphology, resulting in dethematization of its Spec position and in the projection of the external ar-

gument of *destroy* as an adjunct. Observe that, for Borer, examples such as the one in (85) involve a process of passivization as well:

(85) the Vandals' destruction of Rome

She argues that the argumental subject *the Vandals'* is situated in SpecDP and is interpreted pragmatically as the suppressed subject of the passivized VP.

Pursuing this analysis, Alexiadou (2001a) endorses Borer's view that derived nominals lack external arguments, but she does not account for this in terms of passivization. Rather, the intransitive status of such nominals is attributed to the presence of a defective vP which cannot take an external argument and which fails to assign accusative case (see the Introduction, section 2.4, and section 4). As proposed by Borer, the prenominal genitive *the Vandals'* in (85) is taken to be generated in SpecDP, but it is thematically interpreted as an Agent, because in English SpecDP can function as an A-position (see Abney 1987; Horrocks & Stavrou 1987, and the discussion in Chapter 1 of Part II and in Chapter 2 of Part IV).

Hence we can conclude that the arguments for the presence of a VP within derived nominals can be maintained. In the next sections we will have a more detailed look at the syntactic representations that have been proposed in the literature.[20]

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[20] In support of the analysis of English deverbal nouns as containing a V-projection, consider also the following English data: (ia–d) from Fu, Roeper and Borer (2001: 550 (their (3a), 572 their (44a), (44b), 571, their (42a)). (ie) is attested.

(i) a. Sue's exploration of Easter Island was impressive, but Amy's doing so was a real surprise.

b. The defection of the seven moderates, who knew they were incurring the wrath of many colleagues in doing so, signalled that it may be harder to sell the GOP message on the crime bill than it was thought previously. (*Washington Post*)

c. Even though an Israeli response is justified, I don't think it was in their best interest to do so right now.

d. His removal of the garbage in the morning and Sam's doing so in the afternoon were surprising.

e. Canon Michael Hunter, rector of St James parish church in Grimsby, said it was a sad day for natural justice and added that her return to the town would have caused problems but she should have been allowed to do so. (*Guardian*, 13.2.4, page 1+2, cols 4,5)

In these examples *do so* is referred anaphorically; *do so* being a VP anaphora we conclude that the deverbal nouns contain a projection of V.

3.4.2. Syntactic representations

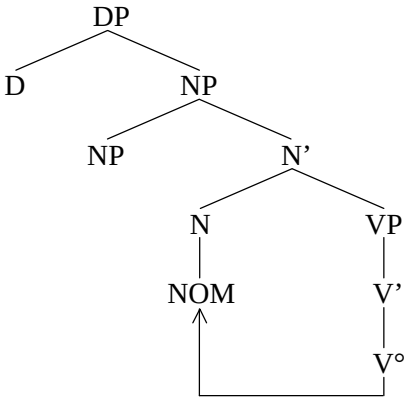
In this subsection we compare approaches that assume a VP base for complex event nominalizations, and hence associate the presence of argument structure to the presence of VP, and approaches that assume a neutral stem, which is the source for verbs and nouns alike. Some of the approaches discussed also postulate a further functional projection related with event interpretation (for instance, AspectP). For all the approaches, the crucial distinction between argument-taking nominals and non-argument-taking nominals relates to the presence of extra functional layers in argument-taking nominals. The approaches differ with respect to whether they analyze result nominals as syntactically or lexically formed. Another difference concerns the cross-linguistic variation within the deverbal constructions, i.e. the question whether derived nominals universally have an identical structure. Not all of the approaches to be discussed here deal with this issue.

3.4.2.1. The [DP [NP [VP]]] approach

For those who assume a verbal component within deverbal nouns, the properties associated with complex event nominals follow directly from the presence of this verbal component inside the nominal structure. On the other hand, the non-availability of accusative case and/or of adverbial modifiers follows from the internal structure of the nominalizations. Here we briefly review two such proposals in order to illustrate the gist of such an approach.

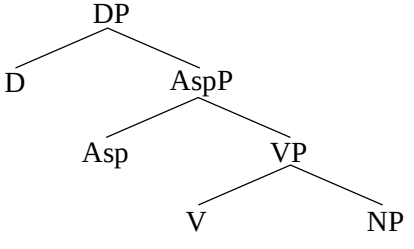
One of the first to propose that a VP is present in the syntax of deverbal nominals was Hazout (1990, 1995) who proposes (86) as the structure for Hebrew deverbal nominals. A nominal bound morpheme NOM is the head of an action nominalization. NOM subcategorises for a VP headed by a verb. The actual deverbal form of the head noun is derived by head movement of the verb to NOM. Since NOM is a bound morpheme the operation must apply. The presence of a VP accounts for the licensing of accusative case and the presence of adverbials within Hebrew nominals.

(86)



Like Hazout, Borer (1993)[21] argues that the argument structure associated with event nominals results from the presence of a full VP in these structures. It is the head of this VP that assigns thematic roles to the arguments, not the derived nominal itself. For English gerunds Borer proposes a structure such as (87) below. Observe that DP here dominates the functional projection Asp, which is associated with VP. This accounts for the facts that accusative case is allowed, adverbial modification is possible, the subject is marked as a possessor, there is no *of* insertion and determiners and adjectival modification are impossible. Borer points out that the last three properties suggest the absence of an NP level from gerunds, while the presence of accusative case is linked to the presence of Aspect:

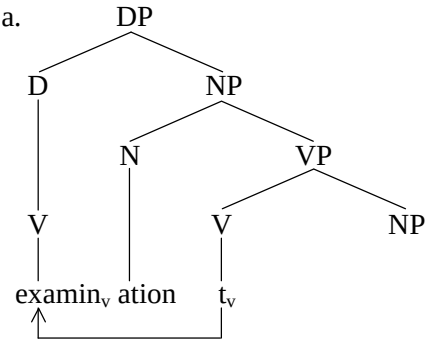
(87)



The structure proposed by Borer (1993) for Hebrew complex event nominals as well as English *(at)-ion* nominals is illustrated in (88a), where N dominates a VP:

[21] Lebeaux (1986) suggests that a VP is present but at the level of LF.

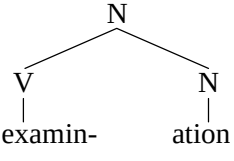
(88) a.



Borer crucially argues that, because Hebrew derived nominals have the internal structure of a noun phrase, DP does not immediately dominate VP[22] or the associated functional projections. Borer also argues against the projection of semantic primitives such as NOM. Argument-taking nominals are the result of the independent projection of the verb and the deverbal affix. As the verb projects a full VP complete with its argument structure, there is an appearance of nominal arguments.

On the other hand, in her analysis, result nominals are not derived syntactically but they are the result of a morphological rule application prior to D-structure. It is crucial at this stage to point out that Borer (1993) assumes a model of Morphology labeled *Parallel Morphology.* Morphology, in this view, is a set of rules that can apply anywhere. The products of these rules may be inserted both at D-structure and at S-structure. In (88a) the input to morphology is a syntactically formed head-adjoined structure. Both V and N project a full syntactic structure, and the verbal head raises and adjoins to the nominal head. In the case of result nominals, the nominal receives its morpheme input straight from the lexicon, as in (88b):

(88) b.



In (88b) a V is combined with an N head to derive the result nominal. The morphological rule gives rise to the nominal which can be inserted at D-structure as an N°. The derived N° projects an NP like an ordinary nominal.

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[22] As had been proposed by Fassi-Fehri (1993), for whom derived nominals in Arabic are VPs dominated by DP.

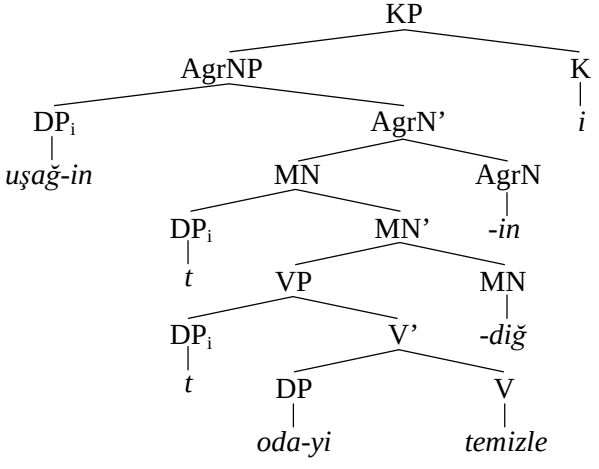
In other words a noun like *examination* in its result reading would be inserted under N, which in that case does not dominate a VP. Hence the properties of the V embedded within them are syntactically inert.

The structures in (87) and (88a) suggest that the properties of the various types of nominalizations have a structural reflex. In the same spirit, Borsley & Kornfilt (2000), suggest that nominalizations have nominal properties, but that this is the result of an association of a verb with one or more nominal categories in addition to the verbal functional categories appearing above the verbal lexical category. While gerunds involve a DP dominating a VP, nominalizations in languages such as Turkish are more verbal and are associated with a different set of nominal projections. They contain layers such as Agreement and nominal Mood. The latter is motivated by the observation that they can be future or non-future. Consider now the structure of a Turkish nominalization such as the one in (89a), from Borsley & Kornfilt (2000: 101, their (2)):

(89) a. Hasan [uşağ-in oda-yi temizle-diğ-in-i] sőyle-di.
Hasan servant-GEN room-ACC clean-fact-3SG-ACC say-PAST
'Hasan said that servant had cleaned the room.'

The authors propose that nominal agreement morphology is a nominal functional category AgrN. They also assume that the element glossed as 'fact' in (89a) above is the realization of the nominal Mood category, labeled MN, and that case is the realization of another functional nominal category – KP – (see the discussion in Chapter 1 of Part II), they propose the structure in (89b):

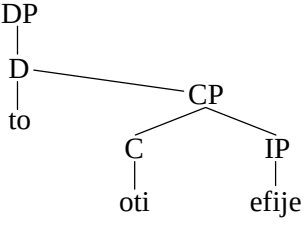
(89) b.



As can be seen from (89b) the set of nominal projections assumed for this type of nominalization in Turkish differs from what is assumed for e.g. English gerunds. The assumption here is that V combines with MN, AgrN and K through head-movement. This analysis predicts that objects bear accusative case like objects of finite verbs, while subjects of nominalized clauses have genitive case like possessors.

In Borsley & Kornfilt's system, DP can even embed a CP, giving rise to nominalized clauses found in Polish and Greek (Roussou 1991). We illustrate such a construction in (90a) with a Greek example; (90b) illustrates the structure proposed for (90a):

(90) a. To oti efije me stenaxori.
the that left-3SG me upset-3SG
'The fact that he left upsets me.'

b.


The constructions that Borsley & Kornfilt (2002) concentrate on mostly concern clausal nominalizations. Hence the variability in projection goes beyond the (extended VP) and affects the CP and IP layers. In the next subsection we turn to a different approach to the structural representation of event structure in the nominal domain.

3.4.2.2. van Hout & Roeper (1998)[23]

In our discussion of Grimshaw's system we pointed out that for her a verb is associated with an event structure. In particular, the event structure decomposes verbs into aspectual sub-parts. According to this view, an accomplishment verb like *x constructs y* is analyzed as an activity in which x is engaged in a constructing activity resulting in a state in which existence is predicated of y.

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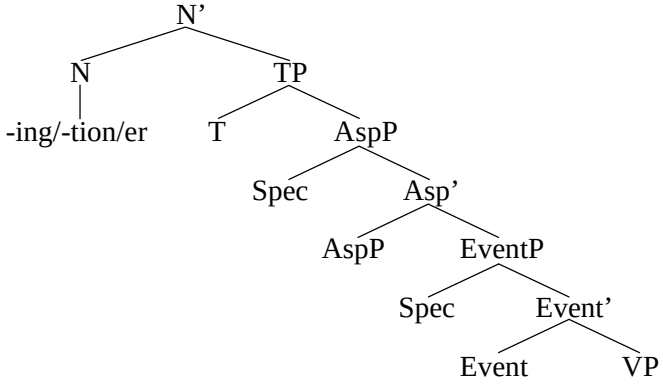
[23] Van Hout & Roeper (1998) do not discuss result nouns, so we cannot present their structure for this type of nominals.

In some recent work it has been proposed that event structure can be represented in terms of aspectual projections, suggesting that event structure is part of syntax proper. Others assume that properties linked with event structure such as telicity are 'checked' in the syntactic derivation, as part of the larger mechanism of feature checking. Pursuing this line of research, van Hout & Roeper (1998) propose that nominalization structures contain not only a VP, but also a vP/EventP, an AspP and a TP. TP is responsible for fixing the event entailment, AspP is responsible for fixing telicity, and EventP is responsible for introducing the event interpretation of complex event nominals These functional nodes project argument positions, yield event entailments and license manner, purpose and instrumental modifiers. The crucial difference between nominalizations that denote events, and those that do not, concerns the presence of functional structure and not of the VP level, which could in fact be present in both. The relevant structure is given in (91):

(91)



According to van Hout & Roeper (1998) certain affixes encode the verb's event structure, thereby projecting argument positions and licensing manner adjuncts (92a), purpose clauses (92b,c) and aspectual PPs (92d). This is illustrated in the examples in (92), from van Hout & Roeper (1998: 177).

(92) a. the destruction of the city quickly[24]
b. the consumption of drugs to go to sleep
c. the discovery of a new product to enrich our society
d. the mowing of the lawn in an hour

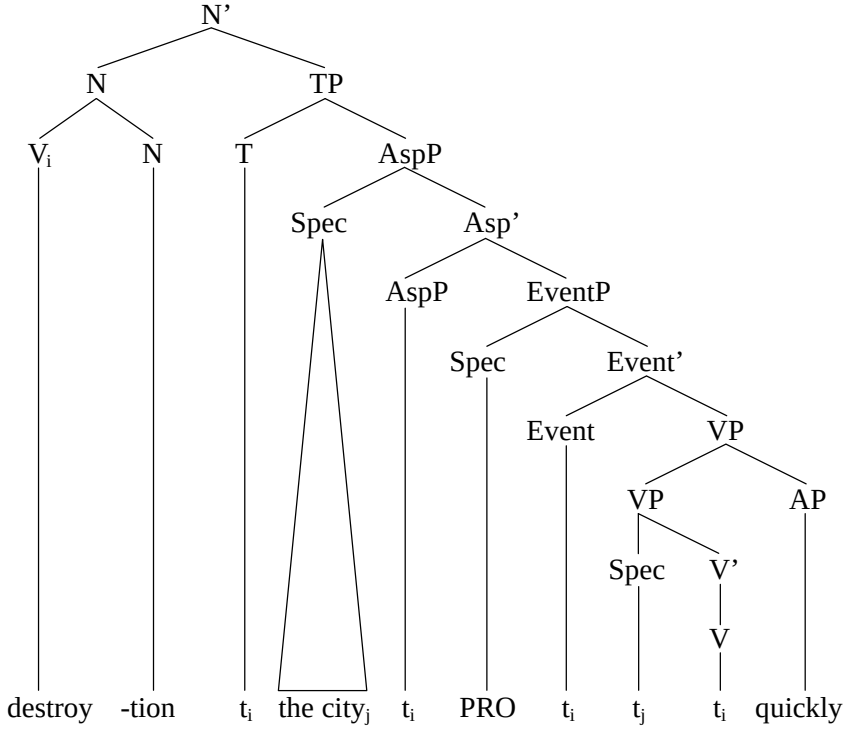
[24] Examples with adverbs are considered marked by most speakers of English. See also note 16.

Other deverbalizing affixes prohibit projection of arguments, and also block manner adjuncts (93):

(93) a. *an employee by Mary
b. *a trainee with great effort

The contrast between (93) and (92) is explained by means of the proposal that nominalization structures containing the affixes *-(at)ion -ing*, and *-y* dominate EventP/vP, AspP and TP nodes as well as the VP node. On the other hand, those with the suffixes, *-ee*, *-ive*, *-ly* and -0 do not contain a fully-fledged functional structure and therefore do not provide argument positions, although they contain a VP node. (94) illustrates the structure assumed for (92a). Observe that the authors assume that all arguments originate in a specifier position, that is, both the Agent, as well as the Theme.

(94)



As can be seen from (94), van Hout & Roeper assume that the Agent is projected as PRO in the specifier of EventP. EventP is the counterpart of

VoiceP in Kratzer (1994) or of vP in Chomsky (1995). The presence of the projection EventP is motivated by the fact that purpose clauses are grammatical within such nominals (cf. (92b,c)). Taking the grammaticality of purpose clauses as an indicator of the presence of an implicit Agent, and assuming that Spec,vP/VoiceP/EventP is the place where this is generated, then nominalizations contain such a projection.

The motivation for postulating AspectP is as follows. It is well known that the semantic nature of the object determines the telicity of the entailed event (Verkuyl 1972, 1993, 1999; Krifka 1998). Van Hout & Roeper observe similar contrasts in nominalizations. A quantized object yields a telic event, as in (95a), while a bare plural yields an atelic event, as in (95b). The compatibility with temporal modifiers such as *in an hour*/*for an hour* bring out this difference:

(95) a. the destruction of the city *for hours/ in an hour
b. the destruction of cities for hours/in an hour

In this respect, nominalizations behave similarly to their verbal counterparts:

(96) a. The destroyed the city *for hours/in an hour.
b. They destroyed cities for hours/*in an hour.

According to these authors, the event structure of the verb phrase must be syntactically identified by means of Feature checking in AspP. AspP is responsible for telicity and for accusative case checking. To account for the non-availability of accusative case in nominal structures, the authors suggest that one could assume that the nominalization affix absorbs case as is the case in verbal passive formation.

The presence of TP is motivated by the data in (97):

(97) a. I hated the destruction of the city. It took place last summer.
b. I hated the destruction of cities. It took place last summer.
c. #I hated city destruction. It took place last summer.

When the object of a nominalization construction is projected in an *of*-phrase, a discourse continuation can refer to the event with a pronoun, *it*. With an incorporated object as in (97c), such a continuation is not felicitous. In the latter case the assumption is that there is no VP node (and the functional layers dominating it). In the same way that the event variable in

sentences is closed off by existential closure introduced by a tense head (Kratzer 1994), van Hout & Roeper assume that the nominal TP introduces existential closure in nominalization constructions.

Although all affixes associated with nominalization appear under N°, they do not receive a uniform treatment in van Hout & Roeper's (1998) system. Specifically, *-ing* is base generated in Aspect and moves to N°. *-er* is base-generated in Voice° and moves to N°, while *(-at)ion* is base-generated in N°. *-ing* nominals and *-(at)io*n nominals differ with respect to the aspectual specification in Asp. The *-ing* affix is generated in Aspect° ; it expresses imperfectivity instantiating progressive *-ing*. Hence, the event entailed by an *-ing* nominal is imperfective. With *-ation* the structure contains a zero Aspect head for perfectivity. The event entailed by *-(at)io*n nominals will be perfective.[25]

Van Hout & Roeper further argue that the same affix can differ in its entailments depending on its structural context. Such a contrast is found in *-er* nominals (cf. Rappaport Hovav & Levin 1992). Compare the data in (98):

(98) a. the mower of the lawn — a.' the lawn-mower
b. the trainer of dogs — b.' the dog-trainer

(98a–b) entail an event, a mower of the lawn must have mowed a lawn, and a trainer of dogs is someone who has trained dogs. On the other hand, the compounds in (98a'–b') do not entail an event. No lawn need have been mowed by a lawn-mower; a dog-trainer is someone who may not have trained any dogs: he may simply have finished dog-trainer school. A further difference that can be pointed out here is that (98a) necessarily has a human referent, while (98a') is typically interpreted as non-human.

For van Hout & Roeper the nominals in (98a–b) are like those in (92). Compound *-er* nominals in (98a'–b') are generated without functional structure and receive the representation in (98c).

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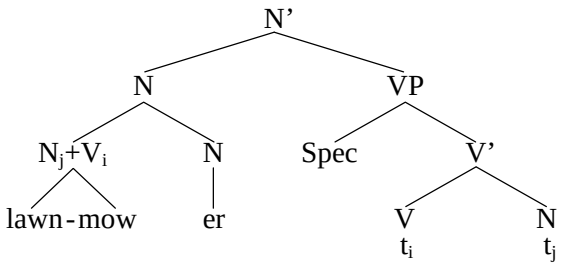
[25] This observation is originally due to Vendler (1967), who calls *-(at)ion* nominals perfect, while he refers to gerunds as imperfect. As mentioned, Chomsky (1970) and Borer (1993), also suggests that *-ing* nominalizations include an aspectual node in their VP.

(98) c.



Note here that in this example the *-er* affix is generated under N, unlike the *-er* found in (98a), which is base-generated in Voice and moves to N. A point of clarification is in order here with respect to the structure in (98c). Van Hout & Roeper assume that bare noun complements of verbs (as well as particles) are generated as the complements of V, while full DP complements are projected in the specifier of V.

The importance of van Hout and Roeper's account is that it adopts a structural approach to argument structure realization in terms of checking. However, the approach leaves a set of questions unanswered. First, how can we explain the differences between *-ing* nominals, *-(at)ion* nominals and *-er* nominals? The point here primarily concerns the presence of accusative case in gerunds and its absence in the other two nominal constructions. Moreover, for most speakers of English, examples containing adverbs with *-(at)ion* nominals (see (92a) and note 15) are rather marked and adverbs seem to be impossible with *-er* nominals. This is in sharp contrast with the well-formedness of adverbial modification in gerunds. Secondly, why don't we ever find nominative case within derived nominals in English? In principle one would expect that T, if present, could license nominative case.

3.4.2.3. Items lacking category specification as input to nominalization

According to the syntactic approaches discussed above, deverbal nouns that have event entailments crucially contain at least a VP node. In another type of approach, the emphasis is put on the fact that the basis for the formation of nouns (and verbs) is a bare root, or rather an element unspecified for category, as discussed in section 2.2 in relation to the discussion of the DM framework. The approaches to be discussed differ as to whether they assume such unspecified items for all deverbal nouns (event and result ones), and as to whether they assume special verbalizing functional layers or not.

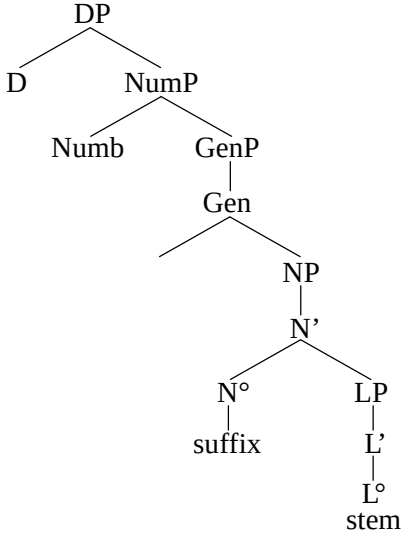
In the following sub-sections we will discuss three such approaches, namely Picallo (1991), Alexiadou (2001a) and Borer (2003). The approaches

further differ as to whether they treat result nominalization as identical to complex event nominalization in the sense that both involve syntactic derivation. Picallo explicitly assumes that result nominals involve a process of lexical nominalization, and Borer does not really make use of the projection of syntactic structure for result nominals. Alexiadou, on the other hand, assumes that all nominalization types are derived in the syntax.

3.4.2.3.1. Picallo (1991)

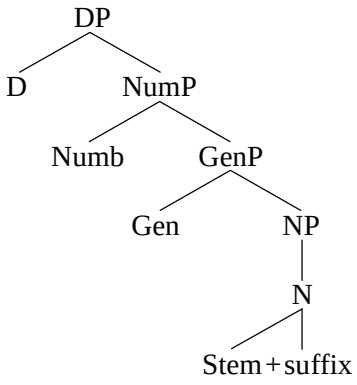
Inspired by Chomsky (1970), and Wasow (1977), Picallo (1991) assumes that the grammar distinguishes between two types of nominalizations: those that are syntactically derived, and those that are lexically derived. Picallo assumes that certain items are neutral with respect to the categorial feature [+N] or [+V] and that their categorial features are assigned by morphological rules. Event nominalizations are syntactically derived from a category-neutral root, as in (99a). The nominalization suffix is located in N and takes as its complement a category-neutral lexical projection (LP) headed by a stem L, which is identical to the stem of the corresponding verb. By head raising, the stem L becomes the head of an NP in the syntactic component. This means that event nominals are instances of syntactic nominalization. In Picallo's approach, the head L takes an internal argument both in the context of N and in the context of V.

(99) a.



Result nouns, on the other hand, have a simple DP structure (e.g. 99b). This structure also applies to ordinary object nouns.

(99) b.



The structures in (99) suggest that nominalization affixes have a dual status. The nominalization suffix is analysed as a functional category in (99a). On the other hand, suffixation is implemented prior to insertion at the level of D-structure in (99b), possibly in a manner similar to Borer's (1993) account (see section 3.4.2.1), though Picallo does not discuss the details of this derivation. Thus result nominals are instances of lexical nominalization.

Picallo proposes that in complex event nominals which are derived in the syntax, the external argument is absorbed by the nominalization affix (see also Baker, Roberts and Johnson 1989, Roberts 1987 for verbal passives). As no thematic role can be assigned to the nominal subject position, the nominalization affix also cannot assign structural case to the internal argument (see also Borer's account earlier on). In other words, when the nominalization morpheme is analysed as a functional affix, passivization is triggered.

Picallo restricts the category-neutral root to the derivation of complex event nominals. In (99b), for instance, the result noun is an N. Her approach differs from that in Marantz (1997) and subsequent work. For the latter, the category-neutral approach extends to all kinds of category formation. Two other proposals in Alexiadou (2001a) and Borer (2003), also attempt to deal with the ambiguity in the nominal system by making use of elements that lack categorial specification. Though the two approaches differ both in their basic assumptions and in a number of details of execution, (100) below captures the essence of both proposals:

(100) a. Argument realization in nominal structures is linked with functional layers of the type found within verbal clauses.
b. The absence of such layers will mean that there is no argument realization.

The two systems differ from approaches like Picallo's in that they attempt to derive both Grimshaw's complex event nominals and result nominals without making use of a lexical process of nominalization. Alexiadou, following Marantz (1997) and subsequent work, is explicit with regard to the module of grammar in which both result and complex event nominalizations take place: independently of their type, they are formed in the syntax and make crucial reference to the functional architecture that is contained within their structure. Borer, on the other hand, allows for morphological formation to act in the absence of syntactic structure, thus giving rise to result nominals, as we will see in the relevant section. Moreover, the two systems differ in that for Borer affixes impose category specification, while for Alexiadou categorial specification is structurally defined, and is not a property of any given affix.

We turn to a detailed discussion of these approaches. We first discuss Alexiadou and then we turn to Borer.

3.4.2.3.2. Alexiadou (2001a): nominal structures and patterns of derivation

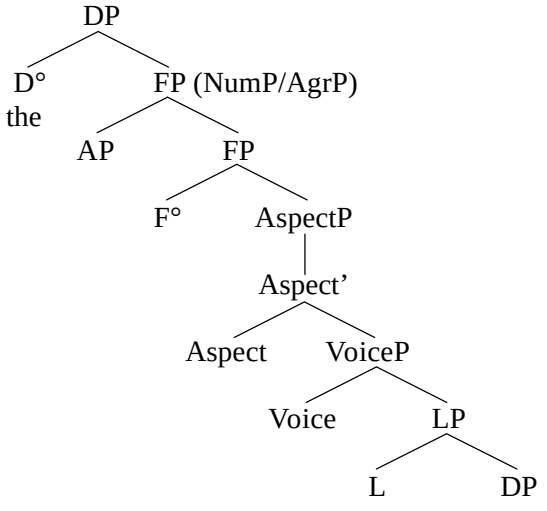
Alexiadou (2001a) develops an analysis of nominalizations in terms of the proposal that they are formed syntactically. The analysis aims at elaborating a typology of derivational processes denoting events in terms of the functional architecture. The main idea is as follows: category formation does not involve any lexical operation, or any nominalizing position for that matter; rather the behavior and appearance of verbs/nominals follows from general processes operating in specific syntactic structures, and is linked with the presence or absence of functional layers (T, D, Aspect, v). Alexiadou defines criteria on the basis of which the organization of the functional structure inside these categories can be determined. Furthermore, she shows that nominals split into several types depending on whether they include certain lower layers of functional structure and depending on the feature specification of these functional layers.

Among the criteria that are proposed as determining the organization of functional structure, two feature prominently: (i) adverbial distribution and (ii) morphological reflexes. These criteria are taken to provide evidence for

the presence of VoiceP and AspectP within certain types of nominals. These two layers of structure come with specific properties, which are those assumed in much of the recent literature. In particular, Aspect contains features that relate to the semantic properties of the event denoted: for instance perfectivity for a completed event, imperfectivity for an ongoing event. Voice is the locus of agentivity, i.e. of features relevant to the licensing and interpretation of external arguments. Voice is also the locus of case features for the object, and it further contains features related to eventivity. It comes in two types: one that introduces an external argument, and one that does not (Marantz 1997). Both types of Voice are eventive.[26]

The structure in (101) instantiates the structure that could be involved in deverbal nominals across languages. In (101) we use LP to represent the root which in fact can contain an internal argument.

(101)



[26] Alexiadou (2001a) did not really distinguish between vP and VoiceP. Crucial aspects of this analysis have been revised in more recent work, see Alexiadou (to appear). The main points made there are: first, VoiceP is a layer that appears higher than vP: VoiceP, unlike vP, is not eventive, in agreement with Alexiadou & al. (2006). Second, nominal affixes are inserted under n°. When they attach outside verbalizing affixes, inserted under v°, the result is compositional meaning predicted from the meaning of the verb. When they attach directly to the root, this is not the case. Third, the presence of argument structure should be dissociated from the presence of verbalizing morphology. Argument structure is related to the presence of layers such as VoiceP and predicates/resultative/prepositional phrases in line with much recent work.

The structure in (101) does not apply to all types of nominalization. First, within a particular language nominalizations may differ as to whether they contain the whole set of projections or not and whether they involve the same feature specification. This variation affects both the nominal functional layers and vP and AspectP. Secondly, the same type of variation occurs cross-linguistically. Naturally, as also discussed in Borsley & Kornfilt (2000), in order to account for nominalized clauses higher functional heads such as CP must be assumed.

Let us first see how the diagnostics work.[27] In the languages that seem to permit adverbial modification, only certain classes of adverbs can be present within complex event nominals. The point is illustrated here for Greek.[28] In this language, manner, and aspectual (frequency, interval-denoting) adverbs are acceptable, while modal and speaker-oriented adverbs are not; the following examples are given in Alexiadou (2001a: 47f.):

(102) a. i katastrofi ton eghrafon toso prosektika
the destruction the documents-GEN that carefully

b. i katastrofi ton eghrafon kathimerina
the destruction the documents-GEN daily

c. *i katastrofi ton stixion pithanos/ilikrina
the destruction the evidence-GEN possibly/frankly

The admissibility of certain adverbs in complex event nominals is not due to some semantic compatibility. In fact the corresponding adjectives would be grammatical as is shown in (102d):

(102) d. i pithani katastrofi ton stixion
the possible destruction the evidence-GEN
the possible destruction of the evidence

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[27] On the basis of similar distribution of adverbs/morphology, as well as additional arguments (failure to find processes within nominals that require the presence of a TP, e.g. raising nominative case and so forth), Alexiadou argues against the presence of TP within nominals. For a similar conclusion based on *do* anaphora in English see Fu, Roeper and Borer (2001: 575–578).

[28] For English too, higher adverbs such as *fortunately* and *presumably* are not possible, as shown in (i) from Fu, Roeper and Borer (2001: 556, their (11)):

(i) a. *His explanation of the problem *fortunately* to the tenants (did not cause a riot).

b. *His removal of the evidence *presumably* (promised a lengthy trial).

Rather, it is a syntactic fact that has to do with the principles that determine which elements can be attached at which positions in the tree structure.

Obviously, this should not be taken to mean that the admissibility of adverbs has nothing to do with the event interpretation associated with complex event nominals. But the interpretation of such nominals as denoting events is not sufficient as an explanation of the restrictions on the distribution of adverbs.

Recent work on the syntax of adverbs proposes that adverbial phrases are related to specialized functional projections (see Alexiadou 1997; Cinque 1999). This hypothesis runs in parallel with research on the type and content of functional projections constituting the clausal architecture. According to this hypothesis, the presence of aspectual adverbs is linked to an Aspect Phrase, while manner adverbs arguably bear a tight relation to a Voice Phrase.[29] In this view, the presence of such adverbs signals the presence of certain 'low' verbal projections within complex event nominals; the absence of modal and speaker-oriented adverbs signals the absence of higher projections (see (102)).

Further support for this conclusion is provided by the systematic morphological connection between voice and aspectual morphology and complex event nominals. While the relevant connection is not manifested in Greek, it is clear from languages such as Turkish and certain Slavic languages. In Turkish, as reported by Comrie (1976), deverbal nominals may show voice-morphology in the same way as a finite verb does: compare the Turkish sentence containing a verb in (103a) to the corresponding nominal in (103b). Both contain the passive morpheme *-il-*:

(103) a. Mektub yaz -il -di.
letter write PASS PAST
'The letter was written.'

b. mektub-un yaz -il -ma-si
letter-GEN write PASS VN its
'the writing of the letter' (Alexiadou 2001a: 50)

In several languages semantic aspectual distinctions are reflected in both the verbal and the nominal morphology. As already mentioned, in Polish, the Perfective vs. Non-perfective opposition is also observed in complex event nominals (see (81) repeated as (104)).

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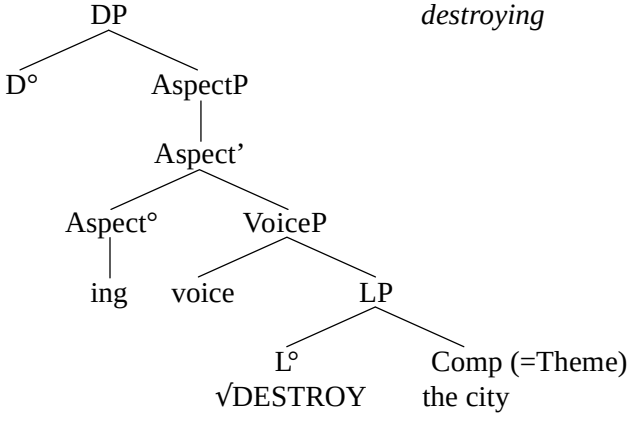
[29] The possibility of a predicate to license a manner adverb is related to its voice features (see Travis 1988; Alexiadou 1997; Cinque 1999 for discussion and references).

(104) a. Ocenienie studentow przez nauczycieli nastapilo szybko. (Polish)
evaluation-PF the students-GEN by teachers occurred quickly
'The teacher's evaluation of the studentc took place quickly.'

b. Ocenianie studentow przez nauczycieli ciagnelo sie.
evaluation-IMP students-GEN by teachers lasted REFL
przez caly tydzien
through the whole week
'The teacher's evaluation of the students lasted the whole week.'

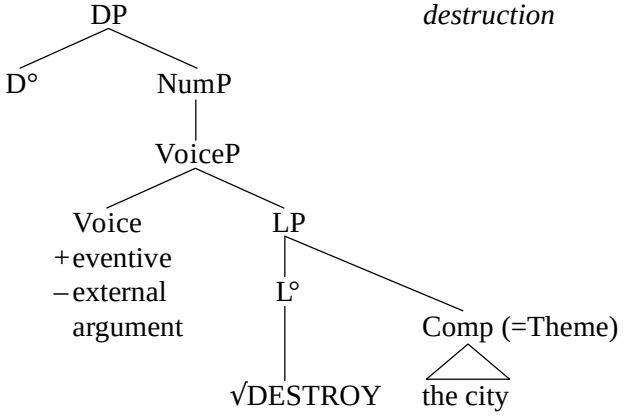
For English a clear argument for the presence of Voice and Aspect can be made for *-ing* nominalizations. First, it has been observed that these differ in their aspectual properties from *-(at)ion* nominalizations, in the sense that *-ing* nominalizations denote an atelic event (see also the discussion in van Hout & Roeper 1998). The fact that gerunds are similar to participles, semantically and morphologically, led Pustejovsky (1995) and Siegel (1997) among others to analyze *-ing* as a progressive marker inside the deverbal formation (see also Portner 1992; Zucchi 1993 and references therein for discussion). Secondly, gerunds permit certain types of adverbial modifiers but they are incompatible with speaker-oriented and modal adverbs (Abney 1987). Thirdly, gerunds assign accusative case and disallow adjectival modification as well as determiners. Alexiadou, like Borer (1993), takes this latter point as evidence that gerunds lack nominal layers. The structure in (105) offers the structural representation for *-ing* gerunds. In (105) Aspect is specified for –imperfective, and Voice (which corresponds to v or EventP) is transitive.

(105) *destroying*



On the basis of the observation that English derived nominals of the *-(at)ion* type do not assign accusative case and that they are compatible with adjectival modification as well as with determiners, these nominals are assigned a structure which contains Number, presumably lacks Aspect, and is specified for a non-transitive Voice (106).

(106) *destruction*



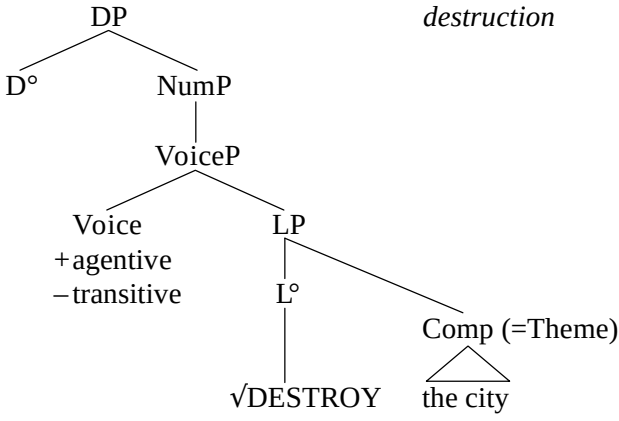
Eventive *-er* nominals do license arguments, in fact they seem to require them, much like their verbal counterparts do, as the contrast in (107a,a') suggests. But they lack aspectual modification and they cannot be modified by any adverbials. This restriction extends even to languages which permit adverbial modification within nominalizations, such as Greek (see note 14 and the discussion in section 3.4.2.1 above):

(107) a. a devourer of fresh fruit a.' *a (good) devourer
b. She devours fresh fruit. b.' *She devours.
(Rappaport Hovav & Levin 1992)

(108) *o katharistis tu ktiriu sixna
the cleaner of the building frequently

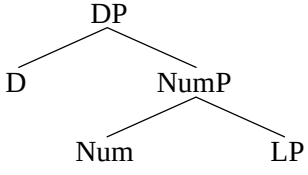
The analysis of *-er* nominals involves a structure that includes Number, since these formations allow for adjectival modification, they exclude Aspect, and contain an agentive, albeit non-transitive voice (Embick 2003), (109):

(109) *destruction*



Note that in the structures above the root is assumed to take an internal argument as in Marantz (1997) and Picallo (1991), but this argument is only licensed by the eventive environment created by the higher functional layers, such as Voice and Aspect.[30] Result nominals lack functional layers such as VoiceP and Aspect, and LP is directly inserted under Number as in (110).

(110)



As noted earlier this approach does not assume a nominalizing position. A rule of the type in (36), given in (111a), applies. On the basis of (111) the node in which the affix appears is added at the level of morphological structure much like Agreement on Tense in English. X is meant to be variable over the functional projections that could be involved, Aspect and VoiceP or only VoiceP or only LP. Taking (111a) as our input, i.e. where X = the complex head F, the morphological structure of this construction would be as in (111b):

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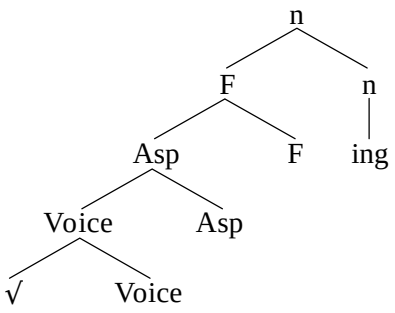
[30] It is not clear whether the root licenses an argument. This is a debatable issue in the theory of Distributed Morphology. Note that data such as those illustrated in note 13 above suggest that roots may license an internal argument in the absence of functional layers.

(111) a. X → [X n] _ <D>

b.



What this means is that there is no syntactic terminal in the structure that is the locus of the nominalization affix. On this view, what determines the event vs. result interpretation is the height of the attachment of the suffix at morphological structure, crucially echoing Abney's (1987) intuition, and in particular whether it will attach to layers that contain the Aspect-VoiceP complex, yielding complex event nominals or whether it will attach to structures lacking this complex, yielding result nominals. The interpretation of the resulting structure is based on the variation in functional structure as explained above.

In the next section we turn to Borer's account.

3.4.2.4.3. Borer (2003, 2005): verbalizing structure in derived nominals

3.4.2.4.3.1. The framework.

Borer's analysis of nominalizations is part of a larger approach to the syntax-lexicon interface. Before we enter a detailed discussion of Borer's analysis of argument-taking nominals it is important to clarify some of her assumptions.

For Borer the syntactic structure gives rise to a template which determines the interpretation of arguments. Her view can be schematically summarized as in (112).

(112) syntactic structure → event structure → interpretation of arguments

Note that to a certain extent, (112) is shared by, e.g., van Hout & Roeper (1998) and Alexiadou (2001a).

Borer explicitly assumes that sound-meaning pairs are part of what she calls the e*ncyclopedia*. By *meaning* Borer refers to the notion of a concept and by *sound* she means an appropriately abstract phonological representation. These sound-meaning pairs are called *encyclopedic items* (EIs). Crucially, an EI is not associated with any formal grammatical information concerning category, argument structure, or word-formation (compare the notion of roots in DM, which are part of the so-called narrow Lexicon). An EI is a category-less, argument-less concept, although its meaning might give rise to certain expectations with respect to a felicitous context. EIs are initially selected to form part of what Borer calls the conceptual array, which is similar but not identical to the numeration in the sense that it does NOT contain any of the functional vocabulary. In the absence of a category determination, EIs are inserted as an unordered set into an unmarked lexical phrasal domain (L-DOMAIN, L-D), as in (113):

(113) [L-D *sink, boat, dog*]

Alongside the encyclopedia and distinct from it, the grammar has a functional Lexicon, including, in essence, grammatical formatives in the form of features (e.g., [+PL], [+PST]) as well as independent grammatical formatives (e.g., <*the*,[+DEF]>). Simplifying somewhat, we may say that some grammatical formative X merges with L-D, as a consequence projecting some functional structure. Particular functional structures, in turn, will categorize, i.e. specify as V or N, whatever category is L-D they dominate. Consider, as an illustration, X to be equivalent of some value for Tense, e.g. <PST>, in a language in which the verb is inflected for tense. The merge of <PST>T and L-D would give rise to the structure in (114):

(114) [T <PST> T [L-D *sink, boat, dog*]]

Assuming free copy and merger (and abstracting away from the covert nature of verb movement in English), any of the items in L-D may now merge a copy in T, but under standard assumptions, only one may do so. This will make L-D a VP and its head in T and the copy in VP will be VPs (115).

(115) a. [T [V*sink*]-<PST> T [VP [V*sink*], *boat, dog*]] (*sank)*
b. [T [V*dog*]-<PST> T [VP *sink, boat,* [V*dog*]] (*dogged*)
c. [T [V*boat*]-<PST>T [VP *sink,* [V*boat*], *dog*]] (*boated*)

Borer does not assume a piece-based view of inflection. What this means is that if e.g. *dog* merges with Past, an operation in phonology consults a list to see how this object is pronounced (*dogged*).

Different functional heads will have different effects, e.g. D will determine N categorization, as in (116).

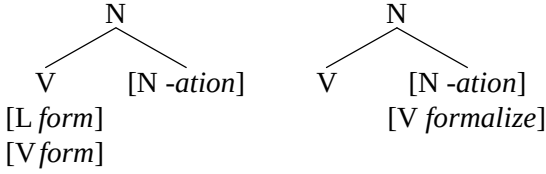
(116) [**D** <…>D [L-D *dog, form*]] L-D → NP

Derivational morphemes are, on this view, part of the functional vocabulary and hence they are specified for category and have a phonological realization. They possess and enforce category labels, and have what looks like sub-categorization frames:

(117) *Categorizing by Morphological Structure:*

a. *-ation, N*, [[V] ___N]

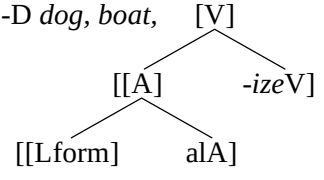
b.



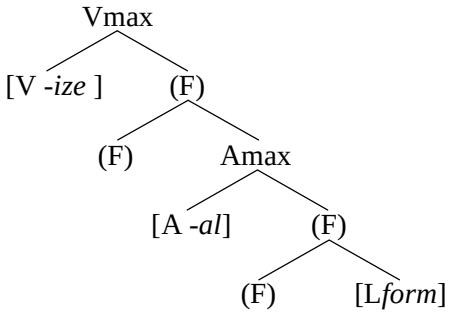
The morphological structures in (117) may operate on items in L-D, giving rise to (118), or alternatively, categorizing morphemes such as *-ation* may merge independently in the syntax as N respectively, in turn heading an Nmax. In this case head movement would take place, and the structures in (117) would be applied to the output of head movement, as in (119a,b):

(118) a. [L-D *dog, boat, form*]

b. [L-D *dog, boat,*

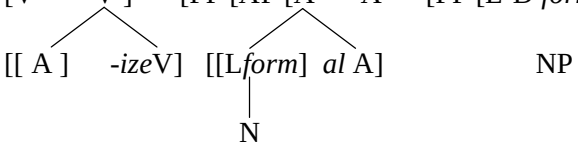


(119) a.



b. [V *form-al-ize* [FP [AP [A ~~*form*~~ *-al* [FP [L-D ~~*form*~~]]]]]]

c. [V V] [FP [AP [A A [FP [L-D ~~*form*~~]]]]]]



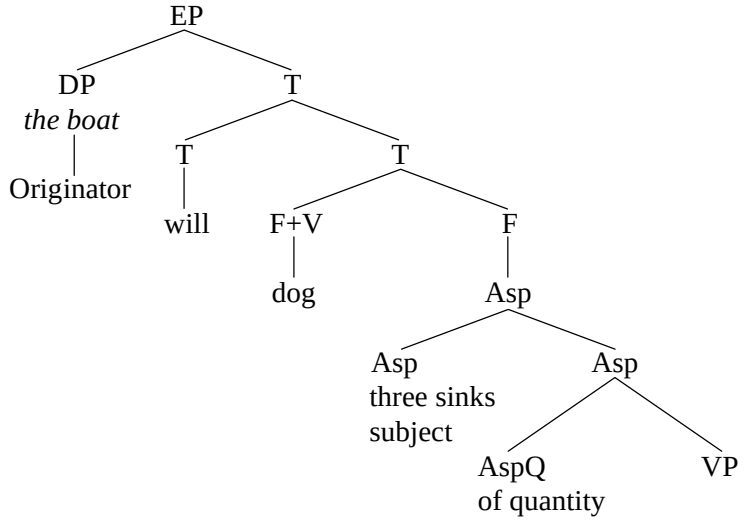
In (119) [L form] may become a noun through its morphological environment, in turn making its copy a noun, and the L-D dominating it an NP.

It should be pointed out at this stage that the above seem reminiscent of the view put forth in Borer (1993) within the system of *Parallel Morphology*. What the above system crucially does is enable morphological rules to either be active on syntactic structures or to apply independently of them. However, if this interpretation is correct, then it is not immediately transparent how such a system enforces a syntactic derivation for all types of nominals, since in principle it assumes two levels or components for word-formation.

As EIs do not in and of themselves have arguments, by assumption, Borer assumes that argument structure, an event complex, emerges through functional syntactic structure, which has the effect of 'verbalizing' an L-D, in the intended sense, in some event complexes. Specifically, by virtue of being in the specifier of AspQ ('quantity aspect'), *sink* in the structure in (120) is assigned a DP structure, thus allowing the merger of functional DP internal material (in this case, *three*). In turn, *three sinks* in SpecASPQ is assigned a *subject-of-quantity* interpretation, in essence, equivalent to an interpretation associated with undergoing a structured change. *Boat,* in turn is assigned DP structure in SpecTP thus licensing the merger of DP-internal functional material (i.e. *the*). It then moves from SpecTP to SpecEP, where it is assigned the role of an *originator* (of a non-stative event). Finally, and

more crucially from the perspective of our focus here, all the functional nodes in (120) are verbalizers, turning L-D into a VP and categorizing *dog* as a verb (for concreteness, Borer assumes overt short movement of the verb in English to a functional position above AspQ.

(120)



[V~~*dog*~~][DP~~*boat*~~][DP~~*sink*~~]

The conceptual array in (113), together with the grammatical formatives *will, the, three,* could, in principle, give rise to a number of sentences. Some are, of course, more compatible with world knowledge, or with selectional restrictions, than others. This Borer believes to be outside the domain of the computational grammatical system, and strictly within the conceptual domain. Syntactically, note, they are all unambiguous. The specifier of AspQ is interpreted as subject of quantity, in the sense that it undergoes a structural change. The specifier of EP is interpreted as the originator and EP is an eventive node.

3.4.2.4.3.2. Argument structure and nominals

With this machinery, Borer addresses the issue of partition of nominals between those that are argument-taking and those that are non-argument taking. Borer assumes that the argument-licensing heads that appear with verbs are also found within nominalizations as in (121):

(121) [N *-ation/-ing* [EP/AspQ [L-D …L .]]]

According to Borer, in (121), AspQ as well as EP are verbalizers, and hence L-D is a VP. In turn, L(= V for (121)) merges with *-ation/-ing* and is assigned morpho-phonological structure. Crucially for Borer all arguments are directly projected in the verbalizing environment, and LP is a VP. In Borer's account then the EI that ultimately has argument structure first becomes a verb, and then becomes a nominal. This is unlike the other approaches making use of unspecified items that we have seen earlier on.

Nominal formations that do not license arguments never appear in the context of EP/AspQ. Result-nominals, by definition, do not have an *Ev* interpretation, and do not have an event argument structure. Yet, morphologically, they are clearly very much the same creatures as *AS*-nominals, and must be assumed to be morphologically derived in an identical fashion. If we take the relevant morphological structure deriving both *AS*-nominals and *R*-nominals to be as in (117a,b), we can assume morphological structure to be associated directly with some EI, within the conceptual array, in the case of *R*-nominals, as illustrated for *formalize*, by (109b). Effectively, this means that a category neutral EI such as *form*, residing in the L-domain of (122a) as part of the conceptual array, may be associated, in the L-D, with an inserted nominal (and verbalizing) affix *-ation*, a member of the functional lexicon, in order to give rise to the structure in (122b). Following the insertion of the relevant morphological structure, *formation* is an N. But this means that result nominals are not formed on the basis of a syntactic derivation, a crucial difference from Alexiadou's account seen in the previous section. Here the morphological rules apply in the absence of syntactic structure. The emergence of structure occurs after the application of the rule. If it is to become the head of L-D, it will force the existence of an NP, and would only allow the projection of nominalizing functional structure, e.g., DP, NumP, etc., but not the projection of verbalizing functional structure, such as TP or AspQ:

(122) a. [L-D *form*]

b. [L-D N]

form *-ation*

c. ([DP) ([NumP) [NP *formation*]

d. *[TP [AspQ [NP *formation*]

Formation, as an *R*-nominal, does not have any argument structure in the representation in (122). There is no argument structure here, quite simply because the nominalization was formed prior to the projection of syntactic structure and any attempt to add argument structure to it would involve the projection of structure that is incompatible with the existence of an N-head. Thus there is a VP inside all argument-supporting nominals, alongside full functional event structure similar to that otherwise attested in propositions. On the other hand, *R*-nominals are simple nominal structures, with a nominalizing morphological structure as well as whatever compatible functional structure may co-exist with it.

An important claim made by Borer (2001) is that these morphemes have a dual nature: thus in argument structure nominals, e.g. *-ation* is projected as Asp and checks N features. In ***R*-**nominals, and in the absence of functional structure, she assumes that the N/D features of *-ing* and *-ation* force it to project directly as N. In this view, the morphemes have a dual nature: they are both functional and lexical.

Borer's system thus, at least in its (2001) outline, makes a distinction between the different types of nominals possessing argument structure on the basis of the structure these project. Thus semantic differences between *-ing* and *-ation* nominals are the result of projection of different aspectual structure: *-ing* projects a process, while *-ation* projets an end state. Furthermore, Borer addresses the issue of the realization of external arguments with nominals and the general optionality in its expression with *-(a)tion* nominals only by arguing that the latter class includes passive nominals. Consider the data in (123):

(123) a. John's/*the examining the students
b. (John's)/The examination of the students took place yesterday.

In (123a) *John's* is necessarily interpreted as an Agent, while in (123b) *John's* may or may not be an Agent. Borer's account does not offer a solution to the difference between (123a) and (123b), and does not say anything about the two readings of the possessor in (123b).

Note also that in this account zero derivations never give rise to a verbal source, and hence can never appear with argument structure. However, examples such as those in (124) are possible, and they are recognized by Borer as counterexamples:

(124) a. my constant change of mentors
b. the frequent release of the prisoners by the government

It is not clear how this system would deal with these cases, see Newmeyer (to appear) for further discussion.[31]

Finally, the details of how morphological rules apply to an unordered set of elements remain to be spelled out. As already pointed out, at first sight this seems to echo a system that needs two places for derivation, the syntax for argument taking nominals, and the array for non-argument-taking nominals, and in this respect it differs from the DM approaches that seem related to it.

4. Case assignment in derived nominals

As already pointed out in this chapter, a crucial difference between nouns and verbs concerns the fact that, in most languages, the former are not able to assign accusative case. In this part of the chapter we will be concerned with case assignment in derived nominals. Observe that we will not be dealing with the general issue of case assignment within the DP (for a brief discussion see Chapter 1 of Part II).

The issue of case assignment within derived nominals is relevant here in view of the fact that for several researchers derived nominals contain verbal projections, and hence the corresponding verb or related functional heads might be expected to assign case to the arguments of the noun. In principle there are two options that seem to be available. One is that the arguments of the derived nominal are assigned structural case from the nominal functional projections within the DP, e.g. Gender or Number. Alternatively, one could assume that nouns inherently case-mark their arguments.

Consider the English data in (125):

(125) a. Caesar's destruction of the city
b. Caesar's destroying the city

In the above examples we need to account for both the genitive case on *Caesar's* and the case on the internal argument *the city*. While it seems uncontroversial to assume that *Caesar* is assigned genitive in SpecDP, see Chapter 1 of Part II, the question is what is responsible for the case on the internal argument. We can assume that in (125b) the internal argument re-

[31] In structures of the type in (111b) this would reflect an instance of allomorphy, i.e. Ø would be a possible candidate competing for insertion.

ceives a structural accusative case by the mechanisms that apply within VPs, either by V or by a functional category within the internal structure of the gerund.[32] Structural cases, such as nominative and accusative, have the characteristic property that there are no thematic restrictions on the elements that bear them. For instance, any grammatical subject of a sentence will receive nominative case, regardless of the type of thematic role it has been assigned and what its base position is.

A question also arises concerning the status of the *of*-phrase in (125a). Since the *of*-phrase is a morphologically marked case for English, one could assume that it is an inherent case. It has been proposed that nouns assign inherent case. In particular, Chomsky (1986a) assumes that genitive case is assigned under theta-government to the right of N at D-structure and that subsequently case realization allows for the genitive to be spelled out with the formative *of*. The most typical instance of an inherent case is one in which a particular case is associated with a particular theta-role or related set of theta-roles. For instance, the feature [+genitive] will be linked to a specific interpretation. In the literature many instances of morphologically case-marked DPs which can occur with [+N] categories, such as dative, genitive and partitive case have traditionally been analyzed as instances of inherent case. In contrast to V and P, A and N are taken to be the prototypical examples of inherent case assigners.

But treating the *of*-genitive as an instantiation of inherent case seems problematic. First of all, if the *of*- genitive were indeed an inherent case then it is not immediately clear why the presence of a second genitive, bearing another thematic role, is banned from complex event nominals. This is true for English (126) and for a number of other languages e.g. Greek (127) and Catalan (128) (data from Alexiadou 2001a: 78ff; see also Chapter 1 of Part II for the same data in Greek in support of the view that there is only one argument position in the Greek DP):[33]

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[32] Recall here that it is debatable whether the accusative in Hebrew derived nominals is an instance of structural case. See the discussion in section 3.1.

[33] Note here that English permits two prenominal genitives with non-complex event nouns as in (i):

(i) John's driver's license

The status of the two genitives is not the same. The second genitive, *driver's*, has a modifier function (see next chapter, note 1 and section 5.4 for discussion). At least two accounts have been suggested in the literature for such genitives.

(126) *the destruction of the city of the barbarians

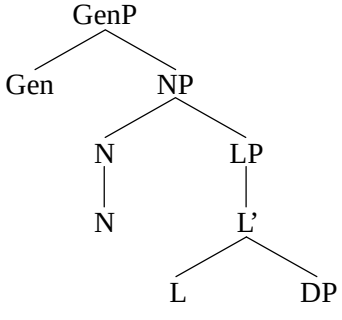
(127) a. *i silipsi tu Jani tis astinomias
the capture the John-GEN the police-GEN
b. *tis astinomias i silipsi tu Jani

(128) *l'afusellament de l'escamot d'en Ferrer Guardia
the execution of the squad of Ferrer Guardia
'the squad's execution of Ferrer Guardia'

Secondly, at least in the syntactic approaches that assume a bare root, the complement DP of the noun is either projected in the functional domain or it is generated in the complement of the root. We know that when the lexical roots found in nominalizations appear as verbs they do not assign inherent case. Since inherent case is attached to a root, or to certain roots, and since there is no category distinction between those categories assigning structural case and those assigning inherent case, genitive case cannot be inherent.

Picallo's proposal (1991) is phrased within a more general approach to case under Spec-Head Agreement. In general a DP can be assigned case if it agrees with Infl, in the verbal domain, or with Gender in the DP. Hence in order for the DP in (129) to be assigned case, it must move to the specifier of GenP, where it will be assigned case under agreement.

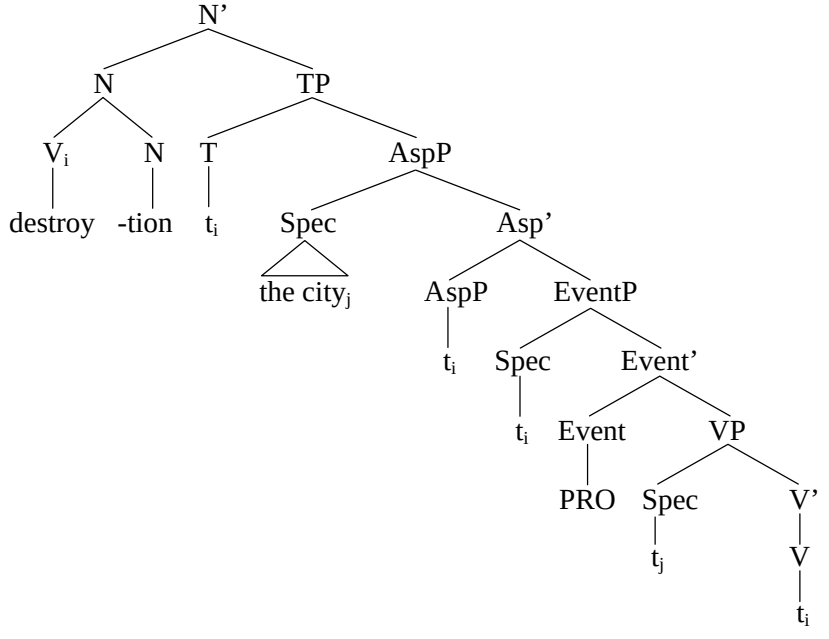
(129)



On one view, they should be analysed as adjectives (Zribi-Herzt 1997); on another, they are compounds of a special type (Barker 1995). Irrespectively of which analysis is the correct one, in the above patterns the second genitive is definitely not in DP and does not receive structural case. See the discussion in the next chapter.

In the previous sections we have seen accounts that postulate a VP within derived nominals. In such accounts the complement DP of the noun is generated as the complement of V. In such approaches genitive case cannot be inherent but must be assigned by some other functional category. In particular, for van Hout & Roeper (1998), case is checked in SpecAspectP, as shown in (94) and repeated here in (130):

(130)



The question arises, though, why the DP *the city* is not assigned accusative case. In principle case-checking might be expected to work exactly as in the (sentential) verbal domain. Van Hout & Roeper's explanation is to assume that the nominalization affix absorbs case as is the case in verbal passive formation.

Alexiadou (2001a) and Borer (2003) view *of*-insertion as the realization of structural case. In particular Borer, like van Hout & Roeper, assumes that case is available in functional specifiers only. Hence it is assigned/checked in Spec of AspQ in (130).[34]

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[34] Note here that Alexiadou (2001a) makes a rather different set of assumptions with respect to case, pursuing a realizational approach of the type advanced in Marantz (1991). Discussion of this would take us too far afield, hence we refer the reader to the source literature.

The assumption that genitive case is available in functional specifiers only is not necessarily tied to syntactic approaches to derived nominals. In fact Siloni (1997a), who adopts a lexicalist analysis of derived nominals in Hebrew, proposes a mechanism for the assignment of genitive as a structural case in these constructions on the basis of the observation that this case is available in ECM constructions.[35] (131) is from Siloni (1997a: 41, her (40)):

(131) a. meci'at ha-ne'ešam 'ašem
finding the accused guilty

b. Hu muca 'et ha-ne'ešam 'ašem.
he found ACC the accused guilty

In (131) the DPs *ha-ne'ešam/ 'et ha-ne'ešam* ('the accused') receive case though they are not theta-marked by the nominal in (131a) or by the verb in (131b). This pattern suggests that the case of the construct state (see also Chapter 3 of Part II for *šel*-phrases) is available in ECM configurations. These grammatical examples contrast with the ungrammatical (132) which contains a *šel*-phrase:

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[35] ECM constructions are 'exceptional case-marking' patterns. These are illustrated in the English example in (i):

(i) a. I found [John to be the best candidate].

Here the subject of the complement clause is *John*. It has an accusative case, as shown by the fact that it is pronominalized by *him*:

(i) b. I found [him to be the best candidate].

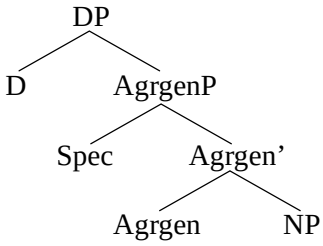
There is no source for such an accusative case inside the bracketed complement of *found*, the infinitival clause (*him to be the best candidate*). Thus we must conclude that the source of accusative case is outside. It is proposed that the verb *find* is responsible for the case of *John*. Patterns such as these are called exceptional because the source of the case is outside the clause containing the relevant DP. For an overview of analyses of examples such as (i) see Runner (2006). ECM is also taken to apply to patterns such as that in English (iia) and (iib) and in text example (131b), repeated here as (iic), in which the bracketed constituent is a verbless clause or 'small clause':

(ii) a. I found [the accused guilty].
b. I found [him guilty].
c. Hu muca ['et ha-ne'ešam 'ašem].
he found ACC the accused guilty

(132) *ha-meci'at šel ha-ne'ešam 'ašem
the-finding of the accused guilty

Siloni assumes that genitive is assigned by Spec-head Agreement in AgrgenP, as in (133):

(133)



For the sake of concreteness, consider the derivation of (134) on the basis of the structure in (133):

(134) harisat ha-cava
destruction the army
'the destruction of the army'

Here N *harisat* ('destruction') raises to Agrgen, and the internal argument *ha-cava* ('the army') raises to SpecAgrgen, where it checks genitive case. The head Agrgen, with N, then raises to D.

5. Summary

In this chapter we first discussed the debate between lexicalist and syntactic approaches to derived nominals. We then introduced Grimshaw's partitioning of the nominal system into so-called complex event, event and result nominals. In the subsequent sections of section 3 we discussed a number of approaches to the formation of complex event and result nouns. Finally, in section 4 we briefly discussed the case assignment properties of nouns.

It seems that the debate between one component (Lexicon or Syntax) vs. two components (Lexicon or something else and Syntax) for word-formation remains central to the discussion on nominalizations. It is a crucial discussion for the development of the theory, as the division of labor between the various components of the grammar (Lexicon and Syntax) results in the constant re-examination of the relationship between these components.

Chapter 2

Possessors and Genitives

1. Introduction: aim and organization of this chapter

In this chapter we deal with some aspects of the syntax of DP constituents that are usually referred to by the label 'possessors'. The core empirical data we will be concerned with are illustrated by the bold face constituents in (1):

(1) a. **John's/his** books are on the table.
b. The dilapidated London house **of a rich property developer** was sold for a million pounds last week.
c. **John's/his** brother is a priest.
d. **John's/his** arms were tied behind his back.
e. John was standing on the edge **of the cliff**.

All these constituents, be they prenominal genitive DPs as in (1a,c,d), possessive pronouns (1a,c,d), or postnominal *of*-PPs (1b,e) express a relation which we may loosely refer to as 'possession'. While discussing such expressions we will also occasionally refer to other uses of prenominal DPs (whether lexical or pronominal) and of postnominal PPs such as those illustrated in (2) and (3) of the type discussed in the previous chapter:

(2) a. **John's/his** criticizing the book
b. **Belushi's/his** mixing **of drugs** led to his demise.

(3) a. **the barbarians'/their** destruction **of the city**
b. **the city's /its** destruction

In (2a) and (2b), the prenominal genitives *John's* and *Belushi's,* or their pronominal variant *his*, realize Agent roles associated with their respective heads (*criticizing, mixing)*. Similarly in (3a), the genitive *the barbarians'* or the pronoun *their* realizes the Agent of the action expressed by the deverbal noun *destruction*; in (3b) the genitive *the city's* or the possessive pronoun

its realize the Theme argument of the N *destruction*. In (2b) and in (3a) the Theme is expressed by a PP (*of drugs, of the city*). For an extensive discussion of thematic relations in the nominal projection we refer to the preceding chapter.[1]

We assume that, in English, prenominal genitives and prenominal possessive pronouns with a possessor interpretation occupy the same structural position as those prenominal genitives and possessive pronouns that have a thematic relation to the head noun. This assumption is based on the observation that in English all the prenominal genitives illustrated above, regardless of their interpretation, seem to occupy the same position as determiners (in the broad sense) such as articles and demonstratives. This is illustrated in (4)–(6): in each case we observe that the prenominal genitive is incompatible with the article or the demonstrative.[2]

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[1] In addition to the readings illustrated by (1)–(3), the prenominal genitive may have yet other interpretations, such as those illustrated in (i):

(i) a. **an hour's** walk
b. **a week's** salary

We will not go into the semantics or syntax of this use here.

[2] A different use of the genitive is illustrated in (i):

(i) a. She lives in an old people's home.
b. She lives in this old people's home.
c. Roald Dahl is a famous children's author.
d. I used to love reading those glossy women's magazines.

In (ia) the genitive *old people's* precedes the N *home*. It is often referred to as a classifying genitive, because it serves to classify the concept indicated by the head noun. This use of the genitive differs considerably from that of the genitives illustrated in (1)–(3). As discussed in the text, English prenominal genitives such as those illustrated in (1)–(3) compete with the determiners for one and the same position. Because such genitives as those in (1)–(3) seem to occupy the same position as the determiners (in a broad sense), as shown in (4)–(6), they are sometimes referred to as 'determiner genitives'. The classifying genitive (also called the descriptive genitive or the attributive genitive) does not compete with the article or with a demonstrative for the same position. This is clearly shown in (ia) and (ib) in which *old people's* follows the article *an* and the demonstrative *this*. Secondly, whereas the determiner genitive precedes adjectival modifiers to the noun (cf. (ii)), the classifying genitive tends to follow them, as shown by (ic) and (id).

(ii) a. John's new book is on the shelf.
b. John's careful analysis of the data was much appreciated.

(4) a. *The John's/his books are on the table.
b. *Johns/ his the books are on the table.

(5) a. *The Belushi's/his mixing of drugs led to his demise.
b. Belushi's/his the mixing of drugs led to his demise.

(6) a. *these the barbarians'/their destruction of the city
b. *the barbarians'/ their the desctruction of the city
c. *that the city's /its destruction
d. *the city's/ its that destruction

In this chapter we focus on various aspects of the syntax of possessors, i.e. the examples in (1). We mainly concentrate on prenominal possessors such as lexical DPs (which may be realized by various case forms: genitive (English, Dutch, Greek, etc.), dative (Hungarian, German), nominative (Hungarian)). In addition, we will also discuss the pronominal counterparts to these prenominal possessives. Given that we assume they occupy the same position as prenominal possessors, we will also touch upon the syntax of prenominal genitives and possessive pronouns that have a thematic relation to the head noun. Finally, we will also occasionally refer to postnominal possessive DPs and PPs.

The classifying genitive seems to have a function similar to that of prenominal classifying adjectives (see Chapter 1 of Part III, section 3.3 for classifying adjectives).

There is also a semantic difference between the two types of genitives. The determiner genitive is referential, the classifying genitive is property-denoting. In (ia) for instance *old people* does not refer to a set of old people. Hence, while possessive pronouns can replace determiner genitives (iiia), possessive pronouns cannot be used to replace classifying genitives (iiib).

(iii) a. His new books are on the table.
b. *She lives in a their home.

In section 5.4 below we will illustrate a construction type from French in which postnominal *de*-PPs share some properties of the classifying genitives in English. Greek has a similar type of construction, the 'genitive of property', illustrated by the following examples:

(iv) a. vivlio istorias
book history-GEN
'history book'

b. potiri krasiu
glass wine-GEN
'wine glass'

In the discussion we first point out some differences between prenominal and postnominal constituents expressing possession on the one hand, and those expressing thematic arguments of the N on the other. We then examine the DP-internal syntactic position of prenominal possessives such as genitive DPs and personal pronouns in English. Based on the evidence in (4)–(6), we start from the assumption that whether strictly 'possessive' (1) or thematic (2)–(3), prenominal genitives and their pronominal counterparts have the same surface position.[3] We postulate that their main difference rests in their base position, a point which we elaborate in this chapter.

The terminology used in the literature to refer to the boldfaced constituents in (1)–(3) is unfortunately not very systematic, labels such as 'possessor' or 'possessive' are sometimes used to focus just on those constituents that express strict POSSESSOR relations; sometimes they are used more loosely to refer to all the constituents corresponding to the boldfaced constituents in the above examples, including those with a thematic relation to the genitive or the deverbal noun. With respect to English, the label 'genitive' is sometimes restricted to prenominal DPs, but sometimes it is also used more widely to include postnominal *of*-phrases. We will use the term possessor/possessive informally to cover all of these constituents. When the interpretive distinction between these different expressions is crucial and when we want to isolate those constituents that strictly express possessor relations we will use small capitals (POSSESSORS). Admittedly, a certain indeterminacy in this use of terminology is inescapable but we hope that this will not pose a problem for the reader.

The chapter is organized as follows: section 2 surveys the differences between the thematic arguments of the noun (2–3) and DP-internal POSSESSORS (1). Section 3 examines how the intuition that, in certain contexts, POSSESSORS are subject-like can be expressed syntactically. This section focuses on the base position of POSSESSORS. Section 4 provides a first analysis of the derived position of prenominal possessors. For the discussion, we will mainly be using examples in which the prenominal DP has a POSSESSOR relation to the head N, but, at least for English, other prenominal genitives such as those with a thematic relation to the head noun are assumed to occupy the same position (but see notes 1 and 2). Based on evi-

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[3] The classifying genitive which expresses a 'kind of' relation such as *children's* in (i) has a different position and also it does not alternate with possessive pronouns. See note 2.

(i) The police found a green children's bicycle in the field.

dence of possessor extraction, section 5 elaborates the DP-related positions of possessors. Section 6 examines the possessor doubling construction in which a possessor is expressed both by a prenominal possessive DP and by a matching pronoun. Section 7 brings out more similarities between the CP level in the clause and the DP level in the nominal projection, showing that just as it has been proposed that CP is decomposed in various projections, DP must be so decomposed too. The appendix deals with some of the specific properties of inalienable possession.

2. Possessor genitives and thematic complements

2.1. Alienable and inalienable possession

We can distinguish between two types of possession: alienable possession (7a*)* vs. inalienable possession (7b).

(7) a. John's book, John's present, the house of a wealthy aristocrat
b. John's nose, John's mother, the top of the mountain, the edge of the cliff

Both types of possession relate two elements, a POSSESSOR and the entity which he or she possesses, the *possessum*. In inalienable possession the two entities in the POSSESSOR relation are semantically dependent (see Vergnaud & Zubizarreta 1992: 596; Guéron 2006a). An inalienable object is a dependent entity in the sense that it is intrinsically defined in terms of another object. Typically, part-whole relations such as body parts and kinship relations are treated in terms of inalienable possession. Clearly, parts of human bodies, for instance *nose* in e.g. *John's nose*, are defined with respect to the typical individual, which consists of a nose, two eyes, and a mouth and so on. Similarly, kinship terms such as *mother, father,* etc., are defined by the relation between two entities: when we evoke the entity defined as a mother we automatically evoke an entity that is her child. As a consequence of this dependency, nouns associated with inalienable possessors are called relational nouns and they often give degraded results when used in isolation (Vikner & Jensen 2002: 209):

(7) c. #A mother was standing in the yard.[4]

Alienable possession, on the other hand, is not an intrinsic dependency relation of this type. The noun *book* as in e.g. *John's book* is not defined by its relation to *John*, the concept 'book' does not directly invoke an intrinsic relation to some individual. We can talk about a book without evoking the idea of an owner. Moreover, the relationship between *John* and *book* is not uniquely defined. *John's book* could refer to a book that John wrote, possesses, bought, translated, discovered and so on. Nouns related to alienable possessors may occur in isolation:

(7) d. A book was lying on the table.

Alienable possession implies a POSSESSOR who is involved in acquiring the *possessum*, while inalienable possession is intrinsic, intimate possession which does not need to be acquired (cf. Seiler 1983). As suggested by the examples in (7a,b), in English alienable and inalienable possessors are realized in syntactically identical ways, as prenominal genitives, possessive pronouns or postnominal PPs. In what follows we will not make use of the distinction between the two types, unless it becomes relevant. We will turn to some specific properties of inalienable possession in the appendix to this chapter.

2.2. Possessors: complements or subjects?

2.2.1. Possessors as complements?

As mentioned in the introduction to this book (section 1), the subject-like behavior of possessive modifiers has been taken as one piece of key evidence for the clausal nature of the internal structure of noun phrases. However, several authors (see e.g. Ouhalla 1991; Delsing 1993a; Horrocks & Stavrou 1987) have suggested that rather than being subjects of N, possessors are actually complements. Evidence for this claim comes from the observation that in several languages possessors appear in postnominal posi-

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[4] The symbol # means that (7c) needs a specific context to become acceptable:

(i) The parents of the children killed in the accident were unconsolable. A mother was standing in the yard where the plane crashed, a father was wandering by the lake where the bodies were found.

tion, much like the complements of complex event nominals discussed in the previous chapter:

(8) a. huset til Per (Norwegian)
house-the of Per

b. hús Péturs (Icelandic)
house Pétur-GEN (data from Delsing 1993a: 166)

c. to spiti tu Jani (Greek)
the house the John-GEN

d. la casa di Gianni (Italian)
the house of John

e. la maison de mon frère (French)
the house of my brother

f. het huis van mijn broer (Dutch)
the house of my brother

Both POSSESSORS and thematic complements may also be realized in prenominal position. In some languages both a pronominal form and a lexical DP are possible, in others only the pronominal variant is possible.[5]

(9) a. Jans huis a'. zijn huis (Dutch)
Jan's house his house

b. Jans aanstelling b'. zijn aanstelling
Jan's appointment his appointment

c. sa maison (French)
his house

d. sa description des évènements
his description of the events

e. la sua macchina (Italian)
the his car

f. il suo desiderio
the his wish

[5] Observe that in Italian (9e,f) the prenominal possessive pronoun is compatible with the determiner. For discussion of the determiner in Italian see also Part II, Chapter 3, section 4.2. See also note 9.

If POSSESSORS are complements of the noun, the assumption will be that their postnominal position is closer to their base position and that their prenominal position is a derived position. However, in spite of sharing their distributions, POSSESSORS differ from thematic complements in several respects.

First of all, there is a difference in interpretation between examples involving true thematic arguments of nouns and examples involving POSSESSORS. Consider the contrast in the Greek examples below:

(10) a. i katastrofi tu dasus
the destruction the forest-GEN

b. to kapelo tu Jani
the hat the John-GEN

In both cases the postnominal DPs, *tu dasus* ('of the forest') and *tu Jani* ('of John') bear genitive case. However, only in (10a) is the genitive DP understood as being thematically related to the head noun: the semantic relation between the head noun and the genitive is reminiscent of the relation between the verb *katastrefo* ('destroy') and its internal argument *tu dasus*, 'the forest'. This is not the relation that exists between the two nominals in the second example.

The copular construction is one environment that allows us to discriminate between constituents licensed by a modification relation and constituents licensed by argument structure. Grimshaw (1990) (cf. also section 3.3. in Part IV, Chapter 1) says:

> An important characteristic of the relation of modification is that it can be established equally well across a copula. PP modifiers and possessive modifiers are possible in contexts like the ones in [11]:
>
> [11] a. John's dog
> The dog is John's.
>
> b. The book by/about/on Chomsky
> The book was by/about/on Chomsky.
>
> This distinguishes modifiers from complements in a very clear way: only modifiers can be related to a head across a copula. (Grimshaw 1990: 97)

In this light, consider the complex event nominals discussed in the previous chapters. Genitives (12a,c) or postnominal PPs (12b,c) that realize arguments in complex event nominals can never be paraphrased with a copular construction:

(12)	a.	The building's construction	*The construction was the building's.
	b.	the construction of the building	*The construction was of the building.
	c.	Reagan's defeat	*The defeat was Reagan's.
	d.	The defeat of Reagan	*The defeat was of Reagan.

(examples based on Grimshaw 1990: 98)

Similar contrasts can be reproduced for other languages. We illustrate Greek (see also Alexiadou & Stavrou 1998a) in (13) and West Flemish (WF), a dialect of Dutch, in (14):

(13) a. to vivlio tu Jani
the book the John-GEN
a.' To vivlio ine tu Jani.
the book is the John-GEN
b. i katastrofi tu dasus
the destruction the forest-GEN
b.' *I katastrofi ine tu dasus.
the destruction is the forest-GEN

(14) a. dienen boek van Jan
that book is of John
a.' Dienen boek is van Jan.
that book of John
b. de geboorte van zen eerste kind
the birth of his first child
b.' *De geboorte is van zen eerste kind.
the birth is of his first child

In English, Greek and WF, to mention only these three languages, only the POSSESSOR genitive can be used as a predicate related to the nominal by means of the copula. Thematic complement PPs cannot appear as predicates.

If possessives were to be seen as complements to the head N then, like other complements, they would by definition have to be related to the head noun by virtue of a specific thematic relation. This would mean that all nouns which are accompanied by possessives should have a well-defined argument structure. The argument structure of the noun is intrinsically

linked to its semantics. But nouns such as *book, dog, house* etc, though compatible with a POSSESSOR, cannot really be claimed to have an argument structure that will enable them to license possessives. In fact, Williams (1981: 89) pointed out that just about any relation can hold between a possessive modifier and a head noun. The context may often lead to a wide range of possible interpretations. For instance, while (15a) may have as its most obvious interpretation (15b), other interpretations are also possible, depending on particular (extra-linguistic) contexts:

(15) a. John's car
b. the car that John owns
c. the car that John is renting
d. the car that John has to paint
e. the car that John has to find
f. the car that John prefers

None of these additional interpretations could naturally fall under traditional thematic role labels/relations. Complex event nominals, on the other hand, have specific thematic relations with their arguments, and these do not vary widely from context to context.[6]

On the basis of the observations above, it can reasonably be argued that the POSSESSOR does not function as an argument of the nominal. Since complements of lexical heads by definition have a thematic relation with that head, we conclude that POSSESSORS are not complements.

2.2.2. Possessors as subjects

As mentioned before, other evidence has been invoked to suggest that rather than patterning with complements, POSSESSORS essentially pattern with subjects. This intuition is based on the observation that in the same way that the canonical position of the subject is on the left edge of IP, the canonical position of the prenominal genitive is on the left edge of the nominal constituent.

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[6] This is actually a simplification. Consider a DP such as *his murder*. As the most obvious interpretation we will take *his* to refer to the victim of the murder. But in a context of a criminal investigation where *his* refers to a detective, *his murder* may refer to the murder which 'he' is investigating. (Example and discussion due to Vikner & Jensen 2002: 211.) For more discussion of such 'pragmatic' interpretations see Vikner & Jensen (2002) and the references cited there.

In the clausal domain, subjects need not have a thematic relation with the verb that they are the subject of, as shown by patterns with raising verbs. Similarly, prenominal genitives do not really realize a specific argument of the noun (cf. the data in (15)).

That prenominal POSSESSORS are subject-like is also suggested by Hungarian data like those in (16), which we have already discussed in the Introduction to this book (section 1) and also in the first chapter (section 5). First of all, recall that Hungarian in fact has two prenominal possessors, illustrated in (16) from Szabolcsi (1994: 180; her (2b) and (3)). The Hungarian prenominal possessor may follow the determiner, in which case it has nominative case (16a), or it may precede the determiner, in which case it has dative case, as shown in (16b). Nominative case is typically associated with subject-hood.

(16) a. a Mari kalap-ja
the Mari-NOM hat-3SG
b. Mari-nak a kalap-ja
Mari-DAT the hat-3SG
Mari's hat

If we assume that the DP layer in the nominal structure corresponds to the clausal CP and that D takes a complement similar to the clausal IP, then *Mari* in (16a) is on the left edge of the nominal IP, in the same way that the canonical subject position is on the left edge of IP. Both could be argued to be in SpecIP.

Moreover, agreement and case properties of the nominative prenominal possessor are also similar to those found in the finite clause. In the same way that a nominative subject of a finite clause agrees with the verb, the nominative pronominal possessor agrees with the noun. Indeed 'possessive inflection is almost identical to verbal inflection' (Szabolcsi 1994: 187). (17) is from Zribi Hertz (2003: 142, her (3)):

(17) a. (én) szeret-0-em
1SG love-PRES-1SG
b. János szeret-0-0
János love-PRES-3SG
c. a(z) (én) haz-a-0-m
the 1SG house-POSS-SG-1SG
d. a János haz-a-0-0
the János house-POSS-SG-3SG

(17a) and (17b) illustrate the forms of the inflected verb with a nominative first person singular subject *én* ('I) and with the DP subject *János.* (17c) and (17d) show DPs with possessors: in (17c) the possessor is *en* ('I') and we see that the inflection ending found on the verb in (17a) is also found on the *possessum* N. Similarly, just like the verb has no overt ending for the DP subject in (17b) there is also no overt ending on the possessed N in (17d), in which the possessor is a DP. Moreover, in (17a) the subject pronoun *én* is nominative, in (17b) the subject DP *János* is nominative. Again in (17c) and in (17d) the possessors are nominative. Furthermore, in the same way that the pronoun subject may be omitted in (17a), the possessor pronoun may be omitted in (17c). In both cases the inflectional endings allow us to identify the features of the possessor.[7]

We have seen that prenominal POSSESSORS and prenominal arguments of N pattern alike (cf. (4)–(6)). We assume that they occupy the same structural position, a position which is to the nominal projection what the canonical subject position is to the clause. The subject position in the clause is taken to be the highest specifier in the functional domain, SpecIP[8] (see section 2.5 in the Introduction). Analogously, it has been proposed that prenominal POSSESSORS occupy the specifier of a nominal Infl projection (recall the discussion on Szabolcsi's work in Chapter 1 of Part II, section 5). In (18) below we repeat the structure assumed by Szabolcsi (1994):[9]

---

[7] For a further discussion of agreement properties of lexical DPs as prenominal nominative possessors we refer to Szabolcsi's description (1994: 187–188). For similar patterns in other languages see also Zribi Hertz (2003: 142).

[8] Alternatively the labels AgrP or TP have been used to replace IP. Accordingly, SpecAgrP or SpecTP are then used for the subject position.

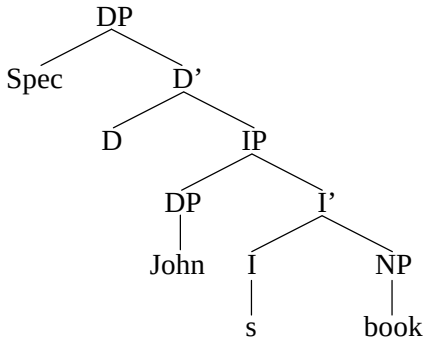
[9] Structure (18) is not unproblematic. It allows us to predict that the determiner and the possessive pronoun will be able to co-occur in Italian (9e), repeated here as (i):

(i) a. la sua macchina
the his car
b. [$_{DP}$ la [$_{IP}$ sua macchina]]

However, the structure does not lead to the prediction that English determiners and possessors will be in complementary distribution (4–6). According to (18) the posssessor is in the nominal IP, leaving D and SpecDP available for determiners.

We return to the position of the possessors below.

(18)



With respect to thematic arguments surfacing as prenominal genitives or possessive pronouns, we assume that they also occupy a derived position, they are merged in a thematic position associated with the lexical head (see the discussion in the preceding chapter).

(19) shows that a thematic argument of the noun may function as a binder for reflexives in its complement: (cf. Keenan 1974; Cinque 1980; Giorgi & Longobardi 1991; Kayne 1993).

(19) a. John$_i$'s destruction of his$_i$ own career
b. John$_i$'s description of himself$_i$

This pattern is again similar to that found in the clause, in which DPs in the canonical subject position (SpecIP) can bind anaphors:

(19) c. John$_i$ has destroyed his$_i$ own career.
d. John$_i$ always describes himself$_i$ in the most depressing terms.

This suggests again a similarity between the prenominal DPs in (19a,b) and the subject nominal in (19c,d). If binding relations depend on a c-command configuration,[10] then we conclude that the prenominal DP *John* in (19a,b) c-commands the complement. This conclusion would be in line with the hypothesis that the prenominal DP occupies SpecIP.[11]

---

[10] For the concept of c-command see the Introduction to this book, section 2.2.

[11] It is not obvious that the argumentation carries over to prenominal POSSESSORS. The examples in (i) may at first sight be taken to suggest that a prenominal POSSESSOR can bind an anaphor contained in the DP complements of the *possessum:*

(i) a. John$_i$'s latest book about his own $_i$ experiences
b. Mary$_i$'s generous present to herself$_i$
c. his$_i$ many letters to himself$_i$

If prenominal POSSESSORS occupy the subject position of the nominal projection, the question arises whether the semantic POSSESSOR relation gets licensed/assigned in that subject position. Note that if this were the case, the nominal subject position would be differentiated from the clausal specifier of IP. The clausal SpecIP is usually taken not to be thematic, as shown by raising facts or by the fact that the subject may be an expletive. In addition, one would have to address the question of what happens when the DP which is already thematically related to N moves to the nominal subject position. An alternative that comes to mind is that for POSSESSORS too, the 'subject' position in the nominal projection is a derived position and that they originate in a lower position in which the POSSESSOR relation is licensed. In this way neither the clausal subject position (SpecIP) nor the nominal subject position would be thematic, a welcome result. We examine this point in the next section.

3. The base position of the POSSESSOR

3.1. Light v and light n

In the introduction to this book (section 2.4), we discussed proposals by Larson (1988), Hale & Keyser (1993) and Chomsky (1995) to the effect that verb phrases have a complex internal structure comprising an outer vP shell headed by an abstract light verb ('v') and an inner VP core headed by a lexical verb (V). On this view, a sentence like (20a) is derived by first merging the V *roll* with its complement *down the hill* and its specifier *the ball*, forming the VP in (20b). Then the VP merges with an abstract causative head, v, whose subject and specifier is *he*, deriving (20c). The verb *roll* raises to adjoin to the affixal light v. Kratzer (1994) labels the relevant head Voice.

(20) a. He rolled the ball down the hill.
b. [$_{VP}$ the ball [$_{V}$ roll] down the hill]
c. [$_{vP}$ he [v] [$_{VP}$ the ball [$_{V}$ roll] down the hill]]
d. [$_{vP}$ he [roll+v] [$_{VP}$ the ball [$_{V}$ t] down the hill]]

However, all three genitives in (i) could be argued to have an argumental interpretation in a loose sense: for instance, in (ia) John may well be the author of the book. Indeed, in this example the AGENT is the first interpretation of *John*, prior to POSSESSOR. The same remark also applies to (ib) and (ic). Obviously the question arises how to represent the implied argument relation in the examples in (i).

Assuming cross-categorial symmetry between the structure of verb phrases/ clauses and noun phrases/DPs, we should expect to find that noun phrases too comprise an outer nP shell headed by a light noun and an inner NP core headed by a lexical noun[12]. The outer nP shell itself would be the complement of a higher functional head, such as Number and Gender (see Chapter 3 of Part II).

Radford (2000) suggests that support for the presence of the specifier of light n comes from complex event nominals in English, shown in (21a):

(21) a. the enemy's destruction of the city

His proposal is that the Agent DP *the enemy* is merged in SpecnP, a projection strictly outside NP, the projection headed by the head noun. Just as V raises to v, N (here *destruction*) raises to n (21b). Just as the subject of the clause raises out of vP to a higher position, the Agent DP *the enemy* raises to the specifier of a higher functional head to satisfy its EPP feature: as shown by the derivation in (21b,c) Radford assumes the relevant head is D (21c).[13]

(21) b. $[_{nP}$ the enemy$_k$ $[_n$ destruction$_j]$ $[_{NP}$ $[_N$ $t_j]$ of the city]]

c. $[_{DP}$ the enemy's$_k$ $[_D$ 0] $[_{nP}$ t_k $[_n$ destruction$_j]$ $[_{NP}$ $[_N$ $t_j]$ of the city]]]

Observe, though, that while Radford's analysis would capture the fact that *the enemy* is interpreted as the subject/Agent of the N *destruction*, it is incompatible with the claims made in the previous chapter concerning the structure of deverbal nouns. Indeed, based on arguments of, among others, Borer (1993), we proposed a different structure for such derived nomimals and refer the reader to the earlier discussion (Part IV, Chapter 1, section 3.4.1).

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[12] See the discussion in section 2.4 of the previous chapter, where light n was discussed from the point of view of derivational morphology.

[13] Radford assumes that even nominals obey the EPP-requirement, that is, they need to check the features in D via phrasal movement.

Observe that assuming the Doubly filled Comp Filter (Chomsky & Lasnik 1977) representation (21c) does predict that the prenominal possessor and the determiner will be in complementary distribution (cf. also note 9 and for the Doubly filled Comp filter note 11).

However, some version of Radford's analysis can be adopted for the syntax of POSSESSORS. We propose that in the same way that external arguments of V receive their thematic role in the specifier of vP (or of VoiceP) and are subsequently attracted to a higher functional position, alienable POSSESSORs may be said to receive the POSSESSOR role in the specifier of nP and move to a higher functional position. Schematically, this would mean that an alienable possessor construction such as (22a) is derived as in (22b) and (22c), where for the moment we assume that in the same way that the clausal subject moves to the highest specifier of IP, the POSSESSOR moves to the specifier position of the nominal IP/AgrP. As before, we assume that the nominal head of the construction, the noun *book*, is merged as the head of N and raises to n. (In section 4 we turn to the relation between possessors and D. For inalienable possessors we refer to the appendix to this chapter.) This structure would capture the cross-categorial symmetry between VP and NP and between the clause and the extended nominal projection.[14]

(22) a. John's book
b. $[_{nP}$ John's $[_{n}$ book$_j]$ $[_{NP}$ $[_{N}$ $t_j]]]$
c. $[_{IP}$ John's$_k$ $[_{I}$] $[_{nP}$ t_k $[_{n}$ book$_j]$ $[_{NP}$ $[_{N}$ $t_j]]]]$

As an alternative we might also label nP as PossP:

(22) d. $[_{nP}$ John's $[_{Poss}$ book$_j]$ $[_{NP}$ $[_{N}$ $t_j]]]$
e. $[_{IP}$ John's$_k$ $[_{I}$] $[_{PossP}$ t_k $[_{Poss}$ book$_j]$ $[_{NP}$ $[_{N}$ $t_j]]]]$

Note that the proposals in (22), elaborated on the basis of Radford's proposals in (21), share the hypothesis that the possessor relation between the possessor and the head noun is established configurationally, and is mediated by a head, n in (22b,c) or Poss in (22d,e). In both cases the possessor is outside the lexical projection of the head noun. Observe that, though the possessor DP is outside the projection of the noun, it does form a constituent, labeled PossP or nP with the noun.

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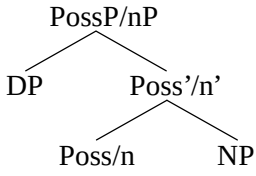
[14] Once again, (22c) and (22e) do not straightforwardly predict the complementary distribution between determiners (articles/demonstratives) and possessors in English, though they do predict that in Italian determiners can cooccur with possessive pronouns (see also note 9). We amend the representations in section 4.3 below.

(22) f.

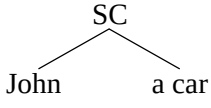


3.2. Two alternative proposals

In addition to the nP/PossP hypothesis elaborated above, there are a number of alternative proposals concerning the base position of POSSESSORS. We will discuss two of them here. Both alternatives treat the possession relation in terms of a small clause structure, where the POSSESSOR and the *possessum* together constitute a maximal projection.

In the first alternative, the relationship of possession is a predication relation between the POSSESSOR and the *possessum* with the latter functioning as the predicate nominal and the former as the subject of the predication. This analysis is to a large extent inspired by proposals for the analysis of the double object construction (see Kayne 1984; Guéron 1985).[15] The relevant structure is given in (23a):

(23) a.



The second view also assumes that *possessum* and POSSESSOR form a small clause. But in this view, the relation between the two elements is inverted: the POSSESSOR now is taken to be the predicate of the small clause and the *possessum* is its subject. The POSSESSOR role is assigned by means of a prepositional element, the dative marker *to*, or the genitive marker *of* (see Hoekstra 1994; den Dikken 1995, among others). This hypothesis is supported by the observation due to Benveniste (1966) that in several languages, e.g. Latin, possession is expressed by a construction in which the possession relation is established via a copula and the POSSESSOR surfaces as a dative/genitive (24) (but see Zribi-Hertz (1997) on predicative possessors in English and in Latin):

(24) Liber est Marco.
book is Marcus-DAT

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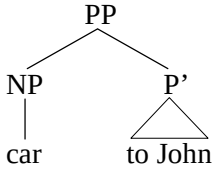
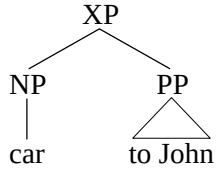
[15] For the double object construction see the Introduction, section 2.4.2.1.

The structures in (23b,c) offer two representations of the second analysis. (23b) is proposed in den Dikken (1995), (23c) is the structure proposed in Larson & Cho (1998). In each case, the DP *John's car* is derived transformationally from the string *car to John*:

(23) b.



c.



The preposing of the POSSESSOR, i.e. the predicate of the small clause, is taken as an instance of Predicate Inversion. See also Zribi-Hertz (2003: 144–147)

At the clausal level, Predicate Inversion has been argued to derive inverse copular constructions such as those in (25). Moro (1997) proposes that the derivation of (25a) is as in (25b,c) (we omit irrelevant details here):[16]

(25) a. La causa della rivolta fossero Gianni e Maria.
the cause of the riot were Gianni and Maria

b. fossero [[$_{DP}$ Gianni e Maria] [$_{DP}$ la causa della rivolta]]

c. [$_{DPi}$ la causa della rivolta] fossero [[$_{DP}$ Gianni e Maria] t_i]

In line with work by Benveniste (1966), Lyons (1967), Freeze (1992), Kayne (1993), etc., the latter proposal considers the possession relation as locational in nature. At first sight, this is a welcome result: across languages the cases used to mark the POSSESSOR are generally the genitive and the dative. These are also the case forms which in many languages are used to express locative relations.

Whichever proposal we adopt for the base position of the POSSESSOR, i.e. the 'light n'-hypothesis, or the PossP hypothesis, developed in section 3.1 or one of the small clause analyses discussed in section 3.2, the fact remains that POSSESSORS often appear relatively high in the DP, suggesting that they have undergone some DP-internal leftward movement. In this way, POSSESSORS resemble clausal subjects which, originating in vP or VP (for internal arguments of ergative verbs or in passive constructions), also end up in a VP-external position. In the next sections we return to the derived position of POSSESSORS.

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[16] See also Part III Chapter 2, section 4.2.

4. Derived positions for possessors in the DP

4.1. Lexical possessors and DP

As mentioned in the introduction to this volume (section 1.2), ever since NPs were reinterpreted as projections of D, the assumption has been that in many languages possessors are associated with D. This would account for the complementary distribution between possessors and determiners as shown in (26): the prenominal genitive is incompatible with the article or the demonstrative.

(26) *Johns/ his the books are on the table.

To account for this complementarity, it has been proposed that possessors occupy SpecDP: (27) is based on the representations in (21) elaborated by Radford for complex event nominals:

(27) $[_{DP}$ John's$_k$ $[_D$ 0] $[_{nP}$ t_k $[_n$ book$_j$] $[_{NP}$ $[_N$ t_j]]]]

DP is considered the nominal equivalent of the clausal CP. There are certain well-known restrictions on filling both the specifier of CP and C at the same time. These restrictions are subsumed under the so-called Doubly filled Comp Filter (Chomsky & Lasnik 1977).[17] Its effects are illustrated in (28) for English.

(28) I wonder $[_{CP}$ who $[_C$(*that)] [they will invite]].

If phrasal possessors occupy SpecDP and if there is a similar ban on simultaneously filling D and SpecDP, then we correctly rule out the examples in (26) in which the phrasal POSSESSOR in SpecDP[18] would co-occur with the article in D. [19, 20]

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[17] The filter, which bans filling both the specifier of C and its head at the same time, remains largely unexplained and it will need to be reassessed in the light of proposals that CP is not unitary (Rizzi 1997).

[18] Though we concentrate on POSSESSORS here, the same argumentation carries over to prenominal genitives which are thematic arguments of N. They, too, are incompatible with the article as shown in (5)–(6).

[19] In Jackendoff's (1977) framework, this co-occurrence was excluded by assuming that both the possessor and the article compete for the highest NP specifier position (see Chapter 1 of Part II).

4.2. Pronominal possessors

4.2.1. Cross-linguistic variation

If all POSSESSORS are in D, then they should never co-occur with determiners. If pronominal POSSESSORS have the same distribution as DP POSSESSORS, then they too should not co-occur with the determiner. This prediction is confirmed by the following data:[21]

(29) a. *det mitt hus — *mitt det hus — (Swedish)
the my house — my the house — (cf. Delsing 1993a: 170)

b. *das mein Buch — *mein das Buch — (German)
this my book — my this book

c. *the my book — *my the book

d. *le mon livre — *mon le livre — (French)
the my book — my the book

e. *het mijn boek — *mijn het boek — (Dutch)
the my book — my the book

On the other hand, in some languages pronominal possessors do co-occur with determiners. This is illustrated by Italian (30a), Paduan (30b) and Old Spanish (30c):

(30) a. il mio libro
the my book

b. el me libro — (Paduan)
the my book — (Cardinaletti 1998: 40)

c. la mi casa — (Old Spanish)
the my house — (Cardinaletti 1998: 23, Picallo 1994, 281, n.14)

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[20] As we will also see below, some authors consider the genitive ending to be a Spell-Out of D (cf. (i)). Such a representation would not be compatible with a nominal variant of the Doubly filled COMP filter (28) since both D ('s) and SpecDP, the possessor, are filled. (i) is based on Radford's nP hypothesis.

(i) $[_{DP}\ John_k\ [_D\ 's]\ [_{nP}\ t_k\ [_n\ book_j]\ [_{NP}\ [_N\ t_j]\ ]]]$

[21] It might be argued that pronominal possessors are clitic-like elements and have head status, but this does not modify the argument. If such possessors are in D then a co-occurring determiner will lead to a violation of the Doubly filled D filter.

Observe that if the determiners occupy D, then (30a), (30b) and (30c) do not contradict the ban on doubly filling D, since the specifier of D should be to its left.

We provisionally conclude that in Italian (30a), Paduan (30b) and Old Spanish (30c), the pronominal POSSESSORS, *mio*, *me* and *mi*, have not moved as far as their English counterpart would move. If *mio*/*me*/*mi* are not in D, then we may expect that the definite article, *il*/*el*/*la* can occupy D.

It also emerges that pronominal possessors do not behave uniformly with respect to their compatibility with determiners: sometimes (Italian (30a), Paduan (30b), Old Spanish (30c)) they follow an article, in other languages (English) they don't co-occur with determiners.

To account for the variation in the distribution of possessive pronouns, Giorgi & Longobardi (1991) distinguish two types of possessive pronouns. In some languages, possessive pronouns behave like determiners (31), in others like adjectives (32). In the former group, the possessor and the determiner do not co-occur. In the latter type of languages, the determiner and the possessor may co-occur.

(31) a. mitt hus *det mitt hus (Swedish) (cf. Delsing 1993a: 170)
b. mein Buch *das mein Buch (German)
c. my book *the my book
d. mon livre * le mon livre (French)
e. mijn boek * het mijn boek (Dutch)

(32) a. il mio libro (Italian)
the my book
b. el me libro (Paduan)
the my book
c. la mi casa (Old Spanish)
the my house

Several researchers have adopted the idea that the pronominal POSSESSORS in (31) are determiners (cf. Jackendoff 1977; Eisenberg 1986; Haider 1992; Zribi-Hertz 1997, among others). Patterns like Italian (32a), Paduan (32b) and Old Spanish (32c) are accounted for by assuming that in those languages the pronominal POSSESSOR is adjectival and that it is located in the specifier position of a projection lower than D. Approximate structures for (31) and (32) are given in (33). We assume that the POSSESSOR starts out in SpecnP, where the POSSESSOR role is assigned (cf. section 3.1 and also sec-

tion 3.2 for alternatives), and that it moves to the subject position (SpecIP in the nominal system). In (33a) the POSSESSOR does not move on up to D. In (33b) the possessor moves on to adjoin to D. The latter move is a form of cliticization.[22]

(33) a. $[_{DP}$ il $[_{IP}$ mio$_i$ $[\ldots$t$_i$ libro $]]]$[23]
b. $[_{DP}$ $[_{D}$ my$_i]$ $[_{IP}$ t$_i$ $[_{np}$ t$_i$ $[_{n}$ book$_k$ $[_{NP}$ t$_k]]]]]$

We turn to a more detailed discussion of possessive pronouns in the next section.

4.2.2. The typology of possessive pronouns

There is ongoing discussion as to the nature and the actual position of pronominal possessors. As mentioned above, Giorgi & Longobardi (1991) propose a bipartite division, in which some possessives are determiner-like pronouns and others are adjectives.

Other authors do not distinguish between 'pronouns' and 'adjectives', but they consider all pronominal possessors as pronouns. One example of this approach is Cardinaletti (1998). Concentrating mainly on Romance data, Cardinaletti (1998) elaborates a tripartite division for possessive pronouns: she distinguishes between strong, weak and clitic possessive pronouns. In so doing, she extends the tripartite strong-weak-clitic division proposed for personal pronouns in Cardinaletti & Starke (1999) to the possessive system.

The three types of pronominal possessives are merged (or 'base generated') in the lexical domain of the NP. Those which express strict possession could be said to be base-generated in the specifier of SpecnP or SpecPossP, thematic possessive pronouns that express an argument of the head N are base -generated in a thematic position (see Part IV, Chapter 1).

Depending on their typology, the possessive pronouns may then undergo movement. The clitic possessive pronouns and the weak possessive pro-

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[22] Observe that postnominal possessors could be derived in a number of ways. One option is that the possessor stays in its base position, SpecnP and the head N moves to a functional head. On this view, languages differ as to whether the possessors remain in their thematic position or move to D or to another DP-internal position for reasons of licensing.

[23] Given the current debate (see also Part II, Chapter 3 and Part IV, Chapter 1) as to whether N or a projection of N ungergoes leftward movement, we leave the internal structure of the nominal vague here.

nouns move to a higher licensing position in the DP. Specifically, clitics incorporate to D. Because clitic possessives undergo head-movement to D, they cannot co-occur with articles in D. Weak possessors are maximal projections and move to a prenominal specifier position below D. This could be SpecIP in our terminology. Strong possessors can remain in their base position. If N itself moves (see chapters 1 and 3 of Part II and Chapter 1 of Part III), then strong possessive pronouns will be postnominal. (34) summarizes the different types of structural positions in the DP in terms of the functional structure elaborated above. (34b) contains a clitic possessor, (34c) a weak possessor, (34d) contains a strong possessor.

(34) a. $[_{DP}\ [_{D}\ \text{clitic}]\ [_{IP}\ \text{weak}\ [_{np}\ \text{strong}\ [_{n}\ N\ [_{NP}\ t_k]]]]]$[24]
b. $[_{DP}\ [_{D}\ ma_i]\ [_{IP}\ t_i\ \text{voiture}_k\ [_{np}\ t_i\ [_{n}\ t_k\ [_{NP}\ t_k]]]]]$
c. $[_{DP}\ \text{la}\ [_{IP}\ \text{mia}_i\ \ldots[\text{macchina}_k\ [_{np}\ t_i\ [_{n}\ t_k\ [_{NP}\ t_k]]]]]]$
the my car
d. $[_{DP}\ \text{la}\ [_{IP}\ \ldots[\text{macchina}_k\ [_{np}\ \text{MIA}_I\ [_{n}\ t_k\ [_{NP}\ t_k]]]]]]$

The contrast between weak and strong pronouns is sometimes reflected morphologically. Cardinaletti (1998: 21) gives the following examples from Paduan: *me* is the weak form of the pronoun, *mio* is its strong form.

Just like personal pronouns (Cardinaletti & Starke 1999), the three types of possessives are systematically distinguished by a number of syntactic properties. The following examples will serve to illustrate the properties listed above for Italian. We refer the reader to Cardinaletti's own work for detailed discussion of these examples.

(35) A: Di quale ragazzo è questo libro?
of which boy is this book
B: Suo.
his (Cardinaletti 1998: 20, her (13))

(36) Questo libro è suo.
this book is his

---

[24] In the representation of (34) we assume that there is N-movement. Alternatively it is not N itself but a projection that moves. We will not examine this alternative here. See the discussion on N-movement in Part II, Chapter 3, section 4 and Part III, Chapter 1, sections 4.3 and 4.4.

(37) a. la casa MIA, non TUA
the house my, not yours
b. *la mia macchina, non tua (see Cardinaletti 1998: 44, but see note 2)

(38) a. la casa proprio sua
the house really his/her
b. *la proprio sua casa

(39) a. la casa sua e tua
the house her and your
b. *la sua e tua casa

(40) Ho invitato i miei amici e Gianni i suoi. (Cardinaletti 1998: 36)
have invited the my friend and Gianni the his

Table 1 summarises the properties associated with the three possessor types as proposed in Cardinaletti's work:[25]

Table 1.

	Strong	Weak	Clitic	Examples
postnominal	+	–	–	(39)
definite article	+	+	–	(39)
Isolation	+	–	–	(35)
Predicative	+	–	–	(36)
Focalization	+	–	–	(37)
Modification	+	–	–	(38)
Coordination	+	–	–	(39)
Ellipsis	–	+	–	(40)

4.3. DP-internal positions for POSSESSORS

What is common to the proposals above is the acknowledgement of the presence of a number of different DP-internal positions for POSSESSORS. (41) summarises these positions in terms of their derived vs. non-derived

[25] Cardinaletti's typology is further refined in Schoorlemmer (1998) and Ihsane (2000).

status: nP corresponds to the domain in which the possessor relation is established, FP is an inflectional projection (analogous to the clausal IP) and DP is the periphery of the nominal projection.

(41) a. $[_{DP}$ derived $[_{FP}$ derived $[_{nP}$ …POSSESSOR]]]

In general when a POSSESSOR is postnominal it is taken to occupy its thematic position and its surface order is derived by leftward movement of N or NP across the possessor.

The movement to the derived positions happens in two steps: the first step is XP movement to SpecFP. Italian might be a case in point. (41a) is a partial representation in which the possessor *mio* occupies the lower derived position in FP.

(41) b. $[_{DP}$ il $[_{FP}$ mio $[_{nP}$ libro]]][26]

The higher derived position in the DP layer is either SpecDP, for lexical DPs, or D. In English (41c) *John's* has moved to SpecDP; this is another instantiation of XP movement. In French (41d) the pronoun *mon* ('my') has cliticized to D.

(41) c. $[_{DP}$ John's $[_{D}$] $[_{FP}$ $[_{nP}$ book]]]
d. $[_{DP}$ $[_{D}$ mon] $[_{FP}$ $[_{nP}$ livre]]]

In languages in which the possessor and the determiner compete for the same position it is assumed that possessors necessarily move to the domain of D.

The proposal in (41c) might be thought to be in contradiction with our earlier proposal in (22c) and (22d), repeated here as (42), in which the possessor was located in the nominal SpecIP, i.e. a position which is lower than that in (41c).

(42) a. $[_{IP}$ John's$_k$ $[_{I}$] $[_{nP}$ t_k $[_{n}$ book$_j$] $[_{NP}$ $[_{N}$ t_j]]]]
b. $[_{IP}$ John's$_k$ $[_{I}$] $[_{PossP}$ t_k $[_{Poss}$ book$_j$] $[_{NP}$ $[_{N}$ t_j]]]]

The two views can be reconciled if we assume that (42a,b) represents an intermediate step in the derivation to (41c).

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[26] For expository reasons, the representations in (41b) and (41d) do not represent the movement of N or a projection of N. See notes 23 and 24.

(42) c. $[_{DP}$ John's$_k$ $[_{IP}$ t_k $[_{I}$] $[_{nP}$ t_k $[_{n}$ book$_j$] $[_{NP}$ $[_{N}$ t_j]]]]]
d. $[_{DP}$ John's$_k$ $[_{IP}$ t_k $[_{I}$] $[_{PossP}$ t_k $[_{Poss}$ book$_j$] $[_{NP}$ $[_{N}$ t_j]]]]]

In languages in which the determiner is followed by a possessive pronoun, the post-determiner possessor must be taken to occupy a relatively 'high' position within the functional domain of the DP. This is illustrated schematically in (41b). We correctly predict that when the head noun is modified by a prenominal adjective, the possessor will precede the adjectival modifier of the noun. Assuming that the POSSESSOR is generated in the specifier of a low projection nP/PossP, it moves to an N-related inflectional projection which dominates the projections hosting adjectives. The relevant pattern is illustrated in Italian (43a,b).

(43) a. la loro brutale invasione
the their brutal invasion
b. *la brutale loro invasione

The possessive pronoun *loro* follows the determiner *la* in D, and it precedes the prenominal adjective *brutale*. The possessive cannot follow the adjective (43b). This ordering can be derived in a number of different ways. Essentially, we would assume that the possessor moves to the lower 'derived' position in (41b)). The question is what is the nature of that position? We have proposed that the projection FP corresponds to an inflectional projection in the nominal domain. One possibility is that the relevant inflectional projection is NumP.

(44) a. $[_{DP}$ $[_{D}$ la] $[_{NumP}$ loro $[_{NumP}$ brutale $[_{Num}$ $[_{N}$ invasione]] $[_{nP}$ $[_{NP}$ t]]]]]

According to the representation in (44a) the AP *brutale* is the specifier of a functional projection NumP and the prenominal possessor *loro* is NumP-adjoined. However, we have already emphasized the parallelism between POSSESSORS and subjects. An adjoined position would not obviously qualify as a canonical subject position. Moreover, as discussed in the introduction to this book (see section 2.2) adjunction is not generally accepted as a theoretical tool.

We have also proposed that in some cases, at least, the prenominal possessor moves to the post-determiner position for case-reasons (cf. (16a)). For instance, as seen in (45) the post-determiner possessor in Hungarian receives nominative case.

(45) a. az én kalap-om
the I (NOM) hat-POSS.1SG
'my hat'

b. az én kalap-ja-i-m
the I (NOM) hat-POSS-PL-1SG
'my hats'

Since adjoined positions are not usually considered to be case positions, at least not in pre-minimalist approaches, this would mean that the analyses in which the possessor is the specifier of a projection are preferable. (44b) is an alternative representation: if the prenominal possessor is the specifier of NumP, then we could postulate that the prenominal adjective is a specifier of a distinct lower projection.

(44) b. $[_{DP}\ [_{D}$ la$]\ [_{NumP}$ loro $[_{FP}$ brutale $[_{F}\ [_{N}$ invasione$]]\ [_{nP}\ [_{NP}$ t$]]]]]$

If prenominal adjectives are themselves in NumP, then we would have to postulate a higher specialized projection FP for the prenominal possessor.

(46) $[_{DP}\ [_{D}$ la$]\ [_{FP}$ loro $[_{NumP}$ brutale $[_{Num}\ [_{N}$ invasione$]]\ [n_{P}\ [_{NP}$ t$]]]]]$

The Hungarian POSSESSOR construction illustrated in (47) provides motivation for preferring (46) over (44b). In (47), two distinct agreement morphemes can be distinguished. (i) The prenominal possessor *te* ('you') itself agrees with the head N in person and number; (ii) the head N independently varies for number.

(47) a. a te kalap-od
the you-NOM hat-POSS.2SG

b. a te kalap-ja-i-d
the you-NOM hat-POSS-PL-2SG

If we wish to keep number agreement of the head N distinct from number agreement of the POSSESSOR, and if we tie individual (agreement) morphemes to specific functional heads, the data in (47) imply that we need two functional projections, a projection for N-number, and a projection for the POSSESSOR. Consider the form of the N *kalap-ja-i-d* in (47b), with a plural *possessum* ('hats') and a second person singular POSSESSOR ('you'). The plural morpheme associated with the noun, *i*, is closer to the stem *kalap* than the second person singular morpheme *d*, which agrees with the possessor, suggesting the ordering in (46) in which the projection hosting the POSSESSOR dominates NumP, which encodes number of the noun.

In Hungarian, the prenominal possessor to the right of the determiner has nominative case (cf. *én* in (45) and *te* in (47)). In the clausal projection,

a nominative DP typically occupies the non-thematic specifier position of the highest functional projection of the inflectional domain, labeled IP or more specifically AgrP[27]. Given the similarity in case between the post-determiner possessor in the Hungarian DP and the subject in the clause,[28] and given that possessors can actually agree with N, we have proposed that in the same way that the subject DP in the clause occupies the highest specifier position in the functional domain dominating VP, the prenominal possessor must also occupy the highest specifier position in the functional domain dominating NP. Re-labeling the projection FP in (46) as AgrP expresses the idea that the relevant projection is associated with possessor agreement.[29] (48) gives the functional hierarchy of N and (49a) and (49b) provide partial structures.[30] Since non-pronominal possessors in Hungarian may also have nominative case, we assume they can also move to SpecAgrP.

(48) DP > AgrP > NumP > GenP > nP > NP

(49) a. $[_{DP}\ [_{D}$ la$]\ [_{AgrP}$ loro $[_{NumP}$ brutale invasione…]]] (Italian)
the their brutal invasion

b. $[_{DP}\ [_{D}$ a$]\ [_{AgrP}$ te $[_{NumP}$ kalapod]]] (Hungarian)
the you-NOM hat- POSS.2SG

c. $[_{DP}\ [_{D}$ a$]\ [_{AgrP}$ Mari $[_{NumP}$ kalapja]]] (Hungarian)
the Mari hat- POSS.3SG

In the above structure the possessive pronoun moves across the adjective located in SpecNumP. This is similar to the movement of subjects in the clausal domain, which can also cross over adjuncts and/or negation (see section 2.5 in the Introduction).

Finally, we also assumed that prenominal possessor DPs in English occupy SpecDP (cf. (41c)) and that French possessive pronouns move as clitic heads to D (cf. (41d)):

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[27] Under Minimalist views the status of AgrP is controversial (see Chomsky 1991 vs. 1993).

[28] For a preliminary discussion of such parallelisms between the clause and the noun phrase see Chapter 1 (especially section 5) of Part II.

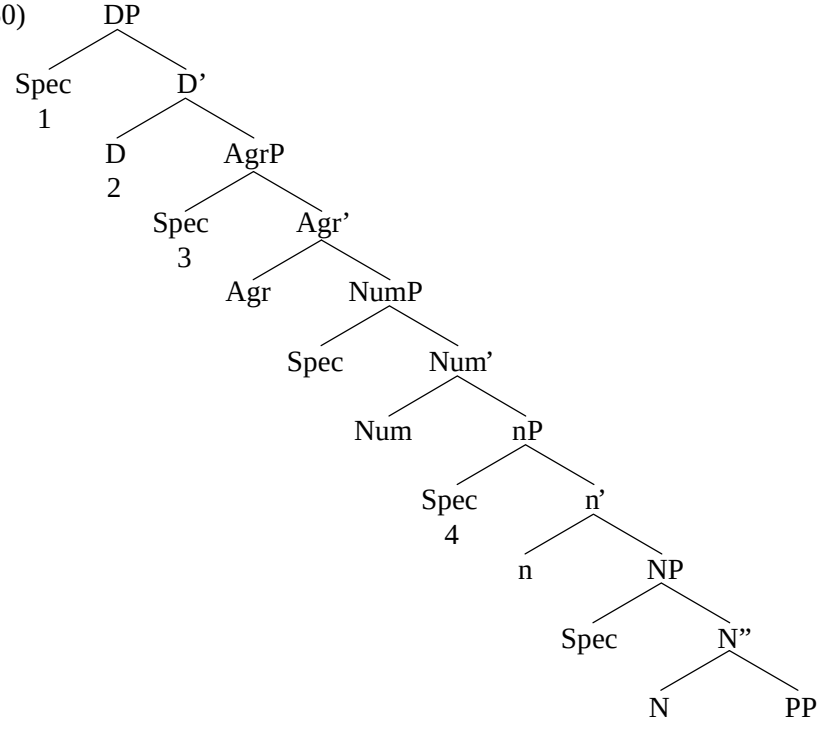
[29] Siloni (1997a) also uses the label AgrP to characterize the landing site of the possessor in the construct state. See the discussion in section 4 of Part II, Ch. 3.

[30] Again we leave open whether it is N or NP that undergoes leftward movement. See the discussion of N movement in Part II, Chapter 3 and in Part III, Chapter 1, sections 4.3 and 4.4.

(49) d. [$_{DP}$ John's [$_{D}$ 0] [$_{AgrP}$ t [$_{NumP}$ …book…]]]
e. [$_{DP}$ [$_{D}$ son] [$_{AgrP}$ t [$_{NumP…}$ livre…]]]

The Arabic numerals in the structural representation in (50) below schematically summarize the positions of possessive elements that we have identified so far:

(50)



1:	lexical DP possessives	*John's book*	(English)[31]
2:	clitic possessives	*son livre*	(French)
3:	'weak' pronoun *possessives*	*il suo libro*	(Italian)
	nominative possessive pronouns and DPs in Hungarian	*a te kalapod*	
	genitive DPs in Hebrew construct state	*beyt ha-'is ha-gadol*[32]	
4:	postnominal 'strong' possessors	*il libro suo*	(Italian)
	postnominal genitive DPs	*to spiti tu Jani*	(Greek)

[31] This is, for instance, the assumption implied by Radford's (21c).
[32] See Part II, Chapter III, example (18b).

5. Possessor extraction

5.1. Possessors in SpecDP

The structure in (50) implies that there is a strong analogy between the nominal projection and the clausal projection, with NP parallel to VP, the nominal AgrP matching the clausal AgrP, and DP parallel to CP.

Obviously the question arises whether, in the same way that SpecCP is the escape hatch for movement from the clause, SpecDP can serve as an escape hatch for movement from the nominal projection. While discussing possessor extraction in Hungarian and Greek in Chapter 1 of Part II, we already suggested that SpecDP serves as an escape hatch for extraction. The relevant data from Horrocks and Stavrou (1987) for Greek are repeated below:

(51) a. Tinos$_i$ mu ipes pos dhiavases [$_{DP}$ t$_i$ to vivlio]?
who-GEN me-GEN say PAST-2SG that read-PAST-2SG the book
'Whose book did you tell me that you read?'

Consider further (51b) from Hungarian:

(51) b. Ki-nek$_k$ ismer-té-tek [$_{DP}$ t$_k$ a vendég-é-∅-t]?
who-DAT know-PAST-2PL the guest POSS-3SG-ACC
'Whose guest did you know?' (Gavruseva 2000: 744, her (1c))

In both examples, the prenominal possessive *wh*-constituent – *tinos* ('whose') in (51a), *kinek* ('whose') in (51b), – is extracted from the DP, stranding the *possessum* DP – *to vivlio* ('the book') and *a véndéget* ('guest') respectively.

Such extraction of the prenominal possessor is generally ruled out in the Germanic languages, as shown by the ungrammaticality of the examples in (52).

(52) a. *Hvers$_k$ hittir [$_{DP}$ t$_k$ móður] Þu? (Icelandic)
whose met mother you (Webelhuth 1992, from
'Whose mother did you meet?' Gavruseva 2000: 745, her (4b))

b. *Wessen$_k$ hast du [$_{DP}$ t$_k$ Buch] gelesen? (German)
whose have you book read
'Whose book have you read?' (Gavruseva 2000: 745, her (5b))

c. *Wiens$_k$ heb je [$_{DP}$ t$_k$ boek] gelezen? (Dutch)
whose have you book read
'Whose book have you read?'

d. *Wiensen$_k$ ee-j gie [$_{DP}$ t_k boek] gelezen? (WF)
whose have-you you book read

e. *Whose$_k$ have you read [$_{DP}$ t_k book]?
whose book have you read

Corver (1990) interprets the impossibility of the extraction of the genitive possessors in Germanic as an effect of the so-called Left Branch Condition, a general ban on extraction from a left branch (see Ross 1967).[33]

(53) *Left Branch Condition*

No NP which is the leftmost constituent of a larger NP can be reordered out of this NP by a transformational rule.

Obviously, the fact that possessors do extract in Hungarian and Greek is a challenge for the descriptive adequacy of the above generalization. There must be factors that allow extraction in some languages, while ruling it out in others.

According to Gavruseva (2000), languages exhibit a three-way split: in some languages, such as Chamorro, possessor extraction is obligatory, in other languages, such as Hungarian and Greek, possessor extraction is optional, and in a third group of languages, such as the Germanic languages, possessor extraction is prohibited.

To account for this split, Gavruseva proposes that two properties determine whether possessor extraction will be possible. First, she assumes that the specifier of DP is an escape hatch for movement. She proposes that in the Germanic languages possessors do not move to SpecDP but remain in a lower specifier of a projection AgrD. Provisionally this projection could be the specifier of AgrP in our (50). This would imply that we adapt our earlier representations in (22c) and (22e), but we will reconsider this point in section 6.

In languages which display possessor extraction, the possessor moves to SpecDP. These languages, such as Chamorro, Tzotzil and Hungarian, also exhibit possessor agreement (see discussion of (47)), which Gavruseva assumes is instantiated in AgrD. She postulates that there is also a correlation between the possibility of possessor extraction and the presence of possessor agreement.

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[33] For a discussion of the role of the left branch condition in extraction see also Part II, Chapter 2, section 3.3.

We repeat some of the relevant Hungarian data here, and we also include Chamorro and Tzotzil data from Gavruseva (2000: 756f):

(54) a. ki-nek a vendég-e-∅ (Hungarian)
who-DAT the guest-POSS.3SG.NOM
whose guest

b. hayi munika-ña (Chamorro)
who doll-3SG
whose doll

c. buch'u s-tot (Tzotzil)
who 3SG father
whose father

In the languages illustrated above, the possessor first moves to SpecAgrDP, which we provisionally assimilate to our SpecAgrP. In a second step, possessors move to SpecDP. At this point we interpret SpecDP as the specifier of the head in which the determiner is spelled out.

The evidence from obligatory possessor movement to this position comes from the distributional contrasts between dative and nominative possessors in Hungarian, which we discussed in Chapter 1 of Part II, and from the contrast between lexical and *wh*-possessors in Tzotzil. In Tzotzil, as illustrated below, lexical and *wh*-possessors do not compete for the same position. Lexical possessors (*li Maruche* in (55a) follow the possessed noun, while *wh*-possessors precede it (*buch'u* ('whose') in (55b)) (from Gavruseva 2000: 752, citing Aissen 1996):[34]

(55) a. s-p'in li Maruche
A3-pot the Maruch-ENC
Maruch's pot

b. buch'u x-ch'amal
WH-A3 child
whose child

c. *li Maruch s-p'in t -e

d. * x-ch'amal buch'u

[34] In addition, Tzotzil exhibits a subject/object asymmetry in the sense that extraction cannot take place from a subject position. Such asymmetries are not found in Chamorro.

Only *wh*-possessors are allowed to extract:

(56) Buch'u av-il-be [s-tot]?
who A2 see-IO A3 father
'Whose father did you see?'

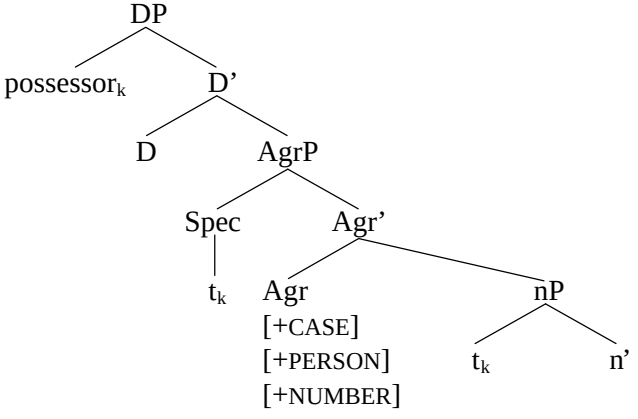
In Chamorro possessors can only be extracted if D is empty, in which case extraction is obligatory. [35]

(57) a. Hayi ti man -mägur 0 famagon-ña
who not INFL(P) happy children-3SG
'Whose children are unhappy?'

b. *Hayi ti man -mägur i famagon-ña
who not INFL(P) happy the children-3SG

According to Gavruseva, movement of the possessor to SpecDP is triggered by the need to check a strong Q feature in D, which is the nominal analogy of the clausal C. (58) summarizes the representation she assumes for languages that allow possessor extraction. The structure is adapted to that we have elaborated above. In particular we have at this point equated Gavruseva's AgrD with our nominal Agr.

(58)



[35] We assume that the other constraints on possessor extraction in Tzotzil and in Chamorro follow from the interaction of other properties of these languages with the extraction of possessors.

For Gavruseva, the Hungarian vs. Germanic contrast is explained by two factors. Recall that she proposed that in Germanic the possessor fails to move to Spec DP in the overt syntax, thus it never reaches the escape hatch for extraction.[36] As Gavruseva says:

> Extraction of *wh*-possessors is possible in a language if possessors extract through SpecDP, an escape hatch position, which is taken to be similar in its properties to the clausal CP. I argue that one of the properties shared by the heads of the DP and CP is the ability to be endowed with an uninterpretable Q-feature. The 'strength' of the Q-feature determines the level at which possessor movement to SpecDP takes place. (…) in languages such as Hungarian, Tzotzil, and Chamorro, possessors move to SpecDP in overt syntax due to a 'strong' value of the Q feature. This property is argued to be responsible for licensing possessor extraction in languages with overt *wh*-movement. An examination of the data in Germanic shows that prenominal possessors move overtly only to an A-position where they check structural case and *phi*-features of the nominal Agr/D. The necessary step of possessor movement through SpecDP is delayed until LF due to the 'weak' nature of the Q-feature on D in Germanic. (…) In addition, it is shown that the 'strength' values of Q interact in a subtle way with the case and *phi*-feature content of the lower projection, which I call Agr/DP in this paper.
>
> (Gavruseva 2000: 746–747)

If SpecDP is the escape hatch required for possessor extraction, the fact that the Germanic possessor fails to move there in the syntax will thus account for its non-extractability while allowing extraction in Hungarian.

As already said, Gavruseva assumes a correlation between the availability of possessor extraction and possessor agreement. In the Germanic languages there is no agreement relationship between the POSSESSOR and the *possessum* noun.

5.2. Genitive extraction in Greek and the periphery of DP

Recall that Greek also allows possessor extraction. Unlike Hungarian, Greek does not have a nominative vs. dative contrast for prenominal possessors, nor does it display a lexical vs. *wh*-possessor contrast like that found in Tzotzil. Nominative prenominal possessors are impossible. Possessors,

---

[36] This is also the position that Schoorlemmer (1998) would adopt, at least for non-pronominal possessors.

whether they be realized as lexical DPs or as *wh*-phrases, always bear genitive case and when prenominal, they precede the determiner:

(59) a. to vivlio tu Jani
the book the John-GEN

b. *to vivlio o Janis
the book the John-NOM

c. to vivlio tinos
the book who-GEN

Greek does not have possessor agreement, and yet possessor extraction is possible. It is reasonable to assume that the extracted possessor moves through SpecDP. We repeat the relevant data here. (60) is from Horrocks & Stavrou (1987: 89, their (14)). (60a) corresponds most closely to a sentence with minimal movement, in (60b) the interrogative genitive *tinos* ('whose') has been fronted (as focused) DP-internally, in (60c) it is further fronted to the matrix SpecCP (again as focused):

(60) a. Mu ipes [$_{CP}$ pos dhiavases [$_{DP}$ to vivlio tinos]]
me-GEN said-2SG that read-2SG the book who-GEN
'You told me you read whose book?'

b. Mu ipes [$_{CP}$ pos dhiavases [tinos to vivlio]]
me-GEN said-2SG that read-2SG who-GEN the book

c. [$_{CP}$ [Tinos] mu ipes [$_{CP}$ t pos dhiavases [$_{DP}$ t to vivlio]]]
who-GEN me-GEN said-2SG that read-2SG the book

Horrocks & Stavrou say:

> Only items that can appear on left branches in this pre-article position may also appear detached from NP as sentence-initial foci. (1987: 90)

Consider (61). The demonstrative *afto* comes before the article in Greek (61a). It is extracted if it bears emphatic or focus stress (61a-b).

(61) a. afto to vivlio
this the book

b. AFTO mu ipes pos dhjavases *(to) vivlio.
this me-GEN said-2SG that read-2SG the book
'You told me that you read this book.'

In Chapter 1 of Part III we saw a similar phenomenon involving polydefinite DPs. When the adjective in a polydefinite DP is marked as [+FOC], it can move – along with its own article[37] – to the initial position in the DP, preceding the article of the noun (62a). Interestingly, it can be further moved out of the DP in the clause (62b):

(62) a. to kokino to forema
the red the dress
b. To kokino mu ipes pos aghorases *(to) forema.
the red me-GEN said-2SG that bought-2SG the dress
'You told me you bought the RED dress'
(Horrocks & Stavrou 1987: 91)

So (60), involving possessors, (61), involving demonstratives, and (62), involving 'definite' adjectives in polydefinite DPs, all pattern alike; a definite constituent that originates lower in the nominal projection is fronted to the initial DP position, and, in particular, to pre-article position, when it bears focal stress. From that position the fronted constituents can all escape further to the clause – we assume to a focus position on the left periphery.

Notice that when an overt demonstrative is present in pre-article position, fronting of either the possessor or the definite adjective of a polydefinite to a pre-article position is ill-formed for most speakers (63a,c).[38] This confirms that for those speakers the demonstrative, the fronted genitive and the 'definite' adjective compete for the same position. Reversing the order of the demonstrative and the possessor (63b) or the adjective (63d) also yields ungrammaticality.

(63) a. *afto tu Jani to vivlio
this the John-GEN the book
b. ?*tu Jani afto to vivlio
the John-GEN this the book
c. ?*afto to paljo to vivlio
this the old the book

---

[37] Recall from Part III, Chapter 1 (section 6) that in Greek an adjective may precede the article provided it is accompanied by its own determiner:

(i) a. *kokino to forema
red the dress
b. to kokino to forema
the red the dress

[38] For most speakers, (63b) is marginal; for a minority it is acceptable (see Panagiotidis 2000).

d. ?* to paljo afto to vivlio
the old this the book

We predict that when the position to the left of the determiner is filled by a demonstrative, the escape hatch for movement is blocked and extraction of a possessor should no longer be possible. This prediction is correct: in (64) the demonstrative *afto* ('this') blocks extraction of *tu Jani* from the DP.

(64) *Tu Jani mu ipes pos aghorases [$_{DP}$ afto to vivlio].
the John-GEN me say-PAST-2SG that bought-2SG this the book

At this point we conclude that the extraction of the genitive possessor in Greek proceeds through a left-peripheral position, which we take to be SpecDP.

In the next section we consider extraction of a PP from a DP.

5.3. Possessor extraction and the thematic hierarchy: comparative data

In many languages (French, Italian, German, Dutch, etc.), a certain class of PPs can be extracted from a DP. Such extractable PPs normally do not surface in the pre-determiner position (but see (76) below); they tend to be postnominal. In the French example (65a) the N *portrait* ('picture') is followed by three PPs: the PP *d'Aristote* ('of Aristotle') expresses the object of the painting, we will call it the Theme, the PP *de Rembrandt* ('of Rembrandt') expresses the Creator, and the PP *de Pierre* ('of Pierre') expresses the POSSESSOR.

(65) a. le portrait d'Aristote de Rembrandt de Pierre
the portrait of Aristotle of Rembrandt of Pierre
(the data are based on Aoun 1985: 19)

Ever since the 1970s, Romance PP extraction has been the subject of much discussion in the literature (Ruwet 1972; Cinque 1980; Milner 1982; Godard 1992; Valois 1991, 1996 and many others; see Kolliakou (1999) for a review of the literature).

Leaving aside certain complications, it seems to be the case that in the clausal domain extraction is relatively unrestricted. Specifically, according to standard views on locality conditions on extraction, the availability of one constituent, say a DP, in argument position will not block extraction of

another such constituent to an operator position. This is as expected if SpecCP is the crucial escape hatch for extraction. Argument positions do not intervene in extraction to SpecCP, an operator position.

(66) a. To whom did you say that Mary sent the parcel last week?
b. Which parcel did you say that Mary sent to John last week?
c. When did you say that Mary sent the parcel to John last week?

As seen in (66), various kinds of constituents can be extracted from the clause. The presence of the DP *Mary* in the subject position of the clause is no hindrance for the extraction of, say, the indirect object (66a), the direct object (66b) or the temporal modifier (66c). Similarly, the presence of an indirect object does not block extraction of an object (66b), *etc.*

One question that has been raised is what happens in the nominal analogy of this situation: if a DP contains a number of argument-like PPs, which as such are extractable, is it then possible to extract any of these PPs? Gavruseva (2000) proposes that all extraction from the nominal projection proceeds through SpecDP. If SpecDP is an operator position, analogous to SpecCP, we might expect that in a nominal projection with multiple potentially extractable PPs, any one of these PPs can extract. This, however, is not true as shown by the data in (65b,c,d). A postnominal PP can extract, but not just any one of the three PPs may move. Only extraction of the POSSESSOR *de*-PP is possible:

(65) b. Pierre dont$_i$ [$_{DP}$ le portrait d'Aristote de Rembrandt t_i] a été vendu
Pierre of whom the picture of Aristotle of Rembrandt has been sold
c. *Rembrandt dont$_i$ [$_{DP}$ le portrait d'Aristote t_i de Pierre] a été vendu
d. *Aristote dont$_i$ [$_{DP}$ le portrait t_i de Rembrandt de Pierre] a été vendu

The extraction facts in (65) correlate in an interesting way with POSSESSOR pronominalization, i.e. replacement of the possessive by a pronoun, which for (67a) is also restricted to the POSSESSOR:

(67) a. son portrait d'Aristote de Rembrandt
his portrait of Aritotle of Rembrandt
b. *son portrait d'Aristote de Pierre[39]
c. *son portrait de Rembrandt de Pierre

[39] This example and the next are ungrammatical when *Pierre* is interpreted as a POSSESSOR.

If no POSSESSOR is present, and both Creator and Theme are realized, then only the Creator can extract (68a) or be replaced by a possessive pronoun (68b). The Theme can only extract or be replaced by a possessive pronoun when neither POSSESSOR nor Creator are realized (69):

(68) a. Rembrandt dont$_i$ [le portrait d'Aristote t_i] a été vendu.
Rembrandt of whom the portrait of Aristotle was sold
b. Son portrait d'Aristotle a été vendu.
his protrait of Aristotle has been sold
c. *Aristote dont$_i$ [le portrait t_i de Rembrandt] a été vendu
Aristotle of whom the portrait of Rembrandt was sold
d. *Son portrait de Rembrandt a été vendu.
his protrait of Rembrandt was sold

(69) a. Aristote dont$_i$ [le portrait t_i] a été vendu.
b. Son portrait a été vendu.

To account for these restrictions on PP extraction, it has been proposed that the thematic hierarchy (70a) constrains extraction from the DP (70b), as well as pronominalization.

(70) a. Thematic hierarchy (cf. Part IV, Chapter 1, section 3.3, (64)):
(possessor(Agent(Experiencer(Goal/Source/Location(Theme)))))
b. Thematic hierarchy hypothesis (Kolliakou 1999: 714: her (1)):
The Agent can be extracted only if the POSSESSOR is not present, and the Theme can be extracted only if neither the Agent nor the POSSESSOR is present.

The thematic hierarchy also constrains the interpretation of the prenominal genitive in Germanic. In (71a) the English possessive pronoun *his* or the Dutch possessive *zijn* can only be interpreted as the POSSESSOR or the Creator of the picture, but not as the Theme. In (71b) the pronouns can be interpreted as POSSESSOR, Creator or Theme:

(71) a. his picture of Mary
a.' zijn foto van Marie (Dutch)
b. his picture
b.' zijn foto (Dutch)

In English (72a) and in Dutch (72b) the prenominal genitives can only be interpreted as the POSSESSOR, or the Creator, in English (72c) and in Dutch (72d) they can be POSSESSOR, Creator or Theme:

(72) a. John's picture of Mary
b. Jans foto van Marie
c. John's picture
d. Jans foto

The three sets of data, extraction, pronominalization and interpretation of prenominal genitives, could be related if we proposed that each of these processes requires the possessive element (the genitive or the pronoun) to transit through a specific position and that the highest argument of the hierarchy has priority for the relevant movement.

For Italian, Cinque (1980) has shown that the only *di*-PPs that can extract from DP are those that have a subject-like relation to the NP. We could interpret this as meaning that all extracted possessors must transit through the 'subject' position of NP, that is our SpecAgr. For French it has also been noted that only *de* PPs allow extraction, as shown by the following data:

(73) a. Une personne dont nous apprécions [$_{DP}$ la grande générosité t] est Georges.
a person of whom we appreciate the great generosity is Georges
b. *une planète sur laquelle plusieurs d'entre nous verront [$_{DP}$ l'atterrissage t]
a planet on which many of us will see the landing
(Aoun 1985: 19, his (11) and (12))
c. *Par qui as-tu vu [$_{DP}$ le portrait]?
by whom have you seen the portrait
d. *Sur qui as-tu vu [$_{DP}$ le livre]?
on whom have-you seen the book (Moritz & Valois 1994)

These data also follow Cinque's proposal that the PPs that extract from DP must be able to be 'subjects' in the DP, i.e. they must be able to occupy the nominal subject position. The non-extractable PPs in (73b-d) could plausibly be considered to be adjuncts rather than subjects and, being adjuncts, they should not be able to occupy or move through the subject position (cf. Cinque 1990; Moritz & Valois 1994).

If transiting through the nominal subject position is a central step in PP-movement out of DP, then we expect that, once the position is filled, the resulting structure becomes an island for extraction. This is confirmed by the data in (74):

(74) a. Paul, dont$_i$ j'ai vu [$_{DP}$ la photo t$_i$]…
Paul of whom I have seen the picture t

b. *Paul, dont$_i$ j'ai vu [$_{DP}$ ta photo t$_i$…]
Paul of whom I have seen your picture t

(Kolliakou 1999: 757: her (54c,d))

In (74) possessivization affects the POSSESSOR *ta* ('your'). After possessivization of *ta* extraction of the Theme is no longer possible.

The effect of the thematic hierarchy can also be observed for PP extraction in German. Consider (75a): PP extraction is apparently possible with POSSESSOR, Creator or Theme reading for *von wem*:

(75) a. [Von wem]$_k$ hat Hans [$_{DP}$ das Bild t$_k$] gesehen?
of whom has Hans the picture seen
'Whose picture did Hans see?'

Now consider German DPs with multiple possessives. PP extraction is blocked when the DP contains a prenominal genitive. This is as expected under the thematic hierarchy hypothesis coupled with the proposal that extracted possessors must transit through a unique 'subject' position. Since the possessive pronoun (75c) or the genitive possessor (75d) also moves to that position, extraction of another PP is blocked[40]. See also Pafel (1995) for some refinements. Again, by the thematic hierarchy the POSSESSOR will be the first candidate to pronominalize or to genitivize, thus locking other candidates for extraction in a lower postnominal position.

(75) b. [$_{DP}$ Maria's Bild von Peter]
Mary's picture of Peter

c. *[Von wem]$_k$ hat Hans [$_{DP}$ ihr Bild t$_k$] gesehen?
of whom has Hans her picture seen

d. *[Von wem]$_k$ hat Hans [$_{DP}$ Maria's Bild t$_k$] gesehen?
of whom has Hans Mary's picture seen?

---

[40] Recall, though, that genitive possessors themselves do not extract in German.

For further discussion on PP extraction in Italian see Cinque (1990) and Giorgi & Longobardi (1991). For German, see Pafel (1995) and Gavruseva (2000). For problems with the thematic hierarchy proposal and for refinements and an alternative analysis we also refer to Kolliakou (1999).

Recall that Gavruseva proposes that POSSESSOR extraction proceeds through SpecDP, by assumption an operator position (but see section 6 for refinement). The discussion above, which underlines the subject properties of extracted possessors, hinges on the crucial step of movement through the subject position of DP, SpecAgr, an argument position. Obviously, these two views can be reconciled if we assume that POSSESSORS first move to SpecAgr, an argument position, and then move through the escape hatch, SpecDP, an operator position.

One objection to the account above might be that we never actually see possessor PPs in either SpecAgr or SpecDP. At a rather anecdotal level we provide the following WF data in which a POSSESSOR PP *van die mensen* ('of those people') seems to occupy the specifier position of D:

(76) a. [$_{DP}$ Van die mensen nen zeune] is-ter me myn nichte getrouwd.
of those people a son is there with my niece married (WF)
'A son of those people married my niece.'

In (76b) the fronted PP is the R-PP *daarvan*:

(76) b. [$_{DP}$ Daarvan$_i$ nen broere t$_i$] is-ter met mijn jongste zuster getrouwd.
thereof a brother is -there with my youngest sister married (WF)
'The brother of that person is married to my youngest sister.'

Some caution is needed however. Observe that the examples concern kinship relations. It seems much harder to construct plausible examples with other types of possession (76c). We leave these data for future study.

(76) c. ??*[$_{DP}$ Van die schilder en schilderye] wordt-der morgen verkocht.
of that painter a picture is there tomorrow sold

Let us return once more to genitive extraction in Greek. The question arises of what would happen if there were more than one potential candidate for extraction in the Greek DP. Is the extraction subject to the thematic hierarchy in the way observed for French and for German? The answer is complex because generally, Greek does not allow two genitives within the same DP, see Horrocks & Stavrou (1987), Markantonatou (1992), Alexiadou (2001a)

for discussion. As (77) shows, two genitives are possible with *translation* type nouns. They are impossible with *destruction*-type nouns. Zubizarreta (1987) notes similar facts for Romance, and attributes the availability of two genitives with nouns like *description, translation* and so on to the fact that these are licit with two genitives, but only under a result interpretation of the derived nominal. There is a fundamental difference then between nouns like *translation*, ambiguous between result and event readings, and nouns like *destruction*, which can only refer to a process and never to the result of a process:

(77) i metafrasi tis Odhisias tu Kakridi
the translation the Odyssey-GEN the Kakridis-GEN

Two views have been proposed to account for the grammaticality of (77). On the one hand, Kolliakou suggests that the second genitive in (77) bears a type of looser relationship to the possessed noun. She argues that the two genitives instantiate different types of possessives, the innermost being a pseudo-possessive. On this view, the innermost genitive in (77) determines the kind of *translation*. On the other hand, Markantonatou (1992) claims that the noun and the thematic genitive form some kind of compound, and the second genitive functions as a possessor. See also the discussion in section 5.4.

Before we consider extraction out of a DP with two DP-internal genitives, let us consider a simple case. (78a) is ambiguous: *tinos* ('whose') may have a Creator reading or a Theme reading. We conclude that extraction of a Creator and extraction of a Theme must be possible from a DP with only one genitive.

(78) a. Tinos$_i$ mu ipes pos agorases[t$_i$ tin metafrasi]?
who-GEN me-GEN said-2SG that bought-2SG the translation
'Whose translation did you tell me that you had bought?'

This is as expected under the thematic hierarchy hypothesis (70). If both Creator and Theme are expressed (78b), extraction of the Theme argument becomes impossible; the Creator may be extracted (78c).

(78) b. *Tinos$_i$ mu ipes pos agorases [t$_i$ tin metafrasi
who-GEN me-GEN said-2SG that bought-2SG [the translation the-GEN
tu Kakridi]?
Kakridi-GEN]

c. Tinos$_i$ mu ipes pos agorases [t$_i$ tin metafrasi
who-GEN me-GEN said-2SG that bought-2SG the translation
tis Odisias]?
the GEN Odyssey-GEN

The data above are compatible with the thematic constraint on extraction (70). Based on the discussion above we will also assume that extraction is dependent on movement to the subject position of the DP (Cinque 1980). Given that only those constituents that can precede D can extract, we can also endorse Gavruseva's claim that possessor extraction is dependent on movement through SpecDP.

As before, the thematic hierarchy in (70) can also be shown to have an impact on DP-internal genitive fronting in Greek: the genitive expressing Theme can be fronted if it is the sole argument expressed (79a). Movement of the Theme argument in the presence of the Creator is ungrammatical (79b). When both THEME and Creator are present, only the latter can be fronted (79c).

(79) a. [$_{DP}$ Tis Odhisias i metafrasi] ine sto rafi deksia.
the-GEN Odyssey-GEN the translation is on the shelf on the right

b. *[$_{DP}$ Tis Odhisias i metafrasi tu Kakridi]
[the-GEN Odyssey-GEN the translation the-GEN Kakridi-GEN]
ine sto rafi deksia.
is on the shelf on the right

c. [$_{DP}$ Tu Kakridi i metafrasi tis Odhisias] ine
the-GEN Kakridi-GEN the translation the Odyssey-GEN is on
sto rafi deksia.
the shelf on the right

The Greek pronominalization facts also seem to follow from the hierarchy. In (80a) the head N *metafrasi* ('translation') is accompanied by two genitives: *tis Odhisias*, the Theme, and *tu Kakridi*, the Creator. In (80b) the DP which is higher on the hierarchy is pronominalized; in (80c) the lower one is pronominalized, leading to ungrammaticality.

(80) a. i metafrasi tis Odhisias tu Kakridi…
the translation the-GEN Odyssey-GEN the-GEN Kakridi-GEN

b. i metafrasi tu tis Odhisias…
the translation his Odyssey-GEN

c. *i metafrasi tis tu Kakridi...
the translation its Kakridi-GEN

5.4. Individual denotation vs. property denotation and extraction from DP

On the basis of the data discussed above we have concluded that the thematic hierarchy in (70) seems to play a role in a number of syntactic processes such as pronominalization and the availability of extraction. This restriction can be made to follow if we assume that the thematic hierarchy determines 'subjectivization' in the DP. However, it is not obvious that the thematic hierarchy is the only factor at play.

Kolliakou (1999) shows that possessor extraction in Romance is also constrained by the semantic distinction between individual-denoting and property-denoting possessives. The relevance of the interpretive contrast is illustrated in French in (81). In both examples the PPs, *de partisans* ('of partisans') and *des partisans* ('of the partisans') denotes the Agent of *attaque* ('attack'). Yet there is a clear difference in the interpretation, as also suggested by the English translation:

(81) a. En ce moment, une attaque de partisans serait fatale.
at this moment, an attack of partisans would be fatal
'At this moment a partisan attack would be fatal.'

b. L'attaque des partisans a commencé.
the attack of the partisans has started
'The partisans'attack has started.'

In (81a) *de partisans* ('of partisans') is property-denoting; it 'cannot pick out a plurality which instantiates the property *partisan*; rather, it identifies a particular kind of attack – a partisan-like attack' (Kolliakou 1999: 735–736). *De partisans* has an adjectival, non-referential reading. In (81b) *des partisans* is referential: it is 'construed as an aggregate of entities that instantiate the property *partisan*' (Kolliakou 1999: 736). While *des* in (81b) is a contraction of the preposition *de* and the definite article *les*, *de partisans* in (81a) does not contain a reflex of the article. Obviously the referentiality of the former and the non-referentiality of the latter can be related to the presence vs. the absence of the article. [41]

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[41] See Part II, Chapter 1, section 2.3 for the relation between determiner and referentiality.

The distinction in referentiality between the two constructions bears on their syntactic behavior. Pronominalization and relativization are only possible with the individual-denoting PP in (81b): *leur* ('their') in (81c) corresponds to *des partisans* ('of the partisans') (81b) and not to *de partisans* ('of partisans') in (81a). Similarly the relativization in (81d) corresponds to (81b) and not to (81a):

(81) c. Leur attaque a commencé.
their attack has started
d. les partisans dont l'attack avait commencé au lever du soleil
the partisans whose attack had started at sunrise

Only individual-denoting *de* PPs can be pronominalized and be extracted.

Note that often the *de*-NP construction in French corresponds to compound nominals in English as suggested by the glosses in (82).[42]

(82) a. Un conte de fées
a story *of* fairies
'a fairy tale'
b. un livre d'histoire
a book of history
'a history book'

Kolliakou argues that the assymetries associated with *de*-phrases in French also occur in Greek (Kolliakou 1999: 764–796).[43]

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[42] Similarly the Greek genitive of property (see note 2 and note 43) corresponds to a compound noun:

(i) a. potiri krasiu
glass wine-GEN
'wine glass'
b. krasopotiro
'wine glass'

[43] In footnote 2 we briefly mentioned classifying genitives in English, as illustrated in (ia), and the Greek genitive of property illustrated in (ib):

(i) a. This is a very well-written children's book.
b. vivlio istorias
book history-GEN
'history book'

The English classifying genitive resembles the French *de N* construction discussed in the text. In particular this genitive is also not individual-denoting but property-denoting: a *children's book* is a kind of book. Similarly for the Greek example: *vivlio istorias* ('history book') denotes a kind of book.

6. The possessor doubling construction

So far, DP-internal reference to a possessor was either by a possessive pronoun (clitic, weak or strong) or by a possessor DP (associated with say a genitive case or with a preposition) or by a postnominal possessor DP/PP. It is also possible to refer to one possessor by BOTH a DP and a coreferential pronoun. This pattern has come to be known as the possessor doubling construction.[44]

As is the case in the French construction pronominalization is not possible: (iia) is not the result of pronominalization of *children's* in (ia) but rather of *the children's* in (iib).

(ii) a. This is their book.
b. This is the children's new book.

Similarly, in Greek (iiia) the feminine singular genitive *tis* cannot be interpreted as replacing *istorias* in (ib) but can, for instance, replace the *tis Marias* in (iiib):

(iii) a. Afto ine to kenurio vivlio tis.
this is the new book hers
b. Afto ine to kenurio vivlio tis Marias.
this is the new book the Mary-GEN

Observe that English *children's book* can be translated by a *de*-construction in French, though not by the *des* PP. In (ivb) *des enfants* ('of the children') will be taken to be referential, referring to the children as possessors of the book.

(iv) a. un livre d'enfants
a book *de* children
b. #un livre des enfants
a book of-the children
'the children's book'

We will not pursue the syntax of the English classifying genitive or the Greek genitive of property here.

[44] At least for WF, which we consider in more detail below, the doubling construction is not strictly restricted to POSSESSORS in the narrow sense: the construction may also be used for thematic arguments of the noun, as shown in (i) in which *Valère* is the Agent of *onderzoek* ('examination') and in (ii) in which it is the Theme.

(i) Valère zen onderzoek van da geval ee lange gedeurd.
Valère his examination of that case has taken a long time
(ii) Valère zen onderzoek ee lange gedeurd.
Valère his examination has taken a long time

6.1. The data

In a possessor doubling construction a (prepositionless)[45] prenominal possessor DP is doubled by a matching and coreferential prenominal possessive pronoun. The pattern is attested in a range of languages. (83) is a non-exhaustive list of examples.[46]

(83) a. Per sin bil — (Norwegian)
Peter *sin* [reflexive] car — (Fiva 1984: 2; Delsing 1998)

b. ae mand hans hus — (Danish: West Jutlandic)
a man his house — (Delsing1998: 90, his (13b))

c. Peter z'n kat — (Dutch) (Jansen 1974, 1977; Janssen 1975;
Peter his cat — Koelman 1975; Taeldeman 1995)

d. alle des conincks sijn landen — (Middle Dutch)
all the-GEN king-GEN his lands — (Koelmans 1975: 437)

e. dem Vater seine Katze — (German)
the-DAT father his cat

f. em bueb zini Mutter — (Swiss German)
a child his mother — (Keenan 1974: 303, in Ramat 1986: 580)

g. Epkema syn plan — (Frisian)
Epkema his plan — (Ramat 1986: 579)

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[45] Most of the examples thus differ from clitic doubling examples in which the possessor DP is postnominal (and pronominal too) and is associated with a preposition:

(i) son livre (à lui) — (Cardinaletti 1998: 25, her (31a))
his book to him
'his book'

The obvious similarities between French clitic possessor doubling in (i) and possessor doubling await further study.

[46] See also Hendriks (2003) for Middle and Early Modern Dutch, Vangsness (2006) for Scandinavian and Weiss (2006) for German possessor doubling.

Allen (2003, 2006, to appear), for the history of English, argues that the possessor doubling construction in the history of English differs substantially from that found in other Germanic languages. Allen (2004) discusses the co-occurrence of the demonstrative and a possessive in the history of English:

(i) Þysne enwerne cyning
this (MASC) your(MASC) king
'your king'

h. the Man of Lawe his Tale (Middle English)
(Chaucer, *Canterbury Tales*; Stahl 1925: 22)

i. li serf sum pedre (Old French)
the serf his father (Ramat 1986: 587)

j. à Pierre sa balle (French Alsace)
to Pierre his ball (Kleiber p.c. Zribi Hertz 1998: 156, n. 37)

k. Peter sua filho (Malayo-Portuguese)
Peter his son (Hesseling 1910 [1979]: 27; Ramat 1986: 589, n. 11)

l. Jón hin-ós (Krio)
John his-house (Givón 1979: 91; Ramat 1986: 587)

This pattern is of interest as it will allow us to identify various positions for possessors in the DP. It will also allow us to elaborate on the parallelism between the functional structure of the DP and that of the clausal CP. Finally, it will prove relevant for the study of possessor extraction. We will concentrate mainly on the doubling patterns in the Germanic languages and specifically on that in WF for which the empirical data are readily available.

For the Germanic languages, Corver (1990) argues that the possessive pronoun (for instance, *z'n* in Dutch (84a), occupies the same position as genitive *'s* in (84b), i.e. D° (see also Lindauer 1998). That this is so is suggested by the fact that they are mutually exclusive (84c):

(84) a. Peter z'n kat
Peter his cat (Dutch)

b. Peters kat
Peter-GEN cat

c. *Peters z'n kat
Peter-GEN his cat

Corver suggests that the prenominal possessor DP *Peter* in the doubling pattern (84a) occupies SpecDP. The German examples in (85) show that this prenominal possessor DP is not assigned case from outside the DP. In (85), the DPs containing the possessor, *dem Mann seinen Wagen* in (85a) and *dem Mann sein Wagen* in (85b), are assigned case by an external case-assigner, the verb (85a) and Infl (85b) respectively. In both instances, the case is morphologically realized on the doubling pronoun *sein* and the possessor DP *dem Mann* itself bears dative case, i.e. an oblique case form. Oblique case is not a structural case assigned from an external source.[47]

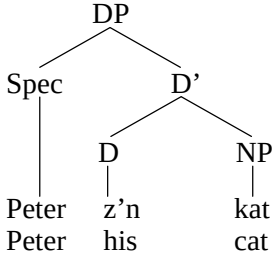
[47] For the discussion of case in German see Weiss (2006).

(85) a. Ich habe [$_{DP}$ dem Mann seinen Wagen] gesehen. (German)
I have the man-DAT his car-ACC seen

b. [$_{DP}$ Dem Mann sein Wagen] wurde gestohlen. (German)
the man-DAT his car-NOM was stolen

(84d) provides the structure proposed by Corver for the Dutch constructions.

(84) d.



According to (84d), we predict that the possessor doubling construction illustrated here is incompatible with articles, since these too occupy D. This prediction seems at first to be borne out (but see (88) below):

(84) e. *de Peter z'n kat (Dutch)
the Peter his cat

f. *Peter de z'n kat (Dutch)

If the possessor occupies SpecDP, this might lead to the expectation that doubling-possessor DPs can extract, which is not true for Dutch: (84g) is ungrammatical:

(84) g. *Dat is de man die ze z'n huis verkocht hebben. (Dutch)
that is the man who they his house sold have

6.2. possessor doubling and possessor-extraction

6.2.1. Extraction from a doubling construction?

Let us further examine possessor extraction in relation to the doubling construction. (86) illustrates a doubling construction in WF.

(86) Da zyn Valère zen boeken. (WF)
that are Valère his books
'Those are Valère's books.'

At first sight, the WF data in (87) suggest that, contrary to the Germanic ban on extraction of the prenominal possessor postulated by Gavruseva (2000) and illustrated in (52) above, possessor extraction IS attested with the doubling construction in WF. In (87a) the POSSESSOR is relativized and is external to the *possessum* DP; in (87b) an interrogative POSSESSOR is external to the *possessum* DP.

(87) a. Dat is die verpleegster dan-ze gisteren [$_{DP}$ eur us] verkocht een.
that is that nurse that-they yesterday her house sold have
'That's the nurse whose house they sold yesterday.'
b. Wekken verpleegster zei-je gie dan-ze gisteren [$_{DP}$ eur us] verkocht een?
which nurse said you that-they yesterday her house sold have
'Who was the nurse whose house you said they sold yesterday?'

The position of the prenominal POSSESSOR DP *Valère* is not transparent from (86). However, in (88) below, in which the *possessum* is omitted, the prenominal possessor *Valère* precedes the definite article *de*. Hence, if we assume that the article occupies D, then we can be sure that the possessor either occupies SpecDP or else that it has moved to a higher position still. If we take the latter option, presumably locality conditions on movement (cyclicity/minimality etc.) require that the possessor has moved through SpecDP.

(88) Da zyn Valère de zyne ∅.
that are Valère the his
'Those are Valère's.'

Data such as (88) make it plausible that the possessor *Valère* also occupies SpecDP in (86), with D realized by the clitic possessive pronoun *zen*. This confirms Corver's analysis (84d). If (88) suggests that the WF possessor may occupy SpecDP and if the language had possessor extraction (cf. section 5.3), the relevant data would confirm Gavruseva's (2000) correlation between possessor extraction and movement to SpecDP.

WF also has a non-doubling possessor construction:

(89) a. Mariesen us
Marie-*se* house
b. [Wiensen us] een-ze t verkocht?
whose house have they sold

c. *[Wiensen] een-ze [t us] verkocht?
whose have they house sold

In (89) the possessor *Marie* is associated with a bound morpheme *sen* (see Haegeman 2003, 2004a,b for discussion and comparison with the doubling construction). Extraction of the complete DP *wiensen us* ('whose house') is possible (89b), as expected, but extraction of the possessor *wiensen* ('whose') is not possible (89c). We might propose that the possessor in this pattern remains lower than is the case in the doubling pattern and hence cannot extract.

Note in passing that here too the thematic hierarchy determines which argument of N will be associated with the *sen* possessive morpheme. In (89d) *Mariesen* could be POSSESSOR and Valère could be Creator or Theme. Alternatively, *Mariesen* could be interpreted as Creator in which *Valère* could be Theme, but not POSSESSOR. There is no way in which *Mariesen* could be Theme and *Valère* could be Creator or POSSESSOR.

(89) d. Mariesen foto van Valère
Marie's picture of Valère

Let us interpret this as meaning that the highest ranking DP will first 'subjectivize' and that it moves to the SpecAgr position of the nominal. This hypothesis would be compatible with the ellipsis data in (89e). The possessor *wienste*[48] remains to the right of the determiner:

(89) e. T- wienste ∅ een-ze verkocht?
the whose have they sold

Tentatively we might conclude that in the doubling construction the possessor can move to SpecDP and hence can extract, as shown in (87), and that in the non-doubling construction the possessor occupies a lower position and hence fails to extract (89c).

On the other hand, comparative considerations raise problems for an extraction analysis for the WF data in the doubling construction (87). Like WF, Dutch and German also have the doubling construction as discussed above, but in both Dutch and in German extraction is not possible.

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[48] The variation between *wiensen* (89b) and *wienste* (89e) is to be studied in the future.

6.2.2. Arguments against a movement analysis for WF

Upon closer examination, the hypothesis that WF displays possessor extraction can be challenged. Haegeman (2004a) shows that the data in WF (87), in which a possessor is separated from the *possesssum* and which we will refer to by the more neutral term the 'remote possessor' construction, must not be analysed as the product of possessor extraction from DP. She argues that the remote possessor pattern should rather be analysed in terms of the construal of the remote possessor with a DP-internal (resumptive) pronoun. We summarize some of her arguments here.

The core of the argumentation against a movement analysis for the remote possessor in (87) is that such an analysis would imply that WF unexpectedly displays unbounded left-branch extraction and that possessor movement would be exempt from all of the well-known constraints on *wh*-movement found to apply elsewhere in the language. The underlying assumption of the argumentation in this book is that the syntax of DP is largely like the syntax of the clause. This would imply that, all things being equal, extraction from DP is submitted to the same constraints as extraction from the clause.

6.2.2.1. Extraction from subject

Consider the examples in (90), in which a remote (relativized) possessor is related to a *possessum* DP, *zen uzen* ('his houses') in the canonical subject position of the relative clause. If we opt for a movement analysis for WF remote possessors, we would have to conclude that there is no deterioration when the extraction site is contained within the canonical subject position.

(90) a. Dat is dienen vent dan [$_{DP}$ - zen uzen] gisteren verkocht zyn.
that is that man that his houses yesterday sold are
'This is the man whose houses were sold yesterday.'

b. Wien zei-je da [$_{DP}$ - zen uzen] gistern verkocht zyn?
who said-you that his houses yesterday sold are
'Who told you that his his houses were sold yesterday?'

Normally, WF relativization from the canonical subject position SpecIP can (and for some speakers must) be accompanied by the replacement of the complementizer *da* by the form *die* (cf. Bennis & Haegeman 1984).

(91) Dat is dienen vent die/dad [t ier gisteren geweest is].
that is that man who/that here yesterday been has
'This is the man who was here yesterday.'

Presumably the *da/die* alternation serves to ensure that the trace/copy[49] of the extracted subject is licensed. But (90c), in which a relative possessor would have been extracted from an embedded subject, shows that the switch from *da* to *die* is ungrammatical. This suggests that the trace/copy within the subject would have to be somehow licensed DP-internally and independently of C. But if a trace/copy in the specifier position of a subject DP is licit in WF, then why not so in the other Germanic languages?

(90) c. *Dat is dienen vent dien [$_{DP}$ - zen uzen] gisteren verkocht zyn.
that is that man *die* his houses yesterday sold are
'This is the man whose houses were sold yesterday.'

6.2.2.2. Er-insertion and indefinite subjects

Upon closer examination, it further turns out that the *possessum* DP in a remote possessor construction cannot be said to contain a trace/copy of the remote possessor. For evidence for this point we need to look at the rather complex interaction of movement of interrogative *wh*-phrases and *er*-insertion in WF.

In WF indefinite subject DPs[50] always trigger the insertion of expletive *er* in the canonical subject position (92). An indefinite subject occupies a lower position than the canonical subject position as shown by the fact that it may follow adverbials (here *tun* ('then')).

(92) dan *(der) (tun) [$_{DP}$ drie/vee/geen studenten] dienen boek kendigen
that *(there) (then) three/many/no students that book knew
'that then three/many/no students knew that book'

In the possessor doubling construction the (in)definiteness of the prenominal possessor systematically determines the (in)definiteness of the containing

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[49] We use the terms 'trace' or 'copy' here without taking a theoretical position.

[50] Except for those with a generic reading:

(i) Kzeggen dat (*er) nen student da niet doet.
I say that (*there) a student that not does

DP.[51] A subject DP with an indefinite prenominal possessor is indefinite and therefore triggers *er*-insertion (93a). Such a subject does not move to the highest specifier of the functional domain of IP and hence may be preceded by an adjunct. A subject DP with a definite prenominal possessor is definite and fails to trigger *er*-insertion (93b), it occupies the canonical subject position and may not be preceded by adjuncts: [52]

(93) a. dan *(der) (tun) [$_{DP}$ drie/geen studenten under oukders] klacht
that there (then) three /no students their parents complaint
ingediend een
deposited have

b. dan (*der) (*tun) [$_{DP}$ die drie studenten under oukders] klacht
that (*there) (*then) those three students their parents complaint
ingediend een
deposited have

Interrogative *wh*-extraction of a subject also triggers *er*-insertion. This means that the copy/trace of a *wh*-constituent is like an indefinite.

(94) a. Wien$_i$ zei-je gie dat *(ter) t$_i$ dienen boek gekocht eet?
who said you that *(there) that book bought has

b. Weknen student$_i$ zei-je gie dat *(ter) t$_i$ dienen boek gekocht eet?
which student said you that *(there) that book bought has

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[51] In the literature there seems to be disagreement whether this generalization also holds for English. According to Grimshaw (1990: 55) and Schoorlemmer (1998) it does, according to Sobin (2002) it does not, and prenominal genitives induce definiteness in English.

[52] A postnominal possessor does not determine definiteness of the DP:

(i) a. dan (*der) (*tun) [d'oukders van twee studenten] nen klacht ingediend een
that (*there) (*then) the parents of two students a complaint deposited have
'that the parents of two students filed a complaint'

b. dan *(der) (tun) [oukders van twee studenten] nen klacht ingediend een
that *(there) (then) parents of two students a complaint deposited have
'that then parents of two students filed a complaint'

In (ia) the subject DP *d'oukders van twee studenten* ('the parents of two students') is definite and it cannot be preceded by an adverbial adjunct such as *tun* ('then'); in (ib) the subject *oukders van twee studenten* ('parents of two students') is indefinite and hence may be preceded by the adjunct. The definiteness of these constituents is determined by the presence/absence of the definite article.

Equipped with these data, let us return now to the remote possessor construction. In (95a) the DP *wien zen uzen* ('whose houses') containing POSSESSOR and *possessum* is extracted. *Er*-insertion is obligatory: by virtue of the prenominal *wh*-possessor, the moved DP counts as indefinite and so does its copy/trace.

(95) a. [$_{DPi}$ Wien zen uzen] zei-je gie [$_{CP}$ dan *(der) t_i a verkocht zyn]?
who his houses said you that there already sold are

Consider (95b) with a remote possessor:

(95) b. [Wien] zei-je [$_{CP}$ dan [$_{DP}$ zen uzen] tun a verkocht woaren]?
who said-you that his houses then already sold were
'Whose houses did you say were already sold then?'

An extraction analysis of *wien* for (95b) would be based on an underlying structure similar to the structure underlying (95a), i.e. a structure in which the DP *wien zen uzen* ('whose houses') is the subject of the lower clause and in which *wien* is its prenominal possessor. Recall that in the possessor doubling construction the possessor DP in the nominal periphery determines the definiteness of the containing DP (93) and that copies have the same features as the moved constituent (94a).

The DP *wien zen uzen* ('who his houses') is indefinite because the interrogative *wien* is indefinite. If *wien* were extracted from a prenominal possessor position, then the stranded *possessum* DP *zen uzen* ('his houses') would have to contain the trace/copy of the extracted indefinite *wien* and hence by virtue of the presence of the copy of *wien* the containing DP ought itself to be indefinite (cf. (94a)). Consequently, *er*-insertion ought to be required. But this prediction is not correct: there is no *er*-insertion in the lower clause of (95b) and indeed, there cannot be.

(95) c. *[Wien] zei-je [$_{CP}$ dan der [$_{DP}$ zen uzen] a verkocht woaren]?
who said you that there his houses already sold were

Also, an adjunct like *tun* ('then') cannot precede the subject.

(95) d. *[Wien] zei-je [$_{CP}$ dan der tun [$_{DP}$ zen uzen] a verkocht woaren]?
who said you that there then his houses already sold were

We conclude that subject DP *zen uzen* ('his houses') in (95b) counts as definite: it occupies the canonical subject position, dispensing with the need for

and – as a last resort – the possibility of *er*-insertion. As is always the case with definite DP subjects in WF, any adverbial adjuncts have to follow the subject. Though the POSSESSOR *wien* in (95b) is construed with the embedded subject *zen uzen*, it does not render the DP with which it is construed indefinite. This suggests then that the source of (95b) is actually different from that of (95a) and that the *possessum* subject, *zen uzen*, in (95c) does not contain a prenominal trace/copy of the remote indefinite possessor *wien*.

6.2.2.3. Wh- islands

If we were to derive the remote possessor pattern in WF by leftward POSSESSOR movement, then possessor extraction from *wh*-islands would have to be considered as fully acceptable, as shown by the examples in (96)–(97). In (96) a possessive relative is construed with a subject DP, in (97) it is construed with an object DP:

(96) a. Dat is dienen vent dan-k nie weten [$_{CP}$ of da [$_{DP}$ zen moeder]
that is that man that-I don't know [$_{CP}$ if that his mother
tun hertrouwd is].
then remarried is]

b. Dat is dienen vent dan-k nie weten [$_{CP}$ me wien da [$_{DP}$ zen moeder]
that is that man that-I don't know [$_{CP}$ with whom that his mother
tun hertrouwd is].
then remarried is]

(97) a. Dat is dienen vent dan-k nie weten [$_{CP}$ of dan-ze [$_{DP}$ zen moeder]
that is that man that I not know [$_{CP}$if that-they his mother
a gevroagd een].
already asked have]

b. Dat is dienen vent dan-k nie weten [$_{CP}$ wien dat-er [$_{DP}$ zen moeder]
that is that man that-I not know [$_{CP}$ who that there his mother
gevroagd eet].
invited has]

In the above examples movement would have to be launched from inside a *wh*-island, a process which in WF normally leads to a degraded acceptability with object extraction (98) and to ungrammaticality with subject extraction (99).

(98) a. ?Dat is dienen vent dan-k nie weten [$_{CP}$ of da Valère t kent].
that is that man that-I not know if that Valère t knows]

b. ?Dat is dienen vent dan-k nie verstoan [$_{CP}$ woarom da Valère t
that is that man that-I not understand [$_{CP}$ why that Valère
nie gevroagd eet].
not invited has]

(99) a. *Dat is dienen vent dan-k nie weten [$_{CP}$ of da t Valère kent].
that is that man that-I not know [$_{CP}$ if that t Valère knows]

b. *Dat is dienen vent dan-k nie verstoan [$_{CP}$ woarom da t Valère
that is that man that-I not understand [$_{CP}$ why that t Valère
nie gevroagd eet].
not invited has]

Inserting a resumptive pronoun can save island violations such as those above:

(100) a. Dat is dienen vent dan-k nie weten [$_{CP}$ of da Valère *em* kent].
that is that man that-I not know [$_{CP}$ if that Valère him knows]

b. Dat is dienen vent dan-k nie verstoan [$_{CP}$ woarom da Valère *em*
that is that man that-I not understand [$_{CP}$ why that Valère him
nie gevroagd eet].
not invited has]

(101) a. Dat is dienen vent dan-k nie weten [$_{CP}$ of dat-*je* Valère kent].
That is that man that-I don't know [$_{CP}$ if that-he Valère knows]

b. Dat is dienen vent dan-k nie verstoan [$_{CP}$ woarom dat-*je* Valère
that is that man that-I not understand [$_{CP}$ why that-he Valère
nie gevroagd eet].
not invited has]

6.2.2.4. Summary

On the basis of the considerations above, we conclude that a possessor extraction analysis of the WF remote possessor data would oblige us to postulate apparently unconstrained movement which is markedly dissimilar from the leftward movement familiar from the literature. We would have to admit that

– POSSESSOR extraction from the canonical subject position would be unconstrained;
– the trace of the fronted *wh*-POSSESSOR would not give rise to an indefiniteness effect in the containing DP;
– *wh*-islands would not lead to any degradation for POSSESSOR extraction.

6.3. Remote possessors and resumptive pronouns

Rather than assuming that the WF remote *wh*-POSSESSOR is extracted from the specifier position in the DP, in which it leaves a trace/copy, Haegeman (2004a) proposes that the remote possessor construction can be interpreted in terms of a resumptive pronoun strategy. In other words, we replace representation (102a) by (102b):

(102) a. $[_{CP}$ *wh*$_i$ … $[_{DP}$ t$_i$/copy D …
b. $[_{CP}$ *wh*$_i$ … $[_{DP}$ pro$_i$ D …

Instead of being co-indexed with a trace or instead of leaving a copy in the specifier of D, the remote possessor is related to the DP by means of a non-overt pronoun. The content of the resumptive *pro* can be identified by the *phi*-features of the possessive clitic in D.[53] In this account, the derivation of (103a) would be analogous to that of (103b), in which the sentence-initial *wh*-constituent, *wavuonen student* is related to the a resumptive pronoun *je*.

(103) a. Wien$_i$ ee-j men neu a were gevroagd $[_{CP}$ of da $[_{DP}$ pro$_i$ zen moeder]
who have you me now already asked $[_{CP}$ whether that his mother
nog leeft]?
still lives]
'About whom was it that you asked me if his mother is still alive?'

b. Wavuonen student$_i$ ee-j gie men neu a were gevroagd $[_{CP}$ of dat-je$_i$
which student have you me now already asked $[_{CP}$ if that he
getrowd was]?
married was]
'About which student was it that you asked me if he was married?'

---

[53] On the relevance of these features in defining constraints on the nature of the possessor see also Haegeman (2003, 2004b).

If the specifier of the embedded subject DP in (103a) is a resumptive *pro*, the containing DP will be [+DEFINITE]: its feature content will be determined by those of the definite (possessive) pronoun in D. In the same way that *er*-insertion is excluded when the subject simply contains a possessive pronoun in (104a), it is excluded in (104b). The definite subject DP *zen moeder* occupies the canonical subject position and cannot be preceded by any adverbial, regardless of whether it is construed with a remote possessor.

(104) a. Kweten nie [$_{CP}$ of da *(der) *(tun) [$_{DP}$ zen moeder] nog leefdege].
I know not [$_{CP}$ if that (*there) (then) [his mother] still lived]
'I don't know if his mother was still alive.'

b. Wien$_i$ ee-j myn gevroagd [$_{CP}$ of da (*er) (*tun) [$_{DP}$ zen moeder]
who have-you me asked [$_{CP}$ whether that (*then) [his mother]
nog leefdege]?
still lived]
'About who did you ask me if his mother was still alive?'

Contrary to first appearances, we conclude now that WF lacks possessor movement. On the other hand, the ellipsis data in (88) led us to propose that the possessor in the doubling construction is in SpecDP. The question arises how to reconcile our conclusion that there is no extraction of the possessor in WF with Gavruseva's (2000) hypothesis that there is a correlation between possessor movement to SpecDP and possessor extraction.

Moreover, if, following Corver (1990) and Lindauer (1998), among others, the structure proposed for the WF possessor DP is also that found in German and in Dutch, the question generalizes to all Germanic languages. Let us try to reconcile Gavruseva's analysis with the data observed.

A first solution to the paradox which we will examine and discard is the following. Gavruseva proposes that in order to extract, the possessor needs to move to SpecDP. It could be that movement to SpecDP is a necessary but not a sufficient condition for extraction. A second condition could be that there should also be possessor agreement. We might say that languages need to have both movement of the possessor to SpecDP AND possessor agreement to allow possessor extraction. However, there are two problems with this solution. First, the Greek data discussed above cast doubt on the validity of this correlation: Greek has possessor extraction but there is no possessor agreement. Moreover, in the doubling pattern in WF the possessor DP matches the features of the pronominal doubler (cf. (105). So we

might actually claim that there IS agreement and yet, for the reasons developed above, we do not want to claim that the possessor is moved.

(105) a. Valère zenen boek
Valère his-MASC-SG book

b. Marie euren boek
Marie her-FEM-SG book

c. djoengers under boeken
the children their-PL books

Let us therefore explore another possibility. In order to account for the contrast between languages with possessor extraction, such as Hungarian and Greek, and those without, such as the Germanic languages, Gavruseva (2000) crucially introduces two levels of structure in the DP: (i) an operator position, labeled SpecDP, the escape hatch for possessor extraction, and (ii) a (presumably) lower argumental specifier, SpecAgrD (2000: 765).

So far we have been assuming that Gavruseva's SpecDP was the specifier of the head in which the determiner is spelled out, and that her AgrD corresponds to our AgrP, i.e.; the highest inflectional projection in the nominal IP. On this analysis, doubling data in Germanic languages would pose a problem since the POSSESSOR DP seems to occupy (or pass through) the specifier position associated with the determiner, and yet there is no extraction.

However, we can recast our analysis slightly to accommodate the data. Gavruseva's analysis of the Germanic data requires that there be two specifiers available for prenominal possessors: one labeled SpecDP and one which she labels SpecAgrDP. Suppose now that in fact BOTH these projections are part of what we call the D-domain; in other words that D itself is decomposed into DP and what Gavruseva calls AgrD. Thus her AgrD would not correspond to our Agr, but would be a separate, higher projection.

If WF articles occupy AgrD, then possessors in the doubling construction may be taken to move to SpecAgrD. Crucially, though, if these WF possessors do not move to the higher specifier, SpecDP, then, under Gavruseva's analysis, we actually predict that they cannot extract. We will now assume that this IS the interpretation intended by Gavruseva and in the next section we explore this line of thinking further, showing that just as there is evidence for the decomposition of the original CP into various functional projections (Rizzi 1997), there is evidence for a split DP.

7. More positions for possessors: some speculative remarks

7.1. Against a left dislocation analysis for WF possessor doubling

Given the analogy between D in the nominal extended projection and C in the clause (cf. Horrocks & Stavrou 1987; Szabolcsi 1983 etc.), it would seem natural to try to analyze the articulated D ('a split D') along the lines of recent proposals for the articulation of C. One proposal is outlined in Haegeman (2004a), who points out parallelisms between the DP structure of the possessor doubling pattern and the articulation of the CP structure in the V2 languages. This section is speculative. Its aim is not to give any definite statements. Rather we point out questions that arise and signal some of the many issues that may be of interest for future research.

The possessor doubling pattern finds a close analogy in the clausal domain in the form of the Romance clitic left dislocation construction (CLLD) illustrated by French (106a):

(106) a. Jean, je ne l'ai pas vu.
Jean I *ne* him have not seen
'John, I haven't seen'

The DP in the left periphery of the clause -*Jean*- has a topic interpretation (Rizzi 1997; Cinque 1990) and is doubled by a resumptive object clitic, *le* ('him').

Giusti (1996) assimilates the Germanic possessor doubling pattern to the Romance left dislocation structure. She proposes that the DP-possessor parallels the topicalized constituent in the CLLD pattern and that it occupies the specifier of TopP in the DP domain. The doubling possessive pronoun corresponds to the doubling clitic. This analysis has also been adopted for Middle English possessor doubling (cf. (83h)). In the literature it is claimed that in the history of English this type of construction is interpretively restricted in that the prenominal DP always functions like a topic: it represents given/old information. In addition, the construction is said to be limited to possessive relations.

Though a possessor-as-topic analysis is intuitively appealing, it raises problems. In the Romance CLLD constructions, typically, the dislocated topic DP cannot be a bare quantifier (cf. Cinque 1990; Rizzi 1997):

(106) b. *Personne je ne l'ai vu.
no one I *ne* him have seen

However, the WF prenominal possessor in the doubling construction may be realized by a bare quantifier:[54]

(107) a. Dat zyn [niemand zen zoaken].
that are no one his businesses
'This is no one's business.'

b. [Niemand zenen tekst] was-ter gereed.
no one his text was there ready
'No one's text was ready.'

A related argument against assimilating the possessor DP to the Romance left-peripheral topic is that the prenominal possessor DP may be realized as a bare interrogative *wh*-phrase, which is compatible with focus interpretation (i.e. 'new information'), but not with topic interpretation (i.e. 'given information'):

(107) c. [Wien zenen boek] ligt *(ter) doa?[55]
[who his book] lies *(there) there

7.2. A split DP

A different analysis from that proposed by Giusti is suggested by the Standard Dutch example of possessor doubling in (108) (from Jansen 1977: 438).

(108) Over minister-president v.A. die zijn fouten hebben we gepraat.
about Minister President v.A. that his mistakes have we talked
'About Prime Minister van A's mistakes, we talked'

---

[54] The containing DP is [-definite], witness the obligatory expletive in text example (107b). This is expected since negative quantifiers such as *niemand* are [–definite], as shown by the need for *er*-insertion in (i) and the fact that the adverbial *tun* ('then') may precede the subject.

(i) dat *(der) da (tun) niemand wist
that *(there) that (then) no one knew
'that no one was aware of it (then)'

[55] If Vezzosi's (1999) claim that Old English doubling DPs are topics is correct, then this suggests a difference from West Flemish. Note, however, that the restriction observed by Vezzosi might be due to the restricted data available. Allen (2003, 2006, to appear), for the history of English, argues that the possessor doubling construction in the history of English differs substantially from that found in other Germanic languages.

In (108) the possessive DP *minister-president v.A.* is doubled by two constituents – the demonstrative pronoun *die* ('that') and the possessive pronoun *zijn* ('his').

The demonstrative pronoun *die* also occurs optionally in the left periphery of the Dutch root V2 clause, where it precedes the finite verb (109a). Let us take (109a) as the clausal analogy of the doubling possessor construction in (109b):

(109) a. Jan die vertrekt.
Jan *die* leaves
'John is leaving.'

b. Jan die z'n vertrek
Jan that his departure
'John's departure'

A doubling construction without the *die*-pronoun (110a) will be taken to be parallel to V2 patterns without the *die*-pronoun (110b).

(110) a. Jan z'n vertrek
Jan his departure

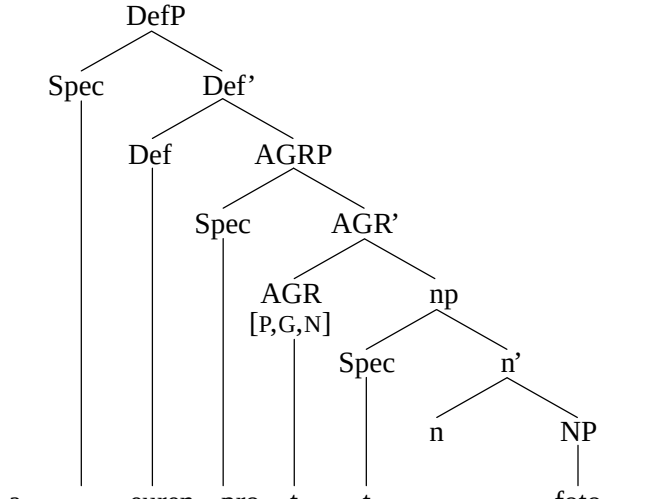
b. Jan vertrekt.
Jan leaves

In Chapter 1 of Part II, section 4.4, we have already presented cross-linguistic evidence for the idea that D can be split into various projections along the lines of the decomposition of the C system proposed by Rizzi (1997). In particular, we said there that a distinction can be made between DefP, the lower instance of the split DP, which corresponds to FinP in Rizzi's system, and higher projections linked to information structure, such as TopicP and FocusP (splitting the higher DP instance of the split DP). DefP is assumed to be higher than nominal agreement projections in the DP.

Following Haegeman (2004a), we assume that in the WF possessor doubling construction, the clitic possessive pronouns *zen(en), eur(en), under(en)* etc.: spell out an I(nflection)- head of the nominal system. To account for the competing distribution of the possessive pronoun in the nominal I and the determiner in D, we follow Zribi-Hertz (1998) in assuming that the possessive clitic is a 'personal definite article'. Being definite, this possessive clitic undergoes I-to-Def movement in order to check its definiteness feature (see also Schoorlemmer 1998 for the feature [DEF] as a trigger for movement).

In the non-doubling pattern, the possessive article, with its complete set of *phi*-features, is like the rich inflection of the pro-drop languages and identifies a 'possessive' *pro* in SpecAgrP (cf. Authier 1992). In the doubling pattern, a possessor DP moves to SpecDefP, through SpecIP.

(111)



a. euren$_i$ pro$_j$ t$_i$ t$_j$ foto …
b. Marie$_j$ euren$_i$ t$_j$ t$_i$ t$_j$ foto … (j=i)

(111) illustrates the 'split DP' with two prenominal 'subject' positions: SpecAgrP, which hosts *pro* in the non-doubling pattern, and SpecDefP, which hosts DP possessors in the doubling pattern. This multiplication of subject positions finds a parallel in the clausal domain. Cardinaletti (1997, 2004) provides empirical arguments for distinguishing a number of different clausal preverbal subject-positions in Italian.

In Dutch (108) the resumptive *die* occupies the specifier position of DefP and the lexical DP *minister president van A* could then be argued to occupy the Spec of a TopP in the DP domain.[56]

Let us briefly speculate on the contrast between languages with possessor extraction, such as Hungarian and Greek, and languages without possessor extraction, such as WF. In Hungarian, the dative possessor may be argued to occupy a quantificational position as shown by the fact that *wh*-phrases obligatorily move there. A similar point can be made with respect to Greek,

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[56] Based on the possessor doubling construction, Grohmann & Haegeman (2002) further explore the parallelism between the clause and the DP.

in which the pre-determiner possessor receives the focal stress typically associated with an operator position. Moreover, moved *wh*-constituents also move to the same position (cf. (60b)). In the Germanic possessor doubling construction, on the other hand, the prenominal possessor can be argued to occupy an argument position, as it receives no particular focal or contrastive stress.[57]

Let us assume that Gavruseva's AgrD in Germanic corresponds to what we have labelled Def. The definite article is spelled out in that position (as shown by the WF ellipsis data in (88)). The head which Gavruseva labels 'D' is the higher head D with quantificational features. Possibly the determiner merges in the lower head and moves to the higher head.

The crucial specifier which serves as the escape hatch for possessor raising is then not SpecDef. The head in question is a higher head, which may be associated with operator features. (112) summarises the analysis. (112a) sketches the relevant pattern in Germanic, (i) for a DP with overt *possessum* and (ii) for a DP with ellipted *possessum*. (112b) is relevant for possessor-extraction languages such as Hungarian and Greek.

(112) a. Germanic
(i) $[_{FP}\ [_{DefP}$ possessor$_i$ $[_{Def'}$ pronoun$_i$ …$[_{np}$ …$[_{NP}$]]]]]
(ii) $[_{FP}\ [_{DefP}$ possessor$_i$ $[_{Def'}$ article $[_{AgrP}$ t$_i$ [pronoun$_i$] $[_{np}$ ∅]]]]]

b. Hungarian
$[_{FP}$ Possessor $[_{DefP}\ [_{Def'}$ *az* [nP…]]]]

The analysis we arrive at is compatible with Gavruseva's. A precondition for possessor extraction is that the possessor move to an operator position in the periphery of DP. Obviously, further research will cast light on this issue and may well lead to more complex structures. For instance, some authors have argued that the position of the Hungarian possessor is not the specifier of the head occupied by the determiner, but that the possessor occupies a higher operator position (Knittel 1998, see also Den Dikken 1999). For Greek a similar argument is found in Panagiotidis (2000).

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[57] In fact this is exactly what is claimed by Horrocks & Stavrou; the pre-article position in Greek is a non-argument position (hosting *wh*-phrases and operator-like constituents), but it is an A position in English (cf. Part II, Chapter 1, section 5.1).

8. Summary

In this chapter we examined in detail a number of aspects of the syntax of possession. In particular, we looked at the similarities and differences between the thematic arguments of the noun and DP-internal POSSESSORS, which are both realized in similar ways, i.e. in English they are realized by prenominal genitive DPs and by postnominal *of*-PPs. The main discussion concerns prenominal possessives.

We revisited the idea that POSSESSORS are subject-like and demonstrated ways in which this can be expressed syntactically. The bulk of the chapter is concerned with derived positions of possessors, both DP-internally and in the context of extraction, which also led us to a fairly detailed discussion of possessor doubling in WF in section 6.

Finally, we brought up more similarities between the CP level in the clause and the DP level in the nominal projection, showing that just as it has been proposed that CP is decomposed into various projections, DP must be decomposed as well. All in all we provided evidence for several positions for possessors inside and at the edge of the DP.

Appendix. Inalienable possessors

1. Types of inalienable constructions

As discussed in the introduction to this chapter, inalienable possession differs from alienable possession in that in the case of inalienable possession the two elements entering the possession relation are semantically dependent (see Vergnaud & Zubizarreta 1992: 596; Vikner & Jensen 2002; Guéron 2006a). An inalienable object is a dependent entity in the sense that it is inherently defined in terms of another object, of which it is a part. Typically body parts (or kinship terms) are treated as inalienably possessed entities. In the examples in (1) inalienable possession has the same form as the alienable possession constructions that we have been discussing thus far: a common nominal can replace the body part nominal:

(1) a. John’s arm
b. John’s book

In some languages such as French, however, the inalienable-possession construction is associated with a number of specialized constructions, the best

known of which are listed below, from Guéron (2006a), her (7–9). In Structure I (2), the direct object *la main* ('the hand') denotes a body part and the subject *Jean* denotes the possessor.

(2) *Structure I*

a. Jean lève la main.
Jean raises the hand

b. Jean donne la main à Marie.
Jean gives the hand to Marie

In Structure II (3), the direct object *la main* ('the hand') denotes the body part and a dative nominal, realized as a clitic (*lui*, 'him') or as a full DP *à la petite fille* ('to the little girl'), denotes the possessor.

(3) *Structure II*

a. Je lui prends la main.
I him take the hand
'I take his hand'

b. Je prends la main à la petite fille.
I take the hand to the little girl
'I take the little girl's hand'

In Structure III (4), the direct object DP *Jean* denotes the possessor while the body part DP is embedded in a PP adjunct to VP, *sur la main* ('on the hand') in (4a), for instance:

(4) *Structure III*

a. Marie a frappé Jean sur la main.
Mary hit John on the hand

b. Marie a tiré Jean par les cheveux.
Mary dragged John by the hair

In this appendix we will only briefly summarize the arguments to show that these possessors behave differently from their alienable counterparts. A survey of semantic and syntactic analyses of inalienble possessors is given in Guéron (2006a) and the reader is referred to her work.

2. Inalienable possessors as arguments

In section 2.2.1 of this chapter we discussed the copular construction as an environment that discriminates between constituents licensed by a modification relation and constituents licensed by argument structure. The Greek and Dutch data in (5) show that while alienable possessors can occur in post-copular position (5a, c), this is not possible for inalienable possessors (5b,d). (Dutch data from de Witt 1997: 146):

(5) a. To vivlio ine tu Jani. (Greek)
the book is the John-GEN
'The book is John's.'

b. *I miti ine tu Jani.
the nose is the John-GEN
'*The nose is John's.' (Dutch)

c. Dit huis is van Jan.
this house is of John
'This house belongs to John.'

d. *Deze lengte is van Jan.
this length is of John

As already mentioned, argumental genitives associated with complex event nominals never occur predicatively (see examples (12)). The relevant data are repeated below:

(6) a. *The construction was the building's.
b. *The defeat was Reagan's.

The above pattern shows that, in this respect, inalienable possessors behave similarly to argumental genitives and unlike alienable possessors. In fact the more or less standard view is that inalienable possessed nouns take a possessor as an argument (see Guéron 1985; Tellier 1990; Vergnaud & Zubizarreta 1992; Español-Echevarria 1997 and references therein). This possessor argument has been argued to be realized by a null pronominal (see Guéron 1985; Tellier 1990). (7) illustrates the structure proposed for the example in (2a) by e.g. Guéron (2002):

(7) $Jean_i$ lève $[ec_i$ main]

Español-Echevarria (1997), on the other hand, proposes that inalienable possessors and inalienable possessors have a different position in the structure. Inalienable possessors are thematically licensed in the specifier of NP (8), while alienable possessors are located higher in the structure (Español-Echevarria 1997: 212). For important discussion see also Vergnaud & Zubizarreta (1992) who propose that inalienable possession is interpreted in terms of a complex predicate formation.

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The authors

Artemis Alexiadou

Professor of English Linguistics

University of Stuttgart
Keplerstr. 17
70174 Stuttgart
Germany

artemis@ifla.uni-stuttgart.de

Liliane Haegeman

Professor of English Linguistics

Université Charles-de-Gaulle – Lille III
Rue du Barreau – BP 60149
59653 Villeneuve d'Ascq Cedex
France

liliane.haegeman@univ-lille3.fr

Melita Stavrou

Professor of Linguistics, School of Philology

Aristotle University of Thessaloniki
54124 Thessaloniki
Greece

stavrou@lit.auth.gr