

Definites and Possessives in Modern Greek:

An HPSG Syntax for Noun Phrases

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## Declaration

I declare that this thesis has been composed by myself and that the research reported therein has been conducted by myself unless otherwise indicated.

Edinburgh, 7 July 1995

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## Abstract

This work discusses topics in noun phrase syntax, in particular, definite and possessive constructions. A syntax of nominal categories is provided that complements descriptions of English-style, determiner-centric nominal systems, by accommodating definite concord phenomena, “determinerless” NPs, and elliptical phrases that lack a noun head. In addition, the syntactic properties and interpretation of possessives are discussed and an account is presented that enables a wide range of interconnected phenomena to be explained in terms of a simple hypothesis, the *possessive / pseudo-possessive* partition. The data considered herein for the most part come from Modern Greek, nonetheless, the phenomena described are also characteristic of a wide range of languages, including Romance, Scandinavian and Semitic. The noun phrase theory provided is formulated in Head-driven Phrase Structure Grammar (HPSG).

Much research on the syntax of noun phrases assumes that quantifier determiners and the definite article rend “maximal” (or *functionally complete*) the noun phrase they make part of. In addition, numerous approaches to elliptical NPs analyse such constructions in terms of empty constituents. It is proposed in this thesis that the definite article should be distinguished from determiners in languages that exhibit definite concord like Greek. An analysis is provided that associates the definite article with the introduction of uniqueness entailments. In addition, it is argued that “determinerful” or “determinerless”, canonical and elliptical nominals are partly unified and their largely common distribution can be accounted for in terms of *inheritance*. This assumption has important implications for maintaining economy in lexical representation, and enables a syntax of nominal ellipsis to be provided that dispenses with empty heads.

This thesis is further concerned with a wide range of Greek genitive NPs in construction with relational or non-relational noun heads and demonstrates that they exhibit systematic asymmetries. These include the semantic readings genitives can be associated with, their distribution and linear order, their anaphoric potentials and accessibility to relativization, aspectual effects and event theory, definiteness and specificity. A partition of Greek genitives is motivated, into possessives and pseudo-possessives, the former referring to entities in the discourse and the latter denoting properties that define the kind of individual or event—in this respect they are reminiscent of non-intersective adjectives. HPSG’s multidimensional architecture lends itself well to expressing the mutual constraints on syntax and interpretation that characterize the two distinct genitive classes. The possessive / pseudo-possessive hypothesis can also be extended to certain Romance languages (e.g. French): pronominalization / relativization asymmetries and word order constraints associated with *de* phrases in French have been previously discussed, nonetheless, without appealing to the semantic differences that characterize such phrases, rather, by assuming a correlation between these asymmetries and grammatical functions or thematic roles. However, such a correlation proves too strong.

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To my parents, my sister, and to the memory of *Μαρία Μέντζου*.

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# Chapter 1

## Introduction

Some of the idiosyncracies of the Modern Greek noun phrase (NP) are discussed in this thesis, and an analysis of definite and possessive constructions is provided that defines and interprets their syntactic behaviour. In many respects, Greek definites and possessives constitute challenging counter-examples for commonly assumed linguistic hypotheses concerning the syntactic status and make-up of NPs and the selection and interpretation of possessives. Nonetheless, phenomena associated with definite and possessive nominals in Greek are also characteristic of a wide range of languages, including Romance, Scandinavian and Semitic. A principal objective of the research reported here is a theory of the syntax of nominal categories that will complement descriptions of English-style, determiner-centric nominal systems, by accommodating definite concord phenomena, “determinerless” NPs, and elliptical nominals that lack a noun head. A further major goal is to provide an explanatory account of a number of interconnected syntactic and semantic phenomena that encompass possessives in Greek, and occur in other languages too. These include issues of linear order, pronominalization, access to relativization, aspect and event theory, definiteness and specificity. Some of these phenomena have not been previously discussed in connection with possessive constructions, whereas for others (e.g. pronominalization and relativization asymmetries, and word order constraints) accounts do exist but I will argue that either they are not general enough, or they suffer from certain intrinsic theoretical inadequacies.

I am assuming that a concise, theoretically motivated and computationally tractable account of definites and possessives is a desirable end in itself. For this reason, the proposed analysis is couched in the framework of Head-driven Phrase Structure Grammar (HPSG—cf. [Pollard & Sag, 1994]). HPSG makes use of *sorted feature structures* that model the various types of entities assumed to populate the empirical domain of natural language, and moreover precisely specify the types of linguistic expressions that are admissible or well-formed. Two further requirements that HPSG theoreticians impose on linguistic theory are formalization, in terms of a feature logic, and computability. Those ensure that an account of linguistic phenomena in HPSG is computationally implementable. However, this thesis does not include a computational fragment corresponding to the HPSG grammar of Greek definites and possessives provided. Rather, the principal goal herein is to develop an HPSG account of major phenomena in the syntax and semantics of Greek NPs and moreover to develop the fairly limited basis of HPSG work on noun phrases, cf. [Pollard & Sag, 1994] on English, [Nerbonne et al. 1989, 1994] and [Netter, 1994] on Germanic. A further reason for choosing HPSG as a working framework is that its multidimensional architecture lends itself well to capturing the idiosyncratic syntactic role and semantic import of “markers of definiteness” in definite constructions, and, moreover, expressing the mutual constraints on syntax and interpretation that characterize distinct types of possessives.

This introduction will serve to outline the major issues pursued in the thesis and to provide an overview by summarizing the contents of each chapter.

## 1.1 Desiderata

Much research on the syntax of noun phrases assumes a mould designed on the basis of properties of the English noun phrase. This, for the most part, consists of a determiner and a noun projection. The Greek noun phrase, however, does not fit into such a mould, rather it requires a quite different perspective. Maximal nominal projections in Modern Greek can be “determinerful” or “determinerless”. For example, *agorasa ena kenurio agliko vivlio* (bought-1.SG a new English book; ‘I bought a new English book’) and *agorasa kenurio agliko vivlio* (bought-1.SG new

English book; ‘I bought a new English book’) are both well-formed sentences, however, the verb in the latter example takes as a complement the determinerless singular nominal *kenurio agliko vivlio*. Furthermore, apparently distinct nominal categories that lack a noun head may have the same distribution as canonical NPs. For instance, in *ehasa to vivlio mu ki agorasa kenurio* (lost-1.SG the book of-mine and bought-1.SG new; ‘I lost my book and bought a new one’), the elliptical nominal *kenurio* (new) that is syntactically an adjective qualifies as a verb complement, like the canonical definite NP *to vivlio mu* (‘my book’). In this thesis, I consider the issues: What is the make-up of nominal categories? Which are the properties of maximal nominal projections? I further pursue questions such as the following: Is it justified to draw clear-cut dichotomies between syntactic categories, despite the fact that they partly overlap in their syntactic behaviour? How can we account for the shared and idiosyncratic properties of the various syntactic classes, in a straightforward and concise manner? In chapter 3 of the thesis, I present an analysis of the Greek nominal system that relies on a fine cross-classification of syntactic categories, in terms of *inheritance* (cf. [Flickinger, 1987], [Flickinger and Nerbonne, 1992], [Carpenter, 1992]). This approach to nominal categories naturally derives the common and distinct properties of nominal classes, and, moreover, it substantially eliminates redundancy from grammatical representation.

Most languages allow for elliptical NPs—as long as the meaning is recoverable from context. In a sentence such as *Books were on sale, and I bought **several***, the bold-faced **several** is an elliptical nominal. From a syntactic point of view, this elliptical nominal has the same distribution as the canonical NP **several books**, in *I bought several books*: for instance, both nominals may serve as complements of NP-taking verbs such as *buy*. To account for such distributional commonalities, elliptical nominals like **several** are often taken to involve an empty noun constituent ( $\emptyset$ ), i.e. **several**  $\emptyset$ . Therefore, they are structurally identical to canonical nominals such as **several books**. In this work, I review—and find wanting—approaches to nominal ellipsis that posit empty nouns. Moreover, I demonstrate that it is possible to analyse canonical and elliptical nominals as partly unified categories and thus account for their shared properties and overlap in distribution. Therefore, we may eschew theoretical constructs that lack independent motiva-

tion, such as phonologically null constituents.

Definiteness and indefiniteness in Modern Greek are expressed in ways that cannot be accommodated in an English-style, determiner-centric system. In particular, Greek definite nominals partition into *monadic* and *polydefinites*—the latter containing more than a single definite article—for instance, *to kokino podilato* (the red bike) and *to podilato to kokino* (the bike the red; ‘the red bike’), respectively. On the other hand, in Greek there exist determinerless nominals that are associated with an indefinite interpretation (see e.g. the nominal in *agorasa kenu-rio agliko vivlio* (bought-1.SG new English book; ‘I bought a new English book’)). Questions such as the following arise: What is the syntactic make-up of polydefinites? What is exactly “definite concord”? What is the contribution of the definite article in the two types of definite nominal? What does “indefiniteness” signify? In this work, I provide an approach to definiteness from which emerges a natural account of definite concord phenomena. In addition, the analysis proposed assigns a precise interpretation to determinerless indefinites. The current account of definite and indefinite nominals is integrated with the general approach to nominal classes taken herein, and from their interaction derives a formal description of a wide range of nominal constructions in Greek.

This thesis is further concerned with the syntax and semantics of genitive nominals inside Greek NPs. In the title of this work, I have referred to these genitives by the cover-term *possessives*. However, from now on, this term will be employed to refer to a particular subset of Greek genitives, rather than all of them. Previous work on genitive nominals is of two sorts. First, traditional descriptions (e.g. [Tzartanos, 1946]) list numerous examples of genitives and classify them according to their function or meaning. For example, a genitive nominal such as *tu Yani* (the-GEN Yanis-GEN) in *o pateras tu Yani* (Yanis’s father) is often called an *origin* or *relation genitive*; *tu krasiu* (the-GEN wine-GEN) in *potiria tu krasiu* (wine glasses) is named a *purpose genitive*, while *tu thanatu* (the-GEN death-GEN) in *i galini tu thanatu* (the peace of death) is called a *property genitive*. However, this type of classification does not account for important generalizations that hold across the various genitive types. On the other hand, in more recent accounts, emphasis is put on whether it is possible systematically to relate the so-called *deverbal* nomi-

nals or *nominalizations* with their corresponding verbs and provide an account of their argument structure (cf. [Markantonatou, 1992]). Nonetheless, an account of nominals exclusively concerned with such issues is not general enough, rather it leaves out other important aspects in the syntactic behaviour and interpretation of genitives.

In this thesis, I demonstrate that genitives inside Greek NPs do not behave in a homogeneous manner. For example, certain genitives cannot be replaced with personal pronouns and are not accessible to relativization. Genitives of this sort are associated with further systematic patterns of syntactic behaviour. The syntactic partition of genitives is coupled by semantic differentiation. On the basis of a number of syntactic and semantic criteria, I identify two types of genitives: *possessives* and *pseudo-possessives*. In addition, I provide an account of their syntactic licensing and semantic denotation from which straightforwardly derive a number of apparent asymmetries characterizing the behaviour and distribution of genitive nominals in Greek NPs. In particular, the possessive / pseudo-possessive partition proposed herein enables us to sort out constraints concerning the admissible combinations and relative order of genitives. Without this partition, it is not clear why certain combinations of genitives are ill-formed and what factors affect their ordering. Furthermore, the current classification of genitive nominals accounts for aspectual effects and other facts concerning sensitivity to definiteness and specificity. Possessives and pseudo-possessives are compatible with nominals of different aspectual classes and their distribution varies in definite and indefinite phrases. In chapters 4 and 5 of this thesis, I pose a number of questions concerning the distribution and interpretation of genitives in Greek NPs and present a theory of their syntax and semantics, relying on the possessive / pseudo-possessive partition, from which are derived answers to such questions in a straightforward and concise manner.

## 1.2 Overview

There are four main chapters in the thesis. In chapter 2, I review recent approaches to the noun phrase syntax. Initially, I outline influential accounts of the English

noun phrase, e.g. [Jackendoff, 1977], [Abney, 1987] and [Grimshaw, 1991] and discuss problems to these approaches. Hypotheses assumed in these accounts are often taken to be applicable to NP structure in Greek. I proceed with considering three distinct approaches to Greek definites: (a) work by Stavrou and Horrocks, cf. [Stavrou and Horrocks, 1986, 1990], [Stavrou, 1991], (b) Karanassios's account of the Greek nominal system, cf. [Karanassios, 1992] and (c) my earlier work on Greek definites cf. [Kolliakou, 1993, 1994]. Those serve both to introduce basic data and outline the main areas of argument surrounding the question of poly-definiteness. What the important phenomena are, is often, of course, determined by the particular view that is being assumed. However, the three approaches presented are concerned with different aspects of similar phenomena, and, therefore, a substantial amount of the relevant constructions are discussed. Problems and limitations of these accounts are pointed out and it is demonstrated that none of these approaches as it stands can be maintained.

In chapter 3, I present an account of definiteness and the structure of nominal categories in Greek, within the framework of HPSG. More specifically, I provide a sort hierarchy of Greek nominals, in terms of inheritance. From this, straightforwardly emerge the commonalities of DPs, NPs, APs, etc., and the distribution of the definite article in the various types of definites. Moreover, I discuss previous HPSG approaches to maximal nominal projections i.e. [Netter, 1994] and [Pollard and Sag, 1994], and demonstrate that they cannot be extended to account for the Greek nominal system, as they currently stand. I proceed with providing detailed descriptions of the syntactic licensing and semantic denotation of determiners, numerals and the definite article. In particular, the Greek definite article is syntactically distinguished from other determiners and, at the semantic level, it is associated with the introduction of uniqueness entailments, in the sense of [Gawron and Peters, 1990]. The account of definiteness and the classification of Greek nominal sorts interact so that a wide range of nominal constructions in Greek are accounted for.

In chapter 4, I present and motivate the partition of Greek genitives into two classes—*possessives* and *pseudo-possessives*. I consider semantic diagnostics in support of this partition and moreover provide syntactic evidence that two types

of genitive nominals must be distinguished. In particular, I discuss grammatical constraints and evidence from pronominalization, aspect and event theory, definiteness and specificity. This evidence indicates that possessives and pseudo-possessives are associated with different licensing conditions and they are assigned distinct interpretations. Finally, I consider *de*-phrases in French NPs that appear to exhibit similar behaviour to Greek genitives. I discuss in brief an account of these nominals by Sag and Godard (cf. [Sag and Godard, 1994]) that posits restrictions on their argument structure, point out problems for this analysis and suggest that an account relying on the possessive / pseudo-possessive hypothesis can deal with these problems.

In chapter 5, I provide an account of the syntactic licensing of possessives and pseudo-possessives and their semantic interpretation, within the framework of HPSG. This analysis makes use of multiple inheritance and it is integrated with the approach to definiteness and the make-up of nominal categories presented in chapter 3.

Finally, chapter 6 summarizes the main conclusions of the thesis and suggests areas for further research.

## Chapter 2

# Recent Approaches to Noun Phrase Syntax

### 2.1 Overview

In this chapter, I outline previous approaches to Noun Phrase syntax in English and Greek. Jackendoff's *X-bar* analysis of English NPs and Abney's *DP hypothesis* are approaches that are poles apart concerning the question: which constituent is the syntactic head of a nominal—the noun or the determiner. In Jackendoff, the head of the noun phrase is the noun, whereas, according to Abney, it is the determiner. At the other end, Grimshaw's work on *extended projections* makes a compromise suggestion concerning the issue of "headedness": in her system, both nouns and determiners play a role in determining the syntactic category of nominals. Such works, and, more extensively, [Giusti, 1991, 1992] are further concerned with the syntactic status of elements that seem to cut across the determiner and adjective classes. These are the cardinals and elements such as **many**, **few**, or **several** that may either head a nominal on their own (e.g. **many problems**) or be preceded by a determiner (e.g. **the many problems**).

Hypotheses assumed in syntactic theories for English NPs are often adopted in analyses of nominal categories in other languages, including Greek. Stavrou and Horrocks's account of Greek definites and definite concord constructions (*polydefinites*) relies heavily on Abney's DP hypothesis for English. In addition, Stavrou

and Horrocks posit phonologically empty noun categories and argue that empty constituents are required for dealing with elliptical nominals in languages like Greek. I compare their analysis to Nerbonne et al.'s approach to nominal ellipsis in Germanic, which postulates empty  $\bar{N}$ s<sup>1</sup> in order to account for the distribution of particular determiners. Eventually, I demonstrate that an empty head account of Greek polydefinites and elliptical nominals runs into problems.

I proceed to consider an approach to Greek definites presented in Karanassios's dissertation work [Karanassios, 1992]. Karanassios proposes that the definite article in Greek should be distinguished from other determiners and rather be analysed as a marker of number / gender agreement and definiteness. I emphasize that a treatment of the definite article as a (number and gender) agreement marker is lacking empirical motivation, and moreover conflicts with formal aspects in Karanassios's system.

Finally, I examine my previous work on Greek definites [Kolliakou, 1993, 1994] that argues for a correlation between NP word order and definite concord (polydefiniteness) in Greek. In this section, I discuss notions such as *word order domains* (cf. Reape's (1991, 1992) work on word order) and moreover provide a formal account couched in the framework of Head-driven Phrase Structure Grammar (HPSG). However, I conclude that this account resists extension to a satisfactory analysis of other types of Greek nominals and, therefore, cannot be maintained.

The overview of analyses of Greek NPs presented in this chapter will eventually serve as a necessary background for the formal account of the Greek nominal system, formulated in HPSG, that I provide in chapter 3.

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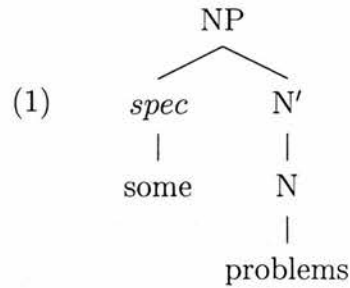
<sup>1</sup> $\bar{X}$  also appears as  $X'$  in tree-diagrams.

## 2.2 Approaches to the syntax of the English noun phrase

Much research on the syntax of NPs assumes a mould designed on the basis of properties of the English noun phrase. In this section, I discuss certain influential analyses of the category of NPs for English. Those analyses focus on two major issues: (1) which constituent is the head of a nominal phrase—the determiner or the noun and (2) what is the syntactic status of elements that seem to cut across the determiner and adjective classes, e.g. *many*, *few*, *several* or the cardinals. In particular, in section 2.2.1, I discuss Jackendoff's approach to nominal categories, cf. [Jackendoff, 1977]. In this system, the syntactic head of NPs is the lexical category of nouns, whereas elements such as *a/an*, *the* or *many* are treated as specifiers, in the sense of X-bar Theory. In section 2.2.2, I consider the *DP hypothesis*, cf. [Abney, 1987]. Abney argues that the functional category of determiners is the head of nominal categories in English. In section 2.2.3 I discuss work by Giusti, cf. [Giusti, 1991, 1992]. Giusti is mainly concerned with extending Abney's system so that the syntactic properties of universal and existential quantifiers are accounted for. Finally, in section 2.2.4, I discuss Grimshaw's work on *extended projections*. Grimshaw essentially proposes that both the determiner and the noun play a role in determining the syntactic category of nominals. In later sections of this chapter, we see that work on Greek nominal categories often relies on hypotheses derived solely from analyses of the English nominal system.

### 2.2.1 Jackendoff: a theory of specifiers

Jackendoff (1977) assumes that determiners such as *the*, *some* or *my* are base-generated under the specifier position (spec) of NPs. The noun is the head of the nominal phrase and its projection is according to X-bar Theory. Viz.:



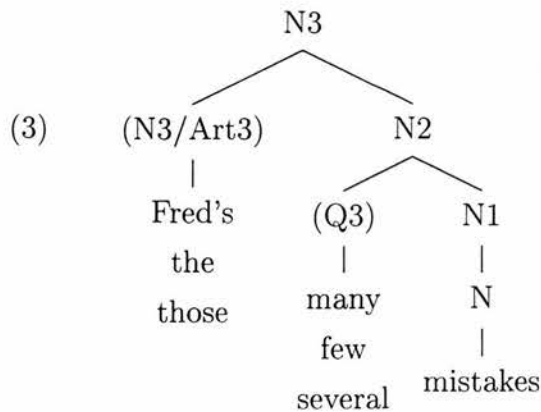
Jackendoff identifies three semantic classes of NP specifiers: *demonstratives*, *quantifiers* and *numerals*. His examples of these classes are as follows:

1. Demonstratives: **the, this, that, these, those, which, what, a**, (singular) **some**,
2. Quantifiers: **each, every, any, all, no, many, few, much, little, some**,
3. Numerals: the cardinals, and phrases such as **a few, a little**.

Jackendoff suggests that these classifications are made “intuitively” and they may be corroborated by evidence “yet to be found” (p. 103). Combinations of specifiers are restricted by the *Specifier Constraint*:

- (2) *The Specifier Constraint (SC)*. A NP specifier may contain at most one demonstrative, one quantifier and one numeral.

The following syntactic tree is assumed, with two specifier positions:



Specifiers also partition into two syntactic classes: *articles* and *quantifiers*. Articles include: **some**, **each**, **all**, **no**, **any** and they are generated under the top specifier (N3/Art3). This position may also accommodate possessives such as **Fred's**. On the other hand, **many**, **few**, **several** and the numerals are syntactically quantifiers and occur under the lower specifier (Q3). Thus, the following NPs are allowed:

- (4) a. Fred's many mistakes  
b. the two issues  
c. those several problems

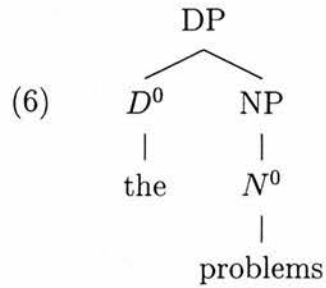
The SC in (2) rules out the following ill-formed strings that the syntactic classification, standing on its own, would generate:

- (5) a. \*each few mistakes  
b. \*all several issues

The two classifications account for a fair number of the possible collocations while allowing a good deal of overgeneration. Jackendoff points out that **\*the much**, **\*every much** etc.—which his system allows—are ill-formed, and notes that further research is necessary (p. 105). However, he does also allow **\*a many** and **\*a several** as well as **\*a much**. The classification of **a few** and **a little** as numerals predicts NPs such as **\*a a few** and **\*the a little**.

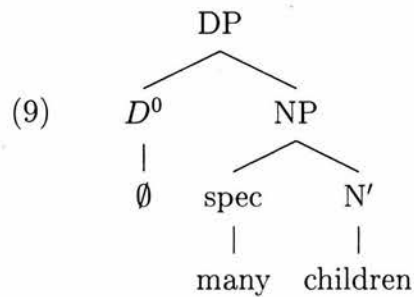
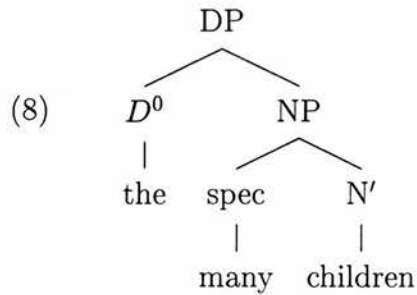
### 2.2.2 Abney: the DP hypothesis

In [Abney, 1987] and subsequent work in the Government and Binding paradigm, determiners are treated as functional heads that take a lexical category as their argument. Determiners are zero bar-level categories and project according to X-bar Theory. Their maximal projection DP dominates their argument, an NP. Viz.:



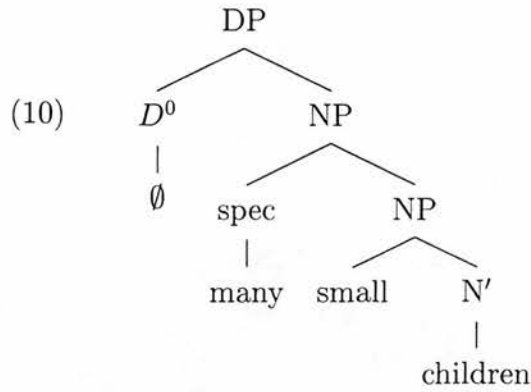
Abney distinguishes determiners such as *the* from elements such as *many*, *few*, *several* and the cardinals. After Jackendoff, he assumes that the latter are NP specifiers. Following a suggestion made in [Szabolcsi, 1987] for Hungarian, Abney posits an empty determiner ( $\emptyset$ ). He analyses the minimal pair in (7) below as shown in tree-diagrams (8) and (9).

- (7) a. *the many children*  
 b. *many children*



In Abney's system, the specifier of NPs may also accommodate adjectives:<sup>2</sup>

<sup>2</sup>Abney also considers the option of treating adjectives as heads (see footnote 3 below).



A problem for Abney's analysis is that it provides no means to determine the relative order of adjectives and elements such as **many**, **few**, **several** or the cardinals. The latter always precede adjectives. However, Abney's grammar also generates ill-formed examples such as (11):

(11) \*small many children

It has been observed that the order of adjectives is not entirely free, rather certain orders are preferred to other. [Bernstein, 1993] quotes the following examples from [Lamarche, 1991].

(12) a. une voiture blanche rouillée

a rusty white car

b. un fruit orange énorme

a huge orange fruit

Lamarche claims that the order pattern with the colour adjective closer to the noun is preferred in both French and English. However, it is possible to reverse the order of the adjectives and still maintain grammaticality.

The obvious ill-formedness of (11) above can be taken to suggest that cardinals and elements that pattern alike should be syntactically distinguished from adjectives. They are never preceded by adjectives and their order is not subject

to whatever factors govern the relative order of adjectives. In Abney's system the two types of element are not syntactically distinct, rather they are both treated as NP specifiers. Therefore, differences in their distribution are not accounted for.<sup>3</sup>

### 2.2.3 Giusti: a syntactic approach to determiners and quantifiers

Giusti (cf. [Giusti, 1991a, 1991b, 1992]) treats determiners such as **the** as functional heads along with Abney, but provides a distinct analysis of elements such as **many** and the like. In particular, she proposes that those elements are syntactically ambiguous. In “determinerful” nominals such as (13) below, they are adjectives.

(13) the many children

Following [Cinque, 1990] and [Crisma, 1991], Giusti assumes that adjectives are generated under the specifier of the functional projection AgrP (Agreement Phrase). The same applies to elements such as **many**.

(14) [DP [ $\bar{D}$   $D^0$  the [AgrP many [ $\bar{A}gr$  ...  $N^0$  children]]]]

On the other hand, in “determinerless” nominals, e.g. (15), **many** or the cardinals are  $Q^0$  heads.

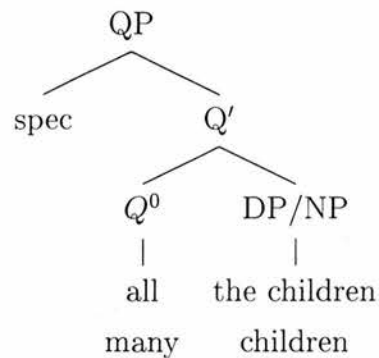
(15) many children

The functional head  $Q^0$  (cf. [Shlonsky, 1991] and [Sportiche, 1988]) takes as its complement a perfect projection of N (in the sense of [Grimshaw, 1991], see section 2.2.4 below). Viz.:

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<sup>3</sup> If one assumed Abney's alternative proposal that adjectives are heads and they take an NP complement, the cardinals and elements that pattern alike would be syntactically distinguished from adjectives. However, a treatment of adjectives as heads runs into different problems: for instance, if we take this line, it is not trivial to account for the fact that adjectives may iterate.

(16)



Giusti's proposal that **many** and the like are ambiguous between an adjective and a quantifier instantiation relies on four types of evidence. I examine them below.

- **Predication**

Giusti points out that **many** or the cardinals may function as predicative adjectives, unlike other quantifiers:

- (17) a. the boys I know are intelligent/**many**/twenty  
b. \*the boys I know are all/some

**many** and **twenty** are adjectives and thus have the same distribution as **intelligent**. On the other hand, **all** and **some** are unambiguously  $Q^0$ s. However, a syntactic distinction between **many** on the one hand and **all** or **some** on the other does not suffice to explain the contrast in (17). Nominals that Giusti analyses as QPs are allowed in predication, as illustrated in (18) below. If (17b) is ruled out on the basis of the syntactic category of **all** and **some**, then the well-formed (18a&b) should also be excluded for the same reason.

- (18) a. the boys I know are [QP some students of Linguistics]  
b. the boys I know are [QP all the students of Linguistics]

- **The Partitive Construction**

The second piece of evidence Giusti relies on comes from partitives. Giusti assumes that the partitive **of** phrase in English is licensed by a quantifier

head ( $Q^0$ ). In (19a) below, **many** is under  $Q^0$  and takes as its argument the partitive **of the boys**. By contrast, in the determinerful (19b) **many** is an adjective and therefore cannot license the **of**-phrase.

- (19) a. many of the boys I know  
 b. \*the many of the boys I know

However, Giusti's hypothesis is not corroborated by cardinals, which are also ambiguous in her system. Both examples in (20) below are well-formed, whereas Giusti predicts that (20b) is ill-formed.

- (20) a. three of the boys I know  
 b. the three of the boys I know

- **ne-Cliticization**

Giusti's analysis of elements such as **many** or the cardinals is intended to apply to languages other than English too. Giusti suggests that **ne**-cliticization in Italian motivates an analysis of the cardinals as syntactically ambiguous. [Cardinaletti and Giusti, 1989] assume that the Italian partitive clitic **ne** is licensed by quantifiers that assign partitive case. In (21a) below, **due** (two) is such a quantifier, thus, **ne** is licit. By contrast, in (21b) **due** is an adjective, therefore it cannot license **ne**.

- (21) a. **ne**        **ho**        visto **due**  
          CL-part have-1.sg seen two  
          'I saw two (of them)'  
 b. \***ne**        **ho**        visto **i due**  
          CL-part have-1.sg seen the two

It should be mentioned here that the type of nominal that is excluded from the **ne** construction in Italian is admissible in left dislocation. Nominals such as **i due**, **tutti** or **questi** share a semantic property that seems to be crucial for their distribution: they all refer to specific sets of entities that are contextually salient. In (22) below, this effect is stronger due to the semantic contribution of restrictive relatives.<sup>4</sup>

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<sup>4</sup>The data in (22) are due to Lucia Tovena.

- (22) a. *i due/tutti/questi che erano con me sul treno li ho rivisti*  
 the two/all/those that were with me in the train them-CL saw-1.SG  
 again  
 ‘I saw again the two ones/all those/those that were with me in the  
 train’
- b. *\*i due/tutti/questi che erano con me sul treno ne ho rivisto*  
 the two/all/those that were with me in the train CL-PART saw-1.SG  
 again

Giusti’s syntactic explanation for the contrast in (21) above does not extend to cover the data in (22). Her account of the distribution of nominals in the *ne* construction in Italian is based on a small fragment of data and fails to capture semantic generalizations.

- **Nominal Ellipsis**

Giusti’s final argument comes from nominal ellipsis. To illustrate, in Modern Greek cardinals or elements such as *pola* (many) are like adjectives in that they may appear in elliptical nominals:<sup>5</sup>

- (23) *Kratuse tria molivia. Mu edose to kokino / ta dio.*  
 had-3.SG three pencils. to-me gave-3.SG the red / the two.  
 ‘(S)he had two pencils. (S)he gave me the red one / the two of them.

However, cardinals and the like also appear in elliptical examples such as the following:

- (24) *...Mu edose ta dio kokina.*  
 ...to-me gave-3.SG the two red  
 (S)he gave me the two red ones.

If one adopts Giusti’s suggestion about cardinals, it will not be trivial to account for examples such as (24): if Giusti’s grammar can generate the grammatical (24), it will also generate ill-formed examples such as (25), with a definite article preceding two adjectives. Assuming an adjective analysis

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<sup>5</sup>For further detail on elliptical nominals in Greek, see section 2.3.3 below and chapter 3.

of the cardinals—as Giusti does in the case of determinerful NPs—the NPs in (24) and (25) cannot be distinguished: they both consist of a determiner (the definite article) and two adjectives.

- (25) ...\*Mu edose        ta kokina kenuria.  
       ...to-me gave-3.SG the red    new  
       (S)he gave me the two red ones.

Positing syntactic ambiguity for the cardinals and elements such as **many** has two further draw-backs. First, it allows for ill-formed combinations such as (26) below, where **some** heads the QP and **many** is an adjective under the specifier position of AgrP.

- (26) \*some many children  
       [QP [ $\bar{Q}$   $Q^0$  some [AgrP many [Agr $\bar{}$  ...  $N^0$  children]]]]

As Giusti points out, in order to rule out overgeneration, one must additionally appeal to some semantic constraint along the lines of Jackendoff's Specifier Constraint (see (2) above). Secondly, Giusti's system, like Abney's analysis, (section 2.2.2) does not account for the relative order of adjectives and elements such as **many**. For instance, it will allow the ill-formed:

- (27) \*the small many children

#### 2.2.4 Grimshaw: extended projections

In the previous sections, we were primarily concerned with the internal structure of the English noun phrase and the syntactic status and distribution of determiners, quantifiers, numerals and the like. I now focus on a different issue: which constituent is the head of the nominal phrase—the determiner or the noun. This is a long-standing problem in the literature on noun phrases and bears on the general theory of functional (or minor) and lexical (or major) categories. We have already encountered two diverging analyses: on the one hand, [Jackendoff, 1977] and subsequent work within the transformational paradigm, in particular in the

seventies (e.g. [Selkirk, 1977]) and, on the other hand, [Abney, 1987] and more recent work in the framework of Government and Binding (cf. [Holmberg, 1986], [Bernstein, 1993] and others). Under the former view, the noun is the head of the nominal phrase, while determiners are specifiers. In the latter approach, the head is the determiner and its maximal projection (DP) dominates NP. This analysis is in line with recent developments in the theory of functional categories (cf. [Pollock, 1989]) that view functional elements as heads that take a lexical category as their argument.

From an empirical point of view, the DP analysis of English nominals is motivated by the fact that singular nominal phrases in English are for the most part determinerful:

- (28) a. \*Man bought book.  
b. That/The/a man bought that/the/a book.

However, a subset of English nominals may be lacking an overt determiner: these are plurals and the so-called MASS terms.

- (29) a. I bought books.  
b. I bought wine.

In order that the DP analysis is extended to cover determinerless nominals such as *books* and *wine*, a phonologically empty determiner is often postulated, cf. [Abney, 1987] (see section 2.2.2).

There are theoretical reasons for arguing against a DP analysis of nominals, for instance, preserving locality in semantic selection of nominal arguments and in dealing with agreement. As Grimshaw (1991) points out, if the determiner is the head of the nominal phrase, a verb cannot locally select for properties of its nominal object, such as animacy or plurality. These can be properties of the noun, rather than the determiner:

- (30) They merged / amalgamated / combined the files / \*the file

Similarly, for agreement. In English, a verb agrees with its nominal subject in number. Number agreement, in many cases, is exclusively reflected in the noun's morphology and not in the determiner:

- (31) a. The dogs bark/\*barks  
b. The dog barks/\*bark

A “compromise” approach to “headedness” that re-examines the role of functional and lexical categories is provided in [Grimshaw, 1991]. Grimshaw argues for maximal projections that incorporate both functional and lexical information. These are the *extended projections*. Technically, Grimshaw's proposal amounts to treating functional and lexical heads as partly unified categories. Their overlap is made explicit in terms of identical feature-value pairs. In this system, the determiner is the head of the nominal phrase and takes an NP argument, in line with the DP hypothesis. However, in addition, a determiner partly overlaps with its NP complement: categories D and N share their categorial features, they are both defined [N+, V-]. Assuming the standard definition of head and projection,  $\bar{D}$ s, DPs,  $\bar{N}$ s and NPs are also [N+, V-]. Though determiners and nouns are partly unified, they also differ from each other in their lexical/functional specification. This is expressed by the feature F, which is not a binary (boolean) feature. Nouns and their projections are F0, while determiners and their projections are F1. The category DP is the extended projection of N. The feature composition of nouns, determiners and their projections is given below.

- (32) **N:** N+, V-, F0  
 $\bar{N}$ : N+, V-, F0  
**NP:** N+, V-, F0  
**D:** N+, V-, F1  
 $\bar{D}$ : N+, V-, F1  
**DP:** N+, V-, F1

Postulating that F is not a binary feature enables more than a single functional category per extended projection to be taken into account. To illustrate,

Grimshaw takes the prepositional phrase (PP) to be the highest extended projection in the nominal system. The zero bar-level prepositional head is defined in (33) below: P differs from both N and D projections with respect to its F specification, it is specified F2.

(33) P: N+, V−, F2

By assuming that information borne by the lexical category N is made available on the extended projection DP—technically, this is expressed by the partial overlap of functional and lexical heads—Grimshaw ensures that semantic selection and agreement can be accounted for without violating the requirement for locality. An approach to functional and lexical categories that is in many ways similar to Grimshaw’s, though it is couched in the framework of Head-driven Phrase Structure Grammar (HPSG), is provided in [Netter, 1994]. Like Grimshaw, Netter assumes that determiners and nouns and thus their projections are partly unified. The distinction between DPs and NPs in Netter’s system is captured in terms of *functional completeness*. This notion expresses whether a nominal is either determinerful or does not need to combine with a determiner (e.g. the case of plurals and MASS terms). The Netter approach accounts for determinerful and determinerless nominals in English without positing phonologically null determiners (cf. [Abney, 1987]). I discuss this analysis in detail in chapter 3.

## 2.3 Greek definites and polydefinites: an empty head approach

### 2.3.1 Monadic definites and polydefinites in Greek

In the previous sections, I discussed approaches to the syntax of the English noun phrase. This, for the most part, consists of a determiner and a noun projection. In this section, I present a nominal construction from Greek that, arguably, cannot be accommodated within an English-style determiner-centric system, rather it requires a quite different perspective. This is the polydefinite construction. Greek definites can be either *monadic* or *polydefinite*. The former are like English definites, while the latter contain more than a single definite article. To illustrate:

(34) a. to kokino podilato  
the red bike

b. to podilato to kokino  
the-SG.NEUT bike-SG.NEUT the-SG.NEUT red-SG.NEUT  
'the red bike'

c. i xilini karekla i kenuria  
the-SG.FEM wooden-SG.FEM chair-SG.FEM the-SG.FEM new-SG.FEM  
'the new wooden chair'

I start with a discussion of work by Stavrou and Horrocks on Greek definite nominals (e.g. [Horrocks and Stavrou, 1986], [Stavrou and Horrocks, 1990], [Stavrou, 1991]). A key feature in their account is that it posits phonologically empty nouns. I demonstrate that Stavrou and Horrocks's grammar overgenerates. Subsequently, I compare their approach to Greek elliptical nominals with work by Nerbonne et al. in Germanic, and address empirical and theoretical problems for analyses positing empty nouns.

### 2.3.2 Stavrou and Horrocks: polydefinites as a case of apposition

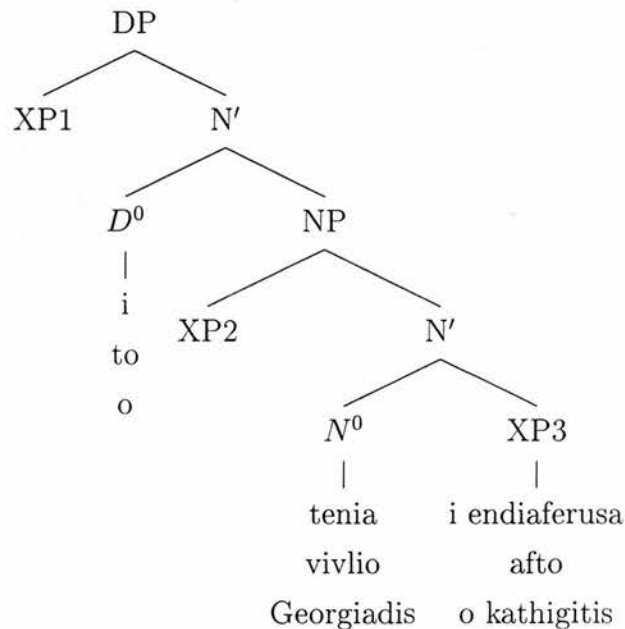
In work by Stavrou and Horrocks (e.g. [Stavrou and Horrocks, 1986]), it is suggested that the Greek polydefinite construction is a special case of apposition. The classification of instances of apposition in [Stavrou, 1991] includes (a) standard apposition examples, (b) polydefinites and (c) monadic definites that contain a demonstrative or personal pronoun in initial or final position. Those are in turn illustrated in (35) below. The examples are from [Stavrou, 1991].

(35) a. o Georgiadis, o kathigitis  
the Georgiadis the professor  
'Georgiadis, the Professor'

- b. i tenia i endiaferusa  
 the film the interesting  
 'the interesting film'
- c. afto to vivlio  
 this the book  
 'this book'

Stavrou (1991) (see also [Stavrou and Horrocks, 1986, 1990]) proposes that all instances of apposition, including polydefinites, have the following structure:

(36)

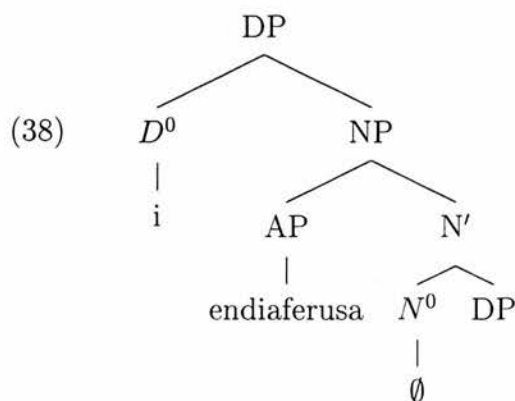


As shown in (36), Stavrou and Horrocks assume that phrases such as *i endiaferusa* (the-FEM interesting-FEM) that make part of polydefinites, and moreover, demonstratives, are sisters of  $N^0$ , i.e. they occupy a position that is typically reserved for noun complements (e.g. [Jackendoff, 1977], [Abney, 1987]). Stavrou and Horrocks do not provide motivation for conflating modifiers and complements in syntactic representation. Moreover, they do not demonstrate what properties of their system ensure that this assumption does not conflict with standard hypotheses in the framework of Government and Binding, concerning Case and thematic role assignment under government. An  $N^0$  sister (XP3 in (36)) can raise to the DP

specifier (XP1). Thus, examples with prenominal modifiers or demonstratives are accounted for:

- (37) a. *i endiaferusa i tenia*  
 the interesting the film  
 ‘the interesting film’
- b. *afto to vivlio*  
 this the book  
 ‘this book’

Stavrou and Horrocks analyse phrases such as *i endiaferusa* (the-FEM interesting-FEM) as DPs that have an empty noun head. In fact, the only difference between standard apposition examples (see (35a) above) and polydefinites in the Stavrou and Horrocks system is that the sister of  $N^0$  in the former is a canonical DP, while the latter have instead a fragmentary DP, analysed as follows:



The structure in (36) above may accommodate quite complex examples of apposition, for instance, polydefinites that contain more than two instances of the definite article, or polydefinites with a noun complement. This is demonstrated by labelled brackets in (39a&b):

- (39) a. [DP to [NP podilato [DP to [NP kenurio [DP to kokino]]]]]  
 the bike the new the red  
 ‘the new red bike’
- b. [DP to [NP podilato [DP to [NP kenurio [DP tu Yiani]]]]]  
 the bike the new the-GEN Yanis-GEN  
 ‘Yanis’s new bike’

There are reasons for being sceptical towards Stavrou and Horrocks’s account of polydefinites. Stavrou and Horrocks treat polydefinites and standard apposition examples as structurally identical but they provide no empirical motivation for this analysis. In fact, there are at least two important differences between the two constructions that the Stavrou and Horrocks analysis does not take into account. First, the daughter constituents of polydefinites agree in gender, whereas no such requirement applies in case of standard apposition. This is illustrated by the following contrast:

- (40) a. i xilini karekla i kenuria  
 the-FEM wooden-FEM chair-FEM the-FEM new-FEM  
 ‘the new wooden chair’
- b. i dulia tu, to pio simantiko pragma sti zoi tu  
 the-FEM job-FEM his, the-NEUT most important-NEUT thing-NEUT in-the  
 life his  
 ‘his job, the most important thing in his life’

Second, the daughter constituents of a polydefinite nominal are all definite: polydefinites are instances of definite concord. On the other hand, apposition examples carry no such requirement. As illustrated in (41), appositional phrases can be indefinite.

- (41) i Maria, ena mikro koritsaki  
 the Maria, a small wee girl  
 ‘Maria, a small wee girl’

Besides theoretical considerations, the Stavrou and Horrocks analysis runs into “concrete” problems. For instance, Stavrou and Horrocks provide no means for excluding ill-formed strings such as those in (42) below. These strings are allowed by (36).

- (42) a. \*merika vivlia kapia aglika  
 some books certain English  
 b. \*to vivlio ena agliko  
 the book an/one English

Moreover, Stavrou and Horrocks do not demonstrate what properties of their analysis account for agreement (in number and gender) and definite concord between the constituents of polydefinites. A further issue is that their system provides no means to distinguish between canonical DPs and fragmentary DPs with an empty noun head. Therefore, it is not clear how the distribution of those two types of DP is accounted for. The Stavrou and Horrocks’s grammar as it stands will generate ill-formed strings such as (43) with two canonical DPs:

- (43) \*to podilato to kokino to trapezi  
 the bike the red the table

A further point is that the distribution of empty nouns is not sufficiently constrained in Stavrou and Horrocks’s system. Fragmentary DPs of polydefinites cannot contain more than a single adjective, as the ill-formed (44) below illustrates. Nonetheless, Stavrou and Horrocks provide no constraint for ruling out DPs that have an empty noun head and contain more than a single adjective.

- (44) \*to podilato to kenurio kokino  
 the bike the new red

Similarly, Stavrou and Horrocks do not explain how their system excludes fragmentary DPs consisting of a definite article and that contain no adjectives, see the ill-formed (45) below. The structure in (36) above does allow such examples.

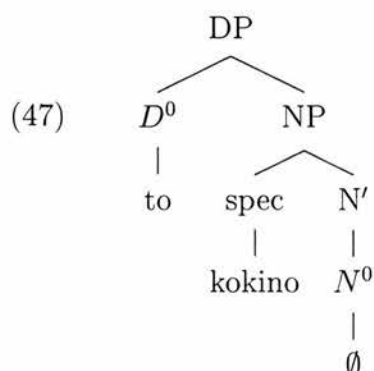
- (45) \*[DP to [NP podilato [DP to [NP  $\emptyset$ ]]]]  
 the bike the

### 2.3.3 An empty head analysis of nominal ellipsis

In the previous section, we saw that the Stavrou and Horrocks analysis of polydefinites posits empty nouns. Stavrou and Horrocks (1991) suggest that postulating such constructs in syntactic representation permits an account to be provided for elliptical nominals in Greek. In (46) below, the sequence *to kokino* ('the red one') is an elliptical nominal: it consists of a definite article and an adjective and contains no noun.

- (46) Kratuse dio molivia. Mu edose to kokino.  
 had-3.SG two pens. to-me gave-3.SG the red  
 '(s)he had two pens. (S)he gave me the red one.'

Stavrou and Horrocks analyse such elliptical expressions as syntactically identical to fragmentary DPs of polydefinites: both are taken to contain an empty noun head ( $\emptyset$ ). Viz.:



However, the empty noun approach to nominal ellipsis that Stavrou and Horrocks argue for overgenerates. In particular, Stavrou and Horrocks do not provide a theory of the distribution of elements they analyse as determiners. Therefore, they cannot account for contrasts such as the following:

- (48) a. Pulusan                    vivlia. Agorasa        merika  
        Were-selling-3.PL books. Bought-1.SG some  
        ‘They were selling books. I bought some.’
- b. \*Pulusan                    vivlia. Agorasa        to  
        Were-selling-3.PL books. Bought-1.SG the

Most determiners in Greek, e.g. *merika* (some) can appear on their own, as shown in (48a) above. However, the definite article, which Stavrou and Horrocks do not distinguish from other determiners, cannot do so. The Stavrou and Horrocks analysis of nominal ellipsis does allow for the ill-formed (48b). This analysis provides no means for ensuring that elliptical nominals headed by the definite article should also contain one adjective.

In the rest of this section, I discuss an approach to nominal ellipsis in Germanic (cf. [Nerbonne et al., 1989] and unpublished work) that accounts for such asymmetries in the distribution of determiners. However, I demonstrate that an analysis of Greek elliptical nominals on the lines of Nerbonne et al. is lacking empirical motivation and moreover runs into similar problems as the Stavrou and Horrocks account.

Nerbonne et al. argue that determiners in languages like English or German can be partitioned into three classes, namely, *dependent*, *independent* and *indiscriminate* ones. Dependent determiners, e.g. *my*, *a/an*, *no* in English, never appear in NPs lacking a noun head (see (49) below). On the other hand, independent determiners, e.g. *mine* or *none*, always occur on their own (see (50)), whereas indiscriminate determiners, e.g. *several*, are admitted in both regular and elliptical nominals (see (51)).

(49) a. This is my book.

b. \*This is my.

(50) a. This is mine.

b. \*This is mine book.

(51) a. I bought several scarves made in China.

b. Scarves were on sale. I bought several made in China.

To account for the distribution of the three determiner types, Nerbonne et al. distinguish between two types of  $\bar{N}$ : elliptical  $\bar{N}$ 's, for instance, *made in China* (see (51b) above) and canonical ones. The former are taken to have an empty noun head and they are specified LEFT PERIPHERY EMPTY+, where LEFT PERIPHERY EMPTY (LPE) is a boolean EDGE FEATURE (in the sense of [Lapointe, 1990] and [Miller, 1992]). On the other hand, canonical  $\bar{N}$ 's, for instance, *scarves made in China* are marked LPE-. Independent or indiscriminate determiners that freely occur in elliptical environments are taken to select for LPE+  $\bar{N}$ 's. On the other hand, dependent forms are taken to select for LPE-  $\bar{N}$ 's.

However, Nerbonne's classification of determiners does not seem appropriate for Greek. With the exception of the definite article, the vast majority of Greek determiners are "indiscriminate", in the sense of Nerbonne, i.e. they may occur in either canonical or elliptical nominals. Consider, for instance, (52).

(52) a. Pulusan            vivlia. Agorasa    ena        (agliko)  
Were-selling-3.PL books. Bought-1.SG a(n)/one (English)  
'They were selling books. I bought one/an English one.'

b. Agorasa        ena    vivlio  
Bought-1.SG a/one book  
'I bought a/one book.'

- c. Pulusan vivlia. Den agorasa kanena (agliko)  
 Were-selling-3.PL books. Not bought-1.SG no/none (English)  
 ‘They were selling books. I didn’t buy any/any English one.’
- d. Den agorasa kanena vivlio  
 Not bought-1.SG no book  
 ‘I didn’t buy any book.’

As shown in (52), the numeral **ena** (a/one-NEUT) and the determiner **kanena** (no/none-NEUT) can appear either on their own or together with a nominal category (noun or adjective). Unlike English, Greek does not provide double forms, dependent and independent ones such as **a(n)/one** and **no/none**. In addition, possessive pronouns in Greek are not determiners (cf. **my** in English). Rather, they are either clitics in genitive case and have a noun, adjective or other element as their host, or are full NPs that contain the adjective **dik-os/i/-o** (own-MASC/FEM/NEUT).<sup>6</sup> This is shown in (53a&b), respectively.

- (53) a. Afto ine to vivlio mu  
 this is the book my-GEN.CL  
 ‘This is my book.’
- b. Afto ine to diko mu (vivlio)  
 This is the own my-CL (book)  
 ‘This is mine/my own book’

The only Greek determiner that cannot occur on its own is **kathe** (every/each). However, **kathe** may appear in elliptical nominals, as shown in (54b) below.<sup>7</sup>

<sup>6</sup>For further detail on clitics in the Greek noun phrase, see chapters 4 and 6.

<sup>7</sup>The distribution of **kathe** can be straightforwardly accounted for: **kathe** can be taken to subcategorize for an obligatory nominal complement, and thus, it never appears on its own. This treatment can be naturally incorporated in the HPSG approach to determiners, presented in chapter 3.

(54) a. *Kathe fititis/ kathenas/ \*kathe ihe diaforetiko eopti.*

every student/ each one/ \*every had a different supervisor

‘Every student/ each one had a different supervisor.’

b. *Otan ehume ligus fitites, iparhi enas diaforetikos eoptis gia kathe kenu-  
rion.*

when have-1.PL few students, there-is a different supervisor for each new

‘When we have few students, there is a different supervisor for each new one.’

Greek provides very little evidence for adopting the [Nerbonne et al.] partition of determiners into dependent, independent and indiscriminate ones. The idiosyncratic distribution of the Greek definite article—it never occurs on its own, as was shown in (48b) above—can be taken to indicate that it should be distinguished from determiners. This line is taken in Karanassios’s dissertation work (cf. [Karanassios, 1992]) that I discuss in the next section. Moreover, in chapter 3, I provide an analysis of Greek nominal categories couched in the framework of HPSG that distinguishes the definite article from determiners both at the syntactic and the semantic level.

I next consider a “concrete” problem for an analysis of nominal ellipsis on the line of Nerbonne et al.’s. Nerbonne et al. assume that elliptical nominals have an empty left periphery: for example, *made in China* (in *some made in China*) is analysed as  $\emptyset$  *made in China*, where  $\emptyset$  is an empty noun head. However, in certain languages, including Greek, elliptical nominals are not always of this type. We previously saw that Greek allows for nominals consisting of a definite article or a determiner and an adjective or numeral. *Viz.:*<sup>8</sup>

(55) a. *merika aglika*

some English

‘some English ones’

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<sup>8</sup>In fact, the Greek analogue of *some made in China* (*merika ftiagmena stin Kina*) is of the type illustrated in (55); *ftiagmena* (*made*) is syntactically an adjective.

- b. ta dio  
the two  
'the two (of them)'

Assuming an empty noun analysis, it is not clear how elliptical nominals of the type illustrated in (55) can be constrained to contain at most a single adjective/numeral. Elliptical nominals in Greek with more than a single adjective are not well-formed:

- (56) \*ta kokina kenuria  
the red new

However, both Stavrou and Horrocks's and Nerbonne et al.'s analysis of ellipsis, as they currently stand, do allow ill-formed examples such as (56).<sup>9</sup>

## 2.4 The definite article as a marker of agreement

### 2.4.1 Distinguishing the definite article from other determiners

In this section I discuss a second approach to the Greek nominal system, presented in Karanassios's dissertation work, cf. [Karanassios, 1992]. An important feature of Karanassios's analysis is that the definite article in Greek is distinguished from other determiners. In particular, the Greek definite article is taken to be a marker of agreement and definiteness. As Karanassios points out, evidence against a determiner analysis of the definite article comes from the polydefinite construction: if the Greek definite article is analysed as a determiner, sequences consisting of a definite article and an adjective in polydefinites will have to be analysed as DPs.<sup>10</sup> However, there is no independent evidence for a DP analysis of APs.

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<sup>9</sup>In [Nerbonne et al., 1989], it is suggested that further research is required with respect to this issue.

<sup>10</sup>Karanassios does not adopt the empty head analysis of these sequences that was proposed in work by Stavrou and Horrocks (see section 2.3 above).

The definite article in Greek inflects and its various forms denote distinct combinations of case, number and gender. Karanassios proposes that the definite article should be analysed as an affix that carries agreement information and moreover definiteness. He further suggests that definiteness can be viewed as an agreement feature like number and gender and, therefore, the definite article is essentially an *agreement marker*. Karanassios provides two arguments in favour of an analysis of the definite article as an affix: (1) the definite article never occurs on its own in ellipsis and (2) definite articles cannot support pronominal clitics. Unlike determiners such as *merika* (some) and demonstratives such as *afta* (these), the Greek definite article cannot stand on its own:

(57) Pulusan vivlia. Agorasa merika / afta / \*ta

They had books on sale. I bought some / these / \*the

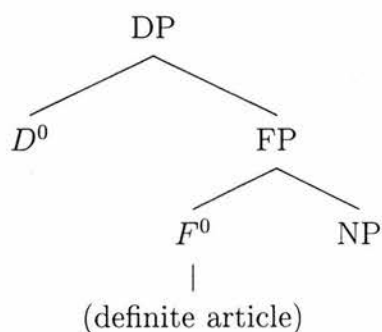
Possessive clitics in Greek attach to nouns, adjectives, quantifiers or demonstratives. However, they cannot attach to definite articles. This is illustrated by the contrasts in (58):

- (58) a. afto to vivlio mu  
       this the book my-CL  
       ‘this book of mine’
- b. afto mu to vivlio  
       this my-CL the book  
       ‘this book of mine’
- c. \*afto to mu vivlio  
       this the my-CL book

From a formal point of view, Karanassios treats the definite article as an instantiation of a zero bar functional category ( $F^0$ ) that projects according to *X-bar Theory*. Much research on the structure of the noun phrase within the Government and Binding paradigm has identified a functional head that intervenes between DP and NP and carries agreement information, e.g. [Giusti, 1991, 1992] (see

section 2.2.3 above). This category can be thought of as the nominal analogue of the sentential  $I^0$  (Inflection). It licenses an NP, like  $I^0$  licenses a VP. Its maximal projection is licensed by the determiner, like IP is licensed by the complementizer. Karanassios argues that in Greek definite nominals, the definite article is the head of an agreement phrase that is licensed by the determiner and dominates an NP. He calls this phrase *functional phrase (FP)*. He assumes that FP is present in indefinite nominals too. However, its agreement head is “abstract”. The position  $F^0$  in indefinites counts as empty, therefore, it can be employed as landing site for head-to-head movement. The basic structure of nominals in Karanassios’s system is given in (59).

(59)

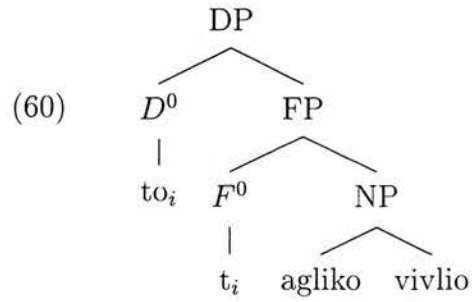


*The basic structure of nominals in [Karanassios, 1992]*

In the following section Karanassios’s account is discussed in further detail. In section 2.4.3, I consider problems for his account.

## 2.4.2 Karanassios’s analysis of Greek nominals

In [Karanassios, 1992], a monadic definite such as *to agliko vivlio* (the English book) is analysed as shown in (60) below. The definite article is base-generated under  $F^0$ , rather than  $D^0$ . From the head position of the agreement phrase FP, a definite article raises to the head of DP (in case it is empty), for reasons related to Case assignment.

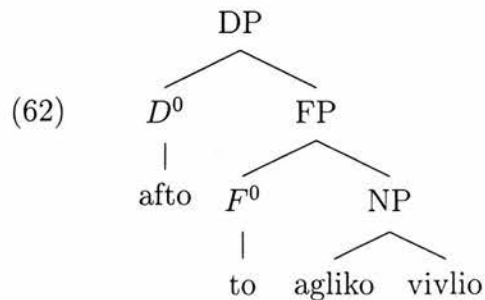


*The monadic definite to agliko vivlio (the English book)*

The position  $D^0$  of a definite phrase can alternatively be occupied by a demonstrative. Demonstratives e.g. *afto* (this) must cooccur with the definite article in Greek. This is illustrated by the contrast in (61):

- (61) a. *afto to agliko vivlio*  
 this the English book  
 'this English book'
- b. \**afto agliko vivlio*  
 this English book

To account for the coexistence of demonstratives and definite articles in Greek, Karanassios suggests that demonstratives should be analysed as determiners. In definites such as (61a) the demonstrative is base-generated under  $D^0$  and in that position it is assigned structural Case by a Case assigner (e.g. verb or preposition). On the other hand, the definite article remains *in situ*. Viz.:

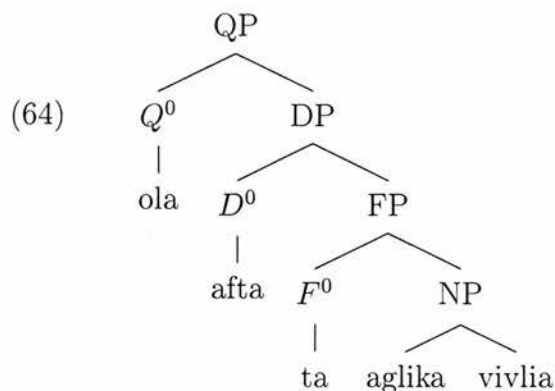


*Greek demonstratives as determiners.*

In addition, Karanassios makes use of a higher functional head  $Q^0$  (Quantifier) (see also [Shlonsky, 1991], [Giusti, 1991, 1992]) that licenses a DP complement. The position  $Q^0$  accommodates the quantifier *ola* (all) in NPs such as (63):

- (63) *ola afta ta aglika vivlia*  
 all these the English books  
 ‘all these English books’

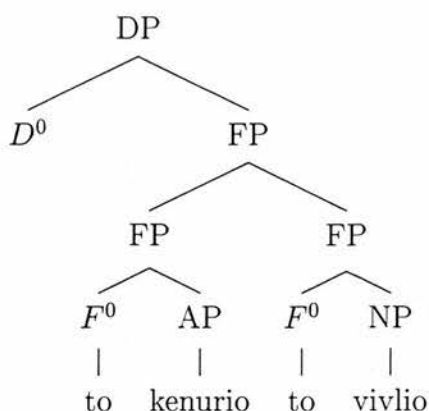
Examples such as (63) are analysed as shown in (64).



*The Quantifier Phrase*

To account for the distribution of definite articles in polydefinite nominals, Karanassios suggests that the category  $F^0$  of the definite article selects for either a noun phrase (NP) or an adjective phrase (AP). In particular, he assumes that nominals have a “core” FP, wherein the definite article takes an NP complement. “Secondary” FPs that accommodate sequences consisting of a definite article and an adjective adjoin to the left or right of the core FP. The tree-diagram in (65) below shows Karanassios’s analysis of the polydefinite *to kenurio to vivlio* (the new the book; ‘the new book’). The secondary FP *to kenurio* (the new) is left-adjoined to the core FP *to vivlio* (the book).

(65)

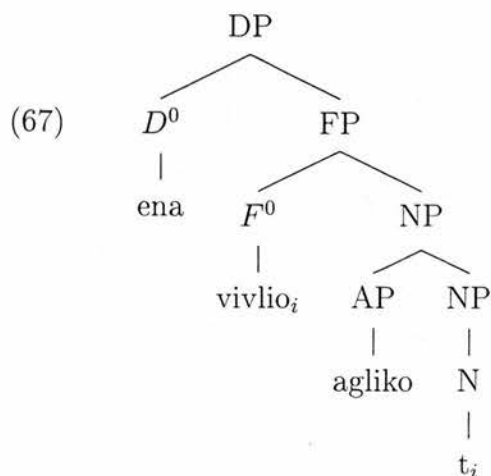


*The polydefinite to kenurio to vivlio (the new the book; 'the new book')*

The agreement phrase FP is present in indefinite nominals too. However, Karanassios assumes that the head  $F^0$  in indefinites is “abstract”. This position is not occupied by lexical material (a functional category or bound morpheme) that is the analogue of the definite article in definite nominals, in the sense that it carries agreement features and “indefiniteness”. The empty  $F^0$  of indefinites plays a crucial role in Karanassios’s account of word order in Greek NPs. Adjectives may precede or follow nouns in Greek indefinites:

- (66) a. ena agliko vivlio  
a/one English book  
'a/one English book'
- b. ena vivlio agliko  
a/one book English  
'a/one English book'

Karanassios assumes the basic order Adjective-Noun for Greek nominals and suggests that the adjective is adjoined to the left of NP. From this order derives the order Noun-Adjective by (optional) head-to-head movement that raises the noun from its base position  $N^0$  to the empty  $F^0$ , over the adjective. This is illustrated in (67).



*The derivation of ena vivlio agliko (a/one book English)*

### 2.4.3 Problems for Karanassios's account

In this section, I consider a number of problems for Karanassios's account of the Greek nominal system. A key point in Karanassios's analysis of definite NPs is that the definite article in Greek is a marker of both number / gender agreement and definiteness. As we saw in the previous sections, Karanassios provides a formal interpretation of this insight: the definite article is the head of the agreement phrase (FP) in definite nominals. However, associating the definite article with agreement features such as number and gender is not sufficiently justified. From an empirical point of view, it is not the case that the definite article, through its morphology, reflects the number and gender agreement of the nominal it occurs in, in an exclusive manner. Rather, all nominal categories in Greek e.g. nouns, adjectives, demonstratives, determiners, etc. inflect and their suffix carries agreement information. The agreement features number and gender of nominal categories inside an NP must be compatible. This is illustrated in (68) below:

- (68)   ola           afta           ta           aglika           vivlia  
 all-PL.NEUT these-PL.NEUT the-PL.NEUT English- PL.NEUT books-PL.NEUT  
 'all these English books'

Consider now definiteness. With the exception of the definite article, Greek nominal categories are “indefinite”:<sup>11</sup> when they occur on their own, they are assigned an indefinite interpretation. To illustrate, *podilato* (bike) in (69a) below is a referential nominal (notice the pronominal clitic *to* (it) in the second conjunct that refers back to it) and it receives the same interpretation as *ena podilato* (a bike) (see (69b)).

(69) a. *agorasa podilato ke to evala sto domatio mu*  
 bought-1.SG bike and it put-1.SG in room my

b. *agorasa ena podilato ke to evala sto domatio mu*  
 bought-1.SG a/one bike and it put-1.SG in room my

‘I bought a bike and put it in my room’

A nominal category is definite once it syntactically combines with a definite article and together they form a phrase. Evidence comes from polydefinite nominals. These phrases are instances of *definite concord*: their daughter constituents “agree in definiteness”, or alternatively, they are all definite phrases. No polydefinite can contain an indefinite daughter. For instance, (70) below is ill-formed since an indefinite adjective *kokino* (red) modifies the definite NP *to podilato* (the bike).

(70) \**to kenurio kokino to podilato*  
 the new red the bike

A first controversial issue in Karanassios’s work is precisely his analysis of the Greek definite article as a marker of agreement and definiteness. Though the definite article clearly marks a phrase definite, there is no substantial evidence that it is also a marker of number and gender agreement. In fact, treating the definite article as the head of agreement contradicts with formal aspects in Karanassios’s system. In particular, Karanassios assumes that functional and lexical categories

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<sup>11</sup>It can be argued that Greek demonstratives are inherently “definite” too and for that reason they syntactically combine with definite nominals. For more detail, see chapter 3.

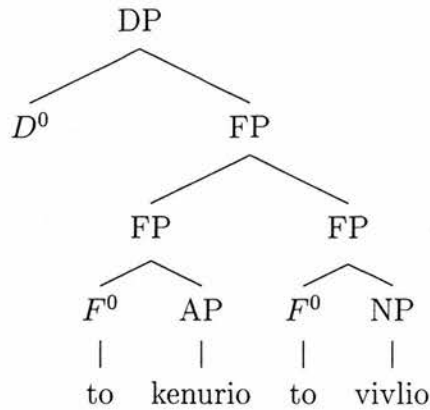
in a nominal phrase (e.g. the quantifier, the demonstrative, definite articles, adjectives, the noun, etc.) are required to agree with each other by *head-to-head agreement*. This device amounts to co-indexing of functional and lexical heads. It ensures that the categories  $Q^0$ ,  $D^0$ ,  $F^0$ ,  $A^0$ ,  $N^0$ , etc. of a nominal phrase carry identical agreement features. The requirement for head-to-head-agreement is satisfied in case of number and gender agreement. Functional and lexical categories in Greek NPs carry agreement information and they agree with each other in number and gender (see (68) above). However, head-to-head agreement is violated in case of definiteness. While the definite article (the head  $F^0$  in definite nominals) is inherently definite, other nominal categories such as nouns or adjectives are not so. Rather, when they do not cooccur with a definite article, they are associated with an indefinite interpretation (see (69) above). Karanassios suggests that definiteness is an agreement feature, like number and gender. Then, head-to-head agreement requires that all functional and lexical heads in a definite nominal should be definite, whereas they are not.

In [Karanassios, 1992], number and gender agreement in definite and indefinite nominals is not accounted for in a unified manner. However, there is no evidence that agreement is expressed in distinct ways in the two types of phrases. In particular, while the head  $F^0$  is explicit in definites (that position is occupied by the definite article), it is taken to be “abstract” in indefinites. In fact, *abstract* means *empty* and therefore the position can be employed as a landing site for head-to-head-movement. This asymmetry in syntactic representation does not seem correct. From an empirical point of view, number and gender agreement are identically expressed in definites and indefinites in Greek. Functional and lexical elements in both types of nominal denote agreement information. From a formal point of view, it is not clear in what sense an agreement head may be abstract. Since  $F^0$  of indefinites is not occupied by lexical material, it should somehow reflect the fact that it incorporates agreement features. However, it bears no trace displaying the presence of number and gender agreement. It is a weak point of Karanassios’s account that it provides no unified account of agreement in definite and indefinite NPs, without offering sufficient motivation for this asymmetry. This drawback of his system is a further piece of evidence that the assumption that the Greek definite article is a marker of number and gender agreement cannot be

maintained.

I proceed by considering a few more technical points concerning Karanassios's analysis. First, there are a number of problems for his account of polydefinites. We saw in the previous section that sequences consisting of a definite article and an adjective or AP are analysed as (secondary) FPs adjoined to the left or right of the core FP that dominates NP. Viz.:

(71)

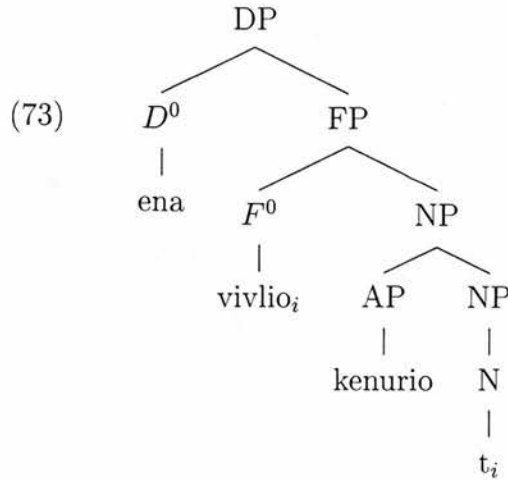


*Karanassios's analysis of the polydefinite to kenurio to vivlio (the new the book; 'the new book')*

In (71), the head  $D^0$  is empty. However, this is not really an option in Karanassios's system. Rather, Karanassios assumes that the definite article moves from its base position to a free  $D^0$  for reasons related to Case assignment (see above). However, if the definite article of the core FP *to vivlio* in (71) raises to  $D^0$ , then an ill-formed string will be generated:

(72) \*to to kenurio vivlio  
 the the new book

It is not clear by what means head-to-head movement is blocked in this configuration. In fact, Karanassios assumes that this type of movement is possible in (73) below:



*The derivation of ena vivlio kenurio (a/one book new)*

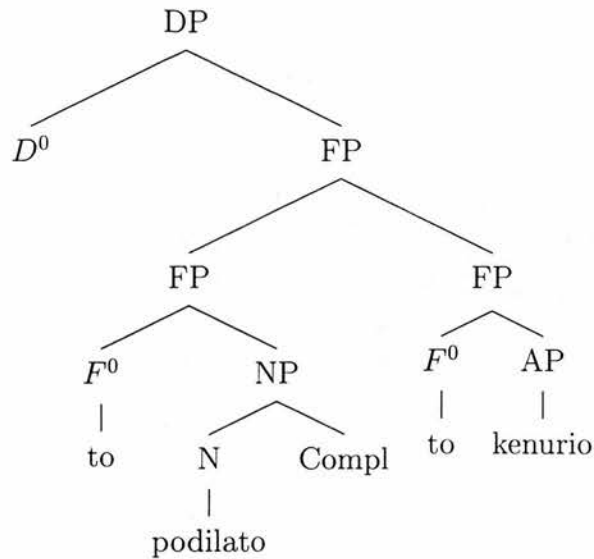
In (73), *vivlio* (book) was moved from  $N^0$  to the empty  $F^0$  across an adjoined AP that accommodates the adjective *kenurio* (new). The configuration in (73) is identical to the one discussed above. In both cases, we have head-to-head movement across an adjoined phrase: *kenurio* and *to kenurio*, respectively. Since the derivation in (73) is legitimate, it follows that Karanassios's grammar will also generate the ill-formed (72) above.

A further problem for Karanassios's account of polydefinite nominals is that it does not cover all the well-formed examples. Sequences consisting of a definite article and an adjective in Greek polydefinites may appear pre- or post-nominally. In fact, such sequences may also intervene between the noun head and a complement. Viz.:

- (74)    *to podilato to kenurio tu Yani*  
           the bike    the new    the-GEN Yanis-GEN  
           'Yanis's new bike'

Notice that Karanassios's grammar cannot generate examples such as (74). Post-nominal definite APs are analysed as FPs adjoined to the right of the core FP that dominates NP. Viz.:

(75)

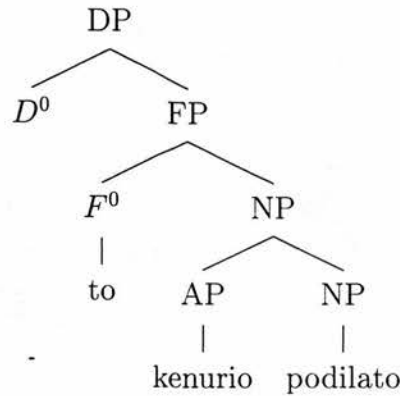


*Post-nominal adjectives in polydefinites*

Adjunction of a phrase on *zero* or *one* bar categories is not legitimate in Karanassios's system. For instance, it is not possible to adjoin a secondary FP to *kenurio* (the new) to the right of a noun *podilato* (bike), so that a polydefinite such as (74) above to be generated. In fact, Karanassios provides no other means for deriving such examples.

Adjunction is in general a controversial issue in Karanassios's work. No unified theory of adjunction is provided. Rather, certain types of categories are assumed to adjoin to the left or right, whereas other categories are taken to adjoin exclusively to the left. For example, adjectival FPs in polydefinites are taken to adjoin to the left or right of the core FP that dominates NP (see above). On the other hand, adjectives in monadic definites are assumed to adjoin only to the left of NPs. Viz.:

(76)



*The monadic definite to kenurio podilato (the new bike)*

Karanassios blocks right adjunction of APs for otherwise his grammar would generate monadic definites with post-nominal adjectives. Indeed, such examples are ungrammatical:

(77) \*to podilato kenurio

the bike new

Though Karanassios covers the word order facts, his account is inconsistent. The assumption that adjectival FPs may right-adjoin, whereas APs cannot do so is *ad hoc*. In addition, it is not clear how such a requirement can be formalized in his system.

We will finally consider Karanassios's treatment of demonstratives. We saw in the previous section that demonstratives in his system are taken to be determiners. Technically, they are base-generated under  $D^0$  in definite nominals:

(78) [ $D^0$  afto [FP  $F^0$  to [NP  $N^0$  vivlio]]]

this the book

'this book'

However, a determiner analysis of Greek demonstratives cannot fully cover their distribution. Unlike determiners, demonstratives do not always occur in the left periphery of the nominal phrase. Rather, they may occur inside the NP or in a final position. This is shown in (79a&b), respectively.

- (79) a. ta kenuria afta vivlia  
           the new     these books  
           'these new books'
- b. ta vivlia afta  
           the books these  
           'these books'

The configuration in (78) above cannot cover examples such as (79). To account for demonstratives in final position, Karanassios assumes the structure in (80) below, adopting a proposal by Horrocks and Stavrou (see section 2.3).



*Demonstratives in final position*

The distribution of Greek demonstratives in [Karanassios, 1992] is not accounted for in a unified manner. In fact, this inconsistency in his system is evidence that his determiner analysis of Greek demonstratives cannot be maintained.

In this section, I discussed a number of problems for Karanassios's analysis of the Greek nominal system. Though I argued that Karanassios's account as it stands cannot be maintained, I will further pursue a central hypothesis in this work: his proposal that the Greek definite article should be distinguished from other determiners and rather be treated as a marker of definiteness. In chapter 3, I provide a formal account of nominal categories in Greek that separates the definite article from the class of determiners. In this account, the notion "marker of definiteness" is assigned a precise semantic interpretation. Definiteness is analysed



in terms of *uniqueness* (in the sense of [Gawron and Peters, 1990]) and the definite article is taken to contribute its semantic content (a uniqueness requirement) to the nominal it occurs in, i.e. a noun, adjective or other nominal category.

## 2.5 Polydefiniteness and word order

### 2.5.1 Word order in monadic definites and polydefinites

In this section I discuss my earlier work on Greek definites (cf. [Kolliakou, 1993, 1994]) where I proposed that there is a correlation between NP word order and polydefiniteness. As illustrated by the following contrast, in monadic definites adjectives must precede nouns:

- (81) a. to kokino podilato  
the red bike  
'the red bike'
- b. \*to podilato kokino  
the bike red

On the other hand, adjectives may appear post-nominally in polydefinites, where they are immediately preceded by an extra definite article:

- (82) a. to podilato to kokino  
the bike the red  
'the red bike'
- b. to kenurio podilato to kokino  
the new bike the red  
'the new red bike'

The extra definite articles of polydefinite nominals can be taken to relate to post-nominal adjectives that are altogether excluded from monadic definites. However, we have seen that sequences consisting of a definite article and an adjective may also appear pre-nominally in the polydefinite construction:

- (83) to kokino to podilato  
 the red the bike  
 ‘the red bike’

Then, the difference between monadic definites and polydefinites in terms of word order is that the former exclusively allow pre-nominal adjectives, while the relative order of adjectives and the head noun in the latter is not constrained. In [Kolliakou, 1993, 1994], I associate the distribution of adjectives in monadic definites and polydefinites with two distinct modes for composing *word order domains*: *adjunction* and *merging*, respectively. Adjectives combining by merging are those that serve as hosts for the extra definite articles of polydefinites. In section 2.5.2 below, I outline Reape’s theory of word order domain (cf. [Reape, 1991, 1992]). In section 2.5.3, I define and exemplify adjunction and merging. In section 2.5.4, I provide an account of the two types of Greek definites—monadics and polydefinites—within the framework of Head-driven Phrase Structure Grammar (HPSG). Finally, in section 2.5.5, I discuss problems for this analysis.

## 2.5.2 Word order domains

Reape (1991, 1992) provides a theory of word order and discontinuous constituency. According to this theory, a phrase has a syntactic structure that for instance reflects subcategorization requirements of the syntactic heads this phrase contains, and, moreover, a *word order domain* that reflects linear precedence relations holding between the lexical and phrasal constituents of the phrase.<sup>12</sup> By way of illustration, we will consider an example of discontinuous constituency from Reape—the German subordinate clause in (84).

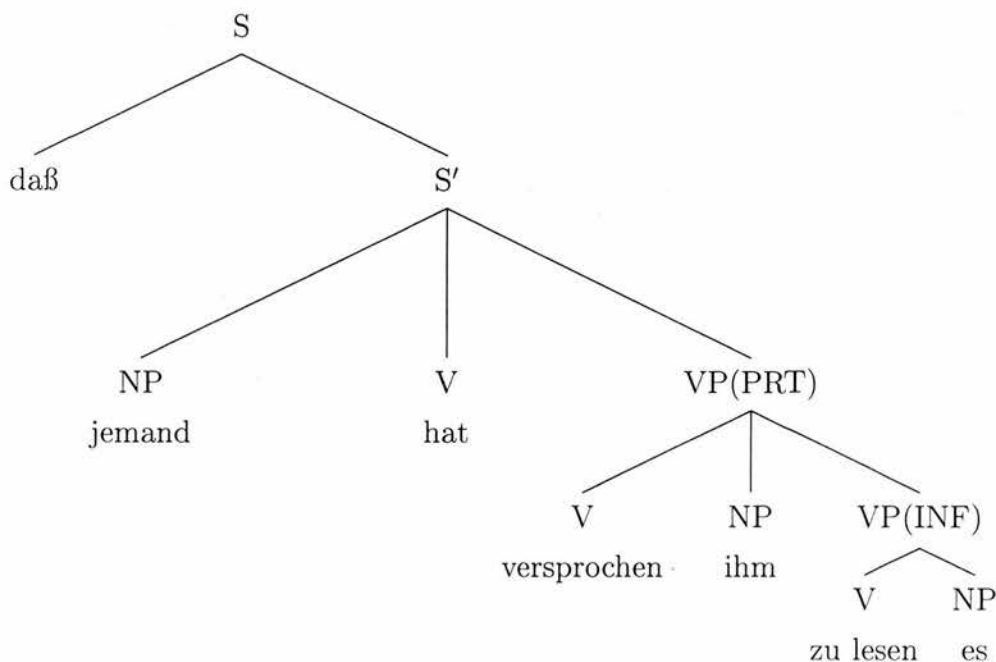
- (84) daß es ihm jemand zu lesen versprochen hat  
 that it-ACC him-DAT someone-NOM to read promised has  
 ‘that someone has promised him to read it’

---

<sup>12</sup>Henceforth, *word order domains* will also be referred to as *order domains*, or, simply, *domains*.

The tree-diagram in (85) below illustrates the syntactic structure that Reape assigns to (84). In particular, Reape assumes an analysis of the complex predicate *zu lesen versprochen hat* on the lines of [Gazdar et al., 1985], or [Pollard and Sag, 1994] for similar English constructions: the auxiliary *hat* is shown to take a nominative subject and a past participle (PRT) VP complement that is “missing” a subject—this subject is coreferential with the subject of *hat* (*jemand*). Similarly, the *equi versprochen* is assumed to subcategorize for a nominative subject (this subcategorization requirement is not saturated, and, in this respect, *versprochen* is missing its subject), a dative indirect object and an infinitive (INF) VP complement that is also “missing” a subject—the missing subject of *zu lesen* is coreferential with that of the *equi* verb, and, therefore, in this case, with *jemand*.

(85)

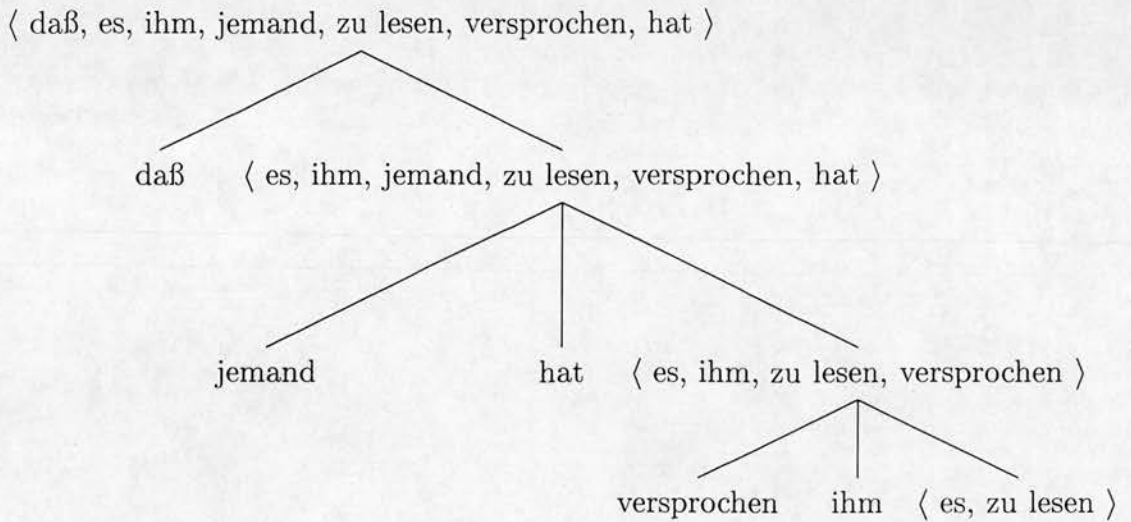


*The syntactic structure of daß es ihm jemand zu lesen versprochen hat*

The composition of the word order domain of the German subordinate clause in (84) from the order domains of its constituents is shown in the tree-diagram in (86). The order of elements in individual word order domains is defined in terms of *linear precedence statements*, in the sense of [Gazdar et al., 1985], or [Pollard

and Sag, 1987]. Linear precedence (LP) constraints capture generalizations concerning the relative order of syntactic constituents. For instance, all the domains in (86) reflect an LP constraint stating that NPs should precede VPs.

(86)



*The word order domains of daß es ihm jemand zu lesen versprochen hat*

Reape's theory of word order claims that:

1. Word order domains are locally definable: an order domain is assigned to each (phrasal) constituent of a sentence. For example, the syntactic constituent [[ versprochen ] [ ihm ] [[ zu lesen ] [ es ]]] (promised him to read it) that is a complement of the auxiliary hat (has) (see (85) above) is assigned the order domain ⟨ es, ihm, zu lesen, versprochen ⟩ (see (86)).
2. The word order domain of a phrase is constructed compositionally from the order domains of its daughters (and/or its lexical daughters that have no word order domain). For example, the domain ⟨ es, ihm, jemand, zu lesen, versprochen, hat ⟩ of the sentence [[ jemand ] [ hat ] [[ versprochen ] [ ihm ] [[ zu lesen ] [ es ]]]] (someone has promised him to read it) is constructed from the domain ⟨ es, ihm, zu lesen, versprochen ⟩ of the VP daughter and the lexical items jemand and hat.

3. The elements of the word order domain of a syntactic daughter may themselves be elements of the domain of the mother, and moreover they may appear discontinuously or nonadjacently in the mother's domain. For example, the elements *es* and *zu lesen* of the domain of the VP complement of *versprochen* appear nonadjacently in its mother's domain:  $\langle \textit{es}, \textit{ihm}, \textit{zu lesen}, \textit{versprochen} \rangle$ .

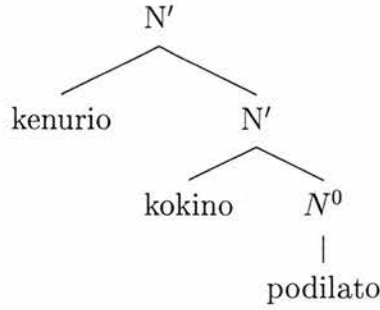
*Monotonicity* is an important feature of Reape's domain theory: linear order constraints, which are reflected in the relative order of elements inside word order domains, are inherited monotonically bottom-up, and once they are introduced, they cannot be removed. To illustrate, inside the domain  $\langle \textit{es}, \textit{zu lesen} \rangle$ , the pronoun *es* is shown to precede the infinitive *zu lesen*. This order cannot change, for instance, Reape's system will *not* generate the (mother) domain  $^*\langle \textit{ihm}, \textit{zu lesen}, \textit{versprochen}, \textit{es} \rangle$ , where *es* follows *zu lesen*.

### 2.5.3 Adjunction and merging

In [Kolliakou, 1993, 1994], I identify two modes for composing word order domains: *adjunction* and *merging*. Let us consider each one in turn.

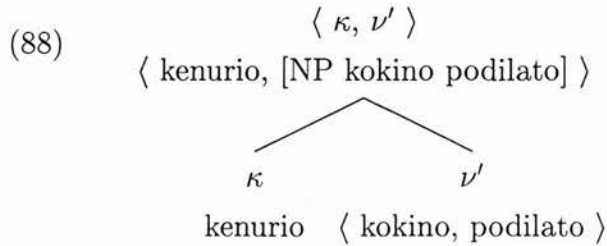
In adjunction, an *adjoining* constituent is an element of its syntactic mother's word order domain. In addition, the syntactic sister of an adjoining constituent is an element of the mother's domain. Finally, the adjoined constituent precedes its syntactic sister inside the mother's domain. Word order domains that are composed in terms of adjunction are "configurational". By way of illustration, consider the phrase *kenurio kokino podilato* (new red bike). The syntactic structure of this phrase is as shown in (87).

(87)



*The syntactic structure of kenurio kokino podilato (new red bike)*

The order domain of **kenurio kokino podilato** is composed by adjunction. Therefore, it contains exactly two elements: the *adjoined* adjective **kenurio** and the syntactic sister of **kenurio**—the phrase **kokino podilato**. **kenurio** is *adjoined* in the sense that it does not mingle with the elements of the domain of its syntactic sister, which is  $D = \langle \text{kokino, podilato} \rangle$ . The composition of the word order domain of **kenurio kokino podilato** in terms of adjunction is shown in (88) below, where  $\kappa$  stands for the adjective **kenurio** and  $\nu'$  stands for the  $\bar{N}$  **kokino podilato**.<sup>13</sup>



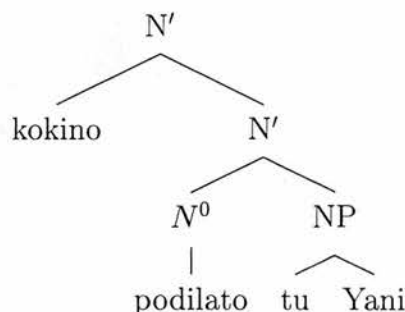
*The composition of the order domain of kenurio kokino podilato (new red bike) by adjunction.*

Consider next merging. In merging, a *merging* constituent is an element of its syntactic mother's word order domain. In addition, the domain elements of the syntactic sister of the merging constituent are elements of the mother's domain and may appear nonadjacently in it, provided their relative order is preserved. Domains that are composed by merging are "flat". Consider for instance the  $\bar{N}$

<sup>13</sup>As will be shown in the next section, domain elements are HPSG feature structures of sort *sign*. That is, they are words or phrases that *inter alia* carry phonological and syntactic information.

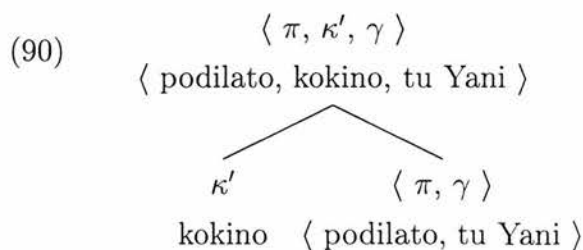
podilato kokino tu Yani (bike red of Yanis; red bike of Yanis's). It is assigned the following syntactic structure:

(89)



*The syntactic structure of podilato kokino tu Yani (red bike of Yanis's)*

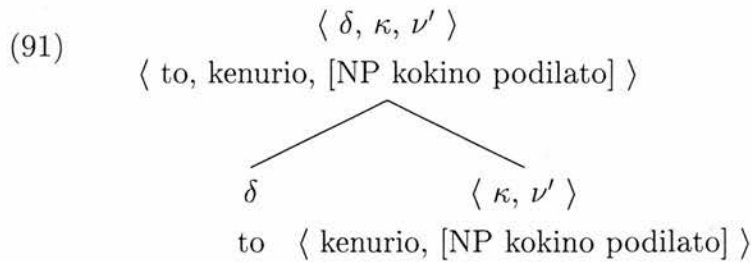
The word order domain of this phrase is constructed by merging: the adjective *kokino* (red) that intervenes between the noun head and its complement is a *merged* constituent. The syntactic sister of that adjective is the  $\bar{N}$  *podilato tu Yani* (bike of Yanis) with domain  $D = \langle \pi, \gamma \rangle$ , where  $\pi$  stands for *podilato* (bike) and  $\gamma$  for the genitive nominal *tu Yani* (of Yanis). The order domain of the syntactic mother contains three constituents: the adjective *kokino* (red) that is represented as  $\kappa'$ , the noun head *podilato* (bike) and the complement phrase *tu Yani* (of Yanis). This is shown in (90).



*The composition of the order domain of podilato kokino tu Yani (bike red of Yanis's) by merging.*

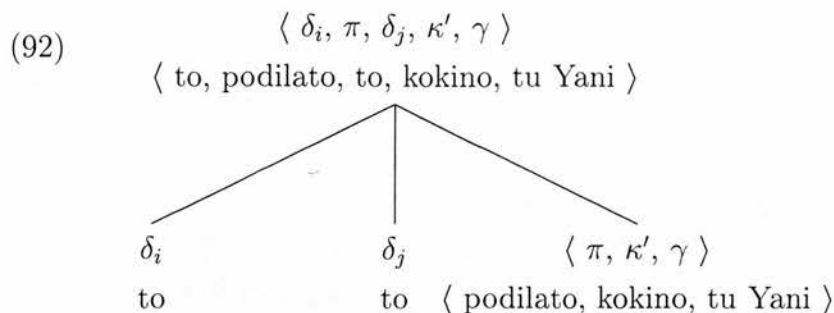
In [Kolliakou, 1993, 1994], I assume that adjectives may be either adjoined or merged in the word order domain of Greek NPs. On the other hand, definite articles are always merged. In addition, I postulate that definite articles immediately

precede or “attach” to lexical elements, rather than phrases. More specifically, I take the order domain of monadic definites to be composed by adjunction: these domains contain only adjoined adjectives (if any). They are configurational, and, therefore, provide a single host for a single definite article to attach: the top adjective, or alternatively, the noun, in case of monadic definites that contain no adjectives. For example, in the order domain  $D = \langle \kappa, \nu' \rangle$  of the  $\bar{N}$  **kenurio kokino podilato** (new red bike) (see (88) above), a unique lexical element is available for a definite article  $\delta$  to attach: the adjoined adjective **kenurio** ( $\kappa$ ). (91) below illustrates the composition of the order domain of the monadic definite **to kenurio kokino podilato** (the new red bike).



*The composition of the order domain of the monadic definite to kenurio kokino podilato (the new red bike).*

On the other hand, the order domain of Greek polydefinites is composed by merging: these domains contain merged adjectives and thus provide extra hosts for multiple definite articles to attach. For example, the domain of the  $\bar{N}$  **podilato kokino tu Yani** (bike red of Yanis; red bike of Yanis’s) (see (90) above) that includes the merged adjective **kokino** (red), provides two hosts for two definite articles  $\delta_i$  and  $\delta_j$  to attach: the noun **podilato** (bike) and the merged adjective **kokino** (red). Viz.:



The composition of the order domain of the polydefinite *to podilato to kokino tu Yani* (the bike the red of Yanis; 'the red bike of Yanis's').

#### 2.5.4 An HPSG account

The analysis of monadic definites and polydefinites provided in [Kolliakou, 1993, 1994] is couched in the framework of Head-driven Phrase Structure Grammar (HPSG) (cf. [Pollard and Sag, 1987, 1994]). In this section, I outline the major features of this analysis.

In HPSG (cf. [Pollard and Sag, 1994]), a phrase is conceived as a *feature structure* that *inter alia* bears the feature DAUGHTERS (DTRS) (see below). This feature determines the constituents (daughters) of a given phrase. For instance, a phrase may consist of a *head-daughter* and an *adjunct-daughter*, or a *head-daughter* and a *complement-daughter*, etc. DTRS also contains information relevant to the phonological value of a phrase's daughters, their word order domains, their subcategorization requirements, etc. The syntactic structure of phrases, which was represented in terms of (syntactic) tree-diagrams in the previous section, is here captured by the DTRS attribute.

In an HPSG implementation of his word order theory, Reape (1991, 1992) defines a feature DOMAIN (DOM) that he assigns to phrases, and which stands for their word order domain. The value of this feature is a *list*, and it is represented as a sequence of elements inside angle brackets. The DOM list reflects the linear order of the words a phrase consists of, and contains the daughter constituents of the phrase and/or the domain elements of these constituents.

By way of illustration, consider the *Attribute Value Matrix (AVM)* in (93).<sup>14</sup>

$$(93) \quad \left[ \begin{array}{l} \textit{podilato kokino tu Yani} \\ \\ \textit{DTRS} \left[ \begin{array}{l} \textit{HEAD - DTR} \left[ \begin{array}{l} \textit{podilato tu Yani} \\ \textit{DOM} < \boxed{1}, \boxed{2} > \end{array} \right] \\ \\ \textit{ADJUNCT - DTR} \boxed{3} \textit{ kokino MERGED+} \end{array} \right] \\ \\ \textit{DOM} < \boxed{1}, \boxed{3}, \boxed{2} > \end{array} \right]$$

*The DTRS and DOM attributes of the  $\bar{N}$  podilato kokino tu Yani  
(bike red of Yanis)*

(93) shows the DTRS and DOM attributes of the  $\bar{N}$  *podilato kokino tu Yani* (bike red of Yanis). This phrase consists of a head daughter *podilato tu Yani* (bike of Yanis) and a merging adjunct daughter *kokino* (red); (the specification MERGED+ on the adjunct daughter will be explained below). The word order domain DOM of this phrase, composed by merging, contains the (merged) adjective  $\boxed{3}$  and the domain elements of the head daughter  $\boxed{1}$  and  $\boxed{2}$ , where  $\boxed{1}$  stands for the noun *podilato* (bike) and  $\boxed{2}$  stands for the NP complement *tu Yani* (of Yanis). The elements  $\boxed{1}$  and  $\boxed{2}$  of the domain of the head daughter appear discontinuously inside the domain of the mother.

In HPSG, the DAUGHTERS value of a phrase is determined by the interaction of a set of principles of the grammar, e.g. the Immediate Dominance (ID) Principle, the Head Feature Principle, the Subcategorization Principle, the Semantics Principle, (cf. [Pollard and Sag, 1994]).<sup>15</sup> On the other hand, the DOMAIN value of a phrase is determined by the Merger Principle (cf. [Kolliakou, 1993, 1994]) that is essentially a variant of Reape's Domain Principle. The Merger Principle is given in (94) below.

<sup>14</sup>In HPSG, AVMs graphically represent feature structures.

<sup>15</sup>These principles are discussed in the following chapters where relevant.

- (94) *The Merger Principle.* In a *headed structure*, the *nonhead daughter* is an element of the DOM list. If the nonhead daughter is MERGED–, then the *head daughter* is an element of the DOM list. If the nonhead daughter is MERGED+, then the elements in the head daughter’s DOM list are elements of the DOM list and they may appear discontinuously in it, provided their relative order is preserved.

*Nonhead daughter* is not a technical term in HPSG. Rather, I use it as a cover-term: it ranges over adjunct daughters and specifier daughters (the latter is a kind of complement daughter that I discuss in some detail below). As stipulated by the Merger Principle, whether the word order domain of a phrase is composed by adjunction or merging is determined by the boolean feature MERGED on the nonhead daughter. I assume that Greek adjectives (adjunct daughters) are ambiguous between a MERGED– and a MERGED+ instantiation, therefore they may be adjoined (e.g. in monadic definites), or merged (e.g. in polydefinites), (see previous section). In (93) above, the adjective *kokino* (red) is MERGED+. Therefore, by the Merger Principle, the domain of the mother is composed by merging and it contains *kokino* and the domain elements of the head daughter.

Word order domains reflect linear precedence (LP) constraints (cf. [Gazdar et al., 1985], [Pollard and Sag, 1987]). For instance, adjoining adjectives that are specified MERGED– are required to precede the  $\bar{N}$  inside their mother’s domain by the LP Constraint in (95):

- (95) *LP Constraint on Adjoined Adjectives:*

[HEAD adj, MERGED–] < [HEAD noun]

(95) essentially states that an adjectival category that is specified MERGED–, and therefore, it is adjoined, linearly precedes a noun category inside the syntactic mother’s domain.<sup>16</sup> This rule ensures that in monadic definites, which exclusively contain adjoining adjectives (if any), adjectives occur only pre-nominally. The AVM in (96) below shows the DTRS and DOM attributes of the  $\bar{N}$  *kenurio kokino*

<sup>16</sup>The HPSG feature HEAD and the type of value it takes will be discussed in detail in chapter 3.

podilato (new red bike). The adjunct daughter of this phrase is the adjective *kenurio* (new) [2] that is specified MERGED-. Therefore, the mother's domain is composed by adjunction, as required by the Merger Principle, and the adjective linearly precedes its  $\bar{N}$  sister [1], as required by the LP statement (95).

$$(96) \left[ \begin{array}{l} \textit{kenurio kokino podilato} \\ \\ \textit{DTRS} \left[ \begin{array}{l} \textit{HEAD} - \textit{DTR} [1] \textit{ kokino podilato} \\ \textit{ADJUNCT} - \textit{DTR} [2] \textit{ kenurio MERGED-} \end{array} \right] \\ \\ \textit{DOM} < [2], [1] > \end{array} \right]$$

*DTRS and DOM attributes of the  $\bar{N}$  kenurio kokino podilato (new red bike)*

On the other hand, no LP statements control the ordering of merged adjectives. It follows that the merged adjectives of polydefinites that qualify as hosts for extra definite articles occur either pre- or post- nominally.

Let us now consider how definite articles fit into the picture. In [Kolliakou, 1993, 1994], I treat definite articles as specifiers. More precisely, in monadic definites, the unique definite article is taken to be a specifier subcategorized by the head noun.<sup>17</sup> Consider the AVM in (97) below.

<sup>17</sup>[Pollard and Sag,1994] make a similar proposal for the syntactic licensing of determiners, which I discuss in some detail in chapter 3. Further, Borsley (e.g. [Borsley, 1983, 1987]) assumes an individual feature for subcategorizing for specifiers (as opposed to subjects and (object) complements) that he calls SPEC.

$$(97) \left[ \begin{array}{l} \textit{to kenurio kokino podilato} \\ \\ \textit{DTRS} \left[ \begin{array}{l} \textit{HEAD} - \textit{DTR} \left[ \begin{array}{l} \textit{kenurio kokino podilato} \\ \textit{SPR} \{ \boxed{3} \textit{def} \} \\ \textit{DOM} < \boxed{2}, \boxed{1} > \end{array} \right] \\ \\ \textit{SPR} - \textit{DTR} \boxed{3} \textit{ to MERGED+} \end{array} \right] \\ \\ \textit{DOM} < \boxed{3}, \boxed{2}, \boxed{1} > \end{array} \right]$$

*the DTRS and DOM attribute of the monadic definite  
to kenurio kokino podilato (the new red bike)*

(97) shows the DAUGHTERS and DOMAIN attribute of the monadic definite to kenurio kokino podilato (the new red bike). This phrase consists of a head daughter and a specifier daughter. The head daughter is the  $\bar{N}$  kenurio kokino podilato (new red bike), with order domain  $\text{DOM} \langle \boxed{2}, \boxed{1} \rangle$ , where  $\boxed{2}$  is the adjoined adjective kenurio (new) and  $\boxed{1}$  is the  $\bar{N}$  kokino podilato (red bike). In addition, the head daughter carries a valence feature SPECIFIER (SPR), through which it selects for a definite article. The SPR specification originates from the lexical noun podilato and propagates along the noun projection until it is saturated by some appropriate element, in this case, to.<sup>18</sup> The treatment of definite articles as subcategorized elements (specifiers) enables a straightforward account to be provided for number / gender agreement and case concord between a definite article and the  $\bar{N}$  head: the singular neuter podilato, for example, selects for the singular neuter form of the definite article (to).<sup>19</sup>

Consider next the specifier daughter in (97), i.e. the definite article  $\boxed{3}$ . It is marked MERGED+, therefore, it is merged in the DOMAIN list of its syntactic

<sup>18</sup>In [Pollard and Sag, 1994], unsaturated subcategorization requirements of the head propagate upwards by the Subcategorization Principle.

<sup>19</sup>For expository convenience, agreement between the noun head and the definite article, which is lexically specified, is not illustrated in (97).

mother's by the Merger Principle. The position of the single definite article of monadic definites is determined by two factors: (a) an LP constraint governing the positioning of definite articles and (b) the "configurationality" of the mother's domain that is composed by adjunction. Consider the LP constraint in (98) below on the positioning of definite articles.

(98) *LP Constraint on the Positioning of Definite Articles:*

[HEAD def]  $\ll$  [word], where  $\ll$  stands for *immediately precedes*.

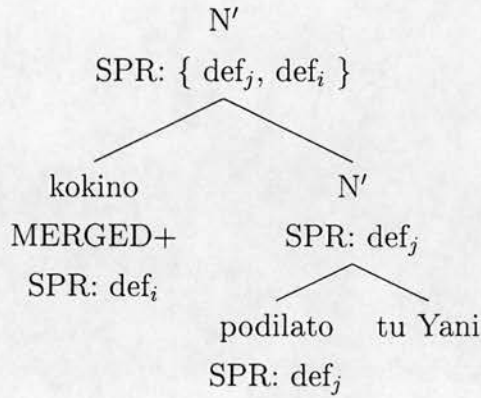
(98) states that a definite article must immediately precede a word. Therefore, inside the domain of *kenurio kokino podilato* in (97) above, the unique appropriate element for the definite article to attach to is the adjoined adjective *kenurio* (new) [2]. [1], which is the other element of this domain, is a phrase. Thus, in accordance with the LP statement in (98), the definite article is located to the left of the adjoined adjective.

We will next consider the licensing of (extra) definite articles in polydefinites. In the current system, an important difference between monadic definites and polydefinites is that only the latter contain merged adjectives. As we have seen in the previous section, such adjectives serve as hosts for spare definite articles to attach to. In [Kolliakou, 1993, 1994], I assume that each merged (MERGED+) adjective of a polydefinite syntactically selects for a definite article via the valence feature SPR (SPECIFIER), like nouns. However, the SPR requirement of a merged adjective is not locally saturated, rather it is *transferred* or added to the SPR value of the noun head, in terms of the Transferable SPR Principle.<sup>20</sup> Thus, it is ultimately the  $\bar{N}$  head daughter that selects for all of the definite articles in a polydefinite. This is schematically shown in (99) for the  $\bar{N}$  *podilato kokino tu Yani* (bike red of Yanis), which contains the merged adjective *kokino*.

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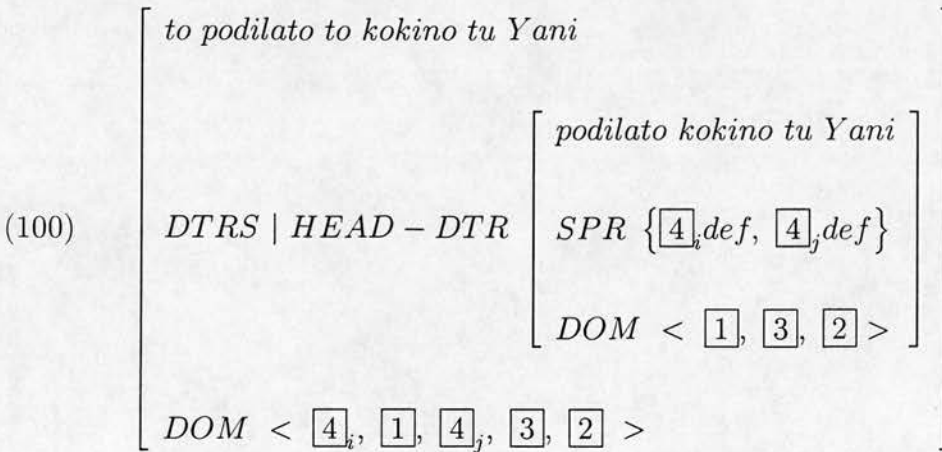
<sup>20</sup>This principle is similar to Flickinger and Nerbonne's (1992) *Transferable Subcat Principle*. Flickinger and Nerbonne assume that an *easy* adjective may either directly combine with its infinitival complement, as in *John is easy to please*, or, alternatively, its subcategorization requirement is "transferred" to the noun the *easy* adjective modifies. E.g. in *John is an easy person to please*, it is the whole  $\bar{N}$  *easy person* that combines with *to please*. This is possible since the subcategorization requirement of *easy* has been transferred to the subcat feature of the noun *person* and from there propagates onto the  $\bar{N}$  projection.

(99)



*Transfer of a merged adjective's SPR value to the head's SPR value*

The AVM in (100) below illustrates the HEAD-DTR and DOM attribute of the polydefinite *to podilato to kokino tu Yani* (the bike the red of Yanis; 'Yanis's red bike').



*HEAD-DTR and DOM attribute of the polydefinite to podilato to kokino tu Yani (the bike the red of Yanis; 'Yanis's red bike')*

The head daughter is the  $\bar{N}$  *podilato kokino tu Yani* (bike red of Yanis). Its domain is composed by merging (see above) and contains two appropriate hosts for two definite articles to attach to: the noun  $\boxed{1}$  and the merged adjective  $\boxed{3}$ . In addition, this  $\bar{N}$  subcategorizes for two definite articles,  $\boxed{4}_i$  and  $\boxed{4}_j$ , one of which originates from the merged adjective.<sup>21</sup> One of the definite articles is located to

<sup>21</sup>Both definite articles are represented by the same tag  $\boxed{4}$ , as they are coreferential and they carry the same agreement features. For expository purposes, I have employed the subscripts  $i$  and  $j$  that have no theoretical import.

the left of the noun (1), and the other to the left of the merged adjective (3). These are the only two lexical elements of the domain, and, therefore, the LP Constraint on the positioning of definite articles is satisfied.

In this section, I have presented an HPSG account of monadic definites and polydefinites. The basic insight underlying this account is that polydefiniteness correlates with NP word order in Greek. In the following section, I discuss certain problems for this analysis.

### 2.5.5 Problems

The analysis of monadic definites and polydefinites I provide in [Kolliakou, 1993, 1994] has two main problems. First, the distribution of definite articles is not fully accounted for. Second, this analysis cannot be extended to a satisfactory account of word order in indefinite nominals. In this section, I discuss these two problems in turn.

A central assumption in my previous work on Greek definite nominals is that definite articles immediately precede or “attach” to appropriate “hosts” inside a word order domain. In [Kolliakou, 1993, 1994], a host is a lexical item, adjective or noun. The distribution of definite articles is controlled by a linear precedence constraint (see (98) above) that requires that a definite article should precede a lexical item in a local domain. Motivation for this constraint comes from both monadic definites and polydefinites. In the former, the unique definite article immediately precedes the top adjective, or alternatively, the noun, in case of monadic definites that contain no adjectives. In polydefinites, extra definite articles immediately precede pre- or post-nominal adjectives. The adjunction and merging modes for composing word order domains ensure that the right amount of hosts are accessible to definite articles in the domains of monadic definites and polydefinites. However, the generalization that definite articles exclusively precede lexical elements is too strong. Definite articles may also precede phrases, for example, APs. In (101) below, the definite article precedes the AP *entelos kenurio* (entirely new).

- (101) to entelos kenurio podilato  
 the entirely new bike

The sequence *entelos kenurio* is a phrasal constituent (AP) in its syntactic mother's domain. On the other hand, *podilato* (bike) is a lexical noun. (101) violates the LP constraint on the positioning of definite articles: the definite article *to* immediately precedes a phrase rather than a word. However, the ill-formed string \**entelos kenurio to podilato* (entirely new the bike), where the definite article is located to the left of the noun, rather than the AP, satisfies that constraint. The analysis I provide in [Kolliakou, 1993, 1994] is lacking the means for identifying all the appropriate elements (hosts) that definite articles can attach to inside word order domains. In order to account for examples such as (101), the linear precedence constraint for the positioning of definite articles must be replaced by a much more complex statement. That statement will for instance allow definite articles to attach to lexical adjectives or APs and prevent them from attaching to a noun in case it is preceded by an AP inside the word order domain. However, such an approach to the distribution of definite articles is not appealing, as it does not capture any generalizations.

The second problem for my previous analysis of Greek definites is that it cannot be extended to a satisfactory account of other nominal classes. In [Kolliakou, 1993, 1994], the occurrence of multiple definite articles in polydefinite nominals is associated with a particular word order pattern. The adjectives of polydefinites that are immediately preceded by a spare definite article are located either pre- or post-nominally. On the other hand, adjectives of monadic definites are required to precede the noun. However, as was shown in section 2.4 above, free adjective/noun order also occurs in indefinite nominals in Greek. E.g.:

- (102) a. ena kokino podilato  
 a/one red bike  
 'a red bike'

b. ena podilato kokino  
a/one bike red  
'a red bike'

c. ena kenurio podilato kokino  
a/one new bike red  
'a new red bike'

The distribution of adjectives in Greek indefinites cannot be accounted for in terms of merging. As we saw in the previous section, merged adjectives, which freely occur pre- or post- nominally, trigger (sparse) definite articles. The approach described previously to word order in definite NPs cannot be integrated into a unified account of NP word order for Greek. From an empirical point of view, it is counter-intuitive to provide distinct accounts for the distribution of adjectives in definite and indefinites, despite the fact that the same linearization patterns are found in both types of nominals. From a theoretical point of view, a satisfactory theory of word order is expected to cover a wide range of data, rather than being motivated by a particular construction (polydefinites). For these reasons, the analysis of Greek definites in [Kolliakou, 1993, 1994] has not been maintained. Rather, I provide a quite distinct account, covering a wide range of Greek nominal categories, in the next chapter. In this account, the hypothesis that there is a connection between polydefiniteness and NP word order in Greek is not pursued any further. Though my previous work on monadic definites and polydefinites has not been integrated into an account of all major types of Greek NPs, certain features of this work are worth pursuing further. For example, an intriguing hypothesis for further research on the Greek noun phrase is that the distribution of pronominal clitics in Greek NPs can be accounted for in terms of the domain theory (for more detail, see chapter 6).

## Chapter 3

# Definiteness and the Make-up of Nominal Categories

### 3.1 Overview

In this chapter, I present an approach to definiteness and the make-up of nominals in Modern Greek, couched in the framework of HPSG. In particular, this account is concerned with the internal structure of various types of Greek nominal phrases, the import of the definite article in monadic definites and polydefinites, and the syntax of elliptical nominals. There are two main hypotheses underlying my analysis: (a) the various nominal categories (nouns, adjectives, determiners, etc.) are not entirely disjoint as is traditionally assumed, rather they are partly unified, and (b) the definite article in languages like Greek which exhibit definite concord phenomena is not a determiner, rather it is a *marker of definiteness*. On the one hand, generalizations concerning the various nominal categories are captured in terms of *inheritance*, (see e.g. [Flickinger, 1987], [Flickinger and Nerbonne, 1992], [Carpenter, 1992]). On the other hand, the definite article is distinguished from determiners both at the syntactic and semantic level: it is viewed as an adjunct that does not affect the syntactic category of the nominal it makes part of, rather its contribution is semantic and is expressed in terms of uniqueness entailments, in the sense of [Gawron and Peters, 1990]. From these hypotheses, straightforwardly derives an account of definite concord and nominal ellipsis, one which remedies a number of intrinsic problems for accounts that posit empty constituents (see

chapter 2). Moreover, the current approach can be naturally extended to cover similar phenomena in a wide range of languages, e.g. Mainland Scandinavian (cf. [Börjars, 1994]) and Semitic (Hebrew and Arabic).<sup>1</sup>

From a theoretical point of view, the analysis of the Greek nominal system presented here is intended to complement descriptions of English-style, determiner-centric systems (see e.g. the approaches to the syntax of the English noun phrase discussed in chapter 2), by accommodating definite concord phenomena, “determinerless” NPs, and elliptical nominals that altogether lack a noun head. Moreover, the current account, by utilizing HPSG resources, aims to provide a clearer insight into commonly assumed but poorly understood notions, for instance, “marker of definiteness”. HPSG feature structures, which integrate syntactic and semantic information, may provide a full characterization of what a marker of definiteness is, both at the syntactic and semantic level. Therefore, unlike previous approaches to Greek polydefinites (see e.g. [Karanassios, 1992] in section 2.4), the one proposed here does not confine itself to accounting for the syntactic combining of a definite article with a nominal category, rather, it also explains what a definite nominal signifies, and which is the difference, in terms of meaning, between monadic definites and polydefinites and indefinite nominal categories. In order to get some insight into how the polydefinite construction works, we need direct access to the semantic component, and such access is available in HPSG. A further objective of the current work is to explain why apparently distinct nominal categories to a large extent exhibit the same distribution. Inheritance, that is, the idea that individual categories are associated with their common (shared) properties by being members of the same supercategories (sorts), enables us to identify the unifying properties of nominal categories, and, therefore, express generalizations concerning their distribution. Hence, unlike other analyses of the internal structure of nominals (see e.g. Giusti’s work, in section 2.2.3), the one proposed here not only does account for the syntactic status and behaviour of various categories (quantifiers, demonstratives, the cardinals, etc.), but, moreover, captures their commonalities. Accordingly, a wide range of nominal phrases is accounted for, including elliptical examples, and this is achieved without resorting to otherwise unmotivated constructs (empty heads).

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<sup>1</sup>For some discussion, see chapter 6.

In section 3.2, I consider a few theoretical concepts such as *hierarchical lexicon*, *sort hierarchy* and *inheritance*, and I provide a cross-classification of Greek nominal categories, in terms of inheritance. In section 3.3, I discuss previous HPSG approaches to determiners (cf. [Netter, 1994] and [Pollard and Sag, 1994]), I demonstrate that they cannot be extended to Greek, and I present a distinct account for Greek determiners and *numerals* (the latter subsume the cardinals and elements such as *poli* (many) or *ligi* (few)). This account covers both canonical and elliptical examples. In section 3.4, I sketch an HPSG non-quantificational analysis of definites, that relies on Gawron and Peters' (1990) notion of uniqueness. Moreover, I provide a syntactic treatment of the Greek definite article as an adjunct. Accordingly, I demonstrate that polydefinite nominals can be naturally analysed as instances of definite concord. In section 3.5, I examine more complex types of polydefinites and show how an analysis of other nominal elements such as demonstratives can be integrated into the proposed account. In section 3.6, I formulate the Uniqueness Principle and deal with a few technical issues. Finally, in section 3.7, I sketch an account of word order asymmetries in Modern Greek NPs.

## 3.2 Inheritance and a cross-classification of Greek nominal categories

In this section, I discuss the advantages of representing lexical information *hierarchically* and in terms of *inheritance*. Moreover, I demonstrate that the commonalities of apparently distinct nominal categories in Greek can be straightforwardly captured by inheritance. Accordingly, I work out a hierarchy of nominal sorts for Greek.

### 3.2.1 Lexicalism and the hierarchical lexicon

HPSG is a radically lexicalized theory of grammar. The lexicon plays a key role in dealing with either local phenomena such as subcategorization, and thematic role and case assignment, or the so-called “movement phenomena”, e.g. topicalization,

relativization, etc.

Predicates are lexically specified for a list of arguments, the SUBCAT list. Crucially, arguments are ordered in terms of *obliqueness* (cf. [Keenan and Comrie, 1977]) inside a transitive verb's subcat list: a less oblique argument e.g. the subject, precedes a more oblique argument, e.g. the direct object. This ordering enables anaphoric binding constraints to be stated, hence, the theory posits no configurational notions such as *C-Command*, as traditionally done in transformational grammars. Thematic role assignment takes place in the lexicon: the arguments of the predicate's subcat list are associated with appropriate thematic roles in the predicate's content structure. Case assignment is also lexically based: the various subcategorized arguments are specified for case in the predicate's subcat value. As an example, consider the inflected verb form *kicks*. In HPSG, it is lexically determined that *kicks* takes two arguments, a nominative NP and an accusative NP, moreover, that the nominative NP is understood as the AGENT (KICKER), while the accusative NP as the PATIENT (KICKEE). Two objects appear in the SUBCAT list of *kicks*, one is specified CASE *nom*, the other CASE *acc*. Moreover, the value of their referential indices, [1] and [2], respectively, is identical to that of the attributes KICKER and KICKEE in the CONTENT of the verb. This is summarized in (103).

$$(103) \quad \left[ \begin{array}{l} \text{CAT} \mid \text{SUBCAT} < [1]_{\text{nom}} [2]_{\text{acc}} > \\ \\ \text{CONT} \left[ \begin{array}{l} \text{RELN } \textit{kick} \\ \text{KICKER } [1] \\ \text{KICKEE } [2] \end{array} \right] \end{array} \right]$$

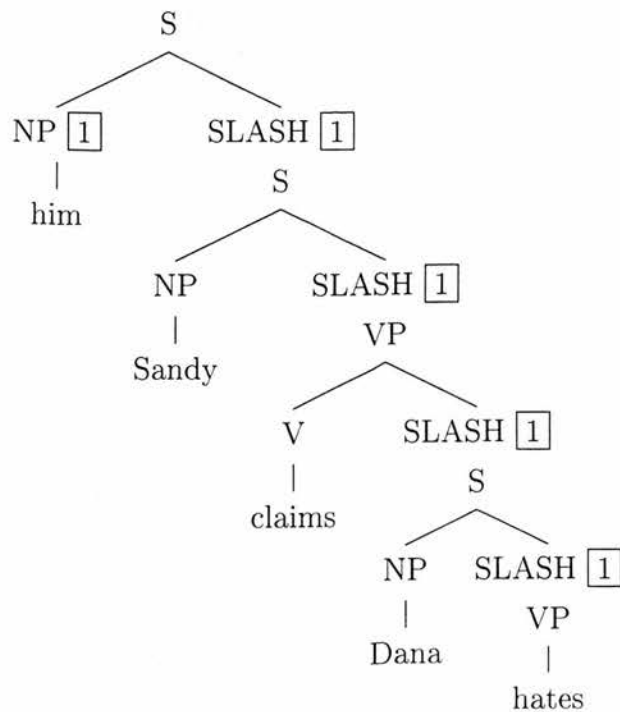
*The SUBCAT and CONTENT value of kicks*

“Movement phenomena”, e.g. topicalization, relativization, etc. that are treated by means of *move- $\alpha$*  in the transformational paradigm, also receive a largely lexical treatment in HPSG. For instance, “gappy” phrases that miss a constituent are

lexically specified so by means of a nonlocal feature of HPSG's. Nonlocal features deal with long distance dependencies. Essentially, they make reference to some of the grammatical properties of the missing constituent (e.g. its syntactic category, morphological case, etc.) and let this information propagate upwards so that it is made available nonlocally. Thus, gappy phrases syntactically combine with a filler-constituent, i.e. a word or phrase that matches the partial description of the missing constituent in their nonlocal feature.

By way of illustration, consider the topicalization example: **Him, Sandy claims Dana hates**. The gappy constituent **Sandy claims Dana hates** "seeks" an accusative NP, the missing argument of the embedded verb **hates**: A gappy VP such as **hates** is lexically marked so by means of the nonlocal feature **SLASH**. The **SLASH** requirement of **hates** propagates upwards (by the Nonlocal Feature Principle) until it is bound off. The accusative pronoun **him** matches the **SLASH** value of the gappy sentence **Sandy claims Dana hates**. Hence, the two of them may form a grammatical sentence. The structure generation of **Him, Sandy claims Dana hates** is depicted in the following tree.

(104)



In HPSG, information required for the generation of well-formed strings is for the most part incorporated in the lexicon. Most of the principles of the grammar govern the propagation of this information.<sup>2</sup> Given the crucial role of the lexicon for grammar formalisms such as HPSG, provisions must be made so that economy and flexibility are secured in lexical representation. Feature grammars for contemporary natural language processing systems distinguish a large number of features, typically, at least thirty features (while systems of forty or fifty features are not rare). Most of these features are not boolean-valued. Nonetheless, even if they were, one would still be faced with two to the thirtieth power ( $2^{30}$ ) possible feature combinations. The representation of each one of these feature combinations is clearly to be avoided. The obvious thing to be done is to represent just the feature combinations (categories) that are actually used in the grammar. Even so, a good deal of redundancy remains if each feature combination is stated separately on each lexical entry. Apart from being uneconomical, a lexicon consisting of such entries cannot be easily extended or modified. This is because every change needs to be stated as many times as the lexical entries it applies to, rather than being derived in a more systematic way.

Given such considerations, the HPSG view of the lexicon is that it should be *structured* or *hierarchical*, cf. [Flickinger, Pollard and Wasow, 1985], [Flickinger, 1987]. Thus, economy in representation and modifiability can in principle be attained. The insight underlying the hierarchical lexicon is as follows. A good deal of the information borne by a fully specified lexical entry is not idiosyncratic to a particular lexical item that the given lexical entry models, but is also characteristic of other lexical items. The information a lexical entry contains can be viewed as a set of properties. Hence, lexical entries for related lexical items will have certain properties in common. Stating a property that many lexical items share on each one of the lexical entries for these items separately causes redundancy. Alternatively, every property (or cluster of related properties) relevant to representing the elements of a lexicon can be mentioned only once in a single class (*sort*), with all lexical elements that share this property being members of this sort. Sorts are *feature structures* that represent a single property or clusters of

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<sup>2</sup>The only exception is the Immediate Dominance Principle that subsumes the universally available schemata, one of which a phrase must instantiate in order to be well-formed.

assorted properties. They consist of feature labels and their *sorted* values, which in turn are feature structures or atomic sorts, the latter being maximally specific sorts for which no features are defined (see below). For a given lexical item to be associated with all of its characteristic properties, it will have to belong to many sorts. The structured lexicon embodies exactly this idea: it consists of a *hierarchy of sorts*, or more precisely, of a set of interconnected sort hierarchies, and lexical items inherit their properties by being members of a subset of these sorts.

Ideally, lexical entries are specified for non-predictable information only, e.g. they provide the semantics and the phonology value of the lexical item they model. The information a lexical item contains and that is not specified in its lexical entry, is *inherited* from the sorts that the lexical item is a member of. More precisely, the classes populating the various hierarchies of the structured lexicon stand in a relation of *inheritance* to one another. At the very top of the hierarchies lie bequeathing classes: the properties of these classes pass to their subclasses. The intermediate classes of the hierarchies both inherit and bequeath. Some of their properties are derived automatically from the bequeathing classes they are associated with. In addition, they can be specified for further properties. All these properties, both inherited and specified ones, are passed on to more embedded classes, their subsorts. Lexical entries populate the lowest edges of the hierarchies. They are most specific as they inherit the properties of the sorts they are associated with, properties that may have been introduced in any of the classes that intervene between the most specific class to which a lexical item belongs and its root supersorts. As has already been mentioned in passing, the hierarchical lexicon assumes multiple inheritance. That is, a single class is allowed to be heir to more than one bequeathing class. Thus, redundancy is reduced dramatically. Multiple inheritance enables every property relevant to representing lexical information to be expressed only once in a single sort. Once this is done, the property will be propagated by inheritance to every subsort or lexical entry that is a member of that sort.

It must be clear by now that the structured or hierarchical lexicon is an economical organization of complex lexical information. The hierarchical lexicon provides rich feature structures for the purpose of radically lexicalized grammar

formalisms such as HPSG, while maintaining at the same time minimal redundancy.

Before closing this section, we provide the formal definition of inheritance in HPSG. A feature declaration of the form:

$$(105) \quad \sigma : \begin{bmatrix} F_1 \tau_1 \\ \\ F_n \tau_n \end{bmatrix}$$

where  $\sigma, \tau_1, \dots, \tau_n$  are sorts, and  $F_1, \dots, F_n$  are feature labels, signifies that for each  $\iota = 1, \dots, n$ , (a) the feature  $F_\iota$  is appropriate for all subsorts of sort  $\sigma$ , and (b) for any subsort of sort  $\sigma$ , the value of  $F_\iota$  must be an object of sort  $\tau_\iota$ . If sorts  $\sigma_1$  and  $\sigma_2$  bear declarations  $[F \tau_1]$  and  $[F \tau_2]$ , respectively, for the same feature  $F$ , and  $\sigma_2$  is a subsort of  $\sigma_1$ , then  $\tau_2$  is a subsort of  $\tau_1$ . That is, a sort inherits the feature declarations of its supersorts. Therefore, any feature which is defined for a given sort, is defined for all of its subsorts, and the sort value of this feature for all the subsorts is a subsort of the sort value of this feature in the supersort.

### 3.2.2 Greek nominal categories and inheritance

In this section, I demonstrate that generalizations concerning apparently different nominal categories can be straightforwardly captured in terms of inheritance.

Categories such as *noun*, *adjective*, or *numeral* (i.e. the cardinals and elements that pattern alike)<sup>3</sup> are traditionally taken to be distinct. However, in Modern Greek, NPs, adjectives and numerals to a large extent share the same distribution. For example, all three types of nominals qualify as complements of verbs or prepositions (nominal-taking heads), in canonical and elliptical examples. As shown in (106a,b&c), the object complement of the verb *agorasa* (bought-1.SG) can be a noun (*vivlia*; ‘books’), adjective (*aglika*; ‘English ones’) or numeral (*tria*; ‘three’).

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<sup>3</sup>Motivation for distinguishing numerals from determiners is provided in section 3.3.4.

- (106) a. agorasa vivlia  
 bought-1.SG books  
 'I bought books'
- b. Ehasa to vivlio mu ki agorasa kenurio.  
 lost-1.SG the book my and bought-1.SG new  
 'I lost my book and bought a new one'
- c. Pulusan vivlia. Agorasa tria.  
 were-selling-3.PL books. bought-1.SG three  
 'Books were on sale. I bought three.'

Similarly, all the three nominal sorts may qualify as complements of determiners: the determiner *opiadipote* (whichever/any) in (107) is shown to cooccur with a noun, adjective or numeral.

- (107) a. opiadipote vivlia  
 whichever books  
 'any books'
- b. opiadipote aglika  
 whichever English  
 'any English ones'
- c. opiadipote tria  
 whichever three  
 'any three'

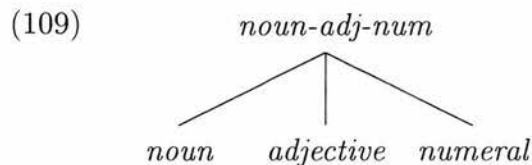
In addition, the definite article in Modern Greek may cooccur with a noun, adjective or numeral. This is shown in (108).

- (108) a. ta vivlia  
 the books  
 'the books'
- b. ta kenuria  
 the new  
 'the new ones'

c. ta tria  
 the three  
 ‘the three’

The commonalities of nouns, adjectives, numerals and their projections in Greek can be straightforwardly accounted for if these categories are taken to be partly unified. More precisely, these three categories can be construed as disjoint subsorts of a common supercategory, a sort that I dub *noun-adj-num* (*noun-adjective-numeral*).<sup>4</sup> It is from this mother sort that nouns, adjectives and numerals inherit their common properties. At the same time, they will also be subsumed under distinct supersorts, in order to be associated with their idiosyncratic properties. Accordingly, categories that invariably cooccur with noun, adjective or numeral projections (e.g. nominal-taking heads, determiners and the definite article in Greek) select for the supercategory *noun-adjective-numeral*, rather than disjunctively selecting for a noun, or an adjective, or a numeral category. Therefore, lexical disjunction is eliminated from the lexical representation. Moreover, an approach following this line enables us to account for elliptical nominals (see (106b&c), (107b&c), and (108b&c) above) without resorting to empty constituents. The so-called elliptical examples may be taken to indicate that Greek verbs, determiners and the definite article syntactically combine with a wide range of nominal categories, noun projections, adjective projections and numeral projections, rather than with only NPs, as often assumed.

The sort *noun-adj-num* and its subsorts is graphically shown in (109).



*The sort noun-adj-num*

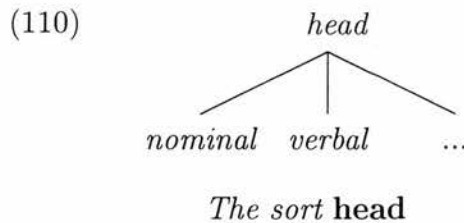
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<sup>4</sup>We will see in the next section that *noun-adj-num* is a subsort of *nominal*—a sort that subsumes all the nominal categories.

### 3.2.3 A hierarchy of nominal sorts for Greek

In this section, I provide a cross-classification of nominal categories in Modern Greek, by means of inheritance. I define the sort *nominal* that subsumes categories such as the definite article, determiners, nouns, adjectives, numerals, etc. This sort is essentially a cluster of morphosyntactic properties that characterize all nominal classes in Greek. Technically, the feature declaration of *nominal* is inherited by all its subsorts.

A feature structure of sort *nominal* serves as a value of the feature HEAD: *nominal* is a subsort of *head* that subsumes all the syntactic categories, e.g. *nominal*, *verbal*, etc. (see (110)), and the value of HEAD is an object of sort *head*—in fact, any subsort of *head* can serve as a value of the feature HEAD.<sup>5</sup>



Feature structures of sort *head* are governed by HPSG's Head Feature Principle (HFP):

(111) *The Head Feature Principle (HFP)*. The HEAD value of any headed phrase is structure-shared with the HEAD value of the head daughter.

This principle guarantees that the head features of a lexical category (a word) are identical to those of its phrasal projections. Consider a functor that takes an argument specified HEAD *nominal*. Given that *nominal* subsumes sorts such as *noun*,

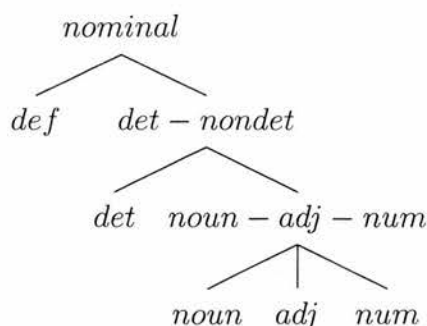
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<sup>5</sup>Pollard and Sag (1994) identify a sort *head* that partitions into *subst* (*substantive*) and *func* (*functional*). The former subsumes the sorts *noun*, *verb*, *adjective*, and *preposition*, whereas the latter splits into *marker* (which includes for example complementizers) and *determiner*. The sort *head* assumed here and that subsumes *nominal* differs from the one in [P&S 94]: *nominal* includes the sorts *noun*, *adjective* and *determiner* that are individual subsorts of *head* in [P&S 94]. With respect to the distinction between substantive (major) nominal sorts and functional (minor) ones, see below.

*adjective*, *determiner*, etc., the functor in hand will license either NPs, or APs or DPs. NPs are specified HEAD *noun*, APs are specified HEAD *adjective*, and DPs are specified HEAD *determiner*. These specifications originate from their lexical heads, (lexical) nouns, adjectives and determiners, respectively, by the HFP.

I move now to examine *nominal* in more detail. The lattice in (112) shows *nominal* and its subsorts.

(112)



Lattice for **nominal** and its subsorts

The sort *nominal* partitions into *def* (*definite-article*) and *det-nondet* (*determiner-nondeterminer*). The sort *det-nondet* subsumes both determiners and other nominal categories that have a different distribution than determiners: it partitions into *det* (*determiner*), that subsumes determiners and their projections, and *noun-adj-num* that subsumes the sorts *noun*, *adjective* and *numeral*. The Greek definite article is distinguished from determiners and the other nominal categories and constitutes a category on its own (*def*). Decisive evidence in support of the separation of the definite article from the determiner class is provided by the polydefinite construction (for details, see section 3.3 and section 3.4, where I discuss determiners and the definite article, respectively). The partition of *nominal* and its subsorts is motivated by the syntactic behaviour of Greek nominal categories. For example, *det-nondet* accommodates categories that qualify as complements of nominal-taking heads (e.g. verbs and prepositions). These are determiners, nouns, adjectives, numerals and their projections. The verb *agorasa* (bought-1.SG) takes a noun complement in (113a), it combines with a determiner or a numeral in the second conjunct of (113b), and with an adjective in (113c).

- (113) a. *agorasa biblia*  
 bought-1.SG books  
 ‘I bought books’
- b. *Pulusan aglika vivlia. Agorasa merika / tria.*  
 were-selling-3.PL English books. bought-1.SG some / three  
 ‘English books were on sale. I bought some / three.’
- c. *Ehasa to vivlio mu ki agorasa kenurio.*  
 lost-1.SG the book my and bought-1.SG new  
 ‘I lost my book and bought a new one’

The definite article is not a member of *det-nondet*, therefore, nominal-taking verbs cannot cooccur with it. Thus, we account for the ill-formed (114):

- (114) \**agorasa to*  
 bought-1.sg the

As will be shown in detail in section 3.4 below, in the current system, definite phrases are not analysed as projections of the definite article, rather their syntactic category is determined by the nominal the definite article is combined with (a noun, adjective or numeral category). For instance, *ta vivlia* (the books) in (115a) below and the elliptical *ta aglika* (the English ones) in (115b) are syntactically analysed as an NP and an AP, respectively. Both types of categories are subsorts of *det-nondet*, therefore, their distribution as complements of *agorasa* is naturally accounted for.

- (115) a. *agorasa ta vivlia*  
 bought-1.SG the books  
 ‘I bought the books’
- b. *Pulusan vivlia. Agorasa ta aglika.*  
 were-selling-3.PL books. bought-1.SG the English  
 ‘Books were on sale. I bought the English ones.’

Let us next consider the sort *noun-adj-num*. As we have seen in the previous section, it subsumes nouns, adjectives, numerals and their projections. All these categories qualify as complements of nominal-taking heads, and this is captured in the cross-classification proposed, since *noun-adj-num* is a subsort of *det-nondet*. In addition, nouns, adjectives and numerals are three categories that both the definite article and determiners may combine with. For this reason, they are conceived as disjoint subsorts of a single supercategory, *noun-adj-num*. To illustrate, in (116), the form **ta** (the-PL.NEUT) of the definite article and the determiner **kamposa** (several) cooccur with the noun **vivlia** (books):

(116) a. Agorasa ta vivlia

‘I bought the books’

b. Agorasa kamposa vivlia

‘I bought several books’

In (117), **ta** (the-PL.NEUT) and **kamposa** (several) cooccur with the adjective category **aglika** (English):

(117) a. Pulusan                    vivlia. Agorasa        ta aglika.  
           were-selling-3.PL books. bought-1.SG the English  
           ‘Books were on sale. I bought the English ones.’

b. Pulusan                    vivlia. Agorasa        kamposa aglika.  
           were-selling-3.PL books. bought-1.SG several English  
           ‘Books were on sale. I bought several English ones.’

Finally, in (118), **ta** and the determiner **opiadipote** (any) cooccur with a numeral phrase (NumP) **tria lastiha** (three tyres).<sup>6</sup>

(118) a. ta tria lastiha

‘the three tyres’

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<sup>6</sup>A detailed account of determiners and numerals is provided in section 3.3.

b. opiadipote tria lastiha

‘any three tyres’

The partitions of *nominal* and its subsorts are summarized in (119):

(119) a. Partition of *nominal*: *def*, *det-nondet*

b. Partition of *det-nondet*: *det*, *noun-adj-num*

c. Partition of *noun-adj-num*: *noun*, *adj*, *num*

I proceed with presenting the features defined for *nominal* and the ones defined for its subsorts. The feature declaration of *nominal* is as follows:

(120)  $nominal : \left[ \begin{array}{l} CASE \textit{ case} \\ FUN \textit{ boolean} \\ MOD \textit{ synsem} \vee \textit{ null} \end{array} \right]$

The features CASE, FUN and MOD are defined for all the subsorts of *nominal*, by inheritance. In addition, for any subsort of *nominal*, the values of CASE, FUN and MOD are objects of sort *case*, *boolean* and *synsem* or *null*, respectively. I will examine these features and their sort values in turn.

In the current system, the feature CASE denotes the morphological case of a nominal. All the nominal categories that are subsumed under *nominal*, i.e. the definite article, determiners, nouns, adjectives and numerals are morphologically marked for case in Greek. The value of CASE is an object of sort *case*. The partition of *case* is as follows:

(121) Partition of *case*: *nom* (*nominative*), *acc* (*accusative*), *gen* (*genitive*)

The sorts *nom*, *acc* and *gen* are *atomic* subsorts or *atoms*, i.e. they are maximally specific sorts for which no features are defined.

The feature FUN (functional) enables us to distinguish between substantive (or the so-called “lexical”, or “major”) and functional nominals. The value of FUN is an object of sort *boolean*, where *boolean* partitions into two atomic sorts, *plus* (+) and *minus* (–):

(122) Partition of *boolean*: *plus* (+), *minus* (–)

Substantive nominals (nouns, adjectives) are FUN–, whereas functional nominals (the definite article, determiners, numerals) are FUN+. The feature FUN plays a crucial role in the account of numerals (see section 3.3.4 below.)

Finally, MOD (modified) is a feature that plays an important role in HPSG’s theory of adjuncts, cf. [Pollard and Sag, 1994]. The value of this feature is disjunctively defined: If MOD is borne by a modifier, its value is an object of sort *synsem*—a feature structure that describes the syntactic and semantic information borne by a word or phrase. The *synsem* value of a modifier’s MOD is required to “match” with that of the modifiee’s. This is how modifiers select for their syntactic sister in HPSG. Alternatively, if MOD is borne by an element that cannot function as a modifier, its value is *null*.<sup>7</sup> In the current system, MOD is inherited by all subsorts of *nominal*, which means that all nominal classes in Greek may have members that function as modifiers.<sup>8</sup> Since the definite article is subsumed under *nominal*, it carries the attribute MOD, too. In fact, MOD also plays a role in the account of the Greek definite article provided in this work.

Let us now turn to the sort *det-nondet*. This is a subsort of *nominal*, hence, it inherits CASE, FUN, MOD and their sort values. In addition, *det-nondet* is defined for the feature PRD (predicative):

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<sup>7</sup>Some members of a certain syntactic class may be modifiers, whereas others are not. For example, as we will see in chapter 5, there is a class of genitive nominals in Modern Greek, the “pseudo-possessives”, that are modifiers, and they are specified MOD *synsem*. On the other hand, there is a distinct class of genitive nominals, the “possessives”, that cannot function as modifiers, and, therefore, their MOD value is *null*.

<sup>8</sup>As shown in chapter 5, pseudo-possessives may be noun phrases, determiner phrases, or numeral phrases: all the three syntactic classes—*noun*, *determiner* and *numeral*—have members that function as modifiers. Moreover, modifiers are also the adjectives and the definite article (see below).

(123) *det – nondet* : [ *PRD boolean* ]

Since PRD is defined for *det-nondet*, PRD will be defined for all the subsorts of *det-nondet* and, for any of these sorts, the value of PRD will be an object of sort *boolean*, i.e. *plus* (+) or *minus*(–). The binary-valued feature PRD (cf. [Pollard and Sag, 1987]) reflects the predicative/nonpredicative distinction. Predicative words or phrases (e.g. elements that may be complements to the copula) are PRD+, and vice versa. In the current work, PRD enables us to distinguish the sort *def* (the definite article) from the sort *det-nondet* that subsumes other nominal categories. Definite articles inherit the feature declaration of *nominal*, i.e. the features CASE, FUN and MOD. On the other hand, the other nominal categories identified here inherit the feature declaration of *det-nondet*, i.e. the features CASE, FUN, MOD, and in addition PRD. The predicative/nonpredicative distinction is not relevant to the definite article. On the other hand, definite NPs, APs and NumPs can be predicative or not. As we have mentioned above (see (115)), such categories inherit their head values from their noun, adjective or numeral daughter, and not from the definite article. Therefore, they are assigned a PRD specification, as they are subsorts of *det-nondet*.

Finally, consider the sort *noun-adj-num*. It is a subsort of *det-nondet*, hence, it inherits CASE, FUN, MOD and PRD. In addition, it is specified for the boolean feature N:

(124) *noun – adj – num* : [ *N boolean* ]

Subsorts of *noun-adj-num* convey the features CASE, FUN, MOD, PRD, and N, and for any such subsort, the value of N is a subsort of sort *boolean*, i.e. *plus* or *minus*. I employ the “abstract” feature N in order to distinguish between adjectives and nouns: the sort *noun* is specified N+, whereas the sort *adjective* is specified N–. Feature N cannot be seen to model a specific property, since it is not clear what properties distinguish nouns from adjectives.<sup>9</sup>

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<sup>9</sup>In the English grammar presented in [Pollard and Sag, 1994], nouns and adjectives are distinguished by the feature CASE. CASE is defined for nouns but not for adjectives. However, this line cannot be adopted for Greek where both nouns and adjectives carry morphological case.

With the exception of N, all the features that we have employed in the current system and their sort values model properties which have directly observable correlates: all Greek nominals carry morphological case and may occasionally serve as modifiers. Thus, they are specified so, in terms of CASE and MOD. Moreover, nominal categories may be distinguished into functional ones and nonfunctional ones: the former do not iterate, they occur in the left periphery of the phrase, and they are members of closed classes (the determiners, numerals and the definite article), while the latter are members of open classes (nouns and adjectives). Hence, all nominal categories carry a [FUN+], or [FUN–] specification, respectively. In addition, certain nominal types can have a predicative use: DPs, and definite or indefinite NPs, APs and NumPs (Numeral Phrases) may occur in construction with a copula. Therefore, these categories bear the feature PRD, and they are specified PRD+ in environments where they are employed predicatively, and PRD– otherwise. The properties expressed in terms of CASE, FUN, MOD, PRD and their sort values uniquely characterize nominal categories in Greek, and enable us to distinguish them from other categories, e.g. verbal categories, prepositions, adverbials, etc.

In this section, I have presented an analysis of Greek nominal categories and their characteristic properties in terms of feature structures that are bequeathed down to lexical entries which populate the lowest edges of the hierarchical lexicon. This analysis enables generalizations about the distribution of apparently distinct nominal types to be expressed and straightforwardly be accounted for. We see this in the next section, where I consider in particular canonical and elliptical nominals with a determiner or a numeral head.

### 3.3 Determiners and numerals

In the following sections, I discuss determiners and numerals. In section 3.3.1, I outline Netter's (1994) approach to determiners and maximal nominal categories, and discuss his notion of *functional completeness*. I demonstrate that his account as it stands cannot be extended to Greek. In section 3.3.2, I consider Pollard and Sag's (1994) account of determiners as noun complements, and mention problems

for this account. Finally, in section 3.3.3 and section 3.3.4, I present an HPSG approach to determiners and numerals for Greek that accounts for both canonical and elliptical examples.

### 3.3.1 Netter: functional completeness

In this section, I present Netter's (1994) approach to determiners and maximal nominal categories. Moreover, I demonstrate that his account as it stands cannot be extended to accommodate data under consideration in the current work.

Netter is concerned with a long-standing problem in the literature on noun phrases: which constituent is the syntactic head of a nominal—the determiner or the noun. In particular, he focusses on data such as the following:

- (125) a. I bought a bike/bikes/wine  
b. \*I bought bike

The data in (125) illustrate that maximal nominal projections in English are for the most part “determinerful”. However, a subset of “determinerless” nominals, i.e. bare plurals such as *bikes* and MASS terms such as *wine*, have the same distribution as determinerful phrases. An account of the data in (125) must capture the fact that both types of nominals—determinerful ones, and determinerless plurals and MASS terms—qualify as arguments of nominal-taking categories (e.g. verbs, prepositions, etc.).

Netter's work provides an alternative to two distinct types of approaches. First, accounts positing an empty determiner head that takes a MASS term or bare plural complement. Under this view, MASS terms and bare plurals are syntactically symmetrical to determinerful nominals: both are construed as DPs, however, MASS terms and bare plurals are projections of an empty head. The second type of approach is to allow nominal-taking predicates to subcategorize for either DP or NP complements (provided the latter are MASS terms or bare plurals), i.e. to posit lexical disjunction.

Det/DP	FCOMPL+	N+	V-
N/NP (sing-count)	FCOMPL-	N+	V-
N/NP (mass term/plural)	FCOMPL+-	N+	V-

Table 3.1: Nominal categories in Netter’s account

A key notion in [Netter, 1994] is *functional completeness*. Functional completeness essentially signifies that a category must not (or need not) combine with a functional head in order to qualify as a maximal projection. A binary-valued head feature FCOMP denotes whether a category is functionally complete or functionally incomplete. For English, functionally complete (FCOMPL+) is a category of nominals that are either headed by a determiner, or they are determinerless MASS terms or bare plurals. Every other determinerless nominal is functionally incomplete (FCOMPL-). Table 3.1 illustrates the feature composition of nominal categories in Netter’s system.

Netter construes determiners and nouns as partly unified categories: both determiners and nouns, hence, their projections, are specified [N+, V-]. However, DPs are distinct from NPs: the former are FCOMPL+, whereas the latter are FCOMPL-. Determiners are treated as heads that are specified FCOMPL+ and they subcategorize for a functionally incomplete (FCOMP-) nominal complement. This has two main implications: (a) DPs are FCOMPL+, by the Head Feature Principle (HFP) (see above), as their head daughter (the determiner) is specified FCOMPL+, (b) a determiner cannot take a DP complement: only nominals which are FCOMPL- qualify as complements to determiners, hence, determiners are prevented from iterating. Singular count terms in English are unambiguously FCOMPL-. Therefore, they do not qualify as maximal nominal projections, but rather serve as complements to determiners. On the other hand, MASS terms and plurals are underspecified: they have two instantiations: a FCOMPL+ one and a FCOMPL- one. Hence, they may either appear on their own, and in this case they are FCOMPL+, or they qualify as arguments to determiners, and in this case, they are FCOMPL-.

The AVM in (126) illustrates the HEAD and SUBCAT features of a determiner in [Netter, 1994]. The feature structure inside the subcat list corresponds

to the determiner's NP complement that is required to be functionally incomplete (FCOMPL-). The determiner itself is specified FCOMPL+, but its categorial features N and V are structure-shared with those of its NP complement.<sup>10</sup> Structure sharing is represented by tag  $\boxed{1}$ .

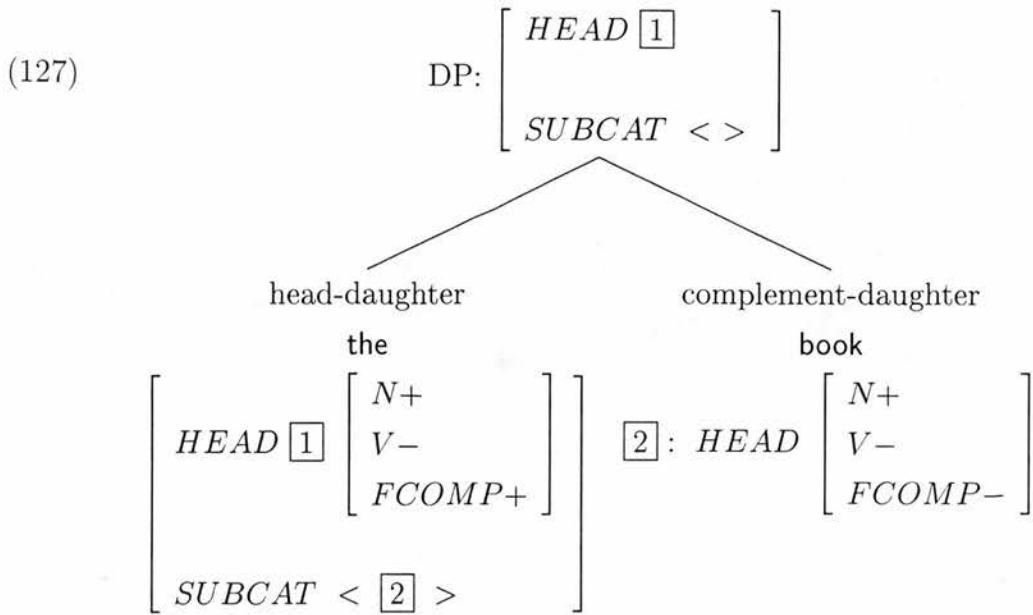
(126)

$$\left[ \begin{array}{l} \text{HEAD} \left[ \begin{array}{l} \text{MAJOR } \boxed{1} \\ \text{MINOR} \mid \text{FCOMPL+} \end{array} \right] \\ \\ \text{SUBCAT} < \left[ \begin{array}{l} \text{LOC} \mid \text{CAT} \mid \text{HEAD} \\ \\ \text{MAJOR } \boxed{1} \left[ \begin{array}{l} \text{N+} \\ \text{V-} \end{array} \right] \\ \\ \text{MINOR} \mid \text{FCOMPL-} \end{array} \right] > \end{array} \right]$$

*The HEAD and SUBCAT attributes of a determiner in Netter's account*

The feature instantiations on the determiner, its NP complement and the DP mother are illustrated in (127). Since the subcategorization requirement of the determiner **the** is saturated by the noun **book**, the subcat value on the mother is the empty list, by HPSG's Subcategorization Principle.

<sup>10</sup>Netter identifies two attributes for objects of sort *head*: MAJOR and MINOR. The former contains purely categorial features such as N and V, whereas MINOR contains *minor* or *functional* features, e.g. FCOMP, which enables functional and nonfunctional categories to be distinguished from each other.



*Determiner Phrase*

An obvious problem for Netter's account is modification. We have seen that a determinerful nominal such as **the bike** is functionally complete (FCOMPL+) in Netter's system. On the other hand, a determinerless MASS term such as **wine** is also specified FCOMPL+. A question emerges: what type of nominal should an attributive adjective select for? How does Netter capture the notion of  $\bar{N}$ ? Let us assume that adjectives select for functionally incomplete (FCOMPL-) nominals. A singular COUNT term such as **bike** is FCOMPL-. Thus, it can be modified by an attributive adjective, e.g. **red**. By contrast, the determinerful nominal **the bike** cannot be modified by **red** since it is FCOMPL+. Hence, the ill-formed \***red the bike** is ruled out. Nevertheless, by the same token, Netter's account fails to accommodate the grammatical **red wine**: the determinerless **wine** is FCOMPL+, whereas adjectives select for functionally incomplete nominals. If, alternatively, attributive adjectives are taken to select for functionally complete (FCOMPL+) nominals, Netter's system will cover examples such as **red wine**. However, it will also generate the ungrammatical **red the bike**. **Wine** and **the bike** are syntactically indistinguishable: they are both functionally complete (FCOMPL+).

In order to remedy this problem, Netter introduces an additional head feature: SPEC. All determinerless nominals, including MASS terms and bare plurals, are

specified as SPEC−. On the other hand, determiners are SPEC+ and, hence, DPs (determinerful nominals) are also SPEC+, by the HFP. Attributive adjectives select for nominals that are specified SPEC−. Thus, both *red bike* and *red wine* are accounted for. The singular COUNT term *bike* is functionally incomplete, whereas the MASS term *wine* is functionally complete. However, they are both SPEC−, as they are both determinerless. On the other hand, the ill-formed \**red the bike* is ruled out. Being a determinerful nominal, *the bike* is specified SPEC+. Therefore, it cannot be modified by an attributive adjective.

By adding SPEC, Netter's account makes the right predictions. Nevertheless, his system posits two distinct features, FCOMPL and SPEC, that both essentially mark the occurrence of a determiner in a nominal phrase. Functional completeness is *par excellence* associated with determiners and the feature SPEC also denotes whether a nominal is determinerful. Such a solution seems rather counter-intuitive and causes redundancy in the grammar. As will be illustrated in section 3.3.3 below, the hypothesis that nominal categories are subsumed under the same sort *nominal* enables an account of the data in hand to be provided that does not encounter the modification problem discussed above.

In the rest of this section, we consider whether Netter's account can be extended to Greek. Netter's notion of functional completeness applies to nominal systems where at least a subset of the nominal categories are required to combine with a determiner in order to be maximal. However, the Greek nominal system is not one of these systems. There is no class of nominals in the Greek that are required to combine with a determiner in order to qualify as maximal projections. Unlike English, in Greek, not only MASS terms and bare plurals, but, in addition, singular COUNT terms may appear without a determiner. Consider (128).

(128) a. agorasa      ena podilato/ podilata/ kراسي  
           bought-1.sg a bike/        bikes/      wine  
           'I bought a bike/bikes/wine'

b. agorasa      podilato ke to evala      sto domatio mu  
           bought-1.SG bike      and it put-1.SG in-the room my  
           'I bought a bike and put it in my room'

- c. *mu eklepsan to podilato ki agorasa kenurio*  
 from-me stole-3.PL the bike and bought-1.sg new  
 ‘My bike was stolen and I bought a new one’

The nominals in (128a) correspond to the three types of maximal nominal categories for English: determinerful nominals (*ena podilato*, ‘a bike’), bare plurals (*podilata*, ‘bikes’) and MASS terms (*krasi*, ‘wine’). In (128b), it is shown that maximal nominal categories qualifying as arguments of nominal-taking heads (e.g. verbs) may be determinerless singular COUNT terms, such as *podilato* (bike). Notice that the bare singular *podilato* is a referential nominal: the clitic pronoun *to* (it) in the second conjunct in (128b) refers back to it. That is, *podilato* is a syntactic argument of *agorasa* (bought-1.SG), rather than part of some compound verb “bike-buy”. Bare singulars such as *podilato* are assigned the same interpretation as indefinite NPs, e.g. *ena podilato* (a/one bike). Not only noun categories, but, in addition, other nominal subsorts may appear determinerless. This is illustrated in (128c), where the object of *agorasa* is the determinerless singular adjective *kenurio* (new).

I conclude that Greek nominals provide no evidence that determiners are associated with a notion of maximality. Any “determinerless” nominal is ‘maximal’ or ‘functionally complete’, in the sense of Netter, i.e. it qualifies as a complement of nominal-taking categories (e.g. verbs, prepositions, etc.). For this reason, the account of Greek determiners presented in section 3.3.3 below makes no use of the feature FCOMPL or some related notion of completeness.

Let us now consider a further problem for Netter’s account if adopted for Greek. As we have seen, in Netter’s system, determiners are taken to be partly unified with their NP complement. Accordingly, DPs are N+, V–, like NPs, by the Head Feature Principle, since their head daughter (the determiner) is specified N+, V–. Identity in categorial features between NPs and DPs enables nominal-taking predicates to license either category, provided it is functionally complete.

However, as was shown in the previous section, Greek determiners may combine with projections of *noun*, and, in addition, with *adjective* and *numeral* pro-

jections. The relevant data are repeated below, for ease of reference.<sup>11</sup>

- (129) a. Agorasa kambosa vivlia  
bought-1.sg several books  
'I bought several books'
- b. Ta vivlia ihan ekptosi. Agorasa kambosa aglika.  
The books were on sale. bought-1.sg several English  
'The books were on sale. I bought several English ones.'
- c. opiadipote tria lastiha  
any three tyres  
'any three tyres'

Given that Greek determiners may combine with a wide range of categories, we are faced with the following problem. If a determiner is (partly) unified with its complement, as Netter proposes, and, moreover, the complement of a determiner is either a noun category or an adjective category or a numeral category, then a determinerful nominal will be construed either as an NP, or as an AP, or as a NumP, respectively. If we apply Netter's proposal to the Greek data in (129), we will construe the nominal in (129a) as an NP, since the determiner's complement is a noun, the nominal in (129b) as an AP, since the determiner's complement is an adjective and the nominal in (129c) as a NumP, since the determiner's complement is a NumP. Nevertheless, such an account of determinerful phrases is clearly counter-intuitive. If a nominal such as *kamposa aglika* (several English; 'several English ones') is analysed as an adjective category, then we might as well expect it to modify a noun projection, since this is what adjectives do. If the nominal *kamposa vivlia* (several books) in (129a) is construed as an NP, we end up licensing ill-formed sequences such as (130).

- (130) \*kamposa aglika kamposa vivlia  
several English several books

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<sup>11</sup>Determiners such as *kamposa* are not compatible with numerals or NumPs. This can be straightforwardly modelled in the current system: *merika* can be taken to subcategorize for an element with a head value of sort *noun-adj-num* and that it is also FUN-. As will be shown in section 3.3.4, numerals are the only elements of sort *noun-adj-num* that are FUN+.

### 3.3.2 Pollard and Sag: determiners as noun complements

In this section, we consider Pollard and Sag's (1994) analysis of determiners as subcategorized complements of nouns. Consider the CATEGORY and CONTENT attributes for the noun *bike*, according to [Pollard and Sag, 1994].

$$(131) \quad \left[ \begin{array}{l} \text{CAT} \left[ \begin{array}{l} \text{HEAD } \textit{noun} \\ \text{SUBCAT } < \textit{DetP} > \end{array} \right] \\ \text{CONT} \left[ \begin{array}{l} \text{INDEX } \boxed{1} \\ \text{RESTR } \left\{ \left[ \begin{array}{l} \text{RELN } \textit{bike} \\ \text{INST } \boxed{1} \end{array} \right] \right\} \end{array} \right] \end{array} \right]$$

The SUBCAT and CONTENT value of *bike* in [P&S 94].

As shown in (131), a noun is assumed to subcategorize for its determiner by its feature SUBCAT. "DetP" is an abbreviation for the following structure:

$$(132) \quad \left[ \text{LOC} \mid \text{CAT} \left[ \begin{array}{l} \text{HEAD } \textit{det} \\ \text{SUBCAT } < > \end{array} \right] \right]$$

The subcat requirement that originates from the noun propagates along the noun projection by HPSG's Subcategorization Principle and it is bound off as soon as the  $\bar{N}$  combines with a determiner. For instance, an  $\bar{N}$  such as *red bike that Jo rides* carries the subcategorization requirement that it should syntactically combine with a determiner, which originates from *bike*. Determiners and  $\bar{N}$ s combine together and form (maximal) NPs by the Schema 1 (*Head-Subject Schema*) of HPSG, which also licenses sentences, i.e. structures consisting of a (subject) NP and a VP subcategorizing for a single complement.

Let us now consider what are the implications of an account that treats determiners as complements of nouns. First, “determinerful” nominals are construed as NPs, rather than DPs. A maximal noun projection is specified HEAD *noun*, and has an empty subcat list (SUBCAT  $\langle \rangle$ ). This means that the noun’s subcategorization requirements have been cancelled off and that the phrase contains a determiner.

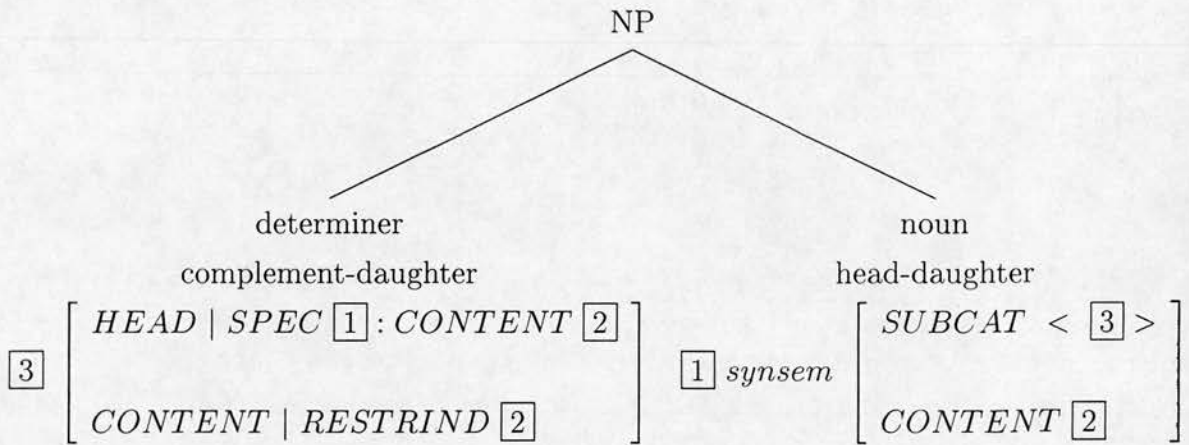
MASS terms and plurals count as maximal noun projections even in case they do not contain a determiner. This is because the relevant subcategorization requirement of such nouns is optional. Notice, however, that Pollard and Sag’s approach is faced with the same problem as Netter’s account, with respect to modification. If an attributive adjective is assumed to select for an  $\bar{N}$ , (a noun category that is specified SUBCAT  $\langle DetP \rangle$ ), then the ill-formedness of strings such as \*red the bike is accounted for: the bike is a maximal NP and its subcat list is empty, hence, it cannot be modified by red. Nevertheless, by the same token, grammatical nominals, e.g. red wine, are excluded from the grammar, too. The MASS term wine is maximal, i.e. it is specified SUBCAT  $\langle \rangle$ , in its determinerless occurrences. Therefore, it cannot be modified by an attributive adjective either.

A further implication of Pollard and Sag’s (1994) account is that the CONTENT value of a quantified NP is an object of sort *nom-obj* (*nominal-object*), rather than *quantifier*. The content of every bike, for instance, is the same as the content of bike, not the same as the content of every. This is because bike is the head-daughter, and it is the content value of the head-daughter that propagates onto the mother, by the Semantics Principle.  $\boxed{2}$  in the tree-diagram in (133) stands for the content value of bike and every bike.



striction and the restrictions due to modifiers, Pollard and Sag make the further assumption that determiners, too, select the NPs that they combine with. That is, determiners and non-saturated NPs ( $\bar{N}$ ) mutually select each other. The noun subcategorizes for a determiner, as we have seen above, and the determiner selects for a non-saturated NP by means of a head feature SPEC (specified). The identity between the determiner's RESTRIND value and the CONTENT value of the NP is lexically specified in the determiner's SPEC. This is shown in (134):

(134)



*Determiners and non-saturated NPs mutually select each other in [P&S 94]*

The selection of nonmaximal NPs by determiners is stipulated by the SPEC Principle:

(135) *The SPEC Principle.* If a non-head daughter in a headed structure bears a SPEC value, it is token-identical to the SYNSEM value of the head daughter.

However, unlike the other HPSG principles, which fit smoothly into the underlying feature logic, the SPEC Principle appears to require substantial logical or metalogical extensions because it is cyclic: in order that the SPEC value of a determiner is defined, the SYNSEM value of the NP must be defined. On the other hand, the SUBCAT value of the NP cannot be maximally specific, unless

the determiner's SPEC value is defined.

Let us now consider whether Pollard and Sag's treatment of determiners extends to cover elliptical examples. Consider (136).

(136) Scarves were on sale. I bought *some*.

The nominal **some** in (136) is 'elliptical': it appears on its own, rather than within an NP. If we treat determiners as complements of nouns, nominals such as **some** in the above example cannot be licensed. Rather, we will have to posit a phonologically null noun head that is on a par with lexical ones in that it subcategorizes for a determiner. Nevertheless, approaches to elliptical constructions that posit empty constituents have serious drawbacks, (see the discussion in chapter 2).

We next turn to a second problem that relates to the Greek data under consideration. I have shown above that determiners in Greek combine with nominals that are to be construed as noun categories, adjective categories or numeral categories. Then, in order to maintain an account of determiners along the lines of [Pollard and Sag, 1994], categories as distinct as *noun*, *adjective* and *numeral* will have to be taken to subcategorize for a determiner. Under such a view, **kamposa vivlia** in (137a) below will be construed as an NP, **kamposa aglika** in (137b) will be analysed as an AP and so on.

- (137) a. Agorasa    kambosa vivlia  
          bought-1.sg several    books  
          I bought several books
- b. Agorasa    kambosa aglika    ke    ena eliniko  
          bought-1.sg several    English and one Greek  
          I bought several English ones and a Greek one

However, as we saw in the previous section, if we analyse a nominal such as **kamposa aglika** (several English; 'several English ones') in (137b) as an AP, then we predict that the ill-formed (138) is grammatical.

- (138) \*kamposa aglika kamposa vivlia  
 several English several books

If the nominal *kamposa aglika* (several English; ‘several English ones’) is construed as an adjective category, then we might as well expect it to modify *kamposa vivlia* (several books) which is analysed as an NP, under Pollard and Sag’s view that determiners are complements of nouns.

### 3.3.3 An HPSG analysis of determiners as heads

In this section, I argue that determiners in Modern Greek should be treated as heads. Evidence for maintaining a head analysis of determiners, rather than treating them as noun complements, comes from elliptical examples:

- (139) Pulusan vivlia. Agorasa merika  
 Were-selling-3.PL books bought-1.SG some  
 ‘Books were on sale. I bought some.’

As was mentioned in the previous section for English, if we treat determiners as complements of nouns, it is not trivial to account for “bare” determiners such as *merika* in (139). In order that elliptical nominals of this type are accounted for, Nerbonne et al. (cf. [Nerbonne et al. 89], and work in progress) posit a phonologically null noun that subcategorizes for an appropriate type of determiner (see section 2.3.3 in chapter 2). However, there are good processing reasons to eschew empty categories: parsers are inevitably slowed by the need to postulate empty elements. In addition, from a theoretical point of view, empty constituents are controversial, see e.g. [Sag and Fodor, 1994] who review—and find wanting—both linguistic and psycholinguistic work purporting to justify the postulation of empty NPs. On the other hand, if determiners are taken to be heads that optionally subcategorize for a nominal category of a certain sort, then examples such as (139) above can be straightforwardly derived.

More specifically, in the current system, determiners are taken to subcategorize for an element with head value of sort *noun-adj-num*. As was shown in

section 3.2, *noun-adj-num* partitions into the sorts *noun*, *adjective* and *numeral*, i.e. it subsumes noun, adjective and numeral projections. Therefore, we may deal with canonical and elliptical examples such as those we have seen in the previous sections, where a determiner is combined with a noun, adjective or numeral category. The cross-classification of nominal sorts in terms of inheritance enables us to account for the syntax of the so-called elliptical nominals, without positing empty heads or lexical disjunction.

The AVM in (140) schematically illustrates the CATEGORY and CONTENT attributes of the Greek determiner *merika* (some-PL.NEUT).<sup>12</sup> The tag  $\boxed{2}$  inside the subcat list stands for the feature structure in (141) below.

$$(140) \left[ \begin{array}{l} \text{CAT} \left[ \begin{array}{l} \text{HEAD } det \left[ \begin{array}{l} \text{CASE } \boxed{1} \text{ } acc \\ \text{FUN+} \end{array} \right] \\ \text{SUBCAT } < \boxed{2} > \end{array} \right] \\ \\ \text{CONT | INDEX } \boxed{3} \left[ \begin{array}{l} \text{NUM } pl \\ \text{GEND } neut \end{array} \right] \end{array} \right]$$

*The CATEGORY and CONTENT attributes of merika (some)*

$$(141) \boxed{2} \left[ \begin{array}{l} \text{CAT | HEAD } noun - adj - num \left[ \text{CASE } \boxed{1} \right] \\ \text{CONT | INDEX } \boxed{3} \end{array} \right]$$

*The subcategorized complement of merika*

<sup>12</sup>For expository convenience, only two of the head features of *merika* are shown in the AVM in (140). *merika* also inherits the features MOD and PRD which are not relevant to the discussion below.

We have seen that the sorts *det* and *noun-adj-num* are subsumed under *nominal*, therefore, the feature CASE is defined for both determiners and noun, adjective or numeral projections. The lexicalist approach to determiners proposed here enables us to account for case concord between the determiner and its nominal complement, in terms of structure-sharing. Similarly, for number and gender agreement. It is specified inside the determiner's subcat list that the CASE and INDEX values of the determiner's subcategorized complement should be token-identical to its own. (See tag 1 and tag 3 in (140) and (141), for CASE and INDEX, respectively).

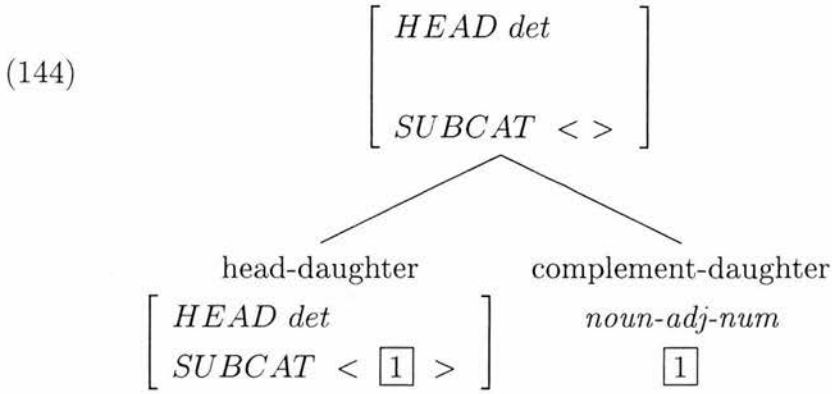
Phrases consisting of a determiner and a noun, adjective, or numeral category are licensed by the Immediate Dominance (ID) Schema 3 (cf. [Pollard and Sag, 1994]):

- (142) *Schema 3.* The SYNSEM | LOCAL | CATEGORY | SUBCAT value is  $\langle \rangle$  and the DAUGHTERS value is an object of sort *head-comp-struct*, whose HEAD-DAUGHTER value is a word.

The determiner's head value of sort *det* propagates onto the mother by the Head Feature Principle (HFP) (see above). In addition, once the determiner's subcategorization requirement is satisfied, the SUBCAT value on the DP mother is the empty list, by HPSG's Subcategorization Principle, which requires that the subcat value of the head daughter should equal the concatenation of the subcat value of the mother with the complement daughters. Technically:

- (143) *The Subcategorization Principle.* In a headed phrase, the list value of DAUGHTERS | HEAD-DAUGHTER | SYNSEM | LOCAL | CATEGORY | SUBCAT is the concatenation of the list value of SYNSEM | LOCAL | CATEGORY | SUBCAT with the list consisting of the SYNSEM values (in order) of the elements of the list value of DAUGHTERS | COMPLEMENT-DAUGHTERS.

This is summarized in the following tree-diagram:



*The feature structure generation of a Determiner Phrase*

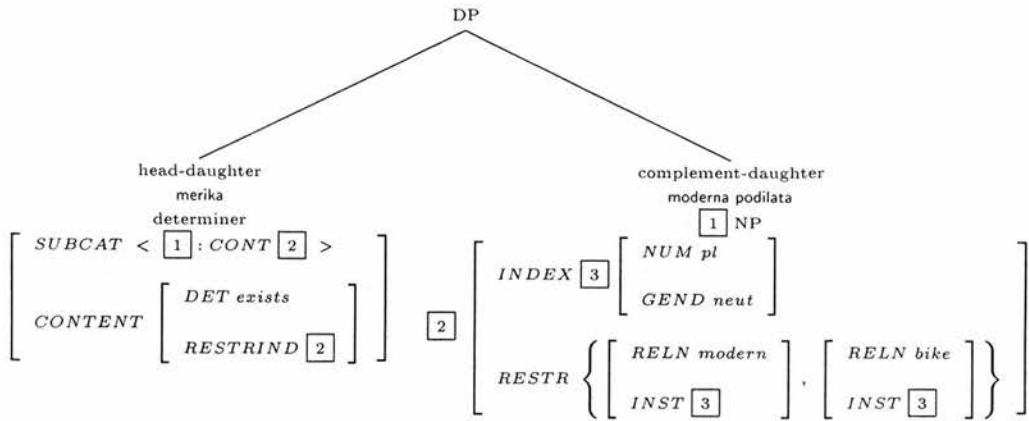
The current approach to (Greek) determiners has the following implications. First, both DPs (phrases with a head value of sort *determiner*) and nominals that qualify as determiner complements, i.e. NPs, APs or NumPs, are maximal nominal categories that may function as arguments of nominal-taking heads (e.g. verbs and prepositions). We have seen in section 3.3.1 above, that there is no subset of Greek nominals that are required to take a determiner in order to count as maximal projections, or, in terms of Netter, as functionally complete categories. Although in the current system maximal nominal categories may syntactically vary, no conflict arises, since determiners, nouns, adjectives or numerals, hence, their projections, are subsorts of the same sort *det-nondet*, and nominal-taking heads select for arguments of sort *det-nondet*. Cross-classifying nominal categories in terms of inheritance enables us to put an end to a long-standing debate in the literature on NPs: whether maximal nominal projections should be analysed as NPs (noun projections) or DPs (determiner projections). In addition, the current approach provides a more precise characterization of elliptical nominals, without positing linguistic constructs that are lacking independent motivation, such as empty heads.

A further important point is that there is no need to postulate a notion of  $\bar{N}$  (intermediate noun projection), in order to identify nominals that can be modified by attributive adjectives, and distinguish them from maximal nominal categories. In the current system, attributive adjectives select and modify noun categories. Technically, these are words or phrases with a head value of sort *noun*. For example, both *podilato* (bike) and MASS terms such as *krasi* (wine), or plurals such as

*podilata* (bikes) are members of the sort *noun*. On the other hand, determinerful nominals, being construed as DPs, do not qualify as sisters of adjectives. Thus, unlike [Netter, 1994] and [Pollard and Sag, 1994], the approach proposed herein, does not run into problems concerning the issue what type of category attributive adjectives may modify (see section 3.3.1 and section 3.3.2 above). Assuming a similar line for English, both nonmaximal noun categories (**bike**) and (determinerless) MASS terms (**wine**) or plurals (**bikes**) can be specified HEAD *noun*. Thus, all three nominal types may be modified by an attributive adjective: **red bike**, **red wine** and **red bikes**. On the other hand, determinerful nominals such as **some bikes** can be analysed as DPs, which, therefore, cannot admit such modifiers: \*red some bikes.

Treating determiners as heads also has a theory internal, technical advantage. We have seen in the previous section that part of the determiner's content is required to originate from the (non-quantified) nominal the determiner combines with. For example, the (referential) index of a phrase **every bike**, which ranges over a set of entities, and moreover, the restriction that these entities should be bikes, both come from **bike**. In Pollard and Sag's (1994) account, in order that such information is made available on the determiner, determiners and  $\bar{N}$ s are required mutually to select for each other, and the SPEC Principle is stipulated. However, as we have seen, this principle is controversial, and should arguably be avoided. By contrast, in the current system, the determiner can directly select for its complement's content, by structure-sharing inside its subcat list. This is illustrated in (145), for **merika moderna podilata** (some modern bikes).

(145)



*SUBCAT and CONTENT value of merika (some) in the phrase merika moderna podilata (some modern bikes)*

As shown in (145), an NP such as *moderna podilata* (modern bikes) refers to a plurality of modern bikes. In case such an NP is the syntactic complement of a determiner, as in (145), its index and restriction are passed to the determiner's RESTRIND (restricted index) value, by structure-sharing.<sup>13</sup>

### 3.3.4 The category of numerals

In this section, I argue that the cardinals and elements such as *ligi* (few), *poli* (many), *diafori* (various/several), etc. constitute an independent class of nominals: the *numerals*. As illustrated e.g. in [Jackendoff, 1977] for English (see section 2.2.1), only certain combinations of specifiers (determiners) are well-formed. For instance, *the several issues* is okay, whereas *\*all several issues* is ill-formed. Greek also exhibits similar contrasts: *opiadipote tria vivlia* (any three books) is an

<sup>13</sup>It should be noted that an analysis of determiners as heads rather than noun complements requires the Semantics Principle of HPSG (cf. [P&S, 94]) to be slightly modified. Assuming the current formulation, if the determiner is the head-daughter of a quantified nominal, the CONTENT value of such a nominal will be an object of sort *quantifier*, rather than *nominal-object*. However, as we have seen in the previous section, the quantification theory assumed in [P&S, 94] requires that the CONTENT value of a quantified nominal such as *every bike* should be of sort *nominal-object*, like that of *bike*. Both the current account and Netter's approach to determiners in section 3.3.1 presuppose a modified Semantics Principle that will assign to quantified nominals content values of sort *nominal-object*.

admissible combination, while \**kapia merika vivlia* (\*some several books) is ruled out. To account for such contrasts, I assume that the cardinals and certain other elements that may cooccur with a determiner inside the same nominal projection should be syntactically distinguished from determiners. Under this view, \**kapia merika vivlia* is ill-formed because it contains two determiners: *kapia* (some) and *merika* (several). Assuming the analysis of determiners we have seen in the previous section, the string *merika vivlia* is syntactically a DP, and determiners, in this case *kapia*, do not admit a DP complement. On the other hand, (146a&b) below are okay, since they contain a single determiner, *opiadipote* (any) and *kathe* (every), respectively, and the *numeral tria* (three).

(146) a. *opiadipote tria vivlia*

‘any three books’

b. *kathe tria hronia*

‘every three years’

There are further differences between numerals and determiners in Greek. As shown in (147), only the former qualify as complements of the definite article. Thus, *ta dio* (the two) is well-formed, whereas \**ta merika* (the some) is ungrammatical.

(147) a. *Mu edose tria vivlia. Ta dio itan aglika*  
to-me gave-3.SG three books the two were English

‘(S)he gave me three books. The two of them were English’

b. \**Mu edose vivlia. Ta merika itan aglika*

to-me gave-3.SG books the some were English

It has often been proposed that the cardinals and elements that pattern alike should be syntactically analysed as adjectives, (see e.g. [Abney, 1987], [Giusti, 1991, 1992]; also see the discussion in section 2.2.2 and section 2.2.3 above). However, there is at least one good reason for rejecting this proposal: numerals and adjectives do not have the same distribution. Numerals occur in the left periphery of the phrase and cannot be preceded by adjectives:

- (148) \*kokina tria podilata  
 red three bikes  
 ‘\*red three bikes’

In what follows, I present an HPSG analysis of numerals and their idiosyncratic properties. In addition to the data we saw above, this analysis captures the fact that Greek numerals may cooccur either with (canonical) NPs (see (149a)), or with APs in elliptical contexts (see (149b)).

- (149) a. Agorasa tria vivlia  
 bought-1.sg tria books  
 ‘I bought three books’
- b. Agorasa tria aglika ke ena eliniko  
 bought-1.sg three English and one Greek  
 ‘I bought three English ones and a Greek one’

Numerals are treated as functional heads (FUN+) that subcategorize for a non-functional complement (FUN-) of sort *noun-adj-num*. This is shown in (150).

(150)

$$\left[ \begin{array}{l} \text{CAT} \left[ \begin{array}{l} \text{HEAD} \left[ \begin{array}{l} \text{CASE } \boxed{1} \\ \text{FUN+} \\ \text{N-} \end{array} \right] \\ \text{SUBCAT} < \textit{noun-adj-num} \left[ \text{CASE } \boxed{1}, \text{FUN-} \right] : \boxed{2} > \end{array} \right] \\ \text{CONT} \mid \text{INDEX } \boxed{2} \left[ \begin{array}{l} \text{NUM } \textit{pl} \\ \text{GEND } \textit{neut} \end{array} \right] \end{array} \right]$$

The CATEGORY value of the numeral tria (three).

By means of the boolean-valued head feature FUN, we segregate the functional and nonfunctional members of *noun-adj-num*: the subsorts *noun* and *adj* are

FUN−, whereas *numeral* is FUN+. The current approach accounts for ill-formed examples such as (151) below as follows. Adjectives exclusively select for noun categories, which are specified [FUN−, N+]. Therefore, an adjective such as *kokino* (red) in (151) cannot combine with a numeral phrase (NumP) *dio podilata* (two bikes), which is specified [FUN+, N−].

- (151) \**kokina dio podilata*  
           red       two bikes

We further rule out ill-formed examples such as (152) that contains two numeral categories: *diafora* (several/various) and the cardinal *pente* (five). In the current system, the string *pente aglika vivlia* (five English books) is analysed as a NumP. Such a phrase is FUN+, like its head daughter (the numeral *pente*), and thus cannot serve as a complement for the leftmost numeral head *diafora*.

- (152) \**diafora pente aglika vivlia*  
           various five English books

A final point with respect to (150) above, is that case concord and agreement in gender and number between the numeral head and its NP or AP complement are straightforwardly accounted for, in terms of structure-sharing. (See [1] and [2], respectively.) The form *tria* is either nominative or accusative case marked, and so will be its complement NP or AP.<sup>14</sup> Moreover, the nominal category subcategorized by *tria* is required to be plural in number and neuter in gender, like *tria* itself.

Let us next consider the content attribute of numerals. In the current approach, numerals and determiners are semantically apart. Determiners are quantifiers: in HPSG terms, they have a CONTENT value of sort *quantifier* (see previous section). By contrast, a non-quantificational analysis is provided for numerals. The semantics of numeral phrases is taken to be parallel to that of plurals, as conceived of in [Link, 1987]. Link's logic of plurals assimilates plural objects to

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<sup>14</sup>The Case of *tria* will be resolved once it combines with a nominal-taking head.

individuals, rather than to sets of individuals. In particular, Link introduces a sum operation that forms individual sums out of individual terms. A sum term such as  $\alpha \oplus \beta$  does not denote the set consisting of  $\alpha$  and  $\beta$ , but rather another individual of the same semantic type as  $\alpha$  and  $\beta$ . Individual sums have individual parts. For example,  $\alpha$  is an individual part of the individual sum  $\alpha \oplus \beta$ . Link takes numerals to be semantically on a par with adjectives. In HPSG terms, numerals, like adjectives, will be shown to introduce a *restriction* on the anchoring of the *index* of the nominal they occur in. In particular, a cardinal's restriction concerns the cardinality of a given individual sum, i.e. how many individual parts it consists of.

Assuming Link's approach to numerals, the CONTENT value of all three subsorts of *noun-adj-num*, i.e. *noun*, *adjective* and *numeral*, is an object of sort *nominal-object (nom-obj)*. As we will see in the following sections, this assumption is crucial for the account of the (Greek) definite article and the various types of polydefinites that is proposed in this work. The sort *nom-obj* bears the attributes INDEX and RESTRICTION (RESTR). The INDEX value is an object of sort *index* and carries the attributes PERSON, NUMBER and GENDER. This type of object is the HPSG analogue of a reference marker in Discourse Representation Theory (DRT) (cf. [Kamp and Reyle, 1993]), or a parameter introduced by an NP use in Situation Semantics (cf. [Gawron and Peters, 1990]). The index of nominals enables us to keep track of the various entities in the discourse. On the other hand, the restriction set contains *psoas (parametric states of affairs)* that place conditions on the entity that the index can be anchored to or, in case of quantified phrases, the set of entities it can quantify over. The RESTR value of adjectives and numerals in particular, is a set obtained by adding to the restrictions imposed by the nominal that the adjective or numeral combines with, one further restriction, imposed by the adjective or numeral itself.

To illustrate, the CONTENT value of the numeral *tria* (three-PL.NEUT) is as shown in (153), where  $\boxed{2}$  stands for the restriction value of the numeral's subcategorized complement:<sup>15</sup>

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<sup>15</sup>*card-three* is an abbreviation for *cardinality-three*. The PERSON attribute of the index is not shown in (153) because it is underspecified: for example, in case the NumP in hand serves as the subject of a third person verb, its person value will be **3rd**, and so on.

$$(153) \quad \left[ \begin{array}{c} \text{CONT} \\ \left[ \begin{array}{c} \text{INDEX } \boxed{1} \\ \left[ \begin{array}{c} \text{NUM } pl \\ \text{GEND } neut \end{array} \right] \\ \text{RESTR } \left\{ \left[ \begin{array}{c} \text{RELN } card - three \\ \text{INST } \boxed{1} \end{array} \right] \cup \boxed{2} \right\} \end{array} \right] \end{array} \right]$$

The *CONTENT* value of the numeral *tria* (three).

The numeral *tria* (three) imposes the restriction that the anchor of the index should consist of exactly three individual parts. In addition, the *RESTR* set of the numeral includes the restrictions placed by its subcategorized complement (tag  $\boxed{2}$ ). Assume that the numeral *tria* syntactically combines with the NP *kokina podilata* (red bikes). The *RESTR* value of *kokina podilata* is given in (154), where  $\boxed{1}$  is as shown in (153) above.

$$(154) \quad \left[ \text{RESTR } \left\{ \left[ \begin{array}{c} \text{RELN } red \\ \text{INST } \boxed{1} \end{array} \right], \left[ \begin{array}{c} \text{RELN } bike \\ \text{INST } \boxed{1} \end{array} \right] \right\} \right]$$

The *RESTR* value of *kokina podilata* (red bikes).

Then, by structure-sharing, the numeral's *RESTR* value will be fleshed out as shown in (155). In a referential use of the phrase *tria kokina podilata* (three red bikes), the index must be anchored to an individual sum of red bikes that has exactly three individual parts.

$$(155) \quad \left[ \text{RESTR } \left\{ \left[ \begin{array}{c} \text{RELN } card - three \\ \text{INST } \boxed{1} \end{array} \right], \left[ \begin{array}{c} \text{RELN } red \\ \text{INST } \boxed{1} \end{array} \right], \left[ \begin{array}{c} \text{RELN } bike \\ \text{INST } \boxed{1} \end{array} \right] \right\} \right]$$

The *RESTR* value of *tria kokina podilata* (three red bikes).

### 3.4 Definiteness and polydefiniteness: an HPSG approach

An important hypothesis assumed in the current analysis is that the Greek definite article is not a member of the class of determiners, but constitutes an individual category: *def*. Though both the definite article and determiners in Greek syntactically combine with the same range of nominal categories, i.e. noun, adjective, and numeral projections, only the definite article appears in constructions that have been referred to as polydefinites. Viz.:

- (156) a. to podilato to kokino  
      *def* bike     *def* red  
      ‘the red bike’
- b. to kenurio podilato to kokino  
      *def* new     bike     *def* red  
      ‘the new red bike’

In this work, I propose that the definite article in Greek does not “project”, or, in other words, it does not determine the syntactic category of the phrase it occurs in. Rather, it is a “marker of definiteness”: it may mark definite noun phrases (NPs), adjective phrases (APs), or numeral phrases (NumPs). Under this view, polydefinites are instances of *definite concord*: the daughter constituents of these phrases agree in “definiteness”, i.e. they are all definite phrases. For example, the polydefinite NP in (156a) consists of a definite noun *to podilato* (the bike) and a definite adjective *to kokino* (the red), and the polydefinite NP in (156b) consists of a definite NP *to kenurio podilato* (the new bike) and a definite adjective *to kokino*. In the following sections, I provide a formal account of definiteness and polydefiniteness in HPSG.

#### 3.4.1 An non-quantificational analysis of definites in HPSG

The analysis of the definite article that I propose in this work relies crucially on a non-quantificational approach to definiteness, the one provided in [Gawron and

Peters, 1990]. In their work, definiteness is associated with uniqueness, in a “local” or relative sense. For instance, the referent of a definite nominal **the book** is taken to be the unique entity that has the property of being a book in a contextually salient situation. That is, on Gawron and Peters’s view, an entity can be “unique” and carry unique properties, only inside a local setting—the setting we pick for a particular referential use of a definite nominal. Following [Barwise and Perry, 1983], Gawron and Peters make use of the idea of a *resource situation* in the analysis of nominals. This is a contextually available situation that provides entities for reference and quantification. Each (referential) use of a definite or indefinite nominal is taken to invoke a resource situation. However, in case of definites, the resource situation is restricted. Uniqueness in Gawron and Peter’s analysis of definites is relative to the resource situation associated with a given use of a definite nominal. More precisely, what the definite article semantically contributes to an NP utterance, is a relation UNIQUE that imposes a restriction on the resource situation for that utterance. To illustrate, the resource situation of a definite such as **the book** is restricted so that it contains a unique exemplar of the property BOOK. On the other hand, the resource situation of an indefinite such as **a book** is essentially unrestricted. Indefinites place no special restrictions on their resource situations. Then, there may be more than a single BOOK entity in the resource situation associated with the indefinite **a book**.<sup>16</sup> In what follows, I formulate Gawron and Peters’s proposal in terms of HPSG.

In the current system, uniqueness is expressed in terms of a boolean feature UNIQUE that is defined for objects of sort *nominal-object* (*nom-obj*). A specification UNIQUE+ indicates that the referent of a (definite) nominal uniquely instantiates a certain property—the property that the nominal denotes—in a contextually salient situation (the resource situation). Alternatively, UNIQUE– signifies that no such restriction needs to be satisfied. Rather, there may be more than a single entity in the resource situation bearing the property that the (indefinite) nominal denotes. The updated version of *nom-obj* is as follows:

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<sup>16</sup>In Gawron and Peters’s analysis, in case of non-referential uses of definites and indefinites, e.g. *every class loves the teacher*, the definite (or indefinite) nominal still introduces a referential index, which, however, is existentially quantified away at the VP or S level, by a Closure operator. Then, in such cases, definites and indefinites are treated analogously to existential quantifiers.

$$(157) \quad \textit{nom} - \textit{obj} : \left[ \begin{array}{l} \textit{INDEX} \textit{ index} \\ \textit{RESTR} \textit{ set}(\textit{psoa}) \\ \textit{UNIQUE} \textit{ boolean} \end{array} \right]$$

*Updated version of the sort* **nom-obj**

The revised sort *nom-obj* bears the following features:

- The feature **INDEX**: its value is an object of sort *index* and conveys the agreement features **NUMBER**, **GENDER**, and **PERSON**. In a referential use of a nominal, the index is anchored to an entity in the discourse.
- The feature **RESTR(ITION)**: its set value contains *psoa*s (*parametric states of affairs*) that impose restrictions on the anchor of the index.
- The feature **UNIQUE** which imposes a further restriction on the anchor of the index if its value is *plus* (+).<sup>17</sup>

The AVM in (158) shows the **CONTENT** value (of sort *nom-obj*) of the indefinite nominal **a book**. In a referential use of **a book**, the anchor must be a book, as required by the restriction *psoa* in (158).

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<sup>17</sup>In the HPSG formulation of Gawron and Peters's proposal that I provide here, no feature structure directly models the *resource situation*. This is because the HPSG ontology does not include (Austinian) propositions, where situations support states of affairs, rather only states of affairs are employed (e.g. the *psoa*s of the **RESTR** attribute). However, the specification **UNIQUE+** is to be construed in the Gawron and Peters's sense: it denotes that there is a unique referent that renders factual the restriction *psoa*s inside the situation that supports these states of affairs.

(158)

$$\text{nom} - \text{obj} \left[ \begin{array}{l} INDEX \boxed{1} [NUM \textit{sg}] \\ \\ RESTR \left\{ \left[ \begin{array}{l} RELN \textit{book} \\ \\ INST \boxed{1} \end{array} \right] \right\} \\ \\ UNIQUE- \end{array} \right]$$

*The content value of a book*

Consider next the definite **the book** in (159). The anchor of this nominal must be a book, and, moreover, it must be the unique book in the resource situation. This is encoded by the UNIQUE+ specification.

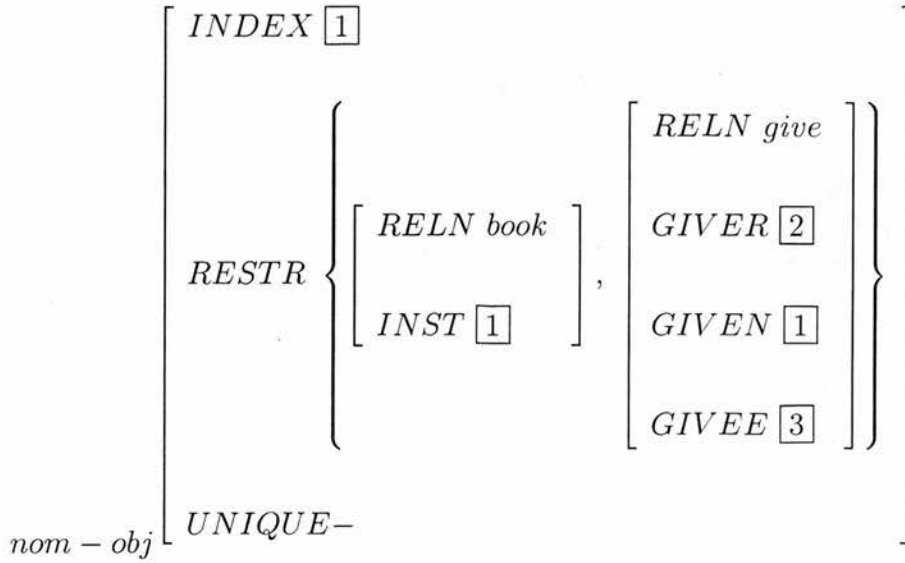
(159)

$$\text{nom} - \text{obj} \left[ \begin{array}{l} INDEX \boxed{1} [NUM \textit{sg}] \\ \\ RESTR \left\{ \left[ \begin{array}{l} RELN \textit{book} \\ \\ INST \boxed{1} \end{array} \right] \right\} \\ \\ UNIQUE+ \end{array} \right]$$

*The content value of the book*

Let us next turn to a couple of more complex examples. The AVM in (160) illustrates the CONTENT value of the indefinite **a book that Kim gave to Sandy**. (Tags  $\boxed{2}$  and  $\boxed{3}$  stand for the index values of the thematic roles of the verb **give** in the relative clause, and  $\boxed{2}$  is associated with Kim, while  $\boxed{3}$  is associated with Sandy).

(160)



*The content value of a book that Kim gave to Sandy*

In a referential use of the NP **a book that Kim gave to Sandy**, the index  $\boxed{1}$  must be anchored to an entity that renders factual each *psoa* in the set value of RESTR. That is,  $\boxed{1}$  must be anchored to a book that an entity named Kim gave to an entity named Sandy. The property denoted by the referent of **a book that Kim gave to Sandy** is a complex one, and it derives by conjoining the RESTR *psoa*s and abstracting over the index  $\boxed{1}$ . To obtain this property, I assume a function  $f_{prop-ob}$  which is as follows:

$$(161) \quad f_{prop-ob}(x, psOA_1, \dots, psOA_n) = \lambda x (psOA_1 \wedge \dots \wedge psOA_n)$$

For  $g = (\text{INDEX} : \boxed{1} ; \text{RESTR} : [\text{book } \boxed{1}] , [\text{give}, \boxed{2}, \boxed{1}, \boxed{3}])$ , (where, *book* and *give* stand for RELN *book* and RELN *give*, respectively),  $f_{prop-ob}(g)$  yields:

$\lambda \boxed{1} ([\text{book } \boxed{1}] \wedge [\text{give}, \boxed{2}, \boxed{1}, \boxed{3}])$ , and this is the property that the referent of **a book that Kim gave to Sandy** is required to instantiate.

Consider next the CONTENT value of the definite **the book that Kim gave to Sandy**.

(162)

$$\text{nom} - \text{obj} \left[ \begin{array}{l} \text{INDEX } \boxed{1} \\ \\ \text{RESTR} \left\{ \begin{array}{l} \left[ \text{RELN } \textit{book} \right] \\ \text{INST } \boxed{1} \end{array} \right\}, \left. \begin{array}{l} \left[ \text{RELN } \textit{give} \right] \\ \text{GIVER } \boxed{2} \\ \text{GIVEN } \boxed{1} \\ \text{GIVEE } \boxed{3} \end{array} \right\} \\ \\ \text{UNIQUE+} \end{array} \right]$$

*The content value of the book that Kim gave to Sandy*

The specification  $\text{UNIQUE+}$  imposes a further restriction on the anchor of the index. It requires that for any anchor that renders factual the psos in the  $\text{RESTR}$  set, the property obtained by conjoining the psos and abstracting over the index ( $\boxed{1}$ ) should be *uniquely* instantiable. Thus, in a referential use of the phrase *the book that Kim gave to Sandy*, there an entity in the resource situation that is the *unique* book that an entity named Kim gave to an entity named Sandy. Thus:

$$\text{UNIQUE } (\lambda \boxed{1} ([\text{book } \boxed{1}] \wedge [\text{give}, \boxed{2}, \boxed{1}, \boxed{3}])).$$

It should be finally noted that the current proposal does not concern only definite NPs. Rather, it further accounts for definite APs or NumPs. Consider for instance the definite adjective *to kokino* (the red) from Greek. The content value of sort *nom-obj* for *to kokino* is given in (163). This feature structure denotes that the property *red* is uniquely instantiable in a local setting.

$$(163) \left[ \begin{array}{l} INDEX \boxed{1} \\ \\ RESTR \left\{ \left[ \begin{array}{l} RELN red \\ INST \boxed{1} \end{array} \right] \right\} \\ \\ UNIQUE+ \end{array} \right]$$

The *CONTENT* value of the definite AP *to kokino* (the red).

Similarly for the definite numeral *ta dio* (the two). The *nom-obj* in (164) denotes that there is a unique individual sum in the resource situation with exactly two individual parts:

$$(164) \left[ \begin{array}{l} INDEX \boxed{1} \\ \\ RESTR \left\{ \left[ \begin{array}{l} RELN card - two \\ INST \boxed{1} \end{array} \right] \right\} \\ \\ UNIQUE+ \end{array} \right]$$

The *CONTENT* value of the definite NumP *ta dio* (the two).

In this section, I have sketched a non-quantificational approach to definites for HPSG, one that incorporates Gawron and Peter's proposal that the definite article does not introduce a quantifier force, but rather a uniqueness entailment. In the following section, I focus on the syntactic properties of the definite article in Greek and demonstrate how exactly it assigns a uniqueness requirement to the nominal it occurs in.

### 3.4.2 The definite article as an adjunct

In the current system, the definite article (*def*) is not taken to be the syntactic head of the phrase it occurs in. Rather, the head daughter of a definite phrase

is the nominal that *def* combines with. The definite article may syntactically combine with a wide range of nominal categories: the sorts *noun*, *adjective* and *numeral*. Thus, definite NPs, APs and NumPs are generated. Nonetheless, *def* makes a semantic contribution. I propose that *def* places a restriction on the referent of definite nominals: the anchor of a definite phrase's index must be an entity that uniquely instantiates the property denoted by this phrase, in a contextually available situation. In other words, the definite article makes a nominal UNIQUE+.

The properties of the Greek definite article can be naturally captured in HPSG terms by treating *def* as an adjunct. Adjuncts in HPSG are functors that take a head as their argument. Moreover, they affect the content of the phrase they occur in: adjuncts that combine with a nominal object (a head with a content value of sort *nom-obj*) add a restriction to the restriction set of that nominal object. This is exactly what *def* also does: like other adjuncts, for instance, adjectives or relative clauses, the definite article restricts the reference of the nominal it makes part of. (165) below is a skeletal illustration of the CATEGORY and CONTENT values of *to* (the-SG.NEUT). Tag [2] stands for the object (of sort *synsem*) given in (166). This object is the actual MOD value of *to* in place of [2], and tags [1], [3] and [4] indicate that certain features of *to* and the object that serves as its MOD value are identical. I cite the two objects separately in (165) and (166) for expository clarity.

$$(165) \left[ \begin{array}{l} \text{CATEGORY} \left[ \begin{array}{l} \text{HEAD } def \left[ \begin{array}{l} \text{CASE } \boxed{1} \text{ } acc \\ \text{FUN+} \\ \text{MOD } \boxed{2} \end{array} \right] \\ \text{SUBCAT } < > \end{array} \right] \\ \\ \text{CONTENT} \left[ \begin{array}{l} \text{INDEX } \boxed{3} \left[ \begin{array}{l} \text{NUM } sing \\ \text{GEN } neut \end{array} \right] \\ \text{RESTR } \boxed{4} \\ \text{UNIQUE+} \end{array} \right] \end{array} \right]$$

The CAT and CONT values of *to* (*the-SG.NEUT*)

$$(166) \left[ \begin{array}{l} \boxed{2} \text{ } synsem \left[ \begin{array}{l} \text{CAT } | \text{ HEAD } noun - adj - num \left[ \text{CASE } \boxed{1} \right] \\ \\ \text{CONT} \left[ \begin{array}{l} \text{INDEX } \boxed{3} \\ \text{RESTR } \boxed{4} \\ \text{UNIQUE-} \end{array} \right] \end{array} \right] \end{array} \right]$$

The MOD value of *to*

As illustrated in (165), the HEAD value of *to* is an object of sort *def*. Recall that *def* is a subsort of *nominal*, hence, it inherits the feature declaration of the latter. The feature CASE denotes the morphological case of a given form of *def*. The specification FUN+ signifies that *def* is a functional subsort of *nominal*, like determiners and numerals. By means of the feature MOD (modified), *def* selects for a sister *nominal*. As shown in (166), *def* requires that the HEAD value of the category it selects by MOD should be an object of sort *noun-adj-num*. That is, *def* essentially selects for a noun, adjective or numeral projection, for these three sorts are subsorts of *noun-adj-num* that exhaust *noun-adj-num*. Given that any

of the categories *noun*, *adjective* and *numeral* qualifies as an argument of *def*, we account for examples such as those in (167). In (167a), *to* cooccurs with an NP *kokino podilato* (red bike), in (167b), it cooccurs with an adjective *kokino* (red) and in (167c), it cooccurs with a NumP *dio kokina podilata* (two red bikes).

- (167) a. *to kokino podilato*  
*def new bike*  
 ‘the new bike’
- b. *Ehi dio podilata. Mu danise to kokino.*  
 has-3.SG two bikes. lent-3.SG me *def* red  
 ‘(S)he has two bikes. (S)he lent me the red one’
- c. *ta dio kokina podilata*  
*def-NEUT.PL two red bikes*  
 ‘the two red bikes’

Case concord and agreement in number and gender between *def* and the nominal it combines with are accounted for straightforwardly. The CASE value of *def* and that of its selected sister are required to be token-identical by structure-sharing (see tag [1] in (165) and (166)). Similarly for their INDEX values that bear the features NUMBER and GENDER (see tag [3] in (165) and (166)). Thus, the neuter *to* cannot combine say with the noun *karekla* (chair) or the adjective *kokini* (red) etc. which are feminine in gender.

A further important point is that *def* introduces no restriction *ps*oas. Notice that the restriction value [4] of *to* in (165) is structure-shared with that of its selected sister in (166). Therefore, the *ps*oas in the restriction set of the definite article originate from the category it combines with. However, *def* does impose a restriction on the anchor of a definite nominal’s index. This is the feature specification UNIQUE+. In the approach proposed here, the definite article is the semantic head of the phrase it makes part of. This means that the content value of a definite phrase originates from the definite article, rather than its nominal sister. However, this is not a special requirement that exclusively applies for definite phrases, rather it is a general property of phrases consisting of an adjunct

constituent and a head constituent, and it is expressed in terms of HPSG's Semantics Principle (see below). Since *def* is the semantic head, a definite phrase will be specified UNIQUE+, like the definite article, and moreover, it will carry the restrictions of the definite article's syntactic sister (i.e. an NP, AP or NumP) that are incorporated in the definite article's content.

Finally, notice that *def* selects for a UNIQUE– nominal (see (166)). It follows that definite NPs, APs, or NumPs do not qualify as syntactic sisters for *def*, since such nominals are specified UNIQUE+. Therefore, we rule out ill-formed strings such as (168).

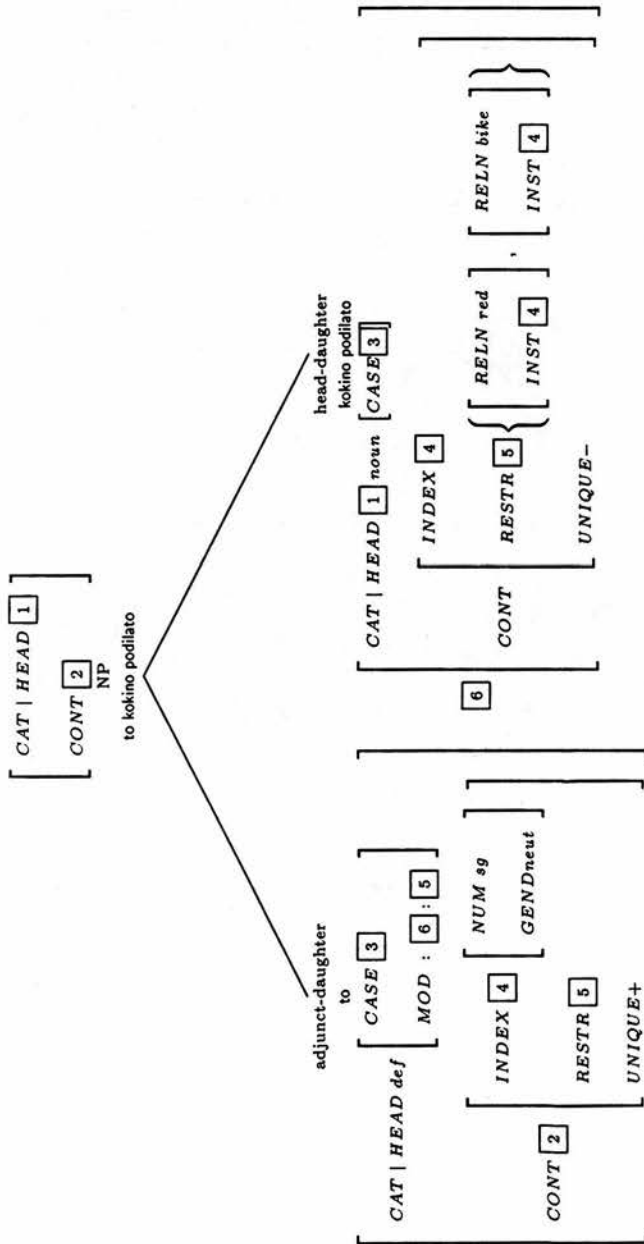
- (168) \*to to kenurio podilato  
*def def* new bike

A phrase consisting of a definite article and a noun, adjective or numeral projection is licensed by the Immediate Dominance (ID) Schema 5, cf. [Pollard and Sag, 1994], given in (169).

- (169) *Schema 5 (Head-Adjunct Schema)*. A phrase with DTRS value of sort *head-adjunct-structure*, such that the MOD value of the adjunct daughter is token-identical to the SYNSEM value of the head daughter.

By way of illustration, we next consider the feature structure generation of the monadic definite *to kokino podilato* (the red bike), admitted by the Head-Adjunct Schema.

(170) *The monadic definite to kokino podilato (the red bike)*



The monadic definite *to kokino podilato* in (170) consists of an adjunct daughter *to* and an NP head-daughter *kokino podilato*. Being an NP (HEAD *noun*), and, therefore, a subsort of *noun-adj-num*, *kokino podilato* is an appropriate category for the definite article *to* “modify”. Moreover, *kokino podilato* is indefinite (UNIQUE–), and identical in case and agreement features to the definite article *to* (see [3] and [4], respectively). We can further see in (170) that the restriction *poas* of *kokino podilato* [5] are incorporated in the definite article’s content: the definite article’s restriction is identical to the restriction of the synsem object [6] that MOD takes as its value, and this is lexically specified. The head value [1] of the NP daughter *kokino podilato* propagates onto the mother by the Head Feature Principle, repeated below for convenience.

- (171) *The Head Feature Principle (HFP)*. In a headed phrase, the values of SYNSEM | LOCAL | CATEGORY | HEAD and DAUGHTERS | HEAD-DAUGHTER | SYNSEM | LOCAL | CATEGORY | HEAD are token-identical.

The content value [2] of the definite article that carries the specification UNIQUE+ and incorporates the restrictions due to the head-daughter propagates onto the mother by the Semantics Principle (172):

- (172) *The Semantics Principle*. In a headed phrase, the CONTENT value is token-identical to that of the adjunct daughter if the DTRS value is of sort *head-adj-struct*, and with that of the head daughter otherwise.

The CONTENT value of *to kenurio podilato* (the red bike) signifies that in a referential use of the phrase, the index must be anchored to an entity that is the unique instantiation of the property *new bike* in a local setting.

In this section, I have presented an HPSG analysis of the Greek definite article as an adjunct. Like other types of adjuncts that modify nominal projections, the definite article in Greek does not affect the syntactic category of the phrase it makes part of. Rather, its contribution is semantic, and it is expressed in terms of uniqueness entailments, in the sense of Gawron and Peters (1990). In the current

approach, the definite article is indeed a marker of definiteness: it marks definite the nominal category it appears in. In addition, “definite marking” is assigned a precise semantic interpretation: a definite nominal has a referent that uniquely instantiates the property that the nominal denotes inside the resource situation. In the following section, we consider a treatment of polydefinites, which naturally derives from the current approach to the definite article.

### 3.4.3 Polydefiniteness as definite concord

In the previous section, it was shown that the Greek definite article may syntactically combine with a noun, adjective or numeral category and yield a definite NP, AP or NumP, respectively. In this section, I demonstrate how a definite AP may syntactically combine with a definite NP, thus yielding a polydefinite. I assume an analysis of adjectives that basically relies on [Pollard and Sag, 1994], and moreover incorporates the UNIQUE attribute. The AVM in (173) shows the CATEGORY and CONTENT attributes of the English adjective *red*, in Pollard and Sag’s (1994) account.

$$(173) \left[ \begin{array}{l} \text{CAT} \\ \text{SUBCAT} < > \\ \text{HEAD } adj \\ \text{MOD} : \bar{N} \left[ \begin{array}{l} \text{INDEX } \boxed{1} \\ \text{RESTR } \boxed{2} \end{array} \right] \\ \text{PRD-} \end{array} \right] \left[ \begin{array}{l} \text{INDEX } \boxed{1} \\ \text{RESTR } \left\{ \left[ \begin{array}{l} \text{RELN } red \\ \text{INST } \boxed{1} \end{array} \right] \cup \boxed{2} \right\} \end{array} \right]$$

*The CATEGORY and CONTENT attributes of the adjective red*

As shown in (173), in [Pollard and Sag, 1994], adjectives select for an  $\bar{N}$ , in terms of their MOD feature.<sup>18</sup> The index value of this  $\bar{N}$  is required to be identical to the index value of the adjective, by structure-sharing (see tag  $\boxed{1}$ ). In addition, adjectives incorporate the restriction psoas of the noun projection they select: the restriction value of the selected  $\bar{N}$   $\boxed{2}$  is added to the restriction value of the adjective. This object ( $\boxed{2}$  in case of (173)) is instantiated once the adjective actually combines with an  $\bar{N}$ , by the Head-Adjunct Schema.<sup>19</sup> By the Semantics Principle, the union of the adjective's restriction psoas propagates on the mother. To illustrate, if *red* eventually combines with the noun *book*, the CONTENT value of *red book* will be the following feature-structure:

$$(174) \left[ \begin{array}{c} \left[ \begin{array}{c} \left[ \begin{array}{c} \text{INDEX } \boxed{1} \\ \text{RESTR } \left\{ \left[ \begin{array}{c} \text{RELN } \textit{red} \\ \text{INST } \boxed{1} \end{array} \right], \left[ \begin{array}{c} \text{RELN } \textit{book} \\ \text{INST } \boxed{1} \end{array} \right] \right\} \end{array} \right] \\ \text{CONT} \end{array} \right] \end{array} \right]$$

*The CONTENT of red book in [Pollard and Sag, 1994].*

For our own purposes, we slightly modify Pollard and Sag's analysis of adjectives: we assume that (indefinite) adjectives such as *kokino* (red) are in addition specified for the feature UNIQUE.<sup>20</sup> Consider the AVM in (175):

<sup>18</sup> $\bar{N}$  is an abbreviation for HEAD *noun*, SUBCAT  $\langle \text{DetP} \rangle$ . In [Pollard and Sag, 1994],  $\bar{N}$ s are noun phrases that have not yet taken their determiner complement (see section 3.3.2, for an outline of Pollard and Sag's (1994) approach to determiners).

<sup>19</sup>As we saw in the previous section, this schema stipulates identity between the adjunct's MOD value and the head's synsem. Therefore, once the adjunct's MOD value is instantiated, the restrictions coming from the  $\bar{N}$  and that are incorporated in the adjunct's content are also instantiated.

<sup>20</sup>A further difference between Pollard and Sag's analysis of adjectives and the one assumed here is that in the latter adjectives do not select for  $\bar{N}$ s, in the sense of Pollard and Sag (1994) (see above), rather, they select for a category specified HEAD *noun*, which may be a word or a phrase. This has certain advantages over the Pollard and Sag account, (for discussion, see section 3.3.3 above).

(175)

$$\left[ \begin{array}{l}
 \left[ \begin{array}{l}
 \text{CAT} \\
 \text{HEAD } \textit{adj} \\
 \text{MOD} : \textit{noun} \\
 \text{PRD}- \\
 \text{SUBCAT } < >
 \end{array} \right]
 \left[ \begin{array}{l}
 \text{INDEX } \boxed{1} \\
 \text{RESTR } \boxed{2} \\
 \text{UNIQUE } -
 \end{array} \right]
 \end{array} \right]
 \left[ \begin{array}{l}
 \text{CONT} \\
 \text{INDEX } \boxed{1} \\
 \text{RESTR } \left\{ \left[ \begin{array}{l} \text{RELN } \textit{red} \\ \text{INST } \boxed{1} \end{array} \right] \cup \boxed{2} \right\} \\
 \text{UNIQUE}-
 \end{array} \right]
 \end{array}$$

*The indefinite (UNIQUE-) adjective kokino.*

The adjective *kokino* is UNIQUE-. That is, the anchor of its index is not required to be the unique instance of the property RED in the resource situation. The noun projection that *kokino* selects via the feature MOD is required to be UNIQUE- too. This is lexically specified by structure-sharing, like it is lexically specified that the adjective and the selected noun category should carry identical index values (see  $\boxed{1}$ ). Therefore, *kokino* will not modify, for example, the definite NP *to podilato* (the bike). The latter is UNIQUE+, due to the definite article *to*, and invokes a particular resource situation in which some entity is the unique bike. Thus, ill-formed examples due to clash in definiteness are excluded:

- (176) a. \**kokino to podilato*  
           *red def bike*

- b. \*to podilato kokino  
*def* bike red

The adjective **kokino** may instead modify the indefinite noun **podilato**. In this case, no clash occurs since both the adjunct and the noun head are UNIQUE-. Hence:

- (177) a. kokino podilato  
 red bike  
 ‘a red bike’
- b. podilato kokino  
 bike red  
 ‘a red bike’

The CONTENT value of the indefinite NP **kokino podilato** (red bike) is as follows:

$$(178) \left[ \begin{array}{c} \left[ \begin{array}{c} \text{INDEX } \boxed{1} \\ \text{RESTR } \left\{ \left[ \begin{array}{c} \text{RELN } \textit{red} \\ \text{INST } \boxed{1} \end{array} \right], \left[ \begin{array}{c} \text{RELN } \textit{bike} \\ \text{INST } \boxed{1} \end{array} \right] \right\} \\ \text{UNIQUE-} \end{array} \right] \end{array} \right]$$

*The content of kokino podilato (red bike).*

The definite article *def* may in principle cooccur with the NPs in (177) above. Recall that *def* selects for an argument of sort *noun-adj-num*, which subsumes projections of *noun*, *adjective* and *numeral*. In addition, *def* requires that the nominal it combines with should be UNIQUE-.<sup>21</sup>

Consider next the definite adjective **to kokino** (the red).

<sup>21</sup>In fact, *def* may cooccur only with the NP in (177a):

(180)

$$\left[ \begin{array}{l}
 \left[ \begin{array}{l}
 \left[ \begin{array}{l}
 \left[ \begin{array}{l}
 \text{INDEX } \boxed{1} \\
 \text{RESTR } \boxed{2} \\
 \text{UNIQUE } +
 \end{array} \right] \\
 \text{MOD : } \textit{noun}
 \end{array} \right] \\
 \text{HEAD } \textit{adj}
 \end{array} \right] \\
 \text{PRD-}
 \end{array} \right] \\
 \text{SUBCAT } < >
 \end{array} \right] \\
 \\
 \left[ \begin{array}{l}
 \left[ \begin{array}{l}
 \text{INDEX } \boxed{1} \\
 \text{RESTR } \left\{ \left[ \begin{array}{l} \text{RELN } \textit{red} \\ \text{INST } \boxed{1} \end{array} \right] \cup \boxed{2} \right\} \\
 \text{UNIQUE+}
 \end{array} \right]
 \end{array} \right]
 \end{array} \right]$$

*The definite adjective to kokino (the red)*

The AP *to kokino* (the red) is UNIQUE+ due to the semantic contribution of *to* (the-SG.NEUT). The UNIQUE+ specification signifies that the property RED is uniquely instantiable in a local setting (the resource situation). The noun projection that *to kokino* selects for via the feature MOD is also UNIQUE+.<sup>22</sup> When a definite adjective such as *to kokino* syntactically combines with a definite NP they

(179) a. *to kokino podilato*

*def red bike*

'the red bike'

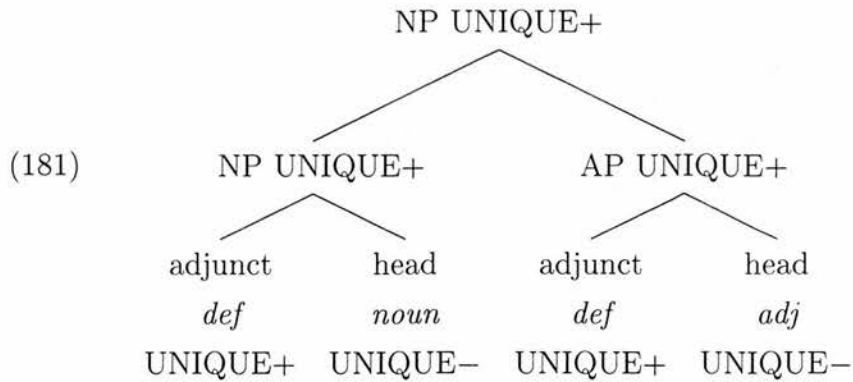
b. \**to podilato kokino*

*def bike red*

The contrast in (179) indicates that there are certain word order constraints in monadic definites in Greek (see also chapter 2). For an account of such contrasts, see section 3.7.

<sup>22</sup>In fact, this is required by the Uniqueness Principle, see section 3.6 below.

yield a polydefinite. The generation of the polydefinite NP *to podilato to kokino* (the bike the red; ‘the red bike’) is schematically illustrated in the following tree-diagram.



*The polydefinite NP to podilato to kokino (the bike the red; ‘the red bike’)*

Polydefiniteness is a natural consequence of the fact that adjectives in Greek “agree” in definiteness with the nouns they modify, as they agree in other features, for instance, number and gender. In this sense, the polydefinite construction is an instance of “definite concord”. It is entirely straightforward to account for this type of definite concord, once we assume the approach to definiteness presented in the previous sections.

The polydefinite *to podilato to kokino* (the bike the red; ‘the red bike’) is a noun projection, i.e. its head value is an object of sort *noun*. This value comes from the head daughter, the monadic definite *to podilato* (the bike), by the Head Feature Principle. Being an NP, *to podilato to kokino* can be modified by a further definite adjective. Thus, a polydefinite that contains more than two definite articles is generated, e.g.:

- (182) *to kenurio to podilato to kokino*  
*def new def bike def red*  
 ‘the new red bike’

In a referential use of *to kenurio to podilato to kokino*, the anchor must be an entity that is the unique new red bike in a contextually salient situation. This condition

is imposed by the restriction *psoas*, and in addition the *UNIQUE+* specification. The *CONTENT* value of this NP is as follows:

(183)

$$\left[ \begin{array}{l} \text{CONT} \\ \text{RESTR} \\ \text{UNIQUE+} \end{array} \left[ \begin{array}{l} \text{INDEX } \boxed{1} \\ \left\{ \left[ \begin{array}{l} \text{RELN } \textit{new} \\ \text{INST } \boxed{1} \end{array} \right], \left[ \begin{array}{l} \text{RELN } \textit{red} \\ \text{INST } \boxed{1} \end{array} \right], \left[ \begin{array}{l} \text{RELN } \textit{bike} \\ \text{INST } \boxed{1} \end{array} \right] \right\} \\ \text{UNIQUE+} \end{array} \right] \right]$$

The *CONTENT* value of *to kenurio to podilato to kokino*.

In this section, I have presented an account of polydefinite NPs. I will demonstrate next how other nominal categories i.e. demonstratives, numerals and determiners can be incorporated in this account.

### 3.5 Demonstratives, numerals and determiners in definites and polydefinites

#### 3.5.1 Greek demonstratives as inherently definite nominals

In this section, I argue that an analysis of Greek demonstratives as definite (*UNIQUE+*) nominal categories enables their distribution to be accounted for in a very straightforward manner. Consider (184) and (185). The former demonstrates that the definite article (*def*) cannot attach to a demonstrative. The contrast in (185) shows that demonstratives exclusively occur in definites phrases.

(184) \**to afto to podilato*  
*def this def bike*

- (185) a. *afto to podilato*  
           *this the bike*  
           ‘*this bike*’
- b. \**afto podilato*  
           *this bike*

If we assume that demonstratives are definite, both these facts can be explained. First, as we have seen, the definite article does not cooccur with definite nominals: *def* selects for a UNIQUE– argument. Moreover, demonstratives are excluded from indefinite phrases so that definite concord is not violated. Ill-formed strings such as (185b) and (186) below are ruled out for similar reasons. In the former, an indefinite noun category (*podilato* ‘bike’) cooccurs with the inherently definite demonstrative. In the latter, the indefinite adjective *kokino* (red) appears to modify the definite NP *to podilato* (the bike). The requirement for definite concord is violated in either case.

- (186) \**to kenurio kokino to podilato*  
           *def new red def bike*

The AVM in (187) is a skeletal illustration of the CATEGORY and CONTENT value of the demonstrative *afto* (this-SG.NEUT). (For expository clarity, only relevant features are included).

$$(187) \left[ \begin{array}{l} \left[ \begin{array}{l} \text{HEAD } \textit{dem} [ \textit{FUN+} ] \\ \text{CAT} \left[ \begin{array}{l} \text{SUBCAT } < \textit{noun} - \textit{adj} - \textit{num}[\textit{UNIQUE+}] > \end{array} \right] \end{array} \right] \\ \text{CONTENT } | \textit{UNIQUE+} \end{array} \right]$$

*The CATEGORY and CONTENT attributes of the demonstrative afto (this-SG.NEUT)*

In the current system, demonstratives are treated as heads that subcategorize for a complement of sort *noun-adj-num*. Therefore, we account for examples such as the ones in (188): in (188a), *afta* cooccurs with an NP (*ta podilata*), in (188b), it cooccurs with an AP (*to kokino*), and in (188c), *afta* appears to be in construction with an NumP (*ta dio*).

- (188) a. *afta ta podilata*  
           these bikes  
           ‘these bikes’
- b. *agorasa afto to kokino*  
           bought-1.SG this the red  
           ‘I bought this red one’
- c. *agorasa afta ta dio*  
           bought-1.SG these the two  
           ‘I bought these two’

A further important point in the analysis of demonstratives provided here is that they are *lexically* specified as UNIQUE+. In this respect, they differ from noun, adjective and numeral categories that are *prima facie* UNIQUE– and turn into UNIQUE+ by the mediation of the definite article.<sup>23</sup> In addition, definite concord between a demonstrative and its nominal complement is lexically specified: as illustrated in (187), the demonstrative requires that the UNIQUE value of its subcategorized complement should be *plus* (+). Hence, ill-formed examples such as (190) (repeating (185b)) are ruled out.

- (190) \**afto podilato*  
           this bike

---

<sup>23</sup>By analysing demonstratives as UNIQUE+, we make the claim that they are associated with a uniqueness requirement. It has been pointed out that nominals such as *this woman* in American English are on a par with indefinites, in a context such as (189):

- (189) I was sitting quietly in the half-empty theater when suddenly *this woman* comes close and...

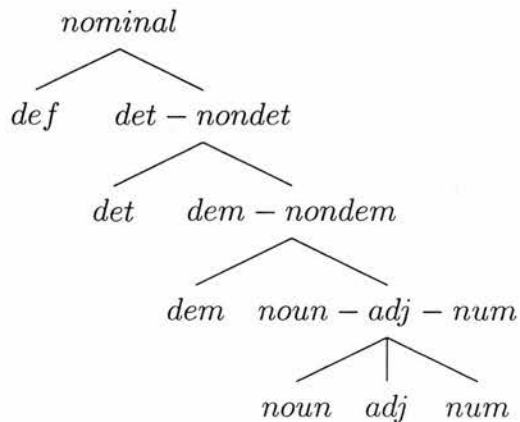
However, no such use is available for the corresponding Greek example.

Demonstratives are subsumed under a distinct sort *demonstrative* (*dem*). As will be shown below, this sort is a subsort of *det-nondet*, and, therefore, inherits the feature declaration of the latter (i.e. the features CASE, FUN, MOD, PRD and their sort values). Demonstratives are functional categories (FUN+), like determiners and numerals. However, they differ from numerals in that they may syntactically combine with any category of sort *noun-adj-num*, rather than only non-functional members of this sort.<sup>24</sup> On the other hand, determiners admit phrases headed by demonstratives (DemPs), in addition to NP, AP and NumP complements. E.g.:

- (191)    *ola afta ta podilata*  
           all these the bikes  
           ‘all these bikes’

The lattice in (192) illustrates the hierarchy of nominal categories for Greek, as modified so as to accommodate demonstratives.

- (192)



*Lattice for Greek nominal categories (updated)*

A new sort *demonstrative-nondemonstrative* (*dem-nondem*) is introduced in the hierarchy of nominals. This sort partitions into *dem* (the sort of demonstratives)

<sup>24</sup>As was shown in section 3.3.4 above, numerals are compatible only with the non-functional members of *noun-adj-num*: noun and adjective projections.

and *noun-adj-num* (the sort subsuming noun, adjective and numeral categories). We assume a further minor modification: determiners subcategorize for a complement with a head value of sort *dem-nondem*, rather than *noun-adj-num*. Thus, we account for the whole range of determiner complements, including DemPs (see (191) above). Treating demonstratives as a distinct class (*dem*) will also enable us to rule out ill-formed examples with more than a single demonstrative. To illustrate, in (193) below, the string **afto to podilato** (this the bike) is analysed as a demonstrative phrase with the demonstrative **afto** as its head-daughter and the definite NP as its complement-daughter. However, the leftmost demonstrative **ekino** (that) cannot take a DemP as its complement, rather it requires a member of *noun-adj-num*. Therefore, our grammar will not generate ill-formed examples such as (193).

- (193) \*ekino afto to podilato  
           that this the bike

The account of Greek demonstratives sketched above can also serve as an illustration of the advantages of a grammar making use of sort hierarchies. Such a grammar can be easily adapted or expanded: in order to incorporate a new sort, the existing sorts are minimally affected.

### 3.5.2 Numeral phrases and definite concord

In various places in the previous sections, we have seen examples of numeral phrases (NumPs) that are monadic definites, e.g.:

- (194) ta dio kokina podilata  
           ‘the two red bikes’

Such phrases are taken to consist of a *def* adjunct daughter (in this case, **ta**) and a NumP head daughter (in this case, **dio kokina podilata** ‘two red bikes’). The sort *numeral*, which subsumes the cardinals and nominals that pattern alike, is a subsort of *noun-adj-num*. As we have seen, the definite article selects for *noun-adj-num* categories, therefore, it may syntactically combine with a numeral and

yield a definite NumP.

However, in addition to monadic definite NumPs, we also find indefinite and polydefinite NumPs. Consider for instance the examples in (195). In (195a), both the numeral (*dio*) and the noun category (*podilata*) are indefinite. By contrast, the examples in (195b&c) consist of a definite numeral head *ta dio* (the two) and its definite complement, a noun or adjective category, *ta podilata* (the bikes) and *ta kokina* (the red), respectively.

(195) a. *dio podilata*

‘two bikes’

b. *ta dio ta podilata*

the two the bikes

‘the two bikes’

c. *ta dio ta kokina*

the two the red

‘the two red ones’

The examples in (195) are instances of definite concord. Definite concord between numeral heads and their noun or adjective complements can be straightforwardly expressed by requiring that the *UNIQUE* value of a numeral and its subcategorized complement should be identical. This is illustrated in the AVM in (196), where the *CONTENT | UNIQUE* value of the numeral and the *UNIQUE* value inside its subcat list are identical ( $\boxed{1}$ ), by structure-sharing.

(196) 
$$\left[ \begin{array}{l} \text{CAT} | \text{SUBCAT} < [ \text{UNIQUE} \boxed{1} ] > \\ \text{CONT} | \text{UNIQUE} \boxed{1} \end{array} \right]$$

*A numeral and its subcategorized complement have identical  
UNIQUE values*

Therefore, we guarantee that a *UNIQUE*– numeral such as *dio* (two), will combine with an indefinite noun or adjective category, e.g. *podilata* (bikes) or *kokina*

(red), and vice versa, a UNIQUE+ numeral such as *ta dio* (the two) will take a UNIQUE+ NP or AP complement such as *ta podilata* (the bikes) or *ta kokina* (the red).

### 3.5.3 The distribution of determiners in definites and indefinites

In the previous sections (see in particular section 3.3.3), we have seen that determiners in Greek may cooccur with noun, adjective, numeral and demonstrative projections. However, Greek determiners can be partitioned into two classes: (a) those that take definite complements (see (197a&b)), and (b) those that take indefinite complements (see (197c&d)).

(197) a. *ola ta vivlia*  
all the books  
'all the books'

b. \**ola vivlia*  
all books

c. *merika vivlia*  
'some books'

d. \**merika ta vivlia*  
'some the books'

The account presented in section 3.3.3 can be easily extended to cover the data in (197). Determiners like *ola* (all) can be taken to select for a UNIQUE+ complement. Such a requirement is lexically specified in their subcat list. The feature structure in (198) corresponds to the subcategorized complement of *ola*.

$$(198) \quad \left[ \begin{array}{l} CAT \mid HEAD \textit{ dem} - \textit{ nondem} \\ CONT \mid UNIQUE+ \end{array} \right]$$

*The subcat list element of the determiner ola (all)*

Thus, *ola* may only combine with definite DemPs, NPs, APs, or NumPs. Ill-formed examples such as (197b) above are excluded. On the other hand, determiners such as *merika* (some) require that their complement should be *UNIQUE-*. The element in their subcat list is as follows:

$$(199) \quad \left[ \begin{array}{l} CAT \mid HEAD \textit{ dem} - \textit{ nondem} \\ CONT \mid UNIQUE- \end{array} \right]$$

*The subcat list element of the determiner merika*

Therefore, determiners of the latter kind will resist a definite complement. Notice, for instance, that *merika* may not cooccur with a demonstrative phrase, though such phrases are members of *dem-nondem*. As shown in section 3.5.1 above, DemPs do not have a *UNIQUE-* counterpart, rather, they are invariably *UNIQUE+*. Then, ill-formed strings such as (200) below are ruled out.

- (200) \**merika afta ta vivlia*  
 some these the books  
 ‘\*some these books’

### 3.6 The Uniqueness Principle

Feature structures in HPSG are required to be *sort-resolved* ([Carpenter, 1992]). A feature structure of sort  $\sigma$  is *sort-resolved* if the value of every feature defined for  $\sigma$  is maximal (most specific). For instance, the *CASE* value in a feature structure of sort *nominal* is maximal if it is an object of sort *nom*, *gen*, or *acc*, rather

than *case* (since the latter sort is not atomic, rather it partitions into *nom*, *gen* and *acc*). The requirement for maximal specificity is directly related to the notion of underspecification in the HPSG framework. If the value of a given feature is underspecified, it means that it will be resolved in as many ways as the subsorts of the sort value appropriate for that feature. For example, if a nominal is underspecified for CASE, it will have three instantiations: a nominative, a genitive and an accusative one. In this section, I discuss a technical problem for the current approach that is related to the requirement for *sort resolved* feature structures.<sup>25</sup> In addition, I provide a solution to this problem by formulating the Uniqueness Principle and by slightly modifying the hierarchy of nominal sorts. Such modifications are not an organic part of the account proposed here, rather they enable us to deal with technical aspects of the grammatical theory (HPSG) that accommodates this account. In particular, they satisfy requirements imposed by the particular feature logic underlying HPSG in its current formulation and moreover the theory of adjuncts proposed in [Pollard and Sag, 1994]. Hopefully, such extensions can be eliminated once HPSG is suitably modified.

In the current system, indefinite adjectives are specified CONTENT | UNIQUE– and they select for a UNIQUE– noun category, through their head feature MOD. Viz.:

$$(201) \quad \left[ \begin{array}{l} MOD \mid CONT \mid UNIQUE- \\ CONT \mid UNIQUE- \end{array} \right]$$

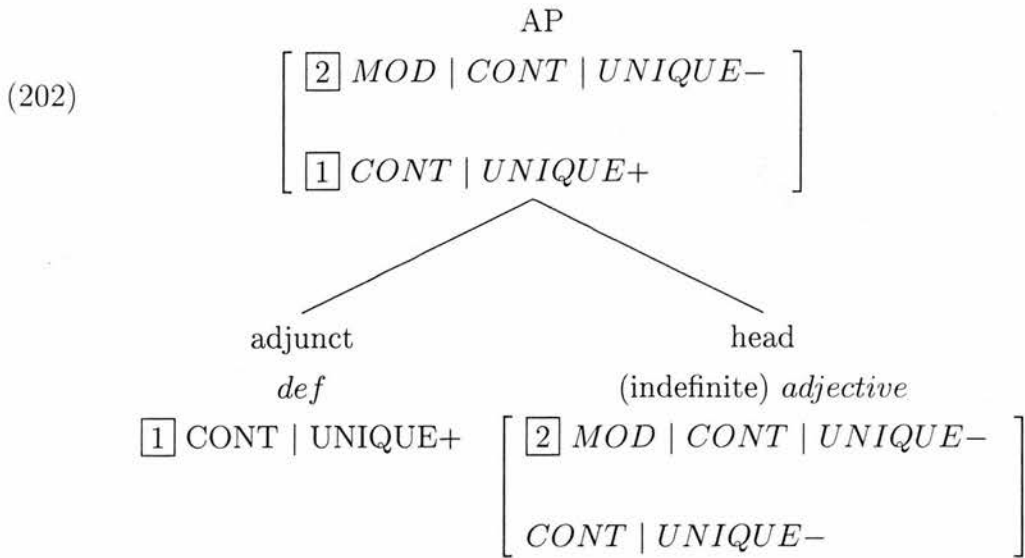
*Indefinite adjectives*

Once the definite article syntactically combines with an indefinite adjective such as the one in (201), it yields a definite AP. However, the MOD value of such an AP is identical to that of its (indefinite) adjective daughter—the head-daughter—by the Head Feature Principle of HPSG. This is because MOD is a head feature.

---

<sup>25</sup>The requirement for maximal specificity can be proved problematic for a number of accounts assuming the HPSG framework, e.g. an account of coordination in HPSG [Sag, p.c.]. See also the typed feature account of idioms in [Copestake and Briscoe, 1994], where *templates* are employed.

This is summarized in (202).



If *def* is allowed to cooccur with an indefinite adjective such as (201), a problem emerges: paradoxically, definite (UNIQUE+) adjectives will be allowed to select for indefinite (UNIQUE-) NPs. This is because incompatible values for the paths CONTENT | UNIQUE and MOD [...] UNIQUE propagate onto the mother from the adjunct-daughter (the definite article) and the head-daughter (the indefinite adjective), respectively. In a theory that places no requirement for maximal specificity, the MOD [...] UNIQUE value of an adjective category can be left underspecified and be required to unify with that of the CONTENT | UNIQUE path. Then, indefinite adjectives (i.e. adjectives specified CONTENT | UNIQUE-) will select for indefinite NPs (i.e. they will be specified MOD [...] UNIQUE-), whereas definite adjectives (i.e. adjectives specified CONTENT | UNIQUE+) will select for definite NPs (i.e. they will be specified MOD [...] UNIQUE+). However, HPSG does require that feature structures should be sort-resolved. Therefore, in order to get round this problem, I introduce the Uniqueness Principle:

(203) *The Uniqueness Principle:* In a head-adjunct-structure whose adjunct daughter is of sort *noun-adj-num* the CONT | UNIQUE value of the head-daughter is token-identical to the CONT | UNIQUE of the adjunct daughter.

$$DTRS \left[ \begin{array}{l} HEAD - DTR \mid SYNSEM \mid CONT \mid UNIQUE \boxed{1} \\ \\ ADJ - DTR \mid SYNSEM \left[ \begin{array}{l} CAT \mid HEAD \textit{ noun - adj - num} \\ \\ CONT \mid UNIQUE \boxed{1} \end{array} \right] \end{array} \right]$$

The Uniqueness Principle requires that the UNIQUE value of an adjective or AP that is modifying a noun or NP should be identical to the UNIQUE value of the latter. Therefore, if the adjective category is UNIQUE−, the noun category should also be UNIQUE−, whereas if the AP is UNIQUE+, the NP should also be UNIQUE+. The Uniqueness Principle is a parochial principle, i.e. it exclusively applies to languages with definite concord phenomena, like Greek. Notice that identity between the UNIQUE value of the adjunct daughter and the UNIQUE value of the head daughter is stipulated only in case the adjunct daughter is a member of the sort *noun-adj-num*. If, for instance, the adjunct daughter is of sort *def* (a definite article), then no such identity will occur. The definite article that carries a UNIQUE+ specification is not subsumed under *noun-adj-num*. Therefore, it is allowed to cooccur with a UNIQUE− head (an NP, AP or NumP category).

In addition to the Uniqueness Principle, I assume two distinct types of indefinite adjectives. The sorts *adj1* and *adj2* differ from each other with respect to the value of the path: MOD | SYNSEM | LOCAL | CONTENT | UNIQUE. Viz.:

- *adj1*

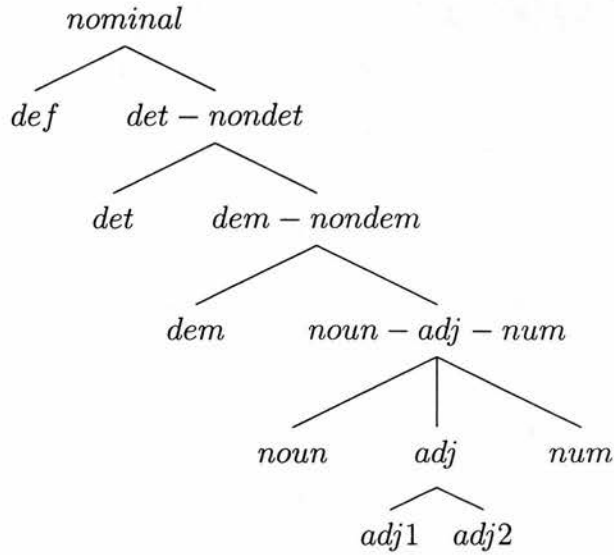
$$\left[ \begin{array}{l} MOD \mid CONT \mid UNIQUE+ \\ \\ CONT \mid UNIQUE- \end{array} \right]$$

- *adj2*

$$\left[ \begin{array}{l} MOD \mid CONT \mid UNIQUE- \\ \\ CONT \mid UNIQUE- \end{array} \right]$$

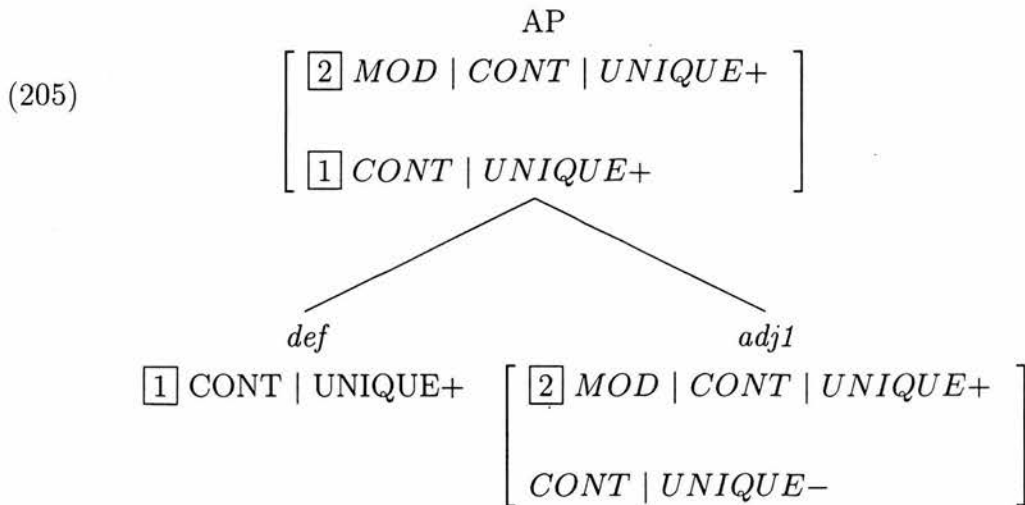
(204) provides an updated lattice for the hierarchy of nominal sorts in Greek.

(204)

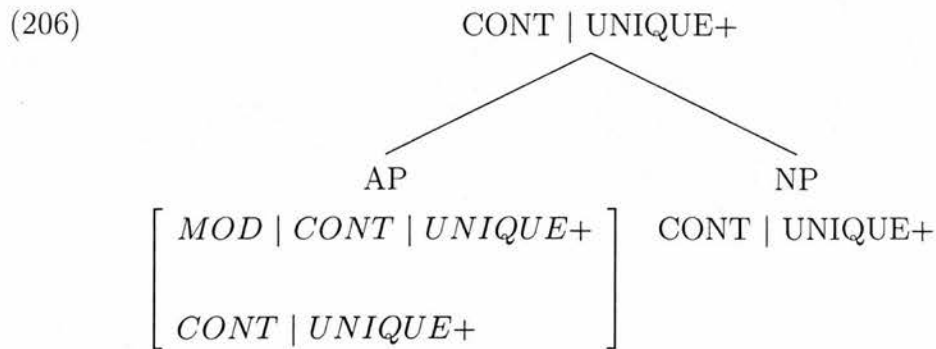


*Lattice for Greek nominal categories (with the two subsorts of **adj**)*

Once the definite article *def* syntactically combines with an adjective category of sort *adj1*, it yields a definite AP that in turn selects for a definite NP. This is illustrated in (205):



The top category in (205) will modify a definite NP, as required by the Uniqueness Principle. Viz.:



On the other hand, indefinite adjectives of sort *adj2* modify indefinite noun categories. Though nothing prevents the definite article from combining with an *adj2* adjective, a definite AP that is a projection of *adj2* cannot combine with an indefinite NP for the Uniqueness Principle would be violated. For the same reason, an indefinite adjective of sort *adj1* can never combine with a definite NP.<sup>26</sup>

In this section, I have formulated the Uniqueness Principle and introduced a further partition in the hierarchy of nominal sorts for Greek. These modifications enable us to preserve current assumptions of the HPSG theory concerning the analysis of adjuncts and moreover completeness criteria that feature structures are required to satisfy. However, none of these additions should be considered to be an organic part of the approach to definiteness and the make-up of nominals that has been proposed in this chapter. Rather, they can be abolished, in favour of further simplification of linguistic theory, provided the HPSG theory of adjuncts and underlying feature logic are suitably modified.

<sup>26</sup>A modification similar to the one I have provided in this section for adjectives is also required for numerals, so as to make sure that the CONTENT | UNIQUE value of a numeral and the one of its subcategorized complement inside its subcat list are identical.

### 3.7 Linear order in Greek definites

In this final section, I discuss linear order inside definite NPs, APs and NumPs, and provide an account in terms of Linear Precedence (LP) statements.

#### 3.7.1 Head-modifier order in definite and indefinite nominals

As was shown in chapter 2, Greek noun phrases exhibit an interesting word order contrast: in polydefinite and indefinite NPs, adjectives may precede or follow the noun head. On the other hand, adjectives are required to precede the noun inside monadic definites. The free adjective-noun order in polydefinites and indefinites is illustrated in (207) and (208), respectively. In (207), the definite adjective *ta aglika* (the English) occurs pre- and post-nominally. Similarly for the indefinite *aglika* (English) in (208).

(207) a. *ta vivlia ta aglika*  
the books the English  
'the English books'

b. *ta aglika ta vivlia*  
the English the books  
'the English books'

(208) a. *vivlia aglika*  
books English  
'English books'

b. *aglika vivlia*  
English books  
'English books'

The minimal pair in (209) demonstrates that adjectives cannot occur post-nominally in monadic definites.

(209) a. to kenurio agliko vivlio  
the new English book

b. \*to kenurio vivlio agliko  
the new book English

Interestingly, analogous contrasts occur inside adjective phrases, too. As pointed out by Karanassios ([Karanassios, 1992]), adverbial modifiers may precede or follow the adjective head in indefinite APs, however, they must precede the adjective in (monadic) definite APs. This is illustrated in (210) (taken from [Karanassios, 1992]): in examples (210a) and (210b), *poli* (very) precedes and follows the (indefinite) adjective *exipni* (intelligent), respectively. (210c), where *poli* precedes *exipni* inside the definite AP *i poli exipni* (the very intelligent (one)), is okay. By contrast, (210d) is ill-formed: in this example, *poli* follows *exipni* inside the definite AP.

(210) a. afti i gineka ine poli exipni  
this the woman is very intelligent  
'this woman is very intelligent'

b. afti i gineka ine exipni poli  
this the woman is intelligent very  
'this woman is very intelligent'

c. afti i gineka ine i poli exipni  
this the woman is the very intelligent  
'this woman is the very intelligent one'

d. \*afti i gineka ine i exipni poli  
this the woman is the intelligent very

Finally, similar constraints appear in NumPs. Numerals may combine with NPs that contain either pre-nominal or post-nominal adjectival modifiers. For instance, both (211a&b) below are well-formed. However, the definite article may

cooccur only with the NumP in (211b), which contains a prenominal adjective *kokina* (red). (211c) is thus grammatical. On the other hand, (211d), where *kokina* is located post-nominally, is ill-formed.

- (211) a. *dio podilata kokina*  
two bikes red  
'two red bikes'
- b. *dio kokina podilata*  
two red bikes  
'two red bikes'
- c. *ta dio kokina podilata*  
the two red bikes  
'the two red bikes'
- d. \**ta dio podilata kokina*  
the two bikes red

The data we have considered above indicate that there is a correlation between definiteness and word order: the definite article appears only in nominal phrases that exhibit a particular linear order pattern—their modifiers precede their head. Moreover, all definite nominals exhibit this constraint: NPs, APs and NumPs. On the other hand, the order of modifiers relative to the head inside Greek nominals is free: definite APs may precede or follow definite NPs in polydefinites, and similarly for indefinites: indefinite adjectives may occur pre- or post-nominally. In the next section, I demonstrate how the approach to the Greek definite article provided in this chapter can be slightly modified so as to accommodate the fact that definite articles occur only in nominals that exhibit a particular linear order pattern.

### 3.7.2 A word order account for monadic definites

In HPSG, linear order constraints are captured in terms of Linear Precedence (LP) statements. Such statements determine the relative order of immediate constituents of a given phrase. Consider a definite NP such as *to kokino podilato* (the

red bike). As has been shown in section 3.4.2, such a phrase has two immediate constituents: an adjunct daughter (in this case, the singular neuter form of the definite article *to*) and a head daughter (in this case, the indefinite NP *red bike*). We can express the fact that the definite article must precede the head constituent, in terms of the linear precedence statement in (212). This rule states that if the adjunct daughter of a phrase is the definite article (i.e. it is specified HEAD *def*), then it should linearly precede the head daughter. Notice that the LP statement in (212) does not specify the syntactic category of the head daughter. Therefore, it accounts for all types of definite nominals: NPs, APs and NumPs. In all such phrases, the definite article precedes its nominal sister.

- (212) *Definite article – Head LP Statement:*  
 ADJUNCT-DAUGHTER [HEAD *def*]  $\prec$  HEAD-DAUGHTER

We further wish to state that an adjective should precede the noun inside a monadic definite. However, it is not possible directly to express this requirement by LP rules. Word order in a definite NP such as *to kokino podilato* (the red bike) can be described by two LP statements: (a) a statement that determines the relative order of the definite article and its indefinite nominal sister—this is the rule we saw in (212)—and (b) a statement that determines the relative order of the immediate constituents of an indefinite NP that consists of a modifier (*kokino*) and a head (*podilato*). However, there is evidence from indefinite nominals that the order of modifiers relative to the head is free. As shown in (213), adjectives may occur pre- or post-nominally in Greek indefinites:

- (213) *agorasa kenuria vivlia aglika*  
 bought-1.SG new books English  
 ‘I bought new English books’

Therefore, we cannot formulate an LP rule that requires (indefinite) adjectives to precede (indefinite) noun categories, since such a rule would rule out the well-formed *kenuria vivlia aglika* (new books English).

We can take a different line in order to account for the requirement that modifiers should precede the head inside monadic definites. Indefinite nominals

of sort *noun-adj-num*, and which contain modifiers, can be split into two classes: (a) nominals that contain modifiers which follow the head and (b) nominals that exclusively contain modifiers that precede the head. Technically, the former type of nominal will be shown to bear a head feature specification FORM *nonrestricted* (*nonrestr*). On the other hand, the latter type will be marked FORM *restricted* (*restr*). The (indefinite) NPs in (214a&b) below are FORM *nonrestr*, as they both contain post-nominal adjectives. By contrast, the NP in (214c) is FORM *restr*.

- (214) a. agorasa        kenuria vivlia aglika  
           bought-1.SG new    books English  
           ‘I bought new English books’
- b. agorasa        vivlia aglika  
           bought-1.SG books English  
           ‘I bought English books’
- c. agorasa        aglika    vivlia  
           bought-1.SG English books  
           ‘I bought English books’

We have seen in section 3.4.2 above that the Greek definite article imposes certain restrictions on the nominal it selects: such a nominal should be a subsort of *noun-adj-num* (i.e. an NP, AP or NumP), and, moreover, it should be indefinite (UNIQUE–). We will now assume that this nominal in addition should have a restricted form: it should be specified FORM *restr*. Therefore, the definite article may syntactically combine with an indefinite NP such as *aglika vivlia* (English books), which has a restricted form, and yield the well-formed definite *ta aglika vivlia* (the English books). However, *def* cannot combine with *kenuria vivlia aglika* (new books English) or *vivlia aglika* (books English), which both have an unrestricted form. Thus, ill-formed strings such as *\*ta kenuria vivlia aglika* (new books English) or *\*ta vivlia aglika* are ruled out.

The AVM in (215) is a skeletal illustration of a feature structure of sort *synsem* that serves as the value of the definite article’s MOD feature. By means of this feature structure, *def* selects for a nominal category that (a) has a HEAD value of sort *noun-adj-num* (i.e. it is a noun, adjective or numeral category), (b) it is

specified UNIQUE– (i.e. it is indefinite), and (c) it is specified FORM *restr*, (i.e. the modifiers inside that category precede the head).

(215)

$$\text{synsem} \left[ \begin{array}{l} \text{HEAD } \textit{noun} - \textit{adj} - \textit{num} [\textit{FORM } \textit{restr} ] \\ \text{CONTENT} \mid \textit{UNIQUE}- \end{array} \right]$$

*The MOD value of the definite article*

The feature FORM is a head feature that is defined for categories of sort *noun-adj-num*. In fact, FORM is part of the feature declaration of *noun-adj-num* which is inherited by nouns, adjectives and numerals. The (final) version of the feature declaration of *noun-adj-num* is given in (216):<sup>27</sup>

$$(216) \quad \textit{noun} - \textit{adj} - \textit{num} : \left[ \begin{array}{l} \textit{FORM } \textit{form} \\ \textit{N } \textit{boolean} \end{array} \right]$$

*The feature declaration of noun-adj-num*

As shown in (216), FORM has a value of sort *form*. This sort partitions into *restr* (*restricted*) and *nonrestr* (*nonrestricted*), which are atomic sorts:

(217) Partition of *form*: *restr* (*restricted*), *nonrestr* (*nonrestricted*)

By means of the feature FORM we essentially distinguish between indefinite nominals that the definite article may combine with and the ones the definite article may not combine with. Accordingly, we are in a position to formulate a linear precedence statement that will affect only indefinite nominals the definite article combines with. The LP statement in (218) requires that in a phrase consisting of an indefinite (UNIQUE–) adjunct daughter and a head daughter bearing the specification FORM *restr*, the adjunct daughter should precede the head daughter.

<sup>27</sup>The feature N was discussed in section 3.2 above.

- (218) *Modifier – Head LP Statement 1:*  
 ADJUNCT-DTR [UNIQUE–] < HEAD-DTR [FORM *restr*]

As required by the Modifier – Head LP Statement 1, a noun phrase that is specified FORM *restr* may not contain any post-nominal modifiers. The definite article may syntactically combine with such a phrase and yield a definite NP with pre-nominal modifiers only (if any). Alternatively, a given noun may be specified FORM *nonrestr*. Adjectives that combine with noun projections specified FORM *nonrestr* may appear pre- or post-nominally: there is no linear precedence constraint that affects the distribution of such adjuncts.

We further provide the Modifier-Head LP Statement 2 (see (219) below) which requires that the modifier should precede an adjective head in phrases that are FORM *restr*, and that the definite article combines with.

- (219) *Modifier – Head LP Statement 2:*  
 ADJUNCT-DTR < HEAD-DTR [N–, FUN–, FORM *restr*]

Therefore, a definite AP such as *i poli exipni* (the very intelligent (one)) (see (210c) above) is analysed as follows. The immediate constituents of this phrase are the definite article *i* (the-FEM.SG) and an indefinite AP *poli exipni* that is specified FORM *restr*. Moreover, the definite article precedes the AP constituent, by the Definite Article – Head LP Statement (see (212) above). Accordingly, the indefinite AP *poli exipni* consists of an adjunct daughter *poli* and a head daughter that is N–, FUN– (i.e. an adjective). This adjective is in addition FORM *restr*—otherwise, its projection could not have been definite—and therefore, by the Modifier-Head LP Statement 2, *poli* is required to precede *exipni*. On the other hand, an (indefinite) AP such as *exipni poli* (intelligent very; ‘very intelligent one’ (see (210b) above)), where the adjunct *poli* follows the head, has a nonrestricted form (it is specified FORM *nonrestr*) and therefore it will have no definite counterpart: *\*i exipni poli* is ruled out, as the definite article cannot combine with a nominal specified FORM *nonrestr*.

By the same token, we may account for word order in definite numeral phrases. The definite article may combine only with numeral phrases that are specified

FORM *restr*. For example, *dio kokina podilata* (two red bikes) is a numeral phrase with a restricted form. A definite article may combine with it and yield the (monadic) definite NumP *ta dio kokina podilata*. By contrast, *dio podilata kokina* (two bikes red) is specified FORM *nonrestr* and cannot be selected by the definite article. Thus, the ill-formed *\*ta dio podilata kokina* is ruled out.

A NumP such as *dio podilata kokina* (two bikes red) is specified FORM *nonrestr* because the numeral head *dio* has the same FORM value as its NP complement *podilata kokina*. The latter has a nonrestricted form, that is, it is specified FORM *nonrestr*, otherwise the adjective *kokina* would precede the noun *podilata*, by the Modifier – Head LP Statement 1. Accordingly, by the Head Feature Principle, the specification FORM *nonrestr* passes from *dio* onto the mother *dio podilata kokina*, which, therefore, may not have a definite counterpart—*\*ta dio podilata kokina*. Similarly for *dio kokina podilata* (two red bikes): this NumP is FORM *restr*, like the numeral’s complement *kokina podilata*.<sup>28</sup> Then, it may have a definite counterpart *ta dio kokina podilata* (the two red bikes).

The AVM in (220) illustrates that the FORM value of a numeral is identical with that of its subcategorized complement inside the subcat list (see tag  $\boxed{1}$ ). This identity is lexically specified, by structure-sharing.

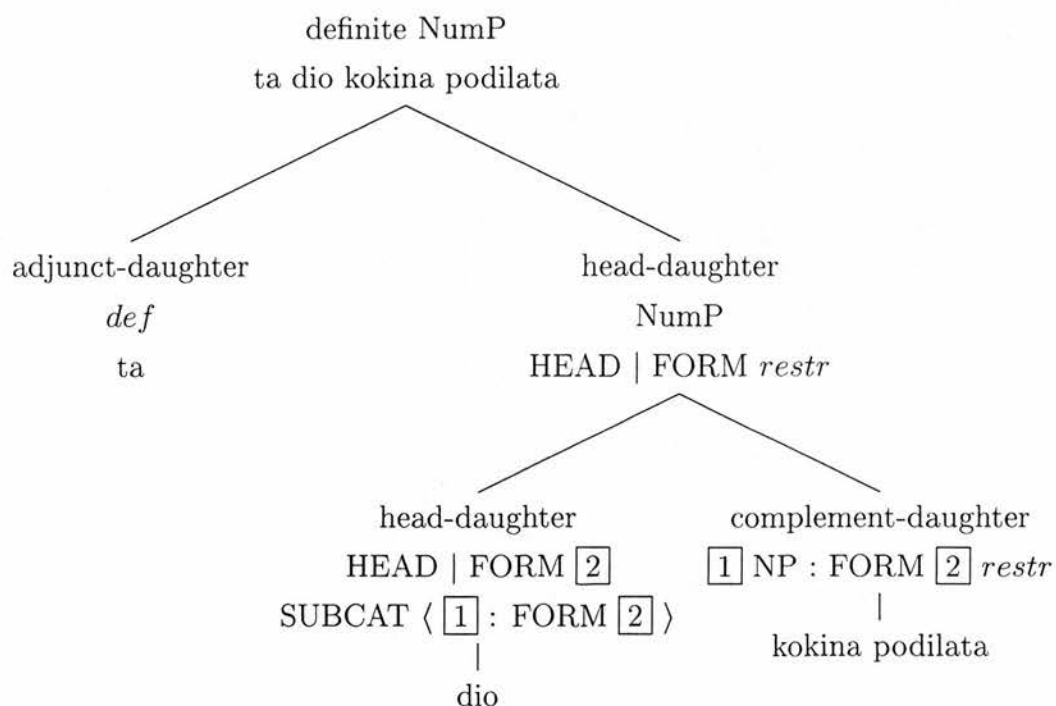
$$(220) \quad \left[ \begin{array}{l} \text{HEAD } num \left[ \text{FORM } \boxed{1} \right] \\ \text{SUBCAT } < \textit{noun} - \textit{adj} - \textit{num} \left[ \text{FUN-}, \text{FORM } \boxed{1} \right] > \end{array} \right]$$

*Numerals have the same form as their subcategorized complements*

The analysis of definite numeral phrases that I sketched above is summarized in the following tree-diagram:

<sup>28</sup>In fact, in the current system, an NP such as *kokina podilata* has two instantiations: (a) a FORM *restr* one, in which the adjective precedes the noun, as required by the Modifier – Head LP Statement 1, and (b) a FORM *nonrestr* one: since no LP statement determines the relative order of modifiers and the head in FORM *nonrestr* NPs, adjectives may occur pre- or post-nominally inside such NPs.

(221)



*The definite NumP ta dio kokina podilata (the two red bikes)*

### 3.8 Summary

In this chapter, I presented an approach to definiteness and the make-up of Greek nominal categories, couched in the framework of HPSG. I discussed the advantages of the hierarchical lexicon for radically lexicalist theories of grammar, and demonstrated how generalizations about apparently distinct nominal categories in Greek can be expressed in terms of inheritance. In addition, I provided a hierarchy of nominal sorts for Greek, in which feature structures interconnected by inheritance model the categorial make-up of partly unified nominal classes. I also discussed recent approaches to determiners that are formulated in HPSG—[Netter, 1994] and his notion of functional completeness and Pollard and Sag's (1994) account of determiners as subcategorized noun complements—and showed that these analyses cannot be extended to Greek. Accordingly, I presented an HPSG account of Greek determiners and numerals as heads, one which covers both canonical and elliptical examples. I sketched a non-quantificational approach to definiteness in

HPSG that incorporates Gawron and Peters's (1990) notion of uniqueness. Moreover, I provided an analysis of the Greek definite article as an adjunct that affects the semantic content of the nominal it makes part of, and its contribution is expressed in terms of uniqueness entailments. I demonstrated how such an analysis enables polydefinites to be analysed as instances of definite concord, and showed how demonstratives, numerals and determiners can be incorporated. I formulated the Uniqueness Principle that deals with certain technical aspects of the proposed account. Finally, I accounted for the requirement of the Greek definite article to combine with nominal phrases that exhibit a particular linear order pattern.

## Chapter 4

# The Split Nature of Greek Genitives: Possessives and Pseudo-possessives

### 4.1 Introduction: previous approaches

In this chapter, I consider genitives (nominal categories in genitive case) inside Greek NPs. For convenience, in the title of this thesis and in previous chapters, I have referred to them collectively as *possessives*. However, from now on, this term will be employed to refer to a particular subset of genitives. In this introductory section, I provide an outline of previous approaches to Greek genitives and mention their limitations. Two sorts of description are discussed: Tzartanos's traditional grammar classification and recent work by Markantonatou focussing on deverbal nouns and their thematic dependents, including genitives. In the final section, I provide a brief overview of the argument proposed in the current work.

#### 4.1.1 A traditional grammar classification of genitives

Tzartanos ([Tzartanos, 1946]) lists numerous examples of genitives inside Greek NPs and classifies them according to their meaning and function. Tzartanos's classification includes: *possessive genitives*, *property* or *quality genitives*, *content genitives*, *subject* and *object genitives*, and *cause genitives*.

The possessive class subsumes genitives that denote (a) ORIGIN or RELATION, such as *tis Marias* in *o pateras tis Marias* (the father the-GEN Maria-GEN; 'Maria's father'), (b) the CREATOR, such as *tu Solomu* in *o imnos tu Solomu* (the hymn the-GEN Solomos-GEN; 'Solomos's hymn'), (c) TIME, such as *tu kalokeriu* in *i dulies tu kalokeriu* (the tasks the-GEN summer-GEN; 'tasks for the summer / the summer tasks'), (d) PURPOSE, such as *tu krasiu* in *potiria tu krasiu* (glasses the-GEN wine-GEN; 'wine glasses'), etc.<sup>1</sup>

In the group of property / quality genitives, Tzartanos classifies examples such as *karavia tu polemu* (ships the-GEN war-GEN; 'war ships') and *galini thanatu* (calm death-GEN; 'calm of death'); moreover, genitives that denote (a) SIZE or a STRETCH OF TIME, e.g. *takouni deka ponton* (heel ten-GEN centimeters-GEN; 'ten centimeter heel') and *adia trion minon* (leave three-GEN months-GEN; 'three month's leave'), and (b) VALUE, e.g. *kaltses ton ekato drahmon* (stockings the-GEN one hundred drachmas-GEN; 'one hundred drachma stockings').

The class of content genitives includes examples such as *apothiki sanu* (shed hay-GEN; 'hay-shed') and, moreover, *imeres exetaseon* (days examinations-GEN; 'examination days').

Genitives such as *tis kardias mu* in *o ponos tis kardias mu* (the pain the-GEN heart-GEN my; 'the pain of my heart') and *tu piiti* in *o pothos tu piiti* (the desire the-GEN poet-GEN; 'the poet's desire') are cited in Tzartanos as examples of the subject type of genitive and sentential paraphrases are provided: *ponai i kardia mu* (my heart hurts) and *o piitis pothi* (the poet desires). On the other hand, Tzartanos classifies examples such as *o pothos tis doxas* (the desire the-GEN fame-GEN; 'the desire for fame') and *i agapi tu ethnos* (the love the-GEN nation-GEN; 'the love for the nation') among object genitives and compares them with *potho ti doxa* (I desire the fame) and *agapo to ethnos* (I love the nation).

Finally, cause genitives are the genitives of examples *i hara tis nikis* (the joy

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<sup>1</sup>All the examples cited here are taken from [Tzartanos, 1946].

the-GEN victory-GEN; ‘the joy of victory’) and *i lipi tu horismu* (the grief the-GEN separation-GEN; ‘the grief of separation’), for they are understood to indicate the cause of joy and grief.

However, Tzartanos does not provide precise criteria for classifying a genitive in one class rather than another. For example, it is not clear on what grounds an example such as *potiria tu krasiu* (wine glasses) falls under the possessive class, rather than the class of property / quality genitives (e.g. *karavia tu polemu*; ‘war ships’) or even the class of content genitives (e.g. *apothiki sanu*; ‘hay-shed’). In addition, a classification on the line of Tzartanos does not capture important generalizations that hold across genitive NPs taken to fall under distinct groups and that concern their syntactic behaviour and semantic interpretation.

#### 4.1.2 Deverbal nouns, arguments and thematic adjuncts

In this section, I discuss recent work on Greek NPs (cf. [Markantonatou, 1992]) that is concerned with the syntactic selection of thematic dependents of *deverbal* nouns, including genitives.

Markantonatou’s account incorporates the hypothesis that deverbal nouns or nominalizations are directly derived from their corresponding verbs, e.g. *metafrasi* (translation) derives from *metafrazo* (translate), and this derivation takes place in the lexicon (cf. [Chomsky, 1970]). In fact, this hypothesis is commonly assumed in Lexical Functional Grammar (LFG—cf. [Bresnan, 1982]), see e.g. [Alsina, 1990, 1993], and Markantonatou formulates her account in LFG. Moreover, Markantonatou’s analysis is inspired by Grimshaw’s work on English (cf. [Grimshaw, 1990]). To a large extent, the former can be viewed as an implementation of Grimshaw’s approach for LFG and its Lexical Mapping Theory (LMT).

A major issue in both [Grimshaw, 1990] and [Markantonatou, 1992] is whether nouns take obligatory complements, like verbs, and what types of nouns do so. Markantonatou maintains Grimshaw’s basic hypothesis that only nouns denoting

*complex events* have an argument structure ( $\alpha$ -structure) that must be satisfied.<sup>2</sup> Both Grimshaw and Markantonatou assume the existence of a class of deverbal nouns that do not support an argument structure, rather they select thematic dependents by different means.

In Grimshaw's system, noun complements other than prepositional phrases (PPs) are not treated as arguments. This is connected with her hypothesis that nouns are *defective theta markers* and they can assign theta roles only through the mediation of prepositions. For the licensing of certain non-argument dependents, Grimshaw appeals to the notion of Lexical Conceptual Structure (LCS), which, however, she does not precisely define. Intuitively, a noun's LCS bears the lexical meaning of that noun. To illustrate, in examples such as *the city's destruction by the enemy*, Grimshaw does not treat the possessive NP (*the city's*) as an argument, rather she assumes that it is selected by the noun's LCS. The lexical meaning of *destruction*, rather than an  $\alpha$ -structure, enables it to combine with such a possessive.

Markantonatou develops and modifies Grimshaw's theory of non-argument dependents that she refers to collectively as *thematic adjuncts*. Thematic adjuncts of deverbal nominals can be sentential complements, the Greek analogue of English *by*-phrases, or genitives. The difference between noun arguments and thematic adjuncts according to Markantonatou is that the latter are not obligatory. For example, the genitive *tis polis* in the NP *i katastrofi tis polis mesa se pente ores* ('the destruction of the city within five hours'; Markantonatou's (24)) is taken to be an argument, as it cannot be omitted: *\*i katastrofi mesa se pente ores* ('\*the destruction within five hours'; Markantonatou's (25)) is ill-formed. On the other hand, a noun such as *metafrasi* (in the sense of 'translation', rather than 'translating') does not support an argument structure, rather it selects for a thematic adjunct genitive that is optional:

- (222) a. *i metafrasi tis Odisias ine sto rafi dexia*  
           the translation the-GEN Odyssey-GEN is on-the shelf to-the- right  
           'the translation of the Odyssey is on the shelf to the right'

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<sup>2</sup>A detailed account of complex event nouns is provided in section 4.3.2.

- b. i metafrasi      tu Kakridi                      ine sto rafi      dexia  
 the translation the-GEN Kakridis-GEN is on-the shelf to- the-right  
 ‘Kakridis’s translation is on the shelf to the right’
- c. i metafrasi      ine sto rafi      dexia  
 the translation is on-the shelf to-the-right  
 ‘the translation is on the shelf to the right’

(Markantonatou’s (13)).

The difference between a thematic adjunct and a mere adjunct, according to Markantonatou, is that thematic adjuncts of a deverbal noun correspond to syntactic arguments of the related verb. For instance, *tis Odisias* in (222) above seems to correspond to the object of the verb *metafrazo* (translate), whereas *tu Kakridi* to the subject of that verb.

In order to account for the selection of thematic adjuncts by deverbal nominals, Markantonatou defines a number of GRAMMATICAL FUNCTIONS (GFs), in the sense of LFG, namely THEMATIC ADJUNCT GFs. This is an extension of the standard LFG GRAMMATICAL FUNCTION system that distinguishes between *subcategorizable* GFs (that subsume *semantically unrestricted* and *semantically restricted* functions, both of which are employed for the subcategorization of arguments) and *non-subcategorizable* GFs that serve for the selection of common adjuncts. The THEMATIC ADJUNCT GFs of Markantonatou are employed for the selection of elements that are neither arguments, nor adjuncts—they are thematic adjuncts.

We saw that Markantonatou focusses on deverbal nominals and provides an account of the licensing of their thematic dependents—sentential complements, PPs and genitives, that she splits into arguments and thematic adjuncts. This account does not cover the whole range of genitives in Greek NPs. Genitives that cooccur with the so-called *concrete* nouns such as *horse* or *book* fall outside the scope of this work and, thus, they are not considered. However, Markantonatou’s account does not fully cover all types of genitives that cooccur with deverbal

nouns either. Following [Horrocks and Stavrou, 1987] and [Theophanopoulou – Kontou, 1988], Markantonatou assumes that a single genitive inside Greek NPs can be *thematic*, i.e. an argument or a thematic adjunct. She suggests that in examples such as (223), the innermost genitive is neither an argument, nor a thematic adjunct, rather it is non-thematic:

- (223) i metafrasi tis Odisias tu Kakridi  
 the translation the-GEN Odyssey-GEN the-GEN Kakridis-GEN  
 ‘Kakridis’s translation of the Odyssey’

(Markantonatou’s (12)).

She further mentions a couple of other examples with a non-thematic genitive:

- (224) a. o fovos tis kategidas  
 the fear the-GEN.SG storm-GEN.SG  
 ‘the fear of storms’  
 b. i agnia ton kanonon  
 the ignorance the-GEN rules-GEN  
 ‘the ignorance of rules’

(Markantonatou’s (113) and (114), respectively.)

Markantonatou provides no account of such genitives and the way they interact with her thematic genitives. In the first place, it is not clear on what grounds she can maintain that a genitive such as *ton kanonon* in (224b) is not a thematic genitive. In Markantonatou’s system, thematic genitives of deverbal nouns are those that correspond to syntactic arguments of related verbs. Clearly, the genitive *ton kanonon* in (*i agnia ton kanonon*; ‘the ignorance of rules’) can be taken to correspond to the object argument of the verb *agnoo* (ignore). A formal analysis of genitives that Markantonatou characterizes as *non-thematic* and for which she does not offer an account is provided in the current work.

### 4.1.3 Précis

In the following sections, I focus on the whole range of genitives in Modern Greek NPs and demonstrate that they should be split into two major classes: *possessives* and *pseudo-possessives*. These two types of genitives occur in both NPs headed by a concrete noun and NPs with a deverbal noun head. Moreover, the possessive / pseudo-possessive partition cuts across Markantonatou's distinction between arguments and thematic adjuncts. Possessives subsume both arguments and thematic adjuncts and in addition certain genitive dependents of concrete nouns (see section 4.2.1). On the other hand, as will become clear in section 4.3.2, pseudo-possessives are never arguments in the sense of Grimshaw's. However, they can be viewed as thematic adjuncts (see discussion above).

The distinction between possessives and pseudo-possessives is motivated by semantic criteria. Moreover, this partition has important syntactic implications: it enables us straightforwardly to account for a number of systematic asymmetries concerning (a) the general distribution of genitives and their relative order, (b) the potential of genitives to pronominalize, (c) their sensitivity to aspectual factors and (d) their distribution in definite and indefinite NPs.

The syntactic asymmetries associated with Greek genitives are not idiosyncratic, rather they characterize other languages, too. In section 4.7, I briefly consider *de*-phrases in French NPs and discuss an account by [Sag and Godard, 1994], couched in the framework of HPSG. The French data are very similar to the Greek ones. Though a detailed account of French *de*-phrases is beyond the scope of the work presented here, it is demonstrated that the possessive / pseudo-possessive hypothesis makes the right predictions for French. Moreover, it is concise and straightforward and therefore, can be argued to be superior to the Sag&Godard approach that imposes certain otherwise unmotivated restrictions on the argument structure of nominals.

## 4.2 The possessive / pseudo-possessive partition

In this section, I motivate a distinction between *intrinsic* and *extrinsic* possessives that are compatible with relational and non-relational uses of nouns, respectively. Moreover, I consider semantic criteria for distinguishing pseudo-possessive genitives from possessives. Finally, I summarize the syntactic properties associated with the possessive / pseudo-possessive partition.

### 4.2.1 Intrinsic and extrinsic possessives

Most work on nouns acknowledges a distinction between *relational* and *non-relational* uses. Both *abstract* nouns (e.g. *dolofonia* ‘assassination’) and *concrete* nouns (e.g. *alogo* ‘horse’, or *fititis* ‘student’) can be employed in a relational or non-relational sense. Consider (225).

- (225) i dolofonia            tu proedru  
      the assassination the-GEN president-GEN  
      ‘the president’s assassination’

The abstract noun *dolofonia* (assassination) has a relational use. In that use, a genitive such as *tu proedru* (the president’s) is taken to refer to the victim of the assassination event. Whether a noun is employed in a relational or non-relational sense can be tested by the genitive it combines with. The interpretation of a genitive that cooccurs with a relational noun crucially relies on the lexical meaning of that noun. It is part of the meaning of *dolofonia* that there is a victim or that somebody gets killed. It is often assumed that abstract nouns that can be associated with a relational reading carry subcategorization requirements analogous to those of verbs, see e.g. [Grimshaw, 1990] for English and [Markantonatou, 1992] for Greek. Under this view, *tu proedru* in (225) above is the direct object complement of *dolofonia* and is assigned the PATIENT thematic role.

Part of the meaning of *dolofonia* is also that there is an assassin. Then, on what grounds are we assuming that the genitive the relational *dolofonia* cooccurs with fills the PATIENT role, rather than the AGENT role, or either of the two?

The current concept of abstract relational nouns is to a large extent in line with Grimshaw's proposal (1990). As will be demonstrated in detail in section 4.3.2, such nouns are taken to denote *complex events*. E.g. the relational *dolofonia* denotes the *measuring out* or *unfurling* over time of a *telic event* or *accomplishment*, (in the sense of [Vendler, 1967]), until its termination point. In (225) above, *dolofonia* describes the whole process of the assassination of the president till the point when (s)he is dead. It is the direct object (the argument linked with the PATIENT or THEME role) that signals the culmination point of the telic event or delimits the event, see in particular [Tenny, 1989], and also [Tenny, 1993], [Van Voorst, 1988, 1992], [Verkuyl, 1989]. Essentially, the direct object induces the particular complex event reading. For that reason, we assume that the genitive which cooccurs with the relational *dolofonia* fills its PATIENT role. On the other hand, the AGENT role of such a noun is linked with an optional *apo* ('by') prepositional phrase. Viz.:

- (226)    *i dolofonia*            *tu proedru*                    *apo ti Dekaepta Noemvri*  
           the assassination the-GEN president-GEN by the Seventeen November  
           'the president's assassination by November Seventeen'

Abstract nouns can be ambiguous between a relational and a non-relational reading. For example, *dolofonia* has a non-relational use, in addition to the relational one. The interpretation of the genitive that may cooccur with the non-relational instantiation of *dolofonia* does not crucially rely on the lexical semantics of that noun, rather, it is context-dependent. For example, in (227) below, John le Carré can be understood to refer to the writer of an account of an assassination event.

- (227)    *i dolofonia*            *tu John le Carré*            *itan arketa prototipi*  
           the assassination the-GEN John le Carré was quite original  
           'John le Carré's assassination was rather original'

The following example from 'The Master and Margarita'<sup>3</sup> eloquently demonstrates a non-relational use of the English noun *murder*. The speaker (Margarita) witnessed a murder for the first time. She is referring to that event as 'my first murder'.

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<sup>3</sup>'The Master and Margarita' by Michail Bulgakov, Flamingo.

(228) 'That was my first murder!' thought Margarita.

A genitive that cooccurs with the non-relational version of *dolofonia* is not assigned a thematic role. Rather, the referent of such a genitive is associated with that of the head noun through the WILD-CARD relation (cf. [Barker, 1991]), that is described below.<sup>4</sup>

It was previously mentioned that both abstract and concrete nouns can have relational and non-relational uses. However, not every noun has either. For instance, *alogo* (horse) is a typical non-relational noun.

(229) to *alogo* tis *Marias*  
the horse the-GEN Maria-GEN  
'Maria's horse'

The interpretation of the genitive *tis Marias* (Maria's) in (229) does not hinge on the meaning of *alogo*. Rather, it is context dependent. This genitive can be taken to refer to the owner of the horse or its rider. In an appropriate context, *tis Marias* may refer to the person that put a bet on that horse. It can be argued that it is not part of the lexical meaning of *alogo* that it can have an owner or a rider or that somebody can put a bet on it. That is, it is not an intrinsic part of the notion of "horsehood" that any bearer of this property must have an owner or rider, etc. Whereas, an assassination event of its very nature must have a victim.

A non-relational noun can be taken to introduce a WILD-CARD relation, cf. [Barker, 1991]. This is a two-place relation<sup>5</sup> and holds between the referent of the non-relational noun and that of the genitive it co-occurs with. In fact, the WILD-CARD relation is assumed to be "resolved" on the basis of contextual information that is available to the recipient of the utterance. For instance, in an appropriate context where the person named 'Maria' is known to be the owner of the horse, the relation holding between the referent of *alogo* and that of the

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<sup>4</sup>A formal description of the relational and non-relational version of abstract nouns such as *dolofonia* is provided in chapter 5.

<sup>5</sup>In [Barker, 1991], non-relational nouns are *prima-facie* one-place relations which turn to two-place relations by combining with a phonologically null determiner.

genitive *tis Marias* is resolved as the ownership relation.

Concrete nouns such as *fititis* (student) can be argued to have both a relational and a non-relational reading. Consider (230).

- (230)    *o fititis      tis Marias*  
          the student the-GEN Maria-GEN  
          ‘Maria’s student’

In the relational use of *fititis*, a genitive such as *tis Marias* is understood to refer to the teacher, tutor, professor or supervisor of that student. In Barker (1991), the relational version of the English noun *student* is taken to introduce a two-place relation. Let us call it the STUDENT-OF relation. One of the two argument roles of the STUDENT-OF relation is associated with the referent of the NP headed by *student*, whereas the other is associated with the constituent that refers to his/her tutor. In (230) above, the STUDENT-OF relation is taken to hold between the referent of *fititis* and that of *tis Marias*. However, it is also possible to dissociate *fititis* from its relational meaning and assign it a non-relational interpretation. In such a case, *tis Marias* does not refer to the tutor of the student. The NP *o fititis tis Marias* can be felicitously employed to refer to a student that the person named ‘Maria’ is somehow related with and who is not her student, e.g. a student that Maria has a crush on.

Whether a concrete noun has a relational use or lacks one, to a large extent depends on assumptions about the world holding in particular cultural settings. In the language of a community where horses are more “prominent” entities than students, it may be part of the lexical meaning of the word for ‘horse’ that it has an owner or rider, etc. On the other hand, it may not be part of the lexical meaning of the word for ‘student’ that (s)he has an advisor.<sup>6</sup>

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<sup>6</sup>Barker argues that the distinction between relational and non-relational nouns in English has syntactic properties too. Relational nouns can take either a possessive or a postnominal *of*-phrase. On the other hand, non-relational nouns resist *of*-phrases. For instance, both *Maria’s student* and *the student of Maria* are grammatical, whereas *\*the horse of Maria* is ill-formed. However, no similar diagnostic can be employed for Greek.

In various NP accounts, a class of *picture* nouns is identified, e.g. *picture*, *portrait*, *statue*, *book*, etc. that may license a possessive phrase referring to the “creator” of the picture, portrait, etc. I assume that it is the relational instantiation of such nouns that assigns the particular reading to a genitive nearby. Consider (231).

- (231)   to vivlio tis Marias  
           the book the-GEN Maria-GEN  
           ‘Maria’s book’

Under the relational interpretation, the genitive *tis Marias* is understood to refer to the writer of the book. It can be argued that it is part of the notion of “bookhood” that every bearer of that property has a writer. On the other hand, assuming the non-relational reading, the person named ‘Maria’ may be taken to refer to the owner of the book. In the non-relational reading, it is possible to paraphrase (231) as ‘the book for Maria’ or ‘the book from Maria’. In a situation where there is a group of people, Maria is one of them, and each one was asked to review a particular book, *to vivlio tis Marias* may refer to the book that was assigned to Maria, etc.

The distinction between relational and non-relational uses of nouns is vital for the kind of genitive we have considered thus far. We saw that the interpretation of a genitive which cooccurs with a relational noun relies on the lexical meaning of that noun. Let us call *intrinsic possessives* genitives which are *lexically* or *intrinsically* related to the head noun. Intrinsic possessives may cooccur with either abstract nouns (cf. the relational *dolofonia* ‘assassination’ in (225) above), or concrete nouns (cf. the relational *fititis* ‘student’). On the other hand, the interpretation of a genitive that cooccurs with a non-relational noun is essentially context dependent. We will call such genitives *extrinsic possessives*. Like intrinsic possessives, extrinsic possessives may cooccur with either abstract nouns (cf. the non-relational *dolofonia* ‘assassination’ in (227) above) or concrete nouns (cf. *alogo* ‘horse’ in (229)).<sup>7</sup>

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<sup>7</sup>Barker (1991) calls “intrinsic possessives” preposed phrases that cooccur with relational nouns e.g. *Mary’s* in *Mary’s student*, where *Mary* stands for the teacher. On the other hand,

The partitioning of genitives into intrinsic and extrinsic possessives leaves out a kind of genitive with distinct properties from possessives and which may cooccur with either relational or non-relational nouns. These genitives, we will consider in the following section.

#### 4.2.2 Pseudo-possessives: semantic diagnostics

In this section, we turn to a different class of genitives: the *pseudo-possessives*. Consider first the example in (232).

- (232) to vivlio tis istorias  
the book the-GEN history-GEN  
'the history book'

(232) contrasts sharply with (233):

- (233) to vivlio tis Marias  
the book the-GEN Maria-GEN  
'Maria's book'

The genitive *tis Marias* in (233) is either an extrinsic or an intrinsic possessive. In the former case, it refers to a contextually determined "possessor" (i.e. an entity related to the referent of *vivlio* in a context dependent way), whereas in the latter case it refers to the writer of the book. By contrast, it can hardly be claimed that the genitive *tis istorias* in (232) refers to anything at all. Rather, *tis istorias* identifies a *kind* of book: a history book. Crucially, (232) can be paraphrased as (234) below, where the noun *vivlio* is modified by the adjective *istoriko* ('historical', in the sense of 'about history').

- (234) to istoriko vivlio  
the historical book  
'the historical book'

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he calls "extrinsic possessives" preposed phrases that cooccur with non-relational nouns, e.g. *Mary's* in *Mary's horse*.

A genitive may be ambiguous between a possessive and a pseudo-possessive reading. See (235a&b) below.

- (235) a. i    epithesis ton antarton                    stamatisan ta ximeromata  
          the attacks    the-GEN guerillas-GEN ceased            at dawn  
          ‘the guerillas’ attacks ceased at dawn’
- b. i    epithesis ton antarton                    ine panta efnidies  
          the attacks    the-GEN guerillas-GEN are always sudden  
          ‘the guerilla attacks are always sudden’

(235a) contains a *stage-level* predicate, in the sense of Kratzer (cf. [Kratzer, 1988]): *stamatisan ta ximeromata*. In this context, the most natural reading for the genitive *ton antarton* is the possessive reading. The possessive *ton antarton* is understood to refer to guerillas that organized the attack, or took part in the attack, etc. On the other hand, (235b) contains the *individual-level* predicate *ine panta efnidies* which favours a pseudo-possessive reading for the genitive.<sup>8</sup> The pseudo-possessive *ton antarton* identifies a kind of attack: the guerilla attack. The difference between the two genitives is that *ton antarton* in (235a) refers to individuals, whereas *ton antarton* in (235b) denotes a property: the property *guerilla-like*.<sup>9</sup>

The possessive/pseudo-possessive dichotomy is reminiscent of the distinction between *intersective* and *non-intersective* adjectives, cf. [Siegel, 1976]. Consider the following example from Siegel.

- (236)    Maria is a beautiful dancer

The adjective *beautiful* in (236) is ambiguous: either it modifies the referent of *dancer*, that is, the person named ‘Maria’, or, alternatively, it determines the *kind* of dancer that Maria is. In case *beautiful* is intersective, then Maria has both the property of being beautiful and the property of being a dancer. If Maria is also

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<sup>8</sup>According to Kratzer, stage-level predicates denote transitory properties and they can be modified by temporal/spatial expressions, e.g. ‘at dawn’. On the other hand, individual-level predicates denote permanent properties.

<sup>9</sup>However, individual-level predicates may take a subject that contains a possessive genitive and stage-level predicates may take a subject that contains a pseudo-possessive genitive.

a cellist, it follows that Maria is a beautiful cellist. On the other hand, if *beautiful* is non-intersective, then it does not denote a property of Maria, but rather a property of her being a dancer. In that case, if Maria is also a cellist, it is not a contradiction to say that Maria is a beautiful dancer but she is not a beautiful cellist. The property that Maria is an exemplar of is *not* the intersection of the denotation of *beautiful* and the denotation of *dancer*.

Pseudo-possessives are analogous to non-intersective adjectives: the non-intersective *beautiful* in (236) determines the kind of dancer, whereas the pseudo-possessive *tis istorias* (the history) in (232) determines the kind of book, and the pseudo-possessive *ton antarton* (the guerillas) in (235b) determines the kind of attack. Both non-intersective adjectives and pseudo-possessive genitives are intensional modifiers. By contrast, possessives can be thought of as parallel to intersective adjectives which are *extensional* modifiers. In a sense, both intersective adjectives and possessives help conversants to identify a particular entity in discourse. An intersective adjective denotes a property of the referent of the noun, it thus contributes additional information for locating that referent. If *beautiful* in (236) above is intersective, then it gives us a clue for identifying Maria: Maria must be an entity that *inter alia* has the property of being beautiful. Similarly for a possessive genitive such as *tis Marias* (Maria's), cf. *to vivlio tis Marias* (Maria's book) in (233) above. No matter whether *tis Marias* is extrinsic or intrinsic, it enables us to distinguish the book in hand from other books, e.g. *to vivlio tu Yiani* (Yani's book) or *to vivlio tu Chomsky* (Chomsky's book), etc.

A diagnostic for distinguishing between possessive and pseudo-possessive genitives is provided by the two types of interrogative pronouns: *pio* (which) and *ti* (what). The contrast between 'which' questions and 'what' questions in English is demonstrated in (237) and (238), below.

(237) a. –Which pen do you want?

b. –The blue one.

(238) a. –What pen do you want?

- b. –An expensive one.

In Greek, NPs that contain a possessive felicitously answer ‘which’ questions. See (239):

- (239) a. –Pia gata thelis?  
which cat want-2.SG?  
‘–Which cat do you want?’
- b. –Ti gata tis Marias.  
the cat the-GEN Maria-GEN  
‘–Maria’s cat.’

On the other hand, NPs that contain a pseudo-possessive felicitously answer ‘what’ questions. See (240):

- (240) a. –Ti gata thelis?  
what cat want-2.SG?  
‘–What cat do you want?’
- b. –Mia gata tu dromu.  
a cat the-GEN street-GEN  
‘–A street cat.’

(239b) is not a felicitous answer to the ‘what’ question in (240a) and, vice versa, (240b) is not a felicitous answer to the ‘which’ question in (239a).

We saw that pseudo-possessives do not refer to particular entities or sets of entities. Quite often, pseudo-possessive genitives are names of *kinds* of entities or “abstract” notions. Consider for instance (241).

- (241) to psarema tis pestrofas  
the fishing the-GEN trout-GEN  
‘the trout fishing’

The genitive **tis pestrofas** in (241) is unambiguously pseudo-possessive. Therefore, it cannot refer to a particular trout, rather it denotes the trout-like property. If we replace **tis pestrofas** in (241) with a referential genitive (i.e. a possessive), then the outcome is infelicitous. This is demonstrated in (242) below, where the demonstrative is meant deictically.<sup>10</sup>

- (242) \*to psarema aftis      tis megalis              pestrofas  
the fishing    this-GEN the-GEN large-GEN trout-GEN  
(the fishing of this large trout)

The pseudo-possessive **tis pestrofas** (of the trout) in (241) identifies a particular kind of fishing. The trout fishing is thus distinguished from other kinds of fishing, e.g. **to psarema tu solomu** (the salmon fishing), **to psarema tis anihthis thalassas** (the fishing in the open sea), etc.

Consider next (243).

- (243) o fovos    tis apotihias  
the fear the-GEN failure-GEN  
‘the fear of failure’

The genitive **tis apotihias** in (243) is also unambiguous. It is a pseudo-possessive that denotes the failure-like property. The noun **fovos** (fear) cannot cooccur with a referential genitive (i.e. a possessive) unless that refers to the experiencer of fear. The possessive genitive **tis Marias** in (244) below cannot refer to the stimulus of fear (THEME).<sup>11</sup>

- (244) o fovos    tis Marias  
the fear the-GEN Maria-GEN  
‘Maria’s fear’

The pseudo-possessive **tis apotihias** (of failure) in (243) identifies a particular kind of fear. Thus, the fear of failure is distinguished from other kinds of fear, e.g. o

<sup>10</sup>The noun **psarema** resists a possessive object. This kind of noun will be discussed in detail in section 322 below.

<sup>11</sup>Psych nouns such as **fovos** (‘fear’) are discussed in detail in section 316.

fovos tu thanatu (the fear of death) or o fovos ton entomon (the fear of insects), etc.

Unlike pseudo-possessives, possessives are referential. For instance, the possessive genitive *tu proedru* (the president's) in (245) (repeating (225)) refers to a particular president.

(245) *i dolofonia tu proedru*  
the assassination the-GEN president-GEN  
'the president's assassination'

In this section, it was demonstrated that the possessive / pseudo-possessive partition I propose here relies on semantic criteria. Possessives are referential genitives. On the other hand, pseudo-possessives do not refer to individuals, rather they denote properties. We saw that pseudo-possessives are intensional modifiers like non-intersective adjectives. For these reasons, nominals modified by pseudo-possessives felicitously answer 'what' questions. In addition, pseudo-possessives are compatible with nominals that resist referential genitives with an "object-like" reading (e.g. *-ma/-mo* nouns such as *psarema* (fishing) and psych nouns such as *fovos* (fear)). The dichotomy of Greek genitives into possessives and pseudo-possessives is crucial at the syntactic level too. The syntactic properties of the possessive / pseudo-possessive partition are briefly reviewed in the following section.

### 4.2.3 The syntactic properties of the possessive/pseudo-possessive partition

The distinction between possessives and pseudo-possessives enables us to explain a series of apparent asymmetries and otherwise obscure limitations. A summary is provided below.

- Greek nouns admit at most two genitives. It can be demonstrated that not just any combination of two genitives is appropriate. In fact, if a noun cooccurs with two genitives, the innermost must be a pseudo-possessive, and the outermost a possessive. This order cannot be reversed, and nouns cannot combine with more than one possessive or more than one pseudo-possessive.

- We have seen that pseudo-possessives are not referential. Therefore, they cannot be realized as pronominal clitics or relative pronouns. The possessive / pseudo-possessive partition thus enables us to explain why certain genitives (possessives) can be felicitously replaced with clitics while others (pseudo-possessives) cannot. It follows that Greek NPs may contain at most one clitic pronoun (a possessive), and that the innermost genitive (a pseudo-possessive) cannot be relativized. In the current proposal, these facts derive from the possessive / pseudo-possessive hypothesis and do not need to be stipulated.
- Certain classes of nouns in English are known to resist a direct object “possessive” (i.e. a pronoun or a preposed phrase). For instance, in *Mary’s fear* or *her fear*, *Mary’s* or *her* cannot be assigned the THEME reading. Rather, they are understood to refer to the experiencer. The same generalization holds for Greek. Certain classes of nouns resist genitives which refer to the PATIENT or THEME. It can be demonstrated that these genitives are possessives. The very same nouns may combine with pseudo-possessive genitives which only apparently correspond to the PATIENT or THEME.
- Only pseudo-possessives, but not possessives, may occur in indefinite NPs. The independently motivated distinction between possessives and pseudo-possessives enables us to identify the genitives that are associated with a definiteness requirement and those that are not.

In the following sections, I discuss the syntactic consequences of the possessive/pseudo-possessive partition in detail.

### 4.3 The distribution of possessives and pseudo-possessives

In this section, I demonstrate that the possessive / pseudo-possessive hypothesis enables us to account for apparently puzzling asymmetries in the distribution of genitives inside Greek NPs.

### 4.3.1 The complementary nature of possessives and pseudo-possessives

In section 4.1.2 above, we saw that Markantonatou (1992) argues that only one genitive inside Greek NPs can be thematic—an argument or a thematic adjunct. According to Markantonatou, both arguments and thematic adjuncts of deverbal nouns seem to “correspond” to syntactic arguments of verbs related to these nouns. Consider, however, (246).<sup>12</sup>

- (246) *i perigrafes podosferikon agonon aftu tu ekfoniti ine idieteros glafires*  
the descriptions football matches-GEN this-GEN the-GEN broadcaster-  
GEN are particularly lively  
'this broadcaster's football match descriptions are particularly lively'

(246) contains two genitives that are clearly thematic. Either *podosferikon agonon* or *aftu tu ekfoniti* can be taken to “correspond” to a syntactic argument of the verb *perigrafo* (describe)—cf. *aftos o ekfonitis perigrafi podosferikus agones* ‘this broadcaster describes football matches’. Therefore, Markantonatou’s hypothesis proves too strong. It is nevertheless true that not just any combination of genitives is admissible in Greek NPs. For example, (247) is ungrammatical, if the innermost genitive *tu Yani* is associated with a referential reading.

- (247) *\*i perigrafes tu Yani tis Marias ine idieteros glafires*  
the descriptions the-GEN Yanis-GEN the-GEN Maria-GEN are particularly  
lively  
(Maria’s descriptions of Yanis are particularly lively)

In this section, I demonstrate that the possessive/pseudo-possessive partition enables a straightforward account to be provided for such apparently puzzling contrasts. There is an important difference between (246) and (247), which explains why only the former is grammatical. (246) paraphrases as follows: this kind of

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<sup>12</sup>*podosferikon* is in fact an adjective in genitive case.

descriptions (the football match descriptions) of this broadcaster are mostly lively. That is, the genitive *podosferikon agonon* is a pseudo-possessive. It does not refer to particular football matches, rather it denotes a property: *football-match-like*. It thus identifies a kind of description (football match descriptions). Only the outermost genitive *aftu tu ekfoniti* (this broadcaster's) in (246)—which contains a deictic demonstrative—is a possessive. Let us now turn to (247). The basic difference between (246) and the infelicitous (247) is that the pseudo-possessive of (246) is replaced in (247) by the proper name genitive *tu Yani* which is relatively hard to construe as a nonreferential *kind* modifier. The contrast between (246) and (247) can be explained by the following hypothesis:

- (248) *The distribution of genitives in Greek NPs (first version)*: If more than a single thematic genitive occur, they should be of distinct types—possessives and pseudo-possessives.

The independently motivated distinction between possessives and pseudo-possessives and the hypothesis in (248) enable us to predict what combinations of genitives are admissible in Greek NPs and which ones are infelicitous. Notice that (247) above can obtain an interpretation in case *tu Yani* is construed as a property (*Yanis-like*), i.e. if the innermost genitive is a pseudo-possessive. This is easier to get if 'Yanis' happens to name a prominent person who is associated with certain characteristic features, e.g. a famous writer or philosopher. For that reason, (249) is felicitous.

- (249) *i perigrafes tu Chomsky orismenon glosologon ine idieteros glafires*  
 the descriptions the-GEN Chomsky certain-GEN linguists-GEN are partic-  
 ularly lively  
 'Certain linguists's Chomsky descriptions are particularly lively.'

Consider next (250).

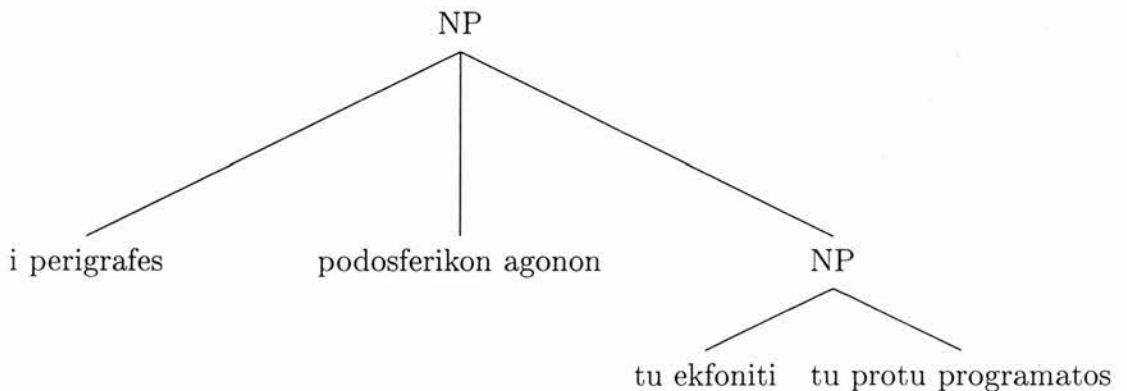
(250) i perigrafes podosferikon agonon tu ekfoniti tu protu programatos

the descriptions football matches-GEN the-GEN broadcast-GEN the-GEN  
first-GEN channel-GEN

‘the broadcaster of channel one’s football match descriptions’

The NP in (250) contains three genitives: *podosferikon agonon*, *tu ekfoniti* and *tu protu programatos*. The outermost genitive *tu protu programatos* (of channel one) is licensed by its adjacent *ekfoniti* (broadcaster), and not by *perigrafes* (descriptions). There is no reading for (250) where the genitive *tu protu programatos* is construed as a possessive or a pseudo-possessive that hinges on the head noun *perigrafes*. The dependencies holding between the various nominals in (250) are schematically illustrated in (251):

(251)



*‘the broadcaster of channel one’s football match descriptions’*

(250) provides evidence that no more than two genitives—one possessive and one pseudo-possessive—are admissible in Greek NPs. If it were otherwise, we would expect (250) to be ambiguous: *tu protu programatos* would be licensed either by *ekfoniti* (broadcaster) or by the top noun head *perigrafes* (descriptions). Then, the hypothesis of the distribution of genitives needs to be reformulated as follows:

(252) *The distribution of genitives in Greek NPs (second version):* No more than two thematic genitives are admissible and they must be of distinct types—one possessive and one pseudo-possessive.

The hypothesis of the distribution of genitives in Greek NPs (252) does not exclusively concern abstract nouns such as *perigrafes* (descriptions). Rather, it also applies to concrete nouns. Consider, for instance, (253). The head noun *vivlio* (book) cooccurs with a pseudo-possessive that determines the kind of book (a history book) and an extrinsic or intrinsic possessive that refers to a contextually determined “possessor” or the writer of the book respectively, who is named ‘Maria’.

- (253)    *to vivlio tis istorias*                      *tis Marias*  
           the book the-GEN history-GEN the-GEN Maria-GEN  
           ‘Maria’s history book’

A concrete noun such as *vivlio* can never admit two (or more) possessives. Evidence is provided by examples such as (254) below. The inner genitive *tu Chomsky* cannot refer to an entity named ‘Chomsky’, rather it denotes the property *Chomsky-like*. That is, it is a pseudo-possessive that establishes a sort of books: Chomsky books. A book can be a Chomsky book in a number of ways: it can be written by Chomsky, or it can be a book about Chomsky, or it is a book given to its owner or reader by Chomsky, etc. On the other hand, the outer genitive in (254) *tis Marias* refers to an entity named ‘Maria’ that is somehow related with the book (e.g. through ownership, authorship, etc.). (254) is not ambiguous: it has no reading where both genitives are referential, and, for instance, they stand for the author and owner of the book.

- (254)    *ta vivlia tu Chomsky*                      *tis Marias*  
           the books the-GEN Chomsky-GEN the-GEN Maria-GEN  
           ‘the Chomsky books of Maria’s’

As predicted by the hypothesis of the distribution of genitives in (252), concrete nouns in Greek resist more than a single pseudo-possessive. (255) can receive no interpretation where both genitives read as pseudo-possessives.

- (255)    *ta vivlia tis istorias*                      *tu Chomsky*  
           the books the-GEN history-GEN the-GEN Chomsky-GEN  
           ‘Chomsky’s history books’

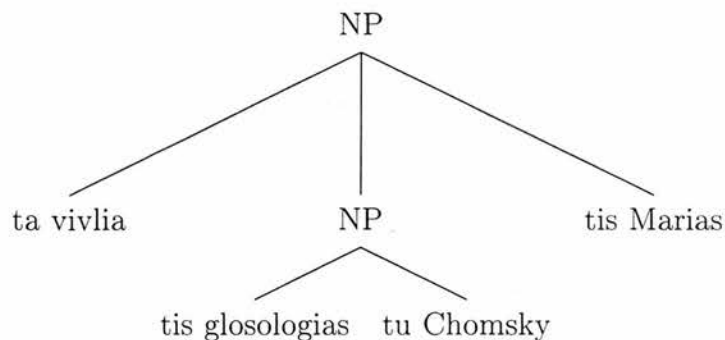
It is not possible to construe the outmost genitive *tu Chomsky* as a pseudo-possessive. Rather, *tu Chomsky* in (255) is a referential genitive: it is an extrinsic or intrinsic possessive that refers to an individual named ‘Chomsky’.

(256) below is a further illustration that concrete nouns in Greek can admit at most one possessive and one pseudo-possessive. This NP has no interpretation where all the three genitives are licensed by the head noun *vivlia*.

- (256) \**ta vivlia [tis glosologias] [tu Chomsky] [tis Marias]*  
 the books the-GEN linguistics-GEN the-GEN Chomsky the-GEN Maria-GEN

(256) can only be parsed as follows: the innermost genitive *tis glosologias* (linguistics) is a pseudo-possessive licensed by the noun head *vivlia* (books); the middle genitive *tu Chomsky* is licensed by *glosologias*; finally, the outermost genitive *tis Marias* is a possessive licensed by the top noun head *vivlia*. (256) may only mean something like: ‘Maria’s Chomsky-linguistics books’. The parse for (256) is given in (257).

(257)



Nevertheless, this example is only marginal, possibly because it is difficult to parse.

In this section, I demonstrated that abstract and concrete nouns in Greek admit at most two genitives and these are not free to occur in any combination. The independently motivated partition of genitive NPs into possessives and pseudo-possessives enables us to formulate a hypothesis that accounts for their

distribution (see (252) above). In the current work, Markantonatou's assumption that a single genitive can be "thematic" in Greek NPs with a deverbal head is reformulated as follows: a single possessive can appear in Greek NPs with an abstract or concrete noun head—where a possessive is a referential genitive that is either assigned a thematic role (intrinsic possessive), or its interpretation is dependent on contextual information (extrinsic possessive). A formal account of the hypothesis of the distribution of genitives in Greek NPs, couched in HPSG, is provided in chapter 5.

Before closing this section, I turn to one last issue. It was illustrated above that Greek nouns admit at most one pseudo-possessive genitive. Interestingly, non-intersective adjectives, like pseudo-possessives, do not iterate in Greek. In (258a&b) below, the adjectives *aplos* (mere/simple) and *ftohos* (poor) can obtain only a non-intersective reading.<sup>13</sup>

- (258) a. *itan enas aplos ipalilos ki egine ekatomiriuhos*  
 was-3.SG a mere assistant and became-3.SG millionaire  
 'he was a mere assistant and became a millionaire'
- b. *itan enas ftohos ipalilos ki egine ekatomiriuhos*  
 was-3.SG a poor assistant and became--3.SG millionaire  
 'he was a poor (pitiable) assistant and became a millionaire'

It is not possible to construct an example where both those adjectives are non-intersective. E.g.:

- (259) \**itan enas aplos ftohos ipalilos ki egine ekatomiriuhos*  
 was-3.SG a mere poor assistant and became-3.SG millionaire  
 \*'he was a mere poor (pitiable) assistant and became a millionaire'

(259) can only translate as follows: 'he was a plain impoverished assistant and...'. I.e. it is assigned a reading where both adjectives are intersective. We have seen in a section 4.2.2 that pseudo-possessives are very similar to non-intersective

<sup>13</sup>Both *aplos* and *ftohos* also have an intersective version, meaning 'plain' and 'impoverished', respectively.

adjectives—both types of modifiers are intensional. In addition, we find out that neither of the two classes may iterate. This might suggest that there exists a general constraint in Greek concerning *kind* modifiers (e.g. non-intersective adjectives and pseudo-possessives) and that prevents them from occurring recursively.

### 4.3.2 Complex event nouns versus result nouns

Grimshaw (1990) demonstrates that abstract nouns in English are systematically ambiguous. They refer to the internal, temporal organization of an event, or, alternatively, to the outcome of an event. The noun *description*, for instance, can refer to the process of describing or the outcome of that process—a description. Therefore, Grimshaw splits abstract nouns into *complex event nouns* and *simple event nouns* or *result nouns*, respectively. Aspectual ambiguity correlates with a syntactic ambiguity. Complex event nouns are taken to have an argument structure. They take obligatory arguments and assign them thematic roles.<sup>14</sup> More precisely, according to Grimshaw, English complex event nouns such as *assassination* take an obligatory *of*-phrase (see (260a)) and an optional *by*-phrase (see (260b)) or “possessive” (a pronoun or a preposed nominal such as *her* or *Miss Marple’s*. See (260c)).

- (260) a. The assassination of Poirot<sub>Pat</sub> was awful to watch.  
b. The assassination of Poirot<sub>Pat</sub> by Miss Marple<sub>Ag</sub> was awful to watch.  
c. Miss Marple’s<sub>Ag</sub> assassination of Poirot<sub>Pat</sub> was awful to watch.

On the other hand, result nouns have no argument structure, and in that respect, they are on a par with concrete nouns. Both result nouns and concrete nouns may cooccur with “possessives”. Those possessives are not arguments and they are not assigned a thematic role. Their resolution relies on contextually available information.

In this section, I examine a class of Greek abstract nouns and show that they are also aspectually ambiguous. In certain contexts, they denote the “unfurling”

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<sup>14</sup>In fact, Grimshaw assumes that nouns are *defective* theta markers. They assign thematic roles to their arguments through the mediation of prepositions.

of a telic event over time from its onset to its culmination point. In other contexts, they denote the outcome of an event. The former reading is available provided a direct object genitive occurs. Interestingly, this observation is in line with much work on aspect (cf. [Tenny, 1989, 1993], [Van Voorst, 1988, 1992], [Verkuyl, 1989], among others). The direct object, (i.e. the complement assigned the *THEME* or *PATIENT* role) is known to signal the culmination point of a telic event. A noun which denotes the “measuring out” of a telic event over time is a noun employed in a relational sense, or a relational noun. Such a noun takes an obligatory genitive (intrinsic possessive) and assigns it the *THEME* or *PATIENT* thematic role. On the other hand, a noun that denotes the outcome of an event is a noun employed in a non-relational sense, or a non-relational noun. It may or may not cooccur with a genitive (extrinsic possessive). The resolution of such a genitive does not depend on the lexical meaning of the head noun, rather it relies on contextual information. (See discussion in section 4.2.1.)

For the most part, the work reported in this section is in line with [Grimshaw, 1990] and the adaptation of her proposal for Greek in [Markantonatou, 1992]. Aspectual ambiguity and syntactic ambiguity go hand in hand. Nevertheless, in the current work, I focus on telic event nouns and remain agnostic with respect to nouns that pertain to other aspectual classes (i.e. nouns that denote processes (activities) or states). The reason is that only telic event nouns seem to admit a direct object possessive (i.e. a possessive assigned the *THEME* or *PATIENT* role).<sup>15</sup> That is, only telic event nouns take an obligatory genitive complement, which indicates that they carry subcategorization requirements. Though process and state nouns resist object possessives, it is possible that they take obligatory prepositional phrase complements (cf. Markantonatou). Nevertheless, the examination of that type of noun complement lies beyond the scope of this thesis.

The NP in (261) describes the “unfurling” of a telic event over time.

- (261) i perigrafi tu hthesinu podosferiku agona mesa se liga lepta  
 the description yesterday’s football-GEN match-GEN in a-few minutes  
 ‘the description of yesterday’s football match in a few minutes’

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<sup>15</sup>This fact is consistent with Tenny’s theory of affectedness. For details, see section 4.5.

The description event that (261) refers to is telic (*delimited*) for it has a culmination point (the point when the description is over). The referential genitive *tu hthesinu podosferiku agona* (yesterday's football match) "measures out" the description from its onset to its culmination point. The description event begins as soon as the first incident of the football match is mentioned and it is over when we have gone through the whole of the football match. Then, the noun head in (261) refers to the internal, temporal organization of a telic event. I call such a noun a complex event noun. Crucially, it is the relational version of *perigrafi* that yields the complex event reading. Therefore, *perigrafi* cannot cooccur with the adverbial *mesa se liga lepta* (in a few minutes), which denotes the duration of the description event, unless it is combined with an "object" (THEME) possessive. See (262).

- (262) \*i perigrafi mesa se liga lepta  
 the description in a-few minutes  
 '\*the description in a few minutes'

In (262), *perigrafi* does not cooccur with a genitive referring to the entity described. Crucially, neither does it afford an 'in *X* time' modifier. Along with Grimshaw and Markantonatou, I assume that this evidence indicates that complex event nouns are relational, i.e. they bear subcategorization requirements that must be saturated.

Consider next (263).

- (263) (\*i perigrafi tu Yani mesa se liga lepta  
 the description the-GEN Yanis-GEN in a-few minutes  
 '(\*Yanis description in a few minutes'

Notice that the genitive *tu Yani* in (263) *cannot* refer to the entity that provided the description. There is no reading for (263) where *perigrafi* denotes the unfurling of a description event from its onset to its culmination point (thus, the 'in a few minutes' adverbial is made licit) and in which at the same time *tu Yani* does not refer to the described entity. (263) is well-formed only if *tu Yani* stands for the

THEME of *perigrafi*.

Consider now the examples in (264).

(264) a. *i perigrafes tu Yani*  
the descriptions the-GEN Yanis-GEN  
'Yanis's descriptions'

b. *mia perigrafi tu Yani pu dimosieftike se oles tis efimerides*  
a description the Yanis-GEN that was-published in all the newspapers  
'a description of Yanis's that was published in all the newspapers'

The plural *perigrafes* in (264a) and *perigrafi* in the indefinite (264b) cannot be assigned a complex event reading. Notice that the genitive *tu Yani* in those contexts is an extrinsic possessive: it can refer either to the entity that provided the description, or the described entity, etc. There is a distinct use of *perigrafi* which does not license aspectual modifiers such as 'in *X* time'. This instantiation of *perigrafi* refers to the outcome of describing (a description), rather than the internal temporal structure of a description event. A noun that refers to the outcome of an event, I call a result noun. Result nouns are non-relational and take no obligatory arguments. Genitives that cooccur with result nouns are extrinsic possessives. Such possessives are not assigned a thematic role, rather, their interpretation depends on contextually available information. For instance, if the recipient of the utterance in (264a) or (264b) knows from context that an individual named 'Yanis' is wanted, then the genitive *tu Yani* will be resolved to refer to the described entity. Alternatively, if the recipient knows that Yanis is a witness of a certain event, *tu Yani* will be resolved to refer to the entity that provided the description, etc.

The result *perigrafi* may stand on its own. Viz.:

(265) *ehun dothi arketa leptomeris perigrafes*  
have-been-given-3.PL quite detailed descriptions-PL  
'there are quite detailed descriptions'

A further example of a complex event noun is provided in (266).

- (266) i dolofonia tu Poirot mesa se pente lepta  
the assassination the-GEN Poirot within five minutes  
'Poirot's assassination within ten minutes'

The head noun is the complex event *dolofonia* ('assassination'), it thus licenses the aspectual modifier *mesa se pente lepta* ('in five minutes'). The complex event reading is induced by the genitive *tu Poirot*, which is an intrinsic possessive assigned the PATIENT role. In contrast, the same genitive *tu Poirot* is associated with extrinsic readings in (267) below, where it cooccurs with the non-relational result *dolofonia*. The extrinsic possessive *tu Poirot* in (267) can be understood to refer either to the assassin or the victim. In order to resolve the reference of *tu Poirot*, contextual information is required.

- (267) i dolofonia tu Poirot itan to agriotero eglima apo osa antikrisan pote i  
astinomikes arhes  
  
the assassination the-GEN Poirot was the most wild crime of which ever  
encountered-3.PL the police-3.PL  
  
'the assassination of Poirot was the most wild crime that the police ever  
encountered'

The distinction between complex event nouns and result nouns can be demonstrated by a number of diagnostics. As pointed out by Grimshaw, the complex event reading is available in singular definite noun phrases. On the other hand, plural NPs, indefinite NPs, or NPs that contain a demonstrative, unambiguously denote the outcome of an event. This is illustrated below in (268a,b&c), respectively. None of the following instances of the noun *dolofonia* refers to the internal temporal organization of an assassination event.

(268) a. i dolofonies tis tromokratikis organosis Dekaepta Noemvri

the assassinations the-GEN terrorist-GEN organization-GEN November Sev-  
enteen

‘the assassinations of the terrorist organization November Seventeen’

b. mia dolofonia vulefti tha ihe olethries sinepies gia ti diatirisi tis ekehirias

an assassination deputy-GEN would have terrible consequences for the  
maintenance the-GEN ceasefire-GEN

‘an assassination of a deputy would affect the maintenance of the ceasefire  
terribly’

c. afti i dolofonia tis Dekaepta Noemvri itan entelos diaforetiki apo oles tis  
proigumenes

this the assassination the-GEN November Seventeen was completely dif-  
ferent from all the previous

‘this assassination of November Seventeen was completely different from  
all the previous ones’

A further diagnostic for distinguishing between complex event nouns and result nouns is that result nouns may cooccur with adjectives such as *hthesini* (yesterday’s), *persini* (last year’s), etc. Viz.:

(269) i hthesini/persini dolofonia tis Dekaepta Noemvri itan entelos diaforetiki...

the yesterday’s/last year’s assassination the-GEN November Seventeen  
was completely different...

‘yesterday’s/last year’s assassination of November Seventeen was completely different...’

By contrast, complex event nouns are incompatible with the *yesterday’s* or *last year’s* type of adjectives. The following example is ill-formed for the complex

event *dolofonia* which licenses an adverbial of the sort ‘in *X* time’, is shown to be modified by the adjective *persini* (last year’s). There is no reading of (270) that paraphrases as: the assassination of Poirot that lasted five minutes and that happened last year.

- (270) \**i persini dolofonia tu Poirot mesa se pente lepta*  
 the last year’s assassination the-GEN Poirot within five minutes  
 ‘\*last year’s assassination of Poirot within ten minutes’

To summarize: in this section, I have shown that Greek abstract nouns have uses that split into complex event ones and result ones. At the syntactic level, the difference between complex event nouns and result nouns is that the former take an obligatory direct object genitive (i.e. an intrinsic possessive), whereas the latter may or may not cooccur with a genitive (extrinsic possessive). A formal account of the complex event and result instantiations of nouns and the way they are systematically related is provided in chapter 5.

### 4.3.3 Complex event nouns, result nouns, possessives and pseudo-possessives

In this section, I examine whether the two types of Greek genitives—possessives and pseudo-possessives—may freely cooccur with both kinds of abstract nominals we identified in the previous section—complex event nouns and result nouns. On the basis of diagnostics discussed previously, it can be demonstrated that both possessives and pseudo-possessives are compatible with result nouns. For instance, plural nouns, which cannot be associated with a complex event reading, may cooccur with two genitives. This is shown for the plural *dolofonies* in (271).

- (271) *i dolofonies vulefton ke dimosiografon tis Dekaepta Noemvri ginonte panta me ton idio tropo*

the assassinations deputies-GEN and journalists-GEN the-GEN November Seventeen are always on the same lines

‘November Seventeen’s assassinations of deputies and journalists are always on the same lines’

Furthermore, nouns may admit two genitives and, at the same time, be modified by an adjective such as *fetinos* (this year's), which is not compatible with complex event nouns, as was shown in the last section. Consider (272).

- (272)    *o fetinos diorismos anergon tis kivernisis tu Pa.so.k*  
           the this-year-ADJ appointment unemployed-GEN the-GEN government-  
           GEN the-GEN Pa.so.k  
           'this year's appointment of unemployed people of the Pa.so.k govern-  
           ment's'

As we have seen in section 4.3.1, if two genitives appear inside a Greek NP, they must be of distinct types—a possessive and a pseudo-possessive. It follows that both possessives and pseudo-possessives may cooccur with result nouns.

Let us next turn to complex event nouns. Consider (273).

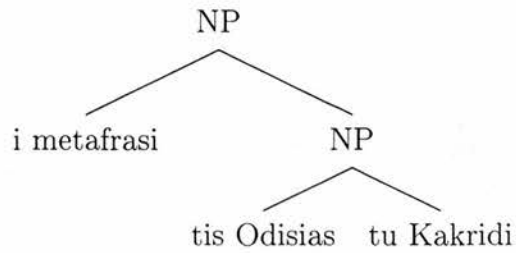
- (273)    *i metafrasi        tis Odisias                    tu Kakridi*  
           the translation the-GEN Odyssey-GEN the-GEN Kakridis-GEN  
           'Kakridis's Odyssey translation'

The NP in (273) can be shown to denote a complex event if it is compatible with an aspectual modifier such as 'in *X* time'. This type of temporal adverbial can only be licensed by a nominal referring to the measuring out of an event over time (a complex event nominal), and not by a nominal referring to the outcome of an event (a result nominal). However, (273) cannot cooccur with such a modifier. Viz.:

- (274)    \**[i metafrasi [tis Odisias] [tu Kakridi]] mesa se dio hronia*  
           the translation the-GEN Odyssey-GEN the-GEN Kakridis-GEN in two years

(274) receives an interpretation only in case the outermost genitive *tu Kakridi* is taken to be licensed by the noun head *Odisias*, rather than the top noun *metafrasi*. The only available parse for *i metafrasi tis Odisias tu Kakridi (mesa se dio hronia)* is schematically illustrated in (275).

(275)



*'the translation of Kakridis's Odyssey'*

The ill-formed (274) can be contrasted with (276). This NP contains a single genitive: *tis Odisias*. The outermost genitive *tu Kakridi* in (274) above is here replaced by an *apo*-phrase, the Greek analogue of English *by*-phrases. (276) denotes a complex event since it is compatible with the temporal modifier *mesa se dio hronia* (within two years).

- (276)    *i metafrasi*        *tis Odisias*                    *apo ton Kakridi mesa se dio hronia*  
          the translation the-GEN Odyssey-GEN by the Kakridis in two years  
          'the translation of the Odyssey by Kakridis in two years'

How can we test whether the unique genitive inside NPs with a complex event head is a possessive or a pseudo-possessive? It can be demonstrated that the single genitive in (276) has the properties of a possessive. For instance, that genitive can be replaced with the NP *aftu tu piimatos* (this poem's) which is unambiguously a possessive due to the deictic *aftu*:

- (277)    *i metafrasi aftu tu piimatos apo ton Kakridi mesa se dio hronia*  
          the translation this-GEN the-GEN poem-GEN by the Kakridis in two years  
          'the translation of this poem by Kakridis in two years'

Moreover, the single genitive of NPs denoting the unfurling of a telic event over time can be a pronominal clitic. See (278). As will be shown in the section 4.4, only possessives can be clitic pronouns, whereas pseudo-possessives have different anaphoric potential.

- (278)   afto to ergo, pu i metafrasi tu apo ton Kakridi pire hronia  
           this the work that the translation its-CL by the Kakridis took years  
           (this work that its translation (= the translation of which) by Kakridis  
           took years)

We conclude that only possessives may cooccur with complex event nouns. It follows that the independently motivated possessive / pseudo-possessive partition provides a solid diagnostic for distinguishing between two uses of abstract nouns: complex event ones and result ones. Nouns that cooccur with two genitives are unambiguously result nouns. On the other hand, nouns that resist two genitives denote complex events.

#### 4.3.4 Word order

In this section, I consider the relative order of possessives and pseudo-possessives inside Greek NPs. We have seen in previous sections that only two classes of nouns may cooccur with two genitives in a row: concrete nouns and abstract result nouns. However, the relative order of genitives in NPs headed by these types of nouns is not free. This is illustrated in (279) for concrete nouns.

- (279) a. to vivlio tis glosologias                   tu Yani  
           the book the-GEN linguistics-GEN the-GEN Yanis-GEN  
           ‘Yanis’s linguistics book’
- b. \*to vivlio tu Yani                           tis glosologias  
           the book the-GEN Yanis-GEN the-GEN linguistics-GEN

The example in (280) demonstrates that analogous contrasts appear in NPs headed by result nouns.

- (280) a. i perigrafes podosferikon agonon aftu tu sigekrimenu ekfoniti  
 the descriptions football matches-GEN this-GEN the-GEN particular-GEN  
 broadcaster-GEN  
 ‘the particular broadcaster’s football match descriptions’
- b. \*i perigrafes aftu tu sigekrimenu ekfoniti podosferikon agonon  
 the descriptions this-GEN the-GEN particular-GEN broadcaster-GEN foot-  
 ball matches-GEN

In work on NPs in Romance and Germanic by Giorgi and Longobardi ([Giorgi and Longobardi, 1991]), it is suggested that the relative order of noun dependents correlates with grammatical functions and thematic roles. More specifically, Giorgi and Longobardi argue that objects (*internal arguments*) are closer to the noun head than subjects (*external arguments*). It follows that objects precede subjects, in languages where all the thematic dependents of nouns occur post-nominally. The concept of objects and subjects in Giorgi and Longobardi’s work is very broad. For instance, within their system, the phrase *dell’ orchestra di Vienna* (of the Vienna orchestra) in the following example from Italian counts as the object of *dischi* (records), whereas, *di mio padre* (my father’s) counts as the subject.

- (281) i dischi [dell’ orchestra di Vienna] di mio padre  
 the records of the orchestra of Vienna of my father  
 ‘my father’s records of the Vienna orchestra’

(Constructed on the basis of (12) pp. 61, in [Giorgi&Longobardi, 1991].)

In case of deverbal nominals, Giorgi and Longobardi assume that the object is the phrase that “corresponds” to the syntactic object of the verb related to that noun, whereas the subject is the phrase that “corresponds” to its syntactic subject. For instance, in (282), *degli avvenimenti* (of the events) counts as the object (THEME), whereas *di Gianni* counts as the subject (AGENT).

- (282) la descrizione degli avvenimenti di Gianni  
 the description of the events of Gianni  
 ‘Gianni’s description of the events’

(Giorgi and Longobardi's (12), pp. 28.)

One might argue that the linear order contrasts in the Greek examples (279) and (280) above can also be captured in Giorgi and Longobardi's terms. Under this view, (279a) can be taken to be similar to the Italian (281) and (280a) can be assumed to be analogous to the Italian (282). The innermost genitive *tis glosologias* (linguistics) in (279a) and *dell' orchestra di Vienna* (of the Vienna orchestra) in (281) are both somehow related with the content or style of the book and the record. The outermost genitive *tu Yani* and *di mio padre* (my father's) can both be argued to refer to the owner or creator (writer and producer, respectively) of that object. On the other hand, the genitive *podosferikon agonon* (football matches) in (280a) can be assumed to "correspond" to the object of the verb *perigrafo* (describe), and *tu sigkekrimenu ekfoniti* (the particular broadcaster's) to its subject. This is analogous to the situation in (282).

However, it can be demonstrated that the order of genitives in Greek NPs is not related to an object / subject distinction, in the sense of Giorgi and Longobardi. Consider, for instance, the following examples.

- (283) a. *i metafrasis ton Alexandrinon tis sigekrimenis tragodias ine aparamiles*  
the translations the-GEN Alexandrians-GEN the-GEN particular-GEN tragedy-  
GEN are incomparable  
'the Alexandrian translations of the particular tragedy are incomparable'
- b. *i ektelesi tu Glen Gould aftu tu komatiu*  
the performance the-GEN Glen Gould this-GEN the-GEN piece-GEN  
'the Glen Gould performance of this piece'

In both examples in (283), the genitive that can be claimed to "correspond" to the subject of the related verb precedes the one that can be argued to "correspond" to the object—cf. *i Alexandrini metefrasan tin Odisia* (Alexandrians translated the Odyssey) and *o Glen Gould ektelese afto to komati* (Glen Gould performed this piece).

The relative order of genitives in the Greek examples above can be accounted for in terms of the possessive / pseudo-possessive hypothesis. The innermost genitive *tis glosologias* (linguistics) in the well-formed example (279a) can be construed as a pseudo-possessive that identifies a kind of book (a linguistics book). It is hard to construe the proper name genitive *tu Yani* as a kind modifier that identifies Yanis-style books. Rather, the rightmost genitive in (279a) can be assigned a possessive reading and be understood to refer to a person named ‘Yanis’. Similarly for (280a). The rightmost genitive in (280a) is unambiguously a possessive as it contains the deictic *aftu* (this). On the other hand, the innermost genitive can be interpreted as a pseudo-possessive that identifies a type of descriptions: football match descriptions. In both cases, the pseudo-possessive genitive precedes the possessive.

Let us now turn to the examples in (283). In (283a), the outermost genitive *tis sigekrimenis tragodias* (the particular tragedy) is unambiguously a possessive, as it refers to a *particular* tragedy. The innermost genitive *ton Alexandrinon* (of the Alexandrians) enables us to denote a particular style of translation, the one attributed to these philologists. Finally, in (283b) the rightmost genitive *aftu tu komatiu* (of this piece) is clearly a possessive since it contains the deictic *aftu* (this). On the other hand, the leftmost genitive *tu Glen Gould*, although a proper name, can be interpreted as a pseudo-possessive. The name of a famous person that is associated with characteristic properties and an idiosyncratic style is much easier to construe as pseudo-possessive than a “plain” proper name such as ‘Yanis’. The pseudo-possessive *tu Glen Gould* in (283b) enables us to refer to a performance of this piece *a la* Glen Gould.

In this section, I demonstrated that the relative order of genitives inside Greek NPs can be captured in terms of the possessive / pseudo-possessive partition. We can now modify the hypothesis of the distribution of genitives inside Greek NPs as follows:

- (284) *The distribution of genitives in Greek NPs (final version)*: No more than two genitives are admissible and they must be of distinct types—one possessive and one pseudo-possessive. Moreover, the pseudo-possessive

must precede the possessive.

A formal account of the distribution of genitives, couched in the HPSG framework, is provided in chapter 5.

## 4.4 Pronominalization effects

As was shown in previous sections, possessives and pseudo-possessives have different anaphoric potentials: the former refer to entities or sets of entities, whereas the latter denote properties. For instance, if a genitive *tu Aristoteli* receives a possessive reading, then it refers to an entity named ‘Aristotelis’. Alternatively, under the pseudo-possessive interpretation, it denotes the property *Aristotle-like* or *Aristotelian*. The distinction between possessives and pseudo-possessives correlates with a distinction between two kinds of anaphora—*pronominal anaphora* and *concept anaphora*—and the variant means utilized for expressing each kind. Possessives can be personal pronouns, e.g. genitive pronominal clitics. Such clitics are utilized in pronominal anaphora: they refer to entities in the discourse. The minimal pair in (285) illustrates that phrasal possessives may freely alternate with clitics.

- (285) a. *ta vivlia tu Aristoteli*  
the books the-GEN Aristotle-GEN  
‘Aristotle’s books’
- b. *ta vivlia tu*  
the books his-CL.GEN.3.SG.MASC  
‘his books’

On the other hand, examples with pseudo-possessives can be shown to have a counterpart where the pseudo-possessive is missing and the head noun is modified by the anaphoric element *tetios* (such-MASC.SG).<sup>16</sup> Elements such as *such* and its Greek analogue *tetios* are utilized in *concept* or *property anaphora*. These elements do not refer to entities but rather to concepts or properties. Consider (286).

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<sup>16</sup>The element *tetios* is described as a pronoun in traditional grammars.

- (286) a. ta vivlia tu Aristoteli  
 the books the-GEN Aristotelis-GEN  
 ‘Aristotle books’
- b. tetia vivlia  
 such books  
 ‘such books’

From the distinct semantic properties of possessives and pseudo-possessives straightforwardly derive otherwise puzzling facts, for instance, that only certain phrasal genitives can be replaced by clitics. Consider (287).

- (287) a. i iperaspisi tis Marias  
 the defence the-GEN.SG.FEM Maria-GEN.SG.FEM  
 ‘Maria’s defence’
- b. i iperaspisi tis  
 the defence her-CL.GEN.SG.FEM  
 ‘her defence’

The genitive in (287a) is a possessive. It refers to an entity named ‘Maria’. It can be intrinsic or extrinsic. In the former case, it is the direct object of the noun *iperaspisi* (defence) and it is linked with the THEME role. Under an extrinsic interpretation, *tis Marias* can refer to the defendant, or the lawyer who took over the defence, etc., depending on context. The phrasal possessive in (287a) can be replaced by a genitive pronominal clitic, as is shown in (287b). The clitic *tis* in (287b) is also an intrinsic or extrinsic possessive.

Consider now (288).

- (288) a. o fivos tis apotihias  
 the fear the-GEN.SG.FEM failure-GEN.SG.FEM  
 ‘the fear of failure’
- b. \*o fivos tis  
 the fear her-CL.GEN.SG.FEM  
 ‘\*its fear’

The genitive *tis apotihias* in (288a) is a pseudo-possessive. It cannot be the direct object of *fovos* (fear), as psych nouns do not admit direct object possessives. For example, the genitive *tis Marias* in *o fovos tis Marias* (Maria's fear) can only refer to the experiencer, rather than the theme.<sup>17</sup> Crucially, the pseudo-possessive genitive *tis apotihias* (of failure) in (288a) cannot be replaced by a pronominal clitic (see (288b)).

The possessive / pseudo-possessive hypothesis enables us naturally to account for a further important asymmetry: it appears that only certain genitives inside Greek NPs have access to relativization, whereas others resist. This can be naturally explained as follows: relative pronouns in genitive case that are co-referential with relativized ("extracted") noun dependents are, of course, possessives. In (289), for example, the relative pronoun *tis opias* (whose/of whom) is a possessive that is co-referential with *kratumeni* (detainee)—the relativized object of the noun *iperaspisi* (defence).

(289) *i kratumeni<sub>i</sub> tin iperaspisi tis opias<sub>i</sub> anelava ego...*

'the detainee the defence of whom I undertook myself...'

On the other hand, *tis opias* in (290) below cannot be understood to refer to the nominal *i apotihia* (the failure). We can have *o fovos tis apotihias* (the fear of failure), but we cannot relativize the genitive *tis apotihias*. Such a genitive is a pseudo-possessive and it denotes a property, therefore, it cannot be coindexed with a relative pronoun that refers to an entity.

(290) *\*i apotihia<sub>i</sub> tis opias<sub>i</sub> o fovos me kiriefse*

(the failure of which the fear came upon me)

In the next two sections, I demonstrate that various facts about pronominal clitics and relative pronouns inside the Greek noun phrase naturally derive from the possessive / pseudo-possessive hypothesis, and do not need to be stipulated.

<sup>17</sup>As is illustrated in section 4.5, psych nouns such as *fovos* (fear) in Greek take a prepositional phrase (PP) as their direct object. See also [Markantonatou, 1992].

#### 4.4.1 Evidence from clitics

We have seen in previous sections that two phrasal genitives may occur in Greek NPs. However, we do not find examples with two genitive clitics. Consider the following minimal pair:

- (291) a. *to vivlio tis istorias*                      *tu Yani*  
the book the history-GEN.SG.FEM the Yanis-GEN.MASC  
'Yanis's history book'
- b. \**to vivlio tis*                                      *tu*  
the book her-CL.GEN.SG.FEM his-CL.GEN.SG.FEM

At first blush, one might think that (291b) is ill-formed because a single element, the noun *vivlio*, hosts two clitics, *tis* and *tu*. However, we find that even NPs with two hosts cannot contain two clitics. As illustrated in (292a&b), both nouns and adjectives may function as clitic hosts in Greek. Nonetheless, (292c), which contains two clitics, each one attached on a different host, is ungrammatical.

- (292) a. *to agliko vivlio tu*  
the English book his-CL  
'his English book'
- b. *to agliko tu vivlio*  
the English his-CL book  
'his English book'
- c. \**to agliko tu vivlio tis*  
the English his-CL book her-CL

The constraint on clitics illustrated above follows from the distinct semantic properties of possessives and pseudo-possessives. Personal pronouns are unambiguously possessives, since such pronouns refer to entities in the discourse. No more than a single clitic may occur in Greek NPs, as no more than a single possessive genitive is admissible (see section 4.3.1). Going back to the example (291),

it is indeed the possessive phrase that can be replaced with a clitic, and not the pseudo-possessive. Hence:

- (293) a. *to vivlio tu tis istorias*  
the book his-CL.GEN.SG.FEM the-GEN.SG.FEM history-GEN.SG.FEM  
'his history book'
- b. \**to vivlio tis tu Yani*  
the book her-CL.GEN.SG.FEM the-GEN Yani-GEN.SG.MASC

We know that *tis istorias* is the pseudo-possessive, whereas *tu Yani* is the possessive: the former precedes the latter in (291) above, and moreover, it identifies a kind of book (a history book), while *tu Yani* can be taken to refer to the owner or the writer of that book, etc.

There is a class of data which might appear to contradict what has been said thus far. The NP in (294) below accommodates two clitics: *mu* and *tis*.

- (294) *to pio agapimeno mu vivlio tis*  
the most favourite my-CL book her-CL  
'my most favourite book by her/of hers'

At first blush, (294) seems to indicate either that some nouns may take two possessives or that both possessives and pseudo-possessives may sometimes pronominalize. However, as we will see, the example in (294) does not constitute evidence against our basic proposal, but in fact supports the generalization that a head noun in Greek admits at most one possessive genitive.

Only one of the two clitics in (294) is licensed by the noun: *tis*. The clitic *tis* is a possessive and can receive an intrinsic or extrinsic interpretation. On the other hand, the other clitic *mu* is licensed by the adjective *agapimeno*. It refers to an entity such that the particular book is its favourite one—in this case, the speaker. There is independent syntactic evidence that *mu* is an argument of *agapimeno* and it saturates subcategorization requirements of that adjective. Examples such as

(295a) below, where **agapimeno** hosts no clitic, are not felicitous, in particular, if contrasted with (295b).

- (295) a. ??tu danisa                    to agapimeno vivlio  
to-him-CL lent-1.sg the favourite book  
'??I lent him the favourite book'
- b. tu danisa                    to agapimeno mu    vivlio  
to-him-CL lent-1.sg the favourite my-CL book  
'I lent him my favourite book'

Clitic climbing provides a solid diagnostic for determining whether a clitic is licensed by the head noun or by an adjective. Clitics licensed by the noun may 'climb' along the NP. For instance, the clitic complement of the noun head can be attached on an pre-nominal adjective.<sup>18</sup> See (296).

- (296) to kenurio tis    agliko vivlio  
the new    her-CL English book  
'her new English book'

Consider next the minimal pair in (297).

- (297) a. to kenurio agapimeno mu vivlio tis  
the new    favorite my-CL book her-CL  
'my new favourite book by her/of hers'
- b. \*to kenurio mu agapimeno vivlio tis  
the new my-CL favorite    book her-CL

The only difference between (297a) and the ungrammatical example (297b) is that the clitic **mu** that is attached on **agapimeno** in (297a) appears to be attached on the top adjective **kenurio** (new) in (297b). The ill-formedness of (297b) demonstrates that clitics licensed by adjectives such as **agapimeno** cannot climb. Once it is established that clitics licensed by adjectives do not climb, the ungrammaticality of

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<sup>18</sup>For some further detail on clitic climbing in Greek NPs, see chapter 6.

(297b) can be taken to constitute evidence that our hypothesis is correct: only a single clitic is admissible in Greek NPs. (297b) is ruled out because it contains two clitics that both will have to be attributed to the noun—**mu** that is attached on **kenurio** cannot be licensed by **kenurio**, as this adjective is not of the same class as **agapimeno**, (for instance, **kenurio** does not seem to be missing an argument, as was shown for **agapimeno** in (295) above).

Consider next (298).

(298)   to pio agapimeno mu    vivlio tis  
          the most favorite   my-CL book her-CL  
          ‘my most favourite book by her/of hers’

(298) is not ambiguous. It can be paraphrased as follows: the speaker’s most favourite book that a certain female entity owns, wrote, etc. (298) cannot receive the reading: a certain female entity’s most favourite book that the speaker owns or wrote, etc. This again shows that if a clitic is licensed by an adjective, it will be attached on that adjective, and vice versa: only a clitic licensed by an adjective and attached on that adjective can be understood to make part of that adjective’s lexical meaning. In addition, (298) can be taken to constitute evidence that nouns license at most one possessive. If both clitics in (298) were syntactically licensed by the noun, we would expect the example to be ambiguous, i.e. to be assigned either of the interpretations listed above: either of the clitics could be taken to refer to the person that the particular book is his/her favourite one, and either of the clitics could be taken to refer to the owner or writer of that book.

A few other adjectives in addition to **agapimeno** license clitics. These are: **gnosto** (familiar), **gitoniko** (neighbouring), **filiko** (friendly) and other adjectives that denote physical or psychological proximity.

In this section, I have shown that the constraint for a single clitic per noun head automatically derives from the possessive / pseudo-possessive hypothesis. Moreover, I discussed apparent counter-examples and demonstrated that they do not constitute evidence against this hypothesis.

#### 4.4.2 Relativization effects in the Greek noun phrase

The distinct semantic properties of possessives and pseudo-possessives enable us to provide a natural explanation for systematic asymmetries inside Greek NPs, concerning relativization. Consider first the example in (299).

(299) i metafrasi tis Odisias tu Kakridi ine sto rafi dexia

the translation the-GEN Odyssey-GEN the-GEN Kakridis-GEN is on the shelf to the right

‘Kakridis’s Odyssey translation is on the shelf to the right...’

In the context of (299), the noun *metafrasi* is clearly employed in the *result* sense—it refers to the outcome of a process (a translation), rather than the process itself. We know from section 4.3.3 that result nouns are compatible with both possessive and pseudo-possessive genitives. Moreover, we have previously seen that pseudo-possessives linearly precede possessives—therefore, the pseudo-possessive genitive in (299) is the innermost genitive *tis Odisias*.

Consider next the contrast in (300).

(300) a. \*i Odisia, tis opias i metafrasi tu Kakridi ine sto rafi dexia...

the Odyssey of which Kakridis’ translation is on the shelf to the right

b. o Kakridis, tu opiu i metafrasi tis Odisias ine sto rafi dexia...

Kakridis, the-GEN whose the translation the-GEN Odyssey-GEN is on the shelf right

‘Kakridis whose Odyssey translation is on the shelf to the right...’

(300) illustrates that it is possible to relativize the outermost genitive *tu Kakridi* of our original example (299), but not the innermost genitive *tis Odisias*. As expected,

the same contrast appears in case we employ the alternative, resumptive pronoun relativization strategy. This is shown in (301).<sup>19</sup>

(301) a. \*i Odisia pu i metafrasi tis tu Kakridi ine sto rafi dexia

the Odyssey-FEM that the translation her-CL the-GEN Kakridis-GEN is on-the shelf right

b. o Kakridis pu i metafrasi tu tis Odisias ine sto rafi dexia

the Kakridis that the translation his-CL the-GEN Odyssey-GEN is on-the shelf right

(Kakridis, that his Odyssey translation is on the shelf to the right...)

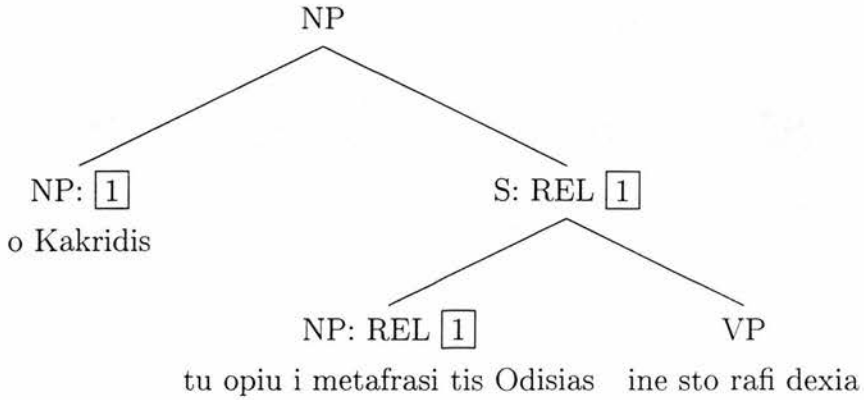
The contrast illustrated in (300) and (301) can be straightforwardly explained in terms of the possessive / pseudo-possessive hypothesis. (300a) and (301a) are ill-formed because in these examples we have attempted to relativize the pseudo-possessive genitive of our original example (299). In relativization, the “extracted” phrase is co-referential with a relative pronoun or a resumptive pronoun *in situ* (roughly, the position where the relativized phrase is assumed to have been extracted from). It is not possible to “extract” a phrase that is understood as a pseudo-possessive, because then that phrase will have to be co-referential with the relative or resumptive pronoun *in situ*—however, a pseudo-possessive is *not* referential in the first place, but rather denotes a property. In HPSG, relativization examples are not treated as instances of extraction, to be accounted for in terms of movement. Phrases such as *tu opiu i metafrasi tis Odisias* (see (300b)) or *i metafrasi tu tis Odisias* (see (301b)) are syntactically NPs signaling that a certain relative dependency must be retrieved. Technically, this is captured in terms of the nonlocal feature REL, which originates from the relative pronoun.<sup>20</sup> This in-

<sup>19</sup>The examples in (300) and (301) are taken from [Markantonatou, 1992]. On the basis of these examples, Markantonatou argues that the innermost genitive *tis Odisias*, which cannot be relativized, is not *thematic*. However, Markantonatou provides no account for such data, rather she considers examples with two genitives beyond the scope of her work.

<sup>20</sup>In case of (301b), the REL specification can be stipulated in terms of inheritance, cf. Sag’s approach to English relatives in terms of multiple inheritance, [Sag, 1995].

formation propagates upwards by the Nonlocal Feature Principle of HPSG, until the relative dependency is retrieved. This is schematically illustrated in (302).<sup>21</sup>

(302)



*Kakridis, the Odyssey translation of whom is on the shelf to the right*

Under this view, (300a) and (301a) above cannot receive an interpretation, if we take (299) as the original example, for the following reason: The NPs headed by *metafrasi* in (300a) and (301a) contain two possessive genitives: the relative pronoun *tis opias* and the resumptive clitic pronoun *tis*, respectively, and, in addition, the non-pronominal *tu Kakridi*, that is, the rightmost genitive in (299) that must be interpreted as a possessive, according to what we have seen thus far. However, as has been previously demonstrated, Greek nouns may admit at most one possessive.

Let us now turn to (300b) and (301b). These examples can receive an interpretation because, in this case, it is a possessive genitive that has been relativized. This is the rightmost genitive *tu Kakridi* in the original example (299). A phrase that is understood as a possessive can be extracted, since such a phrase can be co-referential with a relative pronoun or a clitic (a resumptive pronoun). Under an HPSG analysis of relatives, (300b) and (301b) are okay, since we understand the NPs headed by *metafrasi* to contain genitives of distinct types: a pseudo-possessive *tis Odisias* and a pronominal possessive—*tu opiu* and *tu*, respectively.

<sup>21</sup>For expository clarity, in (302) I provide a very simplified account on the lines of [Sag, 1995]. For further detail on Sag's approach to relatives, see chapter 5.

In work on the Italian noun phrase by Giorgi and Longobardi (cf. [Giorgi and Longobardi, 1991]), it is suggested that not just any noun dependent can be relativized, rather only subjects (“external arguments”) can be extracted, whereas objects (“internal arguments”) are not accessible to relativization. Giorgi and Longobardi assume that deverbal nouns take the same kinds of arguments as their related verb. Under their view, a noun such as *descrizione* (description) takes a subject AGENT and an object THEME, like its corresponding verb *descrivere* (describe). According to Giorgi and Longobardi, the extracted element in (303) below can only express the agent, not the theme. In other words, it corresponds to the subject of *descrizione*, whereas *di Maria* stands for the object that is assigned the THEME role.

(303) Gianni, di cui interrompi la descrizione di Maria

‘Gianni, of whom I interrupted the description of Maria’

(Giorgi and Longobardi’s (8b), p. 60).

If one adopts the Giorgi and Longobardi approach to deverbal nominals for Greek, in an example such as *i metafrasi tis Odisias tu Kakridi* (Kakridis’s *Odyssey* translation), the genitive *tis Odisias* will be taken to be the object, and the genitive *tu Kakridi* the subject—cf. *o Kakridis metefrase tin Odisia* (Kakridis translated the *Odyssey*). Accordingly, one might perhaps think that the contrast illustrated in (300) and (301) above can be accounted for in terms of the Giorgi and Longobardi hypothesis: the subject (AGENT) can be extracted and for that reason (300b) and (301b) are okay, whereas the object (THEME) cannot be extracted, and for that reason (300a) and (301a) are ill-formed.

However, an account of the Greek data on the line of Giorgi and Longobardi runs into significant problems. Consider first (304):

(304) a. *i metafrasi tis Odisias apo ton Kakridi oloklirothike mesa se dio hronia*

‘The *Odyssey*’s translation by Kakridis was completed within two years’

b. i Odisia, tis opias i metafrasi apo ton Kakridi oloklirothike mesa se dio hronia

‘The Odyssey, of which the translation by Kakridis was completed within two years...’

c. i Odisia, pu i metafrasi tis apo ton Kakridi oloklirothike mesa se dio hronia

(The Odyssey, that its translation by Kakridis was completed within two years...)

The examples (304b&c) constitute evidence against Giorgi and Longobardi’s proposal that objects are not accessible to relativization: *tis Odisias*, i.e. the constituent that an analysis *a la* Giorgi and Longobardi would characterize as the object of *metafrasi* can be indeed extracted.

Examples such as (304b&c) can be straightforwardly accounted for in terms of the possessive / pseudo-possessive hypothesis. In the current analysis, a genitive NP is not inherently a possessive or a pseudo-possessive, rather it can be associated with one or the other reading. However, the interpretation a genitive receives is not random, rather it can be determined by a number of precise syntactic diagnostics: the linear order in which this genitive occurs, whether the genitive can be replaced by a clitic pronoun, the type of noun head the genitive depends on, etc. On the basis of diagnostics discussed in previous sections, it can be established that the genitive *tis Odisias* in (304a) above is unambiguously a possessive. The noun head *metafrasi* is employed in a complex event sense, i.e. it refers to a process that has had a certain duration—in this case, it took two years to be completed. Moreover, *metafrasi* in (304) licenses an *apo*-phrase (the Greek analogue of the English *by*-phrase): as illustrated in Rozwadowska’s study of *by*-phrases across various languages (e.g. Russian, English and certain Romance languages), this type of phrase denotes an entity that “actualized” a telic event—in Rozwadowska’s terms, it is the *object of origin or actualization* of a telic event (cf. [Rozwadowska, ms.]). Therefore, it can only be licensed by a complex event noun. However, as we have seen in section 4.3.3, complex event nouns altogether resist pseudo-possessives. Thus, the NP *tis Odisias* in (304a) refers to a particular concrete

work titled ‘Odisia’—an object in discourse. This is a quite distinct reading from the one associated with its pseudo-possessive counterpart (see e.g. the example in (299) above): the pseudo-possessive *tis Odisias* denotes the “Odysseic” property of a translation, in the case of (299), Kakridis’s translation. As we have already seen, a possessive genitive can be relativized: such a genitive can be understood to be co-referential to a relative pronoun *tis opias* or a resumptive clitic pronoun *tis*. Our analysis correctly predicts that the NPs headed by *metafrasi* in (304b&c) are perfectly okay: they contain a single pronominal possessive genitive. A further problem for an analysis on the line of Giorgi and Longobardi is that it cannot account for examples such as those in (305):

(305) a. *Afto to makroskeles piima, tu opiu arketes metafrasis Alexandrinon filologon...*

‘This long poem, of which several translations of Alexandrian philologists...’

b. *Afto to makroskeles piima, pu arketes metafrasis tu Alexandrinon filologon...*

(This long poem, that its several translations of Alexandrian philologists)

In (305a&b), the “extracted” phrase *afto to makroskeles piima* is the constituent that an analysis à la Giorgi and Longobardi would characterize as the object of the noun *metafrasis* (translations). Moreover, there is a phrase *Alexandrinon filologon* that appears to correspond to the subject of *metafrasis*, according to the Giorgi and Longobardi approach. Examples such as (305a&b) demonstrate that the Giorgi&Longobardi hypothesis does not extend to Greek. However, such examples can be naturally accounted for in the current approach. The relativized phrase contains the deictic *afto* (this) and refers to a particular entity. It follows that it is the possessive genitive that has been extracted from the NP headed by *metafrasis*. On the other hand, *ton Alexandrinon filologon* can be assigned a pseudo-possessive reading. In that reading, the genitive does not refer to particular individuals that are philologists, rather it enables us to identify a certain kind of translations—translations characterized by properties pertaining to an Alexandrian philologist’s style of work. Therefore, the NPs *tu opiu arketes metafrasis Alexandrinon filologon*

(of which several translations of Alexandrian philologists) and *arketes metafrasis tu Alexandrinon filologon* (its several translations of Alexandrian philologists) contain exactly one possessive—the relative pronoun and the resumptive clitic pronoun, respectively—and one pseudo-possessive *Alexandrinon filologon*, and thus they are well-formed.<sup>22</sup>

## 4.5 Aspectual asymmetries

In work on aspect in English, Tenny (cf. [Tenny, 1989]) suggests that there is a correlation between the aspectual type of nominals and whether they admit object pronouns or preposed NPs such as *her* and *Miss Marple's*, e.g. *her/Miss Marple's assassination*. Only nouns of a particular aspectual class take pronouns and prenominal NPs with a THEME or PATIENT interpretation. In this section, I present Tenny's account of the English data and accordingly demonstrate that similar phenomena occur in Greek. Though Greek lacks English-style preposed NPs (e.g. *Miss Marple's*), it exhibits the same effect as English with respect to pronouns: only nominals of a particular aspectual class admit object clitics. An obvious question to pose is whether there is a Greek analogue of English prenominal NPs such as *Miss Marple's*, and certain noun classes in Greek resist object phrases of this type. I demonstrate that there is a type of NP that is sensitive to aspectual distinctions, and Tenny's generalization for English extends to both pronouns and nonpronominal nominals in Greek. It is object possessives, pronouns and nonpronominal ones, that are exclusively licensed by nouns denoting a particular type of event. By contrast, all aspectual classes are compatible with pseudo-possessive genitives. The possessive/pseudo-possessive partition enables us to provide a straightforward explanation for otherwise obscure asymmetries concerning the distribution of genitives in NPs of distinct aspectual types.

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<sup>22</sup>It should be mentioned that our analysis predicts that the examples (300a) and (301a) that we examined in the beginning of this section, can be assigned an interpretation, provided the relativized genitive is understood as a possessive, whereas *tu Kakridi* is associated with a pseudo-possessive reading. This is indeed possible if *tu Kakridi* is not taken to refer to an individual named 'Kakridis', rather it identifies a "Kakridian" translation. On the other hand, the "extracted" phrase will have to be taken to correspond to a possessive that refers to a particular work titled "Odisia".

#### 4.5.1 Anderson's affectedness hypothesis and Tenny's generalization

It is well known that English psych nouns such as *fear*, *love* or *knowledge* resist both pronouns and preposed phrases with a THEME or PATIENT interpretation. Both *her* and *Maria's* in (306) below can only refer to the experiencer.

- (306) a. *her/Maria's*<sub>Exp/\*Th</sub> *fear*  
b. *her/Maria's*<sub>Exp/\*Th</sub> *love*  
c. *her/Maria's*<sub>Exp/\*Th</sub> *knowledge*

Resisting an object pronoun or preposed NP is not a property that exclusively characterizes psych nouns. Consider the data in (307) and (308) below, taken from [Anderson, 1979].

- (307) a. *John's/his* avoidance of *Bill*  
b. \**Bill's/his* avoidance by *John*
- (308) a. *Sally's/her* pursuit of the *cat*  
b. \**the cat's/its* pursuit by *Sally*

As shown by the (a) examples, the nouns *avoidance* and *pursuit* take pronouns or preposed phrases which are understood as subjects (agents). The (b) examples are ill-formed, since the *by*-phrases—which are associated with an agentive interpretation—necessitate an object reading for the pronouns (*his* and *its*) and the preposed phrases (*Bill's* and *the cat's*).

Nouns like *avoidance* and *pursuit* contrast with nouns such as *destruction* and *conversion* which can admit object pronouns or prenominal NPs. Consider for example (309) and (310), again from [Anderson, 1979].

- (309) a. the *Mongols'* destruction of the *city*

b. the city's/its destruction by the Mongols

(310) a. the missionaries' conversion of the natives

b. the natives'/their conversion by the missionaries

In order to account for such contrasts, Anderson formulates the Affectedness hypothesis:

(311) *Anderson's Affectedness Hypothesis.* If the head noun does not express an action which "affects", i.e. modifies, the state of the object, the latter cannot be "possessivized" (i.e. it cannot be a pronoun or a preposed phrase.)

Nouns such as **destruction** and **conversion** can be taken to affect the state of their object: the city is destroyed and the natives are converted. By contrast, avoiding Bill, or pursuing the cat does not change the state of Bill or that of the cat. Anderson's generalization seems to be descriptively adequate: **destruction** and **conversion** admit object pronouns or preposed phrases, whereas **avoidance** and **pursuit** resist such objects. Moreover, the affectedness hypothesis appears to extend to psych nouns. Nouns such as **fear** or **love**, which also resist the same kinds of complements, can hardly be claimed to affect the state of their object.

Nevertheless, there is also counter-evidence to Anderson's proposal. Consider, for instance, the data in (312) and (313), from [Tenny, 1989].<sup>23</sup>

(312) a. the company's performance of the play

b. the play's performance by the company

(313) a. John's translation of the poem

b. the poem's translation by John

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<sup>23</sup>(312) also appears in Anderson, cf. Anderson's (48).

As Tenny points out, the noun **performance**, which may take a possessive object (see (312b)), does not affect the state of its object: the play does not change by its being performed. Similarly for **translation**. The essence and the content of the poem is not modified by its translation.

In [Tenny, 1989], affectedness receives an aspectual interpretation. Tenny argues that nouns which admit object pronouns or preposed phrases denote *delimited* events (also referred to as *telic* or *bounded* events). These are the *accomplishments*, cf. [Vendler, 1967], which have a culmination point. The difference between **pursuit** and **destruction**, for instance, is that only the latter denotes a telic event. A well known diagnostic for distinguishing among the various event classes is the kind of adverbials they admit. Accomplishments are compatible with ‘in *X* time’ adverbials and cannot cooccur with ‘for *X* time’ adverbials. This is demonstrated for **destruction** in (314).

- (314) a. the complete destruction of the city in a few days  
b. \*the destruction of the city for a few days

The noun **destruction**, by virtue of its denoting a delimited event, is compatible with the adjective **complete**. Consider next (315): **pursuit**, a *prima facie* activity (process) can associate with a ‘for *X* time’ adverbial, but resists an ‘in *X* time’ one.

- (315) a. the pursuit of the culprit for nine months  
b. \*the pursuit of the culprit in nine months

Tenny’s proposal also accommodates nouns such as **performance** or **translation** that admit an object pronoun or prenominal NP, though they do not “affect” their direct object, in the sense of Anderson. Both the **play’s performance** and the **poem’s translation** are NPs that denote accomplishments: **performance** and **translation** involve a culmination point, when the whole of the play is performed and the whole of the poem is translated.

#### 4.5.2 Greek nouns that resist object pronouns

In this section, I examine whether Tenny's generalization for English applies to Greek. Greek lacks English-style preposed NPs such as *John's* or *the poem's*, (cf. [Markantonatou, 1992]). However, it can be demonstrated that pronominal clitics associated with a THEME or PATIENT interpretation inside Greek NPs are exclusively licensed by nominals denoting telic events, exactly like Tenny predicts for English object pronouns. Consider, for instance, delimited event nouns such as *katastrofi* (destruction), *metafrasi* (translation), or *athoosi* (acquittal). They can all admit a direct object clitic. The clitic *tis* in (316a) below is assigned the PATIENT role, *tu* in (316b) receives the THEME role, whereas *tus* in (316c) is also a PATIENT.

- (316) a. *i olosheris katastrofi tis apo ton simahiko strato mesa se liges meres*  
the complete destruction her-CL by the Allied army within a few days  
'Its complete destruction by the allied army within a few days'
- b. *i metafrasi tu apo ton Kakridi mesa se tria hronia*  
the translation its-CL by the Kakridis within three years  
'its translation by Kakridis within three years'
- c. *i athoosi tus apo enan pasignosto dikigoro*  
the acquittal their-CL by a renowned lawyer  
'their acquittal by a renowned lawyer'

In the following sections, I identify three classes of nouns in Greek that resist direct object clitics and they can be accounted for in terms of Tenny's generalization, as they do not denote telic events. These are: (a) psych nouns, (b) nouns ending in *-ma/-mo* and (c) propositional attitude nouns.

##### Psych nouns

Psych nouns such as *fovos* (fear), *agapi* (love) or *gnosi* (knowledge) resist object clitics. Consider the examples in (317).

(317) a. i agapi tis  
the love her-CL  
'her love'

b. i gnosi tis  
the knowledge her-CL  
'her knowledge'

The NPs in (317) are *not* ambiguous: the clitic pronoun *tis* is assigned the EXPERIENCER role and cannot be alternatively interpreted as the THEME. In fact, a clitic licensed by a psych noun can never receive a THEME reading. In (318) below, *apo* (by) phrases are attached to psych nouns that host a clitic pronoun. The intention is to force a THEME interpretation for the clitic. Both examples in (318) are ill-formed.

(318) a. \*i agapi tis apo to Yani  
the love her-CL by the Yanis  
'\*her love by Yanis'

b. \*i gnosi tis apo to Yani  
the knowledge her- CL by the Yanis  
'\*her knowledge by Yianis'

The fact that psych nouns resist object pronouns can be explained in terms of Tenny's hypothesis. Such nouns do not denote telic events, rather they denote states. Diagnostics for demonstrating that nouns like *fovos* (fear) etc. are states are provided in [Mourelatos, 1978, 1981]. Mourelatos shows that telic event nouns pattern with COUNT terms, whereas processes and states pattern with MASS terms.<sup>24</sup> COUNT terms, e.g. *book*, may pluralize, they are compatible with cardi-

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<sup>24</sup>In section 4.3.2, I discussed Grimshaw's partition of telic event nouns into complex event and result nouns. The former denote the unfurling of a telic event over time from its onset to its culmination point, whereas the latter refer to the outcome of a telic event. In this section, I do not make use of this distinction. Rather, I focus on the overall class of telic events (accomplishments) and, by means of diagnostics provided in Mourelatos, I contrast them with activities and states. Telic event nouns have a reading (Grimshaw's complex event reading) that licenses direct object pronouns (intrinsic possessives). By contrast, there is no use of state and process nouns that admits an object pronoun.

nal numerals, elements such as **many**, **several**, **few** or quantifiers and may occur in indefinite nominals. Similarly for telic event nouns. Viz.:

- (319) a. i dolofonies          ton nearon koritsion    ihan thorivisi tus katikus  
the assassinations the young women-GEN had alarmed the residents  
'the assassinations of the young women had alarmed the residents'
- b. liges dolofonies      prothipurgon          ehun prokalesi    tetio salo  
few assassinations prime ministers-GEN have brought-up such confusion  
'few assassinations of prime ministers brought up such confusion'

The noun **dolofonia** (assassination) denotes an accomplishment. It can pluralize (see (319a)) and it is compatible with the element **liges** (few) (see (319b)). By contrast, it is not possible to construct analogous examples for nouns such as **fovos** (fear) or **gnosi** (knowledge). State nouns pattern with **mass** terms. They do not pluralize (or if they do, then their meaning shifts) and they resist numerals or quantifiers that are appropriate for **count** terms. This is illustrated by the following contrasts.

- (320) a. o fivos    tu thanatu  
the fear the-GEN death-GEN  
'the fear of death'
- b. \*i fovi    tu thanatu  
the fears the-GEN death-GEN  
(the fears of death)
- (321) a. i agapi    tu plision  
the love the-GEN brother-GEN  
'the love of the brothers'
- b. \*mia agapi tu plision  
a love          the-GEN brother-GEN  
(a love of the brothers)

Nouns such *fovos* and *agapi* can pluralize or appear in indefinite phrases etc. in case they do not denote states. Then their meaning changes. For instance, the plural *agapes* (loves) in (322a) below refers to specific individuals that Yanis loves. The indefinite in (322b) resists the reading ‘there is one fear that...’.<sup>25</sup>

- (322) a. *i agapes tu Yanis*  
 the loves the-GEN Yanis-GEN  
 ‘the loves of Yanis’
- b. *me piase enas paralogos fovos*  
 me caught-3.SG an irrational fear  
 ‘Irrational fear came over me’

### Nouns ending in *-ma/-mo*

A second type of nouns in Greek that resist clitics with a THEME or PATIENT interpretation are members of the class of nouns ending in *-ma/-mo*. A subset of *-ma/-mo* nouns denote processes (activities), e.g. *perpatima* (walking). Others are concrete nouns, e.g. *paraskevasma* (product / concoction). Finally, certain *-ma/-mo* nouns are ambiguous between a concrete reading and a process reading, see e.g. *triximo* (crack / grinding) in (323).

- (323) a. *akusa ena triximo*  
 ‘I heard a crack’
- b. *to triximo ton trohon ton nanurize*  
 ‘the grinding of the wheels was lulling him’

The formation of *-ma/-mo* nouns is quite productive. However, (at least) two classes of verbs lack a corresponding *-ma/-mo* noun. These are prototypical state and telic event predicates. For example, there are no *-ma/-mo* nouns such as *\*agapima* (loving), *\*fthonima* (envying), *\*skepsimo* (thinking). Further, there are no nouns such as *\*dolofoanima* (assassinating), *\*katastrema* (destroying), *\*athooma*

<sup>25</sup>In [Poulou, in preparation], it is argued that constructions such as (322b) are not semantically distinct from determinerless ones which denote states, e.g. ‘fear came over me...’

(acquitting). The fact that prototypical states and accomplishments do not yield -ma/-mo nouns is a first piece of evidence that such nouns, if they denote an event, denote a process (activity).

The contrasts in (324) and (325) below demonstrate that nouns ending in -ma/-mo resist object pronouns.

- (324) a. to plisimo ton piaton  
the washing the-GEN dishes-GEN  
'the dish washing'
- b. \*to plisimo tus  
the washing their-CL  
'\*their washing'

- (325) a. to mazema tis elias  
the harvesting the-GEN olive-GEN  
'the harvesting of olives'
- b. \*to mazema tis  
the harvesting its-CL  
'\*its harvesting'

At first blush, it looks as if **plisimo** (washing) and **mazema** (harvesting) have a telic event version. The corresponding verbs **pleno** (wash) and **mazevo** (collect / harvest) can be employed to denote events that reach a culmination point. Viz.:

- (326) a. eplina ta piata mesa se deka lepta  
washed-1.SG the dishes within ten minutes  
'I washed the dishes in ten minutes'
- b. mazepsan tis elies mesa se dekapente meres  
harvested-3.PL the olives within fifteen days  
'they harvested the olives within fifteen days'

Nevertheless, the aspectual diagnostics of Mourelatos enable us to demonstrate that nouns such as *plisimo* and *mazema* cannot denote delimited events. Rather, they denote processes. First, nouns ending in *-ma/-mo* do not pluralize. This is illustrated in (327a&b) for *plisimo* and *diavasma*, respectively.

- (327) a. \**ta plisimata ton piaton*  
 the washings the-GEN dishes-GEN  
 ‘\*the washings of dishes’
- b. \**ta diavasmata exosholikon vivlion*  
 the readings out-of-school-ADJ.GEN books-GEN  
 ‘\*the readings of out-of-school books’

Second, the *-ma/-mo* class of nouns are not compatible with numerals or determiners that are appropriate for count terms and telic events. For instance, they do not occur in indefinites. To wit:

- (328) \**ena plisimo (ton) piaton*  
 one washing the-GEN dishes-GEN  
 ‘\*a washing of dishes’

Finally, *-ma/-mo* nouns diverge from nouns that denote telic events with respect to the modifiers they may combine with. Nouns that describe accomplishments do not license adjectives such as *sihnos* (frequent), *taktikos* (regular), *kathimerinos* (everyday / daily) or *sinehis* (constant), etc.<sup>26</sup>. (329) is thus ill-formed.

- (329) \**i sihni dolofonia nearon koritsion*  
 the frequent assassination young-GEN women-GEN  
 ‘\*the frequent assassination of young women’

By contrast, *-ma/-mo* nouns are compatible with such modifiers, as is illustrated in (330) below.

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<sup>26</sup>As pointed out in [Sanfilippo, 1991] and others, this type of adjectives can only modify plural forms of telic event nouns

- (330) a. to kathimerino plisimo ton dontion  
 the everyday washing the-GEN teeth-GEN  
 ‘the daily tooth brushing’
- b. to taktiko diavasma tis agias grafis  
 the regular reading the-GEN holy-GEN bible-GEN  
 ‘the regular reading of the holy bible’

In this section, I have shown that event *-ma/-mo* nouns characteristically denote processes.<sup>27</sup> Therefore, Tenny’s generalization explains why they resist object clitics, since according to this generalization, only nouns that denote telic events (accomplishments) take object pronouns.

<sup>27</sup>Both Mourelatos’s diagnostics and the fact that prototypical telic event verbs lack a corresponding *-ma/-mo* noun (see above) indicate that *-ma/-mo* nouns cannot denote accomplishments. However, [Markantonatou, 1992] cites one example that contains a *-ma/-mo* noun construed as a telic event. Viz.:

- (331) to xerizoma tu fitu apo ton skilo tu gitona exenevrise ti Maria  
 the uprooting the plant-GEN by the dog the neighbour-GEN enraged the Maria  
 ‘The uprooting of the plant by the neighbour’s dog has enraged Maria.’

Notice that the noun *xerizoma* is a typical *-ma/-mo* noun: it does not pluralize, does not occur in indefinites, etc. Markantonatou does not explicitly state that *xerizoma* is a telic event noun. However, in the example in (331) this noun is shown to cooccur with an *apo*-phrase (the Greek analogue of English *by*-phrases), and such phrases are typically licensed by telic event nouns, cf. [Rozwadowska, Ms]. Personally, I find (331) (at least) infelicitous. Nevertheless, it might be taken to suggest that for certain speakers, certain *-ma/-mo* nouns can have a telic event use, in addition to the process one. Even if this is true, it does not pose any problem for the current approach. If there are *-ma/-mo* nouns that can be employed in a telic event sense, then we expect them to be able to host an object clitic only when used in that particular sense. I cannot confirm that the genitive *tu fitu* (the plant) in (331) above can be replaced by a clitic because I consider the example infelicitous anyway, however, speakers who accept (331) should be in position to do so. Nevertheless, the vast majority of *-ma/-mo* nouns do not seem to have a telic event use—it is remarkable that Markantonatou does not cite any other examples with a *-ma/-mo* noun that cooccurs with an object genitive. Therefore, we conclude that *-ma/-mo* nouns characteristically denote processes.

## Propositional attitude nouns

In this section, I identify a third class of Greek nouns that resist object pronouns and which can be accounted for in terms of Tenny's generalization, as they do not denote telic events. These are propositional attitude nouns, e.g. *dilosi* (statement), *pepithisi* (belief) or *paratirisi* (observation). Propositional attitude nouns refer to a kind of "product" or "object" associated with some event or state, rather than denoting an event or state *per se*. Consider first (332).

- (332) *dilose mesa se klasmata tu defteroleptu oti o proedros skopevi na paretithi*  
'(S)he stated within seconds that the president intends to resign.'

(332) can be taken to denote a telic event that reaches its culmination point within seconds after its onset—the kind of telic event that is sometimes called an *achievement*. Consider next (333).

- (333) *i dilosi oti o proedros skopevi na paretithi*  
'the statement that the president intends to resign'

The NP in (333) does not denote an achievement and its internal organization over time, rather it refers to some kind of object—a statement—the content of which is that the president intends to resign. Essentially, an NP such as (333) refers to what is stated, rather than the process of stating. Therefore, examples such as (334) with a duration modifier of the 'in *X* time' kind are not felicitous:

- (334) *??i dilosi mesa se klasmata tu defteroleptu oti o proedros skopevi na paretithi*  
(the statement within seconds that the president intends to resign)

See also the examples in (335).

- (335) a. *pisteva gia arketo kero oti o proedros skopevi na paretithi*  
'I believed for quite a while that the president intends to resign.'

- b. \*i pepithisi gia arketo kero oti o proedros skopevi na paretithi  
 (the belief for quite a while that the president intends to resign)
- c. i pepithisi oti o proedros skopevi na paretithi  
 ‘the belief that the president intends to resign’

(335a) can be taken to denote a state: the state of believing that the president intends to resign. States may license ‘for *X* time’ modifiers such as *gia arketo kero* (for quite a while), cf. [Mourelatos, 1978, 1981]. However, the nominal *pepithisi* (belief) cannot be associated with such a reading. Therefore, (335b) which contains a ‘for *X* time’ adverbial is ill-formed. On the other hand, the grammatical (335c) refers to a kind of “product” associated with a state of believing—in fact, it refers to what is believed.

It was shown that propositional attitude nouns do not denote events or states and they are incompatible with duration modifiers such as ‘in *X* time’ or ‘for *X* time’. There is further evidence that this class of nouns cannot be construed as telic events: truth, falsity or accuracy can be predicated of propositional attitude nouns, but not of nouns denoting telic events, cf. [Vendler, 1972]. This is illustrated in the following minimal pair.

- (336) a. i dilosis tu itan psevdīs  
 ‘his statements were false’
- b. \*i dolofonia tu itan psevdīs  
 (his assassination was false)

Since propositional attitude nouns do not denote telic events, it follows from Tenny’s generalization that they resist object pronouns. This is indeed so, as illustrated in (337).

- (337) a. i dilosi tu<sub>Ag/\*Th</sub>  
 the statement CL-3.SG.MASC/NEUT  
 ‘his statement’

- b. i    pepithisi tu<sub>Ag/\*Th</sub>  
       the belief    CL-3.SG.MASC/NEUT  
       ‘his belief’

Both nouns in (337) host the clitic *tu*, which serves as the third person singular genitive of the personal pronoun, for either the masculine or the neuter gender. However, neither of the examples in (337) is ambiguous: the clitic can only refer to a male entity that made the statement or maintains the belief, an AGENT or EXPERIENCER, respectively, and not a (neuter) THEME of the statement or belief.<sup>28</sup>

In this section, I have discussed psych nouns, nouns ending in *-ma/-mo* and propositional attitude nouns. At first blush, it looks as if these nouns satisfy only one part of Tenny’s hypothesis: they do not denote telic events and resist object pronouns, whereas nouns that do not denote telic events in English resist both object pronouns and preposed NPs such as *John’s* or *the poem’s*. In the following section, I examine whether there is a Greek analogue of English preposed NPs. I demonstrate that psych nouns, nouns ending in *-ma/-mo* and propositional attitude nouns in addition resist nonpronominal object possessives. Therefore, Tenny’s generalization extends to Greek and applies to both pronouns and nonpronominal nominals. Nouns that resist object possessives may nevertheless cooccur with pseudo-possessives. The possessive / pseudo-possessive partition enables us to account for systematic asymmetries related to aspectual issues.

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<sup>28</sup>If *dilosi* and *pepithisi* admitted an object pronoun, it would be expected to be the neuter form, since it is the neuter form that the corresponding verbs take as their object complement:

- (338) a. to        dilose o proedros  
           it-NEUT stated the president  
           ‘The president stated it.’  
       b. to        pistevi o proedros  
           it-NEUT believes the president  
           ‘The president believes it.’

### 4.5.3 Tenny's generalization and the possessive / pseudo-possessive partition

In this section, I demonstrate that Tenny's generalization homogeneously applies to pronouns and nonpronominal nominals in both English and Greek. We find that nouns that resist an object pronominal clitic in Greek, also resist a non-pronominal possessive genitive associated with a THEME or PATIENT reading. In fact, only nouns that denote a telic event admit pronominal or nonpronominal object possessives. On the other hand, psych nouns, nouns ending in *-ma/-mo* and propositional attitude nouns are compatible with pseudo-possessives.<sup>29</sup> We have seen that pseudo-possessives are nonreferential, thus, they can never be realized as clitic pronouns. The possessive / pseudo-possessive partition of genitives in the Greek noun phrase enables us to explain why nouns that resist an object clitic may still cooccur with a nonpronominal genitive. It is always the case that such a genitive will be a pseudo-possessive. In the rest of this section, I present examples of psych nouns, *-ma/mo* nouns and propositional attitude nouns and illustrate that all the three classes resist clitic or phrasal object possessives, while they are compatible with pseudo-possessives.

#### Psych nouns

Let us first consider psych nouns, e.g. *fovos* (fear), *agapi* (love), *gnosi* (knowledge), *apolafsi* (enjoyment), etc. The noun *fovos*, for instance, may cooccur with a pseudo-possessive genitive or take a subject possessive, but resists an object possessive. The example in (339) below is ambiguous. The genitive *tu patera* (the father) is either a pseudo-possessive and identifies a kind of fear (the fear of paternal power) (see (339a)) or, alternatively, it is a subject possessive, i.e. it is assigned the EXPERIENCER role (see (339b)).

(339) a. *o fivos tu patera*

‘the fear of the father’

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<sup>29</sup>As was demonstrated in section 4.3.3, a fourth class of nouns that are compatible with pseudo-possessives are result telic event nouns. By contrast, complex event nouns resist pseudo-possessives.

b. o fivos tu patera

‘the father’s fear’

We can prove that *fovos* never licenses an object possessive: The pronominal counterpart of (339) is *not* ambiguous. The clitic in (340) below can only refer to the subject (EXPERIENCER) of ‘fear’. If a genitive such as *tu patera* in (339) could be construed as an object possessive, then the corresponding clitic would receive the THEME (or EXPERIENCER) reading. However, this is not the case.

(340) o fivos tu  
the fear his<sub>Exp/\*Th</sub>  
‘his<sub>Exp/\*Th</sub> fear’

A further example is provided in (341). The proper name genitive *tu Aristoteli* (the Aristotle) is ambiguous between a pseudo-possessive and a subject possessive reading. The pseudo-possessive *tu Aristoteli* identifies a kind of fear: the Aristotelian fear, or fear in the sense of Aristotle’s (see (341a)). On the other hand, the subject possessive *tu Aristoteli* refers to an individual named ‘Aristotelis’ that is the experiencer of fear (see (341b)). We can test that *tu Aristoteli* cannot be construed as an object possessive understood to refer to the “theme” or stimulus of fear: if we replace *tu Aristoteli* with a clitic (see (341c)), we find that this clitic unambiguously receives the EXPERIENCER reading.

(341) a. o fivos tu Aristoteli

‘the Aristotelian fear’

b. o fivos tu Aristoteli

‘Aristotle’s fear’

c. o fivos tu

‘his<sub>Exp/\*Th</sub> fear’

Consider next (342). The NP in (342a) is grammatical, as *fovos* cooccurs with an “abstract” notion genitive *tu thanatu* (of death) that can be construed as

a pseudo-possessive. By contrast, (342b) is ill-formed since in this example the genitive *tu thanatu* refers to the impending event of death of a particular individual ('Yanis'), therefore, such a genitive is unambiguously a possessive.

- (342) a. *o fovos tu thanatu*  
the fear the-GEN death-GEN  
'the fear of death'
- b. \**o fovos [tu epikimenu thanatu [tu Yani]]*  
the fear the-GEN impending-GEN death-GEN the-GEN Yanis-GEN  
(the fear of Yanis's impending death)

The object (THEME) of nouns such as *fovos* can only be expressed by a *gia* (for) prepositional phrase (cf. [Markantonatou, 1992]), as illustrated in (343):

- (343) *o fovos tu patera gia ton epikimeno thanato tu Yiani*  
the fear the-GEN father-GEN for the impending death the-GEN Yanis-GEN  
'the father's fear for Yanis's impending death'

### Nouns ending in *-ma/-mo*

We next turn to the *-ma/-mo* class. See the contrasts in (344), (345) and (346) below.

- (344) a. *to plisimo ton piaton*  
the washing the-GEN dishes-GEN  
'the dish washing'
- b. \**to plisimo tus*  
the washing their-CL
- (345) a. *to mazema tis elias*  
the harvesting the-GEN olive-GEN  
'the olive harvesting'

- b. \*to mazema tis  
the harvesting its-CL

(346) a. to psarema tis pestrofas  
the fishing the-FEM.GEN trout-FEM.GEN  
'the trout fishing'

- b. \*to psarema tis  
the fishing her-CL.GEN

The genitives *ton piaton* (the dishes), *tis elias* (the olive) and *tis pestrofas* (the trout) in (344a), (345a) and (346a), respectively, denote kinds, and they unambiguously function as pseudo-possessives. For that reason, none of these genitives can be replaced by a clitic pronoun. We can demonstrate that nouns such as *plisimo* (washing), *mazema* (harvesting) and *psarema* (fishing) altogether resist object possessives. Consider (347) below. The genitives in all the three examples are referential and, therefore, they can only be construed as possessives. All the NPs in (347) are ungrammatical.

- (347) a. \*to plisimo arketon piaton pu vriskontusan ston nerohiti pire poli ora  
(the washing of several dishes that were in the sink took quite a while)
- b. \*to mazema aftis tis paparunas  
(the picking of this poppy)
- c. \*to psarema trion megalon psarion kratise ores  
(the fishing of three large fishes lasted for hours)

### Propositional attitude nouns

The third class of Greek nouns that resist object possessives, clitics or non-pronominal ones, are propositional attitude nouns. See (348).

- (348) a. i paratirisi tu Yani<sub>Ag/\*Th</sub>  
 the observation the-GEN Yanis-GEN  
 ‘Yanis’s<sub>Ag/\*Th</sub> observation’
- b. i paratirisi tu<sub>Ag/\*Th</sub>  
 the observation his-CL  
 ‘his<sub>Ag/\*Th</sub> observation’

Both **tu Yani** and the clitic **tu** in (348a&b) are subject possessives. They refer to an individual that made an observation (“observer”), and not an individual that was being observed. In addition, a noun such as **paratirisi** may combine with a pseudo-possessive. The genitives **ton astron** (of stars) and **ton fisikon fenomenon** (of physical phenomena) in (349) below denote classes of objects and, therefore, they are construed as pseudo-possessives.

- (349) a. i paratirisi ton astron  
 the observation the-GEN stars-GEN  
 ‘the observation of stars’
- b. i paratirisi ton fisikon fenomenon  
 the observation the-GEN physical-GEN phenomena-GEN  
 ‘the observation of physical phenomena’

We can prove that the genitives in (349) cannot be associated with an object possessive reading: if they are replaced with a clitic pronoun (see (350) below), then this pronoun cannot be assigned the THEME role, rather it unambiguously refers to “observers”.

- (350) i paratirisi tus<sub>Ag/\*Th</sub>  
 the observation their-CL  
 ‘their<sub>Ag/\*Th</sub> observation’

Similarly for the noun **dilosi** (statement). In (351a) below, **dilosi** cooccurs with the genitive **tis paretisis** (of resignation). This is a pseudo-possessive, as it cannot be replaced by an object pronoun referring to the content of the statement. This is demonstrated in the (b) example, where the clitic **tis** can only refer to the individual that made the statement.

- (351) a. *i dilosi tis paretisis*  
 the statement the-GEN resignation-GEN.3.SG.FEM  
 ‘the statement of resignation’
- b. *i dilosi tis<sub>Ag/\*th</sub>*  
 the statement CL-GEN.3.SG.FEM  
 ‘her<sub>Ag/\*th</sub> statement’

Psych nouns, *-ma/-mo* nouns and propositional attitude nouns in Greek contrast with nouns that denote a telic event and admit a (pronominal or non-pronominal) object possessive. In (352) below, the telic event nouns *katastrofi* (destruction) and *metafrasi* (translation) cooccur with object possessive phrases.

- (352) a. *i olosheris katastrofi tis mikris aftis polis*  
 the complete destruction the-GEN small-GEN this-GEN town-GEN  
 ‘the complete destruction of this small town’
- b. *i metafrasi aftis tis tragodias mesa se tria hronia*  
 the translation this-GEN the-GEN tragedy-GEN within three years  
 ‘the translation of this tragedy within three years’

In this section, I have demonstrated that Tenny’s aspectual approach to affectedness can be extended to account for Greek. Nouns that do not denote a telic event resist object possessives, whether these are clitics or nonpronominal genitives. On the other hand, this very same class of nouns may cooccur with pseudo-possessives.

## 4.6 Definiteness, specificity and the possessive / pseudo-possessive hypothesis

In this section, I demonstrate that the possessive / pseudo-possessive hypothesis enables us to capture asymmetries concerning the distribution of genitives in definite and indefinite NPs. Such asymmetries are systematic and they are manifested in both NPs headed by a concrete noun and NPs with an abstract noun head.

Possessives are restricted to occur in definites and specific indefinites, whereas the distribution of pseudo-possessives is free.

#### 4.6.1 The distribution of genitives in definite and indefinite NPs

The distribution of genitives in definite and indefinite NPs is not entirely free. Rather, contrasts such as the following occur:

- (353) a. to skili mu dangose ton gitona  
the dog CL-1.SG bit the neighbour  
'my dog bit the neighbour'
- b. \*ena skili mu dangose ton gitona  
a/one dog CL-1.SG bit the neighbour  
(a/one dog of mine bit the neighbour)

We have seen in section 4.4 that only possessives can be realized as pronominal clitics. Consequently, contrasts such as the one shown in (353) demonstrate that this type of genitive does not freely occur in definite and indefinite nominals. Rather, possessives are admitted in definites—the example in (353a) is okay, as the subject NP that contains the clitic **mu** is definite. Nonetheless, possessives are excluded from indefinites, (353b) is thus ungrammatical.

Possessive clitics may occur in partitive examples, however, they are placed inside the embedded definite constituent, as shown in (354):

- (354) ena apo ta skilia mu dangose ton gitona  
one of the dogs CL-1.SG bit the neighbour  
'one of my dogs bit the neighbour'

We have seen in section 4.4.1 that clitics may “climb” inside Greek NPs. That is, they are not exclusively attached to nouns, rather they may be attached to other elements preceding the noun head, such as adjectives. For instance, along with (354), we can have (355):

- (355) ena apo ta kenuria mu skilia dangose ton gitona  
 one of the new CL-1.SG dogs bit the neighbour  
 ‘one of my new dogs bit the neighbour’

However, clitics cannot climb on the determiner in partitive constructions, as if they did, then they would come out of the partitive’s definite constituent. Therefore, (356) is ill-formed:

- (356) \*ena mu apo ta skilia dangose ton gitona  
 one CL-1.SG of the dogs bit the neighbour  
 (one of my dogs bit the neighbour)

On the other hand, the distribution of pseudo-possessives is free and they may appear in either definite or indefinite NPs. All of the examples in (357) below are well-formed, as the genitive *tu dromu* (of the street) is a pseudo-possessive. This genitive denotes a property *street-like*, identifying thus a kind of cat (street cat).

- (357) a. ton gratzunisan i gates tu dromu  
 him scratched-3.PL the cats the-GEN street-GEN  
 ‘the street cats scratched him’
- b. ton gratzunise mia gata tu dromu  
 him scratched-3.SG a cat the-GEN street-GEN  
 ‘a street cat scratched him’
- c. ton gratzunisan gates tu dromu  
 him scratched-3.PL cats the-GEN street-GEN  
 ‘some street cats scratched him’

Thus far, we have seen that the distribution of the two types of genitives is not homogeneous in NPs with a concrete noun head such as *skili* (dog) or *gata* (cat). Rather, possessives appear only in definites, whereas pseudo-possessives are admitted in indefinites too. Let us next consider NPs with an abstract noun head. See (358).

- (358) a. parakoluthisa tin aponomi ton vravion  
 attended-1.SG the award the-GEN prizes-GEN  
 ‘I attended the award of the prizes’

- b. parakoluthisa tin aponomi tus  
 attended-1.SG the award their-CL  
 ‘I attended their award’
- c. \*parakoluthisa mia aponomi tus  
 attended-1.SG an award their-CL

We find that the same constraint with respect to possessive genitives also applies to NPs headed by an abstract noun. The example (358a) is grammatical, as the genitive **ton vravion** (of the prizes) that can be construed as a possessive appears inside a definite phrase. Similarly for (358b) that contains the clitic **tus**, unambiguously a possessive. However, the example in (358c) is ill-formed, since **tus** occurs inside an indefinite. Consider next (359).

- (359) Parakoluthisa mia aponomi vravion  
 attended-1.SG an award prizes-GEN  
 ‘I attended a prize award’

The genitive **vravion** in (359) is pseudo-possessive and therefore it is entitled to occur inside an indefinite NP. We can test that **vravion** can be construed as a pseudo-possessive by employing the ‘which’/‘what’ question diagnostic (see section 4.2.2). The NP **mia aponomi vravion** (a prize award) is not a felicitous answer to a ‘which’ question. By contrast, its possessive counterpart **i aponomi ton vravion** (the award of the prizes) can be felicitously employed in such a context. This is demonstrated in (360) below.

- (360) a. –Pia aponomi parakolouthises?  
 which award attended-2.SG  
 –Which award did you attend?
- b. –\*Mia aponomi vravion.  
 an award prizes-GEN  
 –\*A prize award.

- c. –Tin aponomi ton vravion.  
 the award the-GEN prizes-GEN  
 –The award of the prizes.

On the other hand, ‘a prize award’ is a felicitous answer to a ‘what’ question, whereas ‘the award of the prizes’ is ruled out from such a context. Viz.:

- (361) a. –Ti (idus) aponomi parakolouthises?  
 of what sort award attended-2.SG  
 –What sort of award did you attend?

- b. –Mia aponomi vravion.  
 an award prizes-GEN  
 –A prize award.

- c. –\*Tin aponomi ton vravion.  
 the award the-GEN prizes-GEN  
 –The award of the prizes.

The possessive/pseudo-possessive hypothesis seems to provide an explanation for contrasts such as the following:

- (362) a. \*mia dolofonia tu Poirot

‘\*an assassination of Poirot’

- b. afti ti stigmi mia dolofonia prothipurgu tha odiguse se krisi

‘at this point an assassination of a prime-minister would lead to a crisis’

The example in (362a) cannot be assigned an interpretation with the genitive *tu Poirot* construed as a possessive. A possessive NP *tu Poirot* refers to an individual named ‘Poirot’ that can only be assassinated once. However, the indefinite *mia dolofonia* (an assassination) is not associated with a uniqueness entailment, rather, in principle, it can refer to one of the many assassinations (of Poirot). On the other hand, (362b) can be interpreted only if *prothipurgu* (of a prime-minister) is construed as a pseudo-possessive. Then, the genitive does not refer to an individual that has the property of being a prime-minister, rather it enables us to

identify the “prime-ministerial” kind of assassination. Given that we do not refer to a particular prime-minister, we can have an indefinite NP *mia dolofonia* (an assassination) that may refer to one of potentially many assassination events of this particular kind.

#### 4.6.2 Specificity and possessives

In the previous section, we saw that possessive genitives occur only in definite nominals. I discuss next a class of examples that appear to contradict this generalization. Consider (363).

- (363) a. *irthe enas filos mu*  
came-3.SG one friend my-CL  
'A friend of mine came.'
- b. *sinantisa mia fititria mu*  
met-1.SG one student my-CL  
'I met a student of mine'

In both (363a&b), the NPs are indefinite. However, they contain a clitic (*mu*), i.e. a possessive. Apparently, (363a&b) provide counter-evidence to our previous assumptions. I demonstrate below that such examples indicate that our generalization must be slightly modified: possessives are licit in indefinites subject to a specificity condition.

Nouns such as *filos* (friend) and *fititis* (student) are ambiguous between a relational and a nonrelational use (see section 4.2.1). The noun *filos* in (363a) above is relational, which entails that the possessive *mu* is intrinsic. This possessive refers to an individual (in this case, the speaker) who is a friend of the referent of the whole NP. More technically, the index of the possessive and that of the head noun fill the argument roles of a two-place predicate, namely, the FRIEND-OF relation. Analogously for (363b): the index of the clitic and that of the head noun fill the argument roles of the STUDENT-OF relation. This signifies that *mu* in (363b) refers to the student's teacher, supervisor or tutor, etc. Consider now (364).

(364) i fititria mu ute pu girnuse na me kitaxi

‘my student wouldn’t even look at me’

In (364), the clitic possessive occurs in a definite NP. The noun *fititria* (student) can be associated with either a relational or a nonrelational reading. In the former case, the clitic is an intrinsic possessive and refers to the tutor, supervisor, etc. Alternatively, it refers to an individual that is extrinsically related to a student. For instance, we can think of a situation where the referent of the possessive (the speaker) is in love with an individual that has the property of being a student and (s)he (the speaker) is not the teacher, or supervisor etc. of that student. In that context, the NP *i fititria mu* (my student) refers to the student the speaker is in love with. That is, the interpretation of the possessive does not rely on the lexical meaning of *fititria*. Rather, the relation between the referent of the NP and that of the possessive is resolved on the basis of contextual information available to the recipient of the utterance. In this case *mu* is an extrinsic possessive, whereas *fititria* is a nonrelational noun.

There is a crucial difference between the indefinite *mia fititria mu* (a student of mine) (see (363) above) and its definite counterpart. The clitic *mu* of the indefinite nominal resists extrinsic readings. Rather, it can only refer to the tutor etc. of the student in hand. I propose that the asymmetry in meaning between the possessives of definites and those of indefinites correlates with a specificity requirement associated with possessives of indefinite nominals. The indefinite NP *mia fititria mu* (a student of mine) can only refer to an individual that is a member of a *specific* group. Assuming the intrinsic reading for the possessive *mu*, we presuppose that there is a specific set of students who are students of the individual the possessive refers to. On the other hand, assuming some extrinsic reading for the possessive, it is very hard to presuppose that a specific set of students are related to the referent of the possessive in some extrinsic way. The meaning of the word *student* and in addition pragmatic knowledge about teachers, tutors, professors and the like, facilitate the presupposition in the former case. Lack of sufficient information blocks the presupposition in the latter case. Only intrinsic possessives are available in indefinites because they require a specific reading for the referent of the indefinite nominal. It then follows that possessives are excluded

from indefinites headed by nouns that lack a relational use, for such nouns admit only extrinsic possessives. This is indeed so, as (365) below illustrates:

- (365) \*ena skili mu dangose ton gitona  
a dog CL-1.SG bit the neighbour

The clitic is not tolerated in the indefinite (365) because it is unambiguously an extrinsic possessive.

Indefinites that include a possessive, e.g. *enas filus mu* (a friend of mine) and *mia fititria mu* (a student of mine) can be thought of as “reduced” partitives. They can be paraphrased as *enas apo tus filus mu* (one of my friends) and *mia apo tis fititries mu* (one of my students), respectively. In fact, we can draw a parallelism between the definiteness requirement associated with possessives and the so-called *partitive constraint*. The partitive constraint<sup>30</sup> requires that the embedded NP of partitives should be a definite. This constraint is motivated by contrasts such as the following:

- (366) a. ‘some of the books’  
b. ‘\*some of few books’

There are however counter-examples to the partitive constraint. The following examples are cited in [Ladusaw, 1982]:

- (367) a. ‘That book could belong to one of three people.’  
b. ‘This is one of a number of counter-examples to the Partitive Constraint.’  
c. ‘John was one of several students who arrived late.’

The embedded NPs of the partitives in (367) are indefinite. As Ladusaw points out, such examples are nonetheless felicitous provided the speaker has a specific group of individuals in mind. Possessive genitives are in general associated with a definiteness requirement. Nevertheless, there are also “exceptions” which, like in case of partitives, justify appeal to the notion of specificity.

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<sup>30</sup>The term is due to [Jackendoff, 1977].

## 4.7 De-phrases inside French nominals

In the previous sections, I have motivated a partition of Greek genitives into possessives and pseudo-possessives. I have demonstrated that possessive and pseudo-possessive NPs have distinct denotations and that in addition they differ as to their syntactic behaviour. Systematic asymmetries concerning the distribution of genitives, their relative linear order, their capacity for pronominalizing, their accessibility to relativization, their sensitivity to aspectual factors as well as to definiteness and specificity, can all be captured straightforwardly in terms of the possessive / pseudo-possessive hypothesis.

In this section, I briefly discuss certain relevant data from French and an analysis of these data by Sag and Godard, couched in the framework of HPSG (cf. [Sag and Godard, 1994]). It is illustrated that *de*-phrases inside French nominals exhibit systematic asymmetries with respect to their potential to pronominalize and their accessibility to relativization. Sag and Godard's approach tacitly relies on the assumption that there is a correlation between such asymmetries and the grammatical function or thematic role of *de*-phrases. The very same assumption underlies earlier work on similar phenomena in Italian, within the framework of Government and Binding, cf. [Giorgi and Longobardi, 1991] (see section 4.3.4 and section 4.4.2 above). I discuss problems for Sag and Godard's analysis, which are also problems for Giorgi and Longobardi's account of Italian NPs, and demonstrate that the possessive / pseudo-possessive hypothesis can be extended to account for the French (and Italian) data.

### 4.7.1 Sag and Godard's approach to French *de*-phrases

French nouns may cooccur with two *de*-phrases. This is illustrated in (368). The forms *du* and *des* mark masculine gender, singular number and plural number, respectively.<sup>31</sup>

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<sup>31</sup>The French data and the English translations or paraphrases provided in this section are taken from [Sag and Godard (S&G), 1994], or are strictly based on their predictions.

(368) a. La maison de le Corbusier de M. X n' est guère confortable.

(Mr. X's le Corbusier house is not really pleasant to live in.)

b. la passion du jeu des aristocrates russes

(the passion of gambling of the Russian aristocrats)

c. la peur des serpents de nos ancêtres

(the fear of snakes of our ancestors)

(368a) is based on S&G's (6) and the examples (368b&c) are cited in S&G's (45a).

French **de**-phrases exhibit systematic asymmetries: (a) only certain **de**-phrases are accessible to relativization, (b) only certain **de**-phrases can be replaced by personal pronouns that syntactically serve as determiners (see below). For instance, it is not possible to relativize the innermost phrase **de le Corbusier** in (368a) above, or to replace it with the pronoun **son** (his). This is illustrated in (369):

(369) a. \*Le Corbusier dont la maison de M. X n' est guère confortable.

(Le Corbusier of-which the house of Mr. X is not really pleasant to live in)

b. \*Son maison de M. X n' est guère confortable.

(His house of Mr. X is not really pleasant to live in)

(369a) corresponds to S&G's (6b). (369b) is similar to S&G's (39).

As Sag and Godard point out, it is possible to "extract" **de le Corbusier**, or replace it with **son**, in case no other **de**-phrase appears. Therefore, both examples in (370) are grammatical.

(370) a. Le Corbusier dont les maisons ne sont pas très confortables...

(Le Corbusier whose houses are not really pleasant to live in)

b. Son maisons ne sont pas très confortable.

(His houses are not really pleasant to live in)

(370a) corresponds to S&G's (6a).

On the other hand, in certain environments *de*-phrases altogether resist “extraction”, no matter whether some other *de*-phrase is present or not. Sag and Godard demonstrate that the rightmost *de*-phrases of the NPs in (368b&c) above can be extracted, however, extraction of the innermost *de*-phrases gives rise to ungrammaticality, even in case no other *de*-phrase is present. Viz.:

(371) a. Les aristocrates russes dont la passion du jeu est aujourd'hui incompréhensible...

(The Russian aristocrats of-which the passion of gambling is impossible to understand nowadays...)

b. Nos ancêtres dont la peur des serpents a été bien étudiée...

(Our ancestors of-which the fear of snakes has been well documented)

c. ??le jeu dont la passion a perdu les aristocrates russes...

(gambling for which the passion has ruined Russian aristocrats)

d. \*les serpents dont on mesure la peur par les représentations qu'on en fait

(the snakes the fear of which one measures by the representations that are made of them)

(371a&b) correspond to the examples cited in S&G's (42b). (371c&d) correspond to the examples cited in S&G's (3).

Sag and Godard (1994) provide an HPSG account of “extraction” asymmetries associated with French *de*-phrases that relies on constraints imposed on the

argument structure of noun heads licensing such phrases. In [Sag&Godard, 1994], the argument structure of nominals is represented by a feature ARG-S that takes a *list* as its value. Following Borsley's proposal (e.g. [Borsley, 1983, 1987]), Sag and Godard assume two valence features for nominals: SPR (for specifier) and COMPS (for complements) that also have list values.<sup>32</sup> By means of their valence features, nouns select for their specifier and complements, including personal pronoun determiners such as *son* (his) and *de*-phrases. The list values of SPR and COMPS add up to the ARG-S value, subject to constraints defining the linear order of elements inside the ARG-S list. Such constraints will be discussed below. The AVM in (372) schematically shows the valence features SPR and COMPS of nouns and the merging of their list values (L1 and L2, respectively) into the list value of ARG-S, in terms of the shuffle operation or domain union, represented as  $\cup_{\langle \rangle}$ , (cf. [Reape, 1994]).<sup>33</sup>

$$(372) \quad \left[ \begin{array}{l} HEAD \textit{ noun} \\ \\ SPR \textit{ L1} \\ \\ COMPS \textit{ L2} \\ \\ ARG - S \textit{ L1} \cup_{\langle \rangle} \textit{ L2} \end{array} \right]$$

*The valence features SPR and COMPS  
and the argument structure ARG-S of nominals*

[Sag and Godard, 1994] provide three constraints that define the linear order of arguments inside the ARG-S list of nouns and they account for asymmetries associated with *de*-phrases: (a) the *Accessibility Condition*, (b) the *Possessor Constraint* and (c) the *Agent Constraint*. Consider first the Accessibility Condition in (373).

<sup>32</sup>These valence features and the feature ARG-S replace the SUBCAT feature of [Pollard and Sag, 1994].

<sup>33</sup>Reape's domain union mechanism is discussed in some detail in chapters 2 and 6.

(373) **Accessibility Condition on Nominal ARG-S:**

[NONLOCAL | Feature *neset*]  $\prec$  X

The constraint in (373) has the effect of allowing a noun's argument to be extracted or pied-piped only if that argument is the first member of the noun's ARG-S list.<sup>34</sup> The Accessibility Condition accounts for examples such as (374): the noun *maisons* has a unique dependent, which, therefore, can be relativized.

(374) Le Corbusier dont les maisons ne sont pas très confortables...

(Le Corbusier whose houses are not really pleasant to live in)

Furthermore, the Accessibility Condition interacts with other constraints, such as the Possessor Constraint in (375).

(375) **Possessor Constraint on Nominal ARG-S:** [poss]  $\prec$  X

The constraint in (375) requires that a noun's argument that is understood as the POSSESSOR (owner) should precede any other argument in the noun's ARG-S list. The Accessibility Condition and the Possessor Constraint account for contrasts such as the following:

(376) a. M. X dont la maison de Le Corbusier n' est guère confortable.

(Mr. X of-which the house of Le Corbusier is not really pleasant to live in.)

b. Son maison de Le Corbusier n' est guère confortable.

(His Le Corbusier house is not really pleasant to live in.)

c. \*Le Corbusier dont la maison de M. X n' est guère confortable.

(Le Corbusier of-which the house of Mr. X is not really pleasant to live in.)

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<sup>34</sup>Technically, the Accessibility Condition states that a nonlocal feature (SLASH, QUE or REL) of an argument of the noun head can have a non-empty set value thus initiating a nonlocal dependency, provided that argument precedes any other in the ARG-S list of the head.

d. \*Son maison de M. X n' est guère confortable.

(His house of Mr. X is not really pleasant to live in.)

Sag and Godard assume that the noun *maison* may have two dependents: an AGENT (creator/architect) and a POSSESSOR (owner). By the Possessor Constraint, the first element in the ARG-S list of *maison* is the dependent corresponding to the POSSESSOR. Therefore, by the Accessibility Condition, the AGENT dependent cannot be extracted. As a result, (376a) is okay, since the extracted phrase is understood as the possessor, whereas (376c) is excluded, as it violates the Accessibility Condition and the Possessor Constraint. Further, the Possessor Constraint admits (376b) and rules out (376d): the latter example requires that the AGENT dependent should linearly precede the POSSESSOR inside the noun's ARG-S list—the AGENT is realized as a specifier (*son*), whereas the possessor as a complement *de*-phrase (*de M. X*).

Sag and Godard in addition assume the Agent Constraint:

(377) **Agent Constraint on Nominal ARG-S:**

$NP_{ag} \prec NP_{th}$

The constraint in (377) requires that a *de*-phrase assigned the AGENT role should linearly precede a *de*-phrase assigned the THEME role, inside the ARG-S list of the noun head. The Agent Constraint interacts with the Accessibility Condition and therefore accounts for the following contrasts:

(378) a. *Karajan, dont j'ai entendu l' interprétation de la neuvième*

(*Karajan, of-which I have heard the interpretation of the Ninth*)

b. *son interprétation de la neuvième*

(*his interpretation of the Ninth*)

c. \**la neuvième, à son interprétation de laquelle je me suis intéressé*

(*the ninth, in his interpretation of which I got interested*)

d. \*son interprétation du Karajan

(its interpretation of Karajan)

(378c) corresponds to S&G's (40c).

Sag and Godard assume that *interprétation* may take two dependents: a THEME and an AGENT. Given the agent constraint and the accessibility condition, the THEME phrase cannot be extracted, as it is not the first element in the noun's ARG-S list, rather it is preceded by the AGENT phrase. (378c) is thus excluded. Moreover, the agent constraint rules out (378d): this example requires that the leftmost element inside the noun's ARG-S that is realized as a determiner *son* should be associated with the THEME reading, and that it should be followed by a *de*-phrase understood as the AGENT. Notice that the constraints we have seen thus far do not suffice to account for the ungrammaticality of (379) below (S&G's (8d)):

(379) \*les serpents à la peur desquels certains mythologues ont consacré leur  
oeuvre

(the snakes to the fear of which some mythologists devoted their work)

As Sag and Godard point out, for (379) to be excluded, a fourth constraint is required. Such a constraint will have to state that the THEME *de*-phrase dependent of psych nouns like *peur* (fear) can never be extracted.

#### 4.7.2 Problems for Sag and Godard's approach

The account of [Sag and Godard, 1994] tacitly relies on the assumption that pronominalization and relativization asymmetries associated with French *de*-phrases correlate with grammatical functions and thematic roles. The same assumption underlies work in Italian by Longobardi (cf. [Longobardi, 1987]) and Giorgi and Longobardi (cf. [Giorgi and Longobardi, 1987, 1991]), and other work within the framework of Government and Binding stemming from Giorgi and Longobardi,

see e.g. [Mallen, 1990] for Spanish.

The essential difference between Giorgi and Longobardi's approach and the account of Sag and Godard is that the former appeals to configurational notions, whereas the latter opts for straight lexicalism: in Sag and Godard's HPSG analysis of French *de*-phrases, generalizations concerning grammatical functions are expressed by reference to the linear order of elements inside ARG-S lists. Giorgi and Longobardi assume that extractability from the NP should follow from constraints like the ECP (Empty Category Principle) or Subjacency, and they exploit structural (configurational) differences between the various types of noun dependents ("possessors", "subjects" and "objects"). On the other hand, Sag and Godard impose specific constraints on the ARG-S lists of nominals (e.g. the Accessibility Condition, the Possessor and Agent Constraints) and thus rule out pronominal or relative "objects" (THEMES) from constructions wherein a POSSESSOR or AGENT also occur. Similarly, they exclude pronominal or relative "subjects" (AGENTS) from constructions wherein a POSSESSOR also occurs.

However, a crucial question for both approaches is whether there is indeed systematic evidence for establishing a correlation between thematic roles and pronominalization / relativization asymmetries. In French, such asymmetries appear only in case two *de*-phrases occur. Similarly, for Italian: asymmetries of this type occur in environments with two *di*-phrases. Any type of *de*-phrase in French can pronominalize or relativize, in case it occurs on its own, or in construction with a *by*-phrase. See the examples in (380) (S&G's (4c) and (5a), respectively).

(380) a. La jeune fille dont le portrait par Corot est à la Fondation Barnes...

(‘the young girl of which the portrait by Corot is at the Barnes Foundation’)

b. la neuvième, dont j' ai beaucoup aimé l' interprétation par Karajan

(‘the ninth, of which I have very much liked the interpretation by Karajan’)

In (380a&b) above, the THEME *de*-phrases are felicitously extracted, though they

cooccur with an AGENT *par*-phrase. Notice that such grammatical examples will be ruled out by the Agent Constraint (see (377) above) of Sag and Godard. To prevent this undesirable effect of their constraint, Sag and Godard resort to an equally unattractive solution: they suggest that *par* phrases are not members of the ARG-S list. Then, the THEME phrases in (380) can be extracted by the Accessibility condition, as they are the unique members of the ARG-S lists of the noun heads. Assuming that *par*-phrases are not members of ARG-S lists signifies that they are taken to be modifiers rather than arguments. However, there is no independent evidence for distinguishing between *par*-phrases and AGENT *de*-phrases. Both types of phrases are essentially optional, in particular in case of nouns such as *portrait* or *maison* (house), since such nouns may occur on their own.

A further problem for an approach on the lines of either Sag and Godard or Giorgi and Longobardi is their concept of thematic roles in connection with *concrete* nouns. In both accounts, it is assumed that dependents of nouns such as *house* or *portrait* bear thematic roles like those assigned to arguments of verbs or deverbal nominals. For instance, in *la maison de le Corbusier de M. X* (Mr. X's house of le Corbusier), Sag and Godard take the phrase *de le Corbusier* to be assigned the AGENT role. In *le portrait de la jeune fille de Corot* (Corot's portrait of the young girl), *de la jeune fille* is assumed to bear the THEME role, whereas *de Corot* is taken to be the AGENT. On the other hand, in *le portrait de la jeune fille de Barnes*, *de Barnes* is not the AGENT, but rather the POSSESSOR, as it does not name the painter but rather the collector. It is not clear by what criteria thematic roles such as THEME and AGENT are associated with dependents of concrete nominals.

Dependents of deverbal nominals such as *interpretation* are often taken to bear similar roles to those of the arguments of the corresponding verbs. It seems rather straightforward to relate *l'interprétation de la neuvième de Karajan* with a sentential example like *Karajan a interprété la neuvième* and assign the THEME and AGENT role to the argument NPs in both examples. Indeed, a number of accounts of deverbal nominals incorporate some version of Chomsky's hypothesis (cf. [Chomsky, 1970]) that deverbal nominals derive from their corresponding verbs. On the other hand, the only way for treating the phrase *de le Corbusier* in *la maison de*

le Corbusier as an AGENT, is by paraphrasing the example into something like *the house built by le Corbusier....* Similarly, in order to associate *de la jeune femme* and *de Corot* in *le portrait de la jeune fille de Corot* with the THEME and AGENT respectively, we have to paraphrase the example into something like: *the young girl that is the theme of the portrait painted by Corot....* However, the fact that we can turn NPs with a concrete noun head into sentences does not justify assigning the THEME and AGENT roles to concrete noun dependents. Rather, it is *ad hoc* to associate concrete nouns with thematic roles that verb and deverbal noun heads are qualified to assign. This move serves the purpose of imposing “homogeneity” in Sag and Godard’s system: the *de*-phrases of both deverbal and concrete nouns bear the same type of thematic roles and therefore exhibit analogous asymmetries in the domains of relativization and pronominalization.

As shown in the next section, it seems possible to capture asymmetries discussed in [Sag and Godard, 1994] in terms of the possessive / pseudo-possessive hypothesis. If this is correct, then we can dispense with Sag and Godard’s constraints on the argument structure of nouns.

### 4.7.3 An explanation in terms of the possessive / pseudo-possessive hypothesis

In this final section, I show in brief that the possessive / pseudo-possessive hypothesis I have proposed for Greek appears to extend to French too: a partition of French *de*-phrases into possessives and pseudo-possessives enables us to make the right predictions for data such as those presented in Sag and Godard’s paper.

We have seen in section 4.5 that psych nouns in Greek resist a THEME possessive, however, they may cooccur with an EXPERIENCER possessive or/and a pseudo-possessive. Then, pronominal clitics or relative pronouns in construction with psych nouns are exclusively associated with an EXPERIENCER reading, since pseudo-possessives are never realized as pronouns of this type. An explanation on these lines can be provided for the contrasts in (381).

- (381) a. Les aristocrates russes dont la passion du jeu est aujourd'hui incompréhensible...  
 (The Russian aristocrats of-which the passion of gambling is impossible to understand nowadays...)
- b. Nos ancêtres dont la peur des serpents a été bien étudiée...  
 (Our ancestors of-which the fear of snakes has been well documented)
- c. ??le jeu dont la passion a perdu les aristocrates russes...  
 (gambling for which the passion has ruined Russian aristocrats)
- d. \*les serpents dont on mesure la peur par les représentations qu'on en fait  
 (the snakes the fear of which one measures by the representations that are made of them)

It is possible to “extract” the EXPERIENCER dependent of psych nouns such as *passion* or *peur* (fear), since such a phrase is a possessive and refers to entities in discourse (in this case, the Russian aristocrats and our ancestors). On the other hand, given that psych nouns resist an object possessive, *du jeu* (of gambling) and *des serpents* (of snakes) are bound to be pseudo-possessives, i.e. non-referential phrases that denote properties, rather than referring to individuals. Therefore, such phrases cannot be coreferential with a relative pronoun or be replaced by a personal pronoun.

We have previously seen that Greek nouns take at most one possessive and one pseudo-possessive and that the pseudo-possessive precedes the possessive. Assuming that the situation is similar in French, in *la maison de le Corbusier de M. X* (Mr. X's house of le Corbusier), *de le Corbusier* is a pseudo-possessive, whereas *de M. X* is a possessive. From this straightforwardly derive the contrasts illustrated in (382) below: the possessive can be relativized, as in (a), or it can be replaced by a personal pronoun, as in (b), whereas the pseudo-possessive resists both relativization and pronominalization, as it does not refer to an entity named 'le Corbusier', rather it identifies houses built *à la le Corbusier*.

(382) a. M. X dont la maison de Le Corbusier n' est guère confortable.

(Mr. X of-which the house of Le Corbusier is not really pleasant to live in.)

b. Son maison de Le Corbusier n' est guère confortable.

(His Le Corbusier house is not really pleasant to live in.)

c. \*Le Corbusier dont la maison de M. X n' est guère confortable.

(Le Corbusier of-which the house of Mr. X is not really pleasant to live in.)

d. \*Son maison de M. X n' est guère confortable.

(His house of Mr. X is not really pleasant to live in.)

An approach in terms of the possessive/pseudo-possessive hypothesis will also explain why it is possible to extract phrases such as *de le Corbusier* from NPs that accommodate no other *de*-phrase: the single dependent of *maisons* in (383) can be construed as a possessive that refers to an individual named 'le Corbusier'.

(383) Le Corbusier dont les maisons ne sont pas très confortables...

(Le Corbusier whose houses are not really pleasant to live in)

By the same token, we can account for the contrasts in (384). (384a) is okay, as it contains a single possessive—the relative pronoun *de la quelle*, and in addition an agentive *par*-phrase. On the other hand, (384b) is ill-formed if *de Corot* is construed as a possessive: in this case, two possessives are present—the extracted phrase is unambiguously a possessive. Assuming that the situation in French is analogous to that in Greek, when a noun cooccurs with two *de*-phrases, they should be of different types.<sup>35</sup>

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<sup>35</sup>My analysis predicts that (384b) is not necessarily ungrammatical, rather it can receive an interpretation if *de Corot* is nonreferential, i.e. a pseudo-possessive, and it identifies a style of portrait—portraits painted a la *Corot*.

- (384) a. La jeune fille au portrait par Corot de la quelle je me suis intéressé...  
 (the young girl in the portrait by Corot of which I am interested)
- b. \*La jeune fille au portrait de Corot de la quelle je me suis intéressé...  
 (the young girl in Corot's portrait of which I am interested)

(384a&b) where constructed on the basis of S&G's (4c) and (43a), respectively.

A detailed account of French *de*-phrases is, of course, beyond the scope of this work. Therefore, more data will have to be examined and further aspects in the behaviour of French *de*-phrases will have to be explored before concluding that the possessive / pseudo-possessive hypothesis can account for French. However, the evidence discussed thus far suggests that we are on the right track.

## 4.8 Summary

In this chapter, I presented an account of genitive nominals inside Greek NPs. I demonstrated that they partition into two kinds: possessives and pseudo-possessives. The former are referential genitives, whereas the latter denote properties, rather than referring to individuals, and they are analogous to non-intersective adjectives (cf. [Siegel, 1976]). Further, possessives split into intrinsic and extrinsic ones: the former are licensed by concrete or abstract nouns employed in a relational sense, whereas the latter are licensed by non-relational nouns. If a noun cooccurs with two genitives, then they need to be of distinct types and the pseudo-possessive should precede the possessive. Possessives may cooccur with either complex event nouns or result nouns, in the sense of [Grimshaw, 1990], whereas pseudo-possessives are not compatible with complex event nouns. Only possessives can be realized as pronominal clitics or relative pronouns. It follows that a single clitic licensed by the noun head may appear in Greek NPs and that in examples with two genitives the innermost cannot be relativized. Nouns that do not denote an accomplishment (e.g. psych nouns, *-ma/-mo* nouns and propositional attitude nouns) resist an object possessive (i.e. a possessive assigned a THEME or PATIENT

role). On the other hand, such nouns are compatible with pseudo-possessives. Possessives occur in definite NPs or in specific indefinites, whereas pseudo-possessives are also admitted in indefinites. Finally, it seems possible to employ the possessive / pseudo-possessive hypothesis in order to capture “extraction” asymmetries of the kind discussed in Sag and Godard (1994) for French.

# Chapter 5

## Possessives and Pseudo-Possessives: an HPSG account

### 5.1 Introduction

In the previous chapter, I presented and motivated a partition of Greek genitives into possessives and pseudo-possessives. These two types of genitives are associated with distinct readings and exhibit different syntactic behaviour. Possessives refer to entities or sets of entities in the discourse, whereas pseudo-possessives denote properties and are a kind of non-intersective modifier. A number of otherwise puzzling asymmetries concerning the distribution of genitives, their relative order, their potential to pronominalize, their accessibility to relativization, their sensitivity to aspectual factors and to definiteness and specificity, can be straightforwardly derived from the possessive / pseudo-possessive partition.

In this chapter, I provide a formal account of the possessive / pseudo-possessive partition couched in HPSG. HPSG's multidimensional architecture that *inter alia* integrates syntactic and semantic information lends itself well to expressing the mutual syntactic and semantic constraints that characterize possessives and pseudo-possessives. In the current account, the distinction between possessives and pseudo-possessives is expressed in the semantic and syntactic component of

feature structures that are taken to model Greek genitive nominals: the two types of genitives are associated with distinct semantic values, and in addition have different syntactic status. Semantically, possessives are represented as *nominal-objects*, which signifies that they carry an index and can be used referentially. On the other hand, the content of pseudo-possessives is a *psoa* (*parametric state of affairs*), which indicates that such NPs denote a property, rather than referring to individuals in the discourse. At the syntactic level, possessives are viewed as subcategorized complements of appropriate noun sorts. Therefore, a number of generalizations concerning possessive genitives can be expressed in the lexicon. By contrast, pseudo-possessives are treated as modifiers of noun categories, and, thus, we account for their much freer distribution.

## 5.2 Intrinsic and extrinsic possessives in HPSG

In this section, I present an HPSG account of possessive genitives and demonstrate how the difference between intrinsic and extrinsic possessives and relational and non-relational nouns can be captured in HPSG terms.

### 5.2.1 Intrinsic possessives and relational nouns

As we have seen in chapter 4, only certain noun types admit an (intrinsic) possessive genitive, whereas others resist. For example, there is a correlation between the aspectual class of an abstract noun (whether it denotes an accomplishment, activity or state) and its capacity for taking an object-like possessive. Psych nouns that denote states, *-ma/-mo* nouns that denote activities, and propositional attitude nouns that refer to a “product” or “result” associated with an event or state, resist object possessives. On the other hand, complex event nouns that denote the unfurling of a telic event over time take an obligatory object genitive—an intrinsic possessive.

Consider (385):

(385) a. *i perigrafi tu agona apo dio ekfonites kratise misi ora*

the-SG.FEM description-SG.FEM the-GEN.SG.MASC game-GEN.SG.MASC  
by two broadcasters lasted half an hour

‘the description of the game by two broadcasters lasted for half an hour’

b. *i perigrafi tu apo dio ekfonites kratise misi ora*

the-SG.FEM description-SG.FEM his-CL.SG.MASC by two broadcasters  
lasted half an hour

‘its description by two broadcasters lasted for half an hour’

The genitive *tu agona* (of the game) and the clitic *tu* (its) in (385a&b) are intrinsic possessives. Recall from section 4.2.1 that intrinsic possessives are genitives in construction with nouns employed in a relational sense. The “resolution” of such genitives derives from the “thematic” meaning of the head noun. The abstract noun *perigrafi* (description) may have a relational use. The relational *perigrafi* is a complex event noun and denotes the unfurling of a description event over time from its onset to its culmination point. In fact, *perigrafi* is employed relationally in (385), and, therefore, it is compatible with a predicate that denotes the duration of an event (i.e. *kratise misi ora*, ‘lasted for half an hour’). The interpretation of a genitive that cooccurs with a complex event noun is entirely predictable: such a genitive may receive only the THEME or PATIENT reading, i.e. it can only be interpreted as the object. This point is demonstrated by (386) below, (repeated from chapter 4). The NP in (386) must denote a complex event, since it licenses a duration modifier (*mesa se deka lepta*, ‘in ten minutes’). Crucially, the genitive *tu Yani* cannot be understood to refer to a person that gave the description, or a person that was provided with the description, etc. Rather, (386) makes sense only if *tu Yani* refers to the described entity (the THEME of description).

(386) (\*)*i perigrafi tu Yani mesa se deka lepta*

the description the-GEN Yanis-GEN in ten minutes

‘(\*)Yanis’s description in ten minutes’

Evidence that complex event nouns take an *obligatory* object possessive can be provided by minimal pairs such as (387) below, (also from chapter 4): a duration adverbial of the ‘in *X* time’ type can be licensed by the complex event *perigrafi*, provided a THEME genitive (*tu agona* ‘of the game’) is present.

- (387) a. *i perigrafi tu agona mesa se deka lepta*  
 the description the-GEN game-GEN in ten minutes  
 ‘the description of the game in ten minutes’
- b. \**i perigrafi mesa se deka lepta*  
 the description in ten minutes  
 ‘\*the description in ten minutes’

In this account, the two properties of intrinsic possessives in construction with complex event nouns, i.e. that they receive an object interpretation (they are assigned the THEME or PATIENT role), and that they are obligatory, are lexically represented: abstract relational nouns that denote a complex event are taken to subcategorize for a genitive nominal and assign it the THEME (or PATIENT) role. As an illustration, consider the feature structure in (388) that models the abstract relational noun *perigrafi* (description).

$$(388) \left[ \begin{array}{l} \text{CAT} \mid \text{SUBCAT} < \text{det} - \text{nondet} [\text{gen}] : \boxed{1}, (\text{prep} [\text{apo}] : \boxed{2}) > \\ \\ \text{CONT} \left[ \begin{array}{l} \text{INDEX} \left[ \begin{array}{l} \text{NUM } \textit{sg} \\ \text{GEND } \textit{fem} \end{array} \right] \\ \\ \text{RESTR} \left[ \begin{array}{l} \text{RELN } \textit{describe} \\ \text{THEME } \boxed{1} \\ \text{AGENT } \boxed{2} \end{array} \right] \end{array} \right] \end{array} \right]$$

The *SUBCAT* and *CONTENT* values for the relational *perigrafi* (description).

As shown in (388), the noun *perigrafi* (description) subcategorizes for a genitive nominal category and an optional *apo* (by) prepositional phrase. The abbreviation **det-nondet[gen]** in (388) stands for **HEAD** *det-nondet* | **CASE** *gen*. As shown in chapter 3, the sort *det-nondet* subsumes DPs, NPs, APs, etc., i.e. all the nominal sorts that qualify as arguments of nominal-taking predicates (e.g. verbs, prepositions, relational nouns). In addition, *det-nondet* is a subsort of *nominal*, it thus inherits the feature **CASE**, *inter alia*. On the other hand, **prep[apo]** is an abbreviation for **HEAD** *preposition* | **PFORM** *apo*.<sup>1</sup> Crucially, the INDEX value (tag [1]) of the genitive nominal inside the subcat list is token-identical to the value of the **THEME** attribute in the restriction *psoa*.<sup>2</sup> In addition, the INDEX value (tag [2]) of the *apo* PP is token-identical to the value of the **AGENT** attribute.<sup>3</sup> That is, the intrinsic possessive is assigned the **THEME** role, whereas the *apo* phrase is assigned the **AGENT** role and we express the fact that abstract relational nouns such as *perigrafi* take an obligatory genitive theme and an optional *apo* agent.

A final point with respect to (388) is that *perigrafi* is shown to carry an index encoding the information that it is feminine in gender and singular in number. The index (agreement features) of *perigrafi* allows us to keep track of a description event and distinguish it from other events in the discourse. For example, in (389) below, we refer to the description event (*i perigrafi tu agona*; ‘the description of the game’) mentioned in the first conjunct, by means of the feminine singular clitic *tin* in the second conjunct: *tin* and *perigrafi* are coreferential, or more technically, their indices are token-identical.

<sup>1</sup>For the feature **PFORM**, see [Pollard and Sag, 1987].

<sup>2</sup>Following a suggestion of [Pollard and Sag, 1994], I here assume that restrictions on indices are possibly conjunctive *psoas*, rather than sets of *psoas* (see their discussion of intensional adjectives in chapter 8). For this reason, the value of **RESTR** in (388) is not a set. For further detail, see section 5.3.2.

<sup>3</sup>We can alternatively assume a *psoa* of sort *description*, where two attributes are defined: **DESCRIBER** and **DESCRIBED**.

(389) i perigrafi tu agona kratise misi ora ke tin parakoluthisame me megaloniaferon

the-SG.FEM description-SG.FEM the-GEN game-GEN lasted half hour and her-SG.FEM followed-1.PL with great interest

‘The description of the game lasted half an hour and we followed it with great interest.’

The relational *perigrafi* may syntactically combine with a referential genitive such as *tu agona* (of the game), i.e. an intrinsic possessive. We next consider the semantic value of such a genitive. See the AVM in (390).

(390)

$$\begin{array}{l}
 \left[ \begin{array}{l}
 \text{INDEX } \boxed{1} \left[ \begin{array}{l} \text{NUM } sg \\ \text{GEND } masc \end{array} \right] \\
 \text{RESTR } \left[ \begin{array}{l} \text{RELN } game \\ \text{INST } \boxed{1} \end{array} \right] \\
 \text{UNIQUE+}
 \end{array} \right] \\
 \text{nom - obj}
 \end{array}$$

The *CONTENT* value of the possessive *tu agona* (of the game).

As illustrated in (390), the *CONTENT* value of an (intrinsic) possessive is an object of sort *nominal-object* (*nom-obj*). Feature structures of sort *nom-obj* are defined for the features *INDEX*, *RESTR*(*ACTION*) and *UNIQUE*. The value of *INDEX*, an object of sort *index*, carries agreement features such as *NUM*(*BER*) and *GEND*(*ER*) with atomic sorts as their values. The value of *RESTR* is a conjunction of *psaos*. Such *psaos* impose restrictions on the anchoring of the index. In case of (390), for instance, the index (tag  $\boxed{1}$ ) can only be anchored onto an entity that has the property of being a game. Finally, as was shown in section 3.4.2, the

feature UNIQUE imposes a further restriction on the anchor of the index in case its value is an object of sort *plus (+)*: A UNIQUE+ nominal object is a definite and its index can only be anchored on an entity that uniquely instantiates the property the nominal denotes in a local setting (the resource situation). Assigning a CONTENT value of sort *nom-obj* to possessives signifies that they can be employed referentially. Their index can be anchored to any entity in the discourse that renders the restriction *psoas* factual.

It was demonstrated in section 4.4, that possessives may be pronominal or nonpronominal. In particular, possessive NPs may be replaced with pronominal clitics and also relativized (i.e. they can be realized as relative pronouns). In HPSG framework, we may account for the anaphoric potential of possessives by treating them as *nominal objects*. Both pronouns and nonpronominal referential nominals are semantically *nominal-objects* (cf. [Pollard and Sag, 1994]). More technically, the sort *nom-obj* partitions into *pronoun (pron)* and *nonpronoun (npro)*, which respectively subsume pronouns and nonpronominal referential nominals. Viz.:

(391) Partition of *nom-obj*: *pronoun (pron)*, *nonpronoun (npro)*

Accordingly, noun categories that subcategorize for a possessive genitive will be compatible with either nonpronominal referential phrases or pronouns: both types of elements have a CONTENT value of sort *nom-obj* and carry an index. For example, the relational *perigrafi* (description) may syntactically combine with a clitic *tu* (his). The semantic content of this clitic, an object of sort *pron*, is given in (392). This pronoun is constrained to refer to a masculine NP and carries no restriction *psoas*.

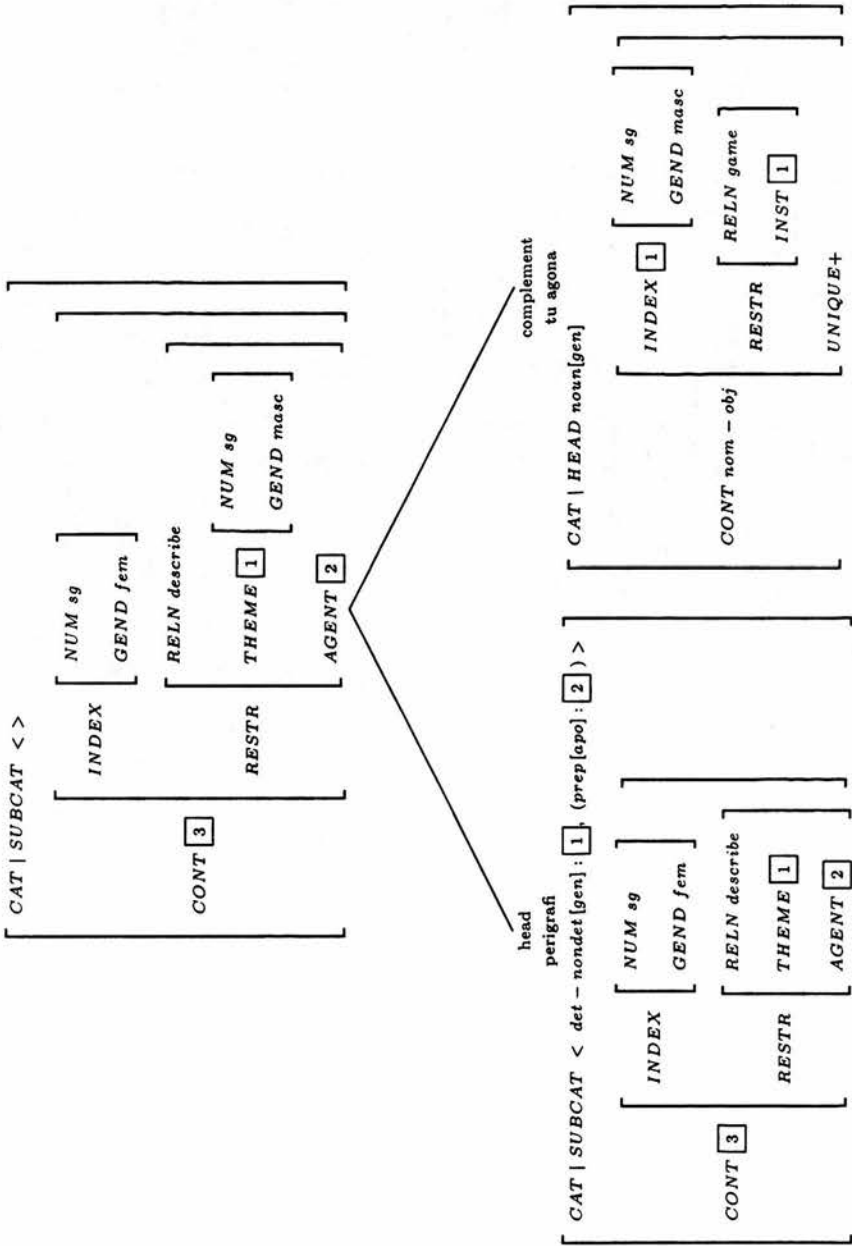
(392)

$$\textit{pron} \left[ \begin{array}{c} \textit{INDEX} \left[ \begin{array}{c} \textit{NUM sg} \\ \textit{GEN} \textit{ masc} \end{array} \right] \end{array} \right]$$

*The CONTENT value of the clitic pronoun tu.*

Let us next consider the actual combining of an abstract relational noun (*perigrafi*, ‘description’) with an intrinsic possessive (*tu agona*, ‘of the game’). This is illustrated in the tree-diagram in (394). The possessive genitive *tu agona* (of the game) in (394) “matches” with the first element in the SUBCAT list of the head noun: it is syntactically a noun phrase (**HEAD** *noun*), i.e. a subsort of *det-nondet*, it is morphologically a genitive, it is semantically a referential nominal (**CONT** *nom-obj*). As will be shown in detail in section 5.5 below, the phrase *i perigrafi tu agona* (the description of the game) satisfies a particular phrasal sort in the hierarchy, namely, *head-complement-phrase* (*hd-comp-ph*), and this is how it is licensed. The **CONTENT** value of that phrase (see tag [3]) originates from the head-daughter (the noun *perigrafi*), as required by the Semantics Principle:

- (393) *The Semantics Principle.* In a headed phrase, the **CONTENT** value is token-identical to that of the adjunct daughter if the **DTRS** value is of sort *head-adj-struc* (*head-adjunct-structure*), and with that of the head daughter otherwise.





An important point in the account of possessive genitives presented here is that these nominals are treated as complements of particular noun sorts (e.g. complex event nouns such as *perigrafi* ‘description’, or relational concrete nouns such as *fititis* ‘student’). Treating possessives as noun complements enables us to express lexically the generalization that a single possessive (per noun head) is admissible in Greek NPs: this is required by the hypothesis concerning the distribution of genitives in Greek (see section 4.3) that is repeated in (396).

- (396) *The distribution of genitives in Greek NPs:* No more than two genitives are admissible per noun head and they must be of distinct types—one possessive and one pseudo-possessive. Moreover, the pseudo-possessive must precede the possessive.

In the HPSG framework, the generalization that no Greek noun may license more than a single possessive can be derived from the hierarchy of *subcategorization list* sorts defined for Greek. Recall from chapter 3 that the HPSG resources enable us dramatically to eliminate redundancy from lexical representation: properties that are not idiosyncratic to a particular lexical item but rather characterize a number of distinct elements are expressed only once in individual sorts. Elements that share a given property are viewed as members of the same sort and they are connected with it by inheritance. For example, it is not an idiosyncratic property of the noun *perigrafi* (description) that it may cooccur with a THEME possessive genitive and an AGENT *apo* (by) phrase. Rather, other nouns have this property too, e.g. *analisi* (analysis), *epexergasia* (processing), etc. Then, the property of subcategorizing for two complements of the particular type and that are linked with the particular roles can be bequeathed. A *subcat list* sort can be defined that contains two elements, a possessive genitive and an optional *apo* phrase. Viz.:

- (397)  $\langle \text{det-nondet}[\text{gen}], (\text{prep}[\text{apo}]) \rangle$

The *subcat list* in (397) is to be thought of as one of the sorts of a hierarchy of *subcat lists* that contains various types of subcategorization lists for various types of predicates. Further, the list in (397) can be required to be “isomorphic” with an appropriate sort in the hierarchy of content psos, so that the genitive NP

element is “linked” with a THEME role and the (optional) apo-phrase is “linked” with an AGENT role, (see [Davis, 1994], for linking in HPSG). The content *psoa* that the subcat list in (397) is isomorphic with is given in (398):

(398)

$$psoa \left[ \begin{array}{c} \textit{THEME index} \\ \textit{AGENT index} \end{array} \right]$$

Accordingly, nouns such as *perigrafi* (description), *analisi* (analysis), or *epexergasia* (processing), etc. can be connected with the sorts in (397) and (398) so as to inherit their subcategorization and thematic role assignment properties. Given that Greek nouns may subcategorize for at most one possessive, no object of sort *subcat list* in the relevant hierarchy, and which nominal heads inherit from, will contain more than one genitive element. Thus, we formalize in the hierarchical lexicon part of the *hypothesis of distribution of genitives in Greek*, i.e. that a single possessive is admissible per noun head.<sup>5</sup>

Before closing this section, a final point should be mentioned. It was shown in section 4.6, that possessives occur in definite NPs or “specific” indefinites. However, the treatment of (intrinsic) possessives that I have presented thus far does not take into account this constraint. In section 5.5 below, I demonstrate how an analysis of possessives as noun complements can be integrated with the approach to definiteness presented in chapter 3, so that the definiteness requirement associated with possessives is accounted for.

### 5.2.2 Extrinsic possessives and non-relational nouns

In this section, I discuss the licensing of extrinsic possessives. As shown in section 4.2.1, these are genitives in construction with non-relational nouns, and therefore, their resolution derives from contextual information, rather than the thematic

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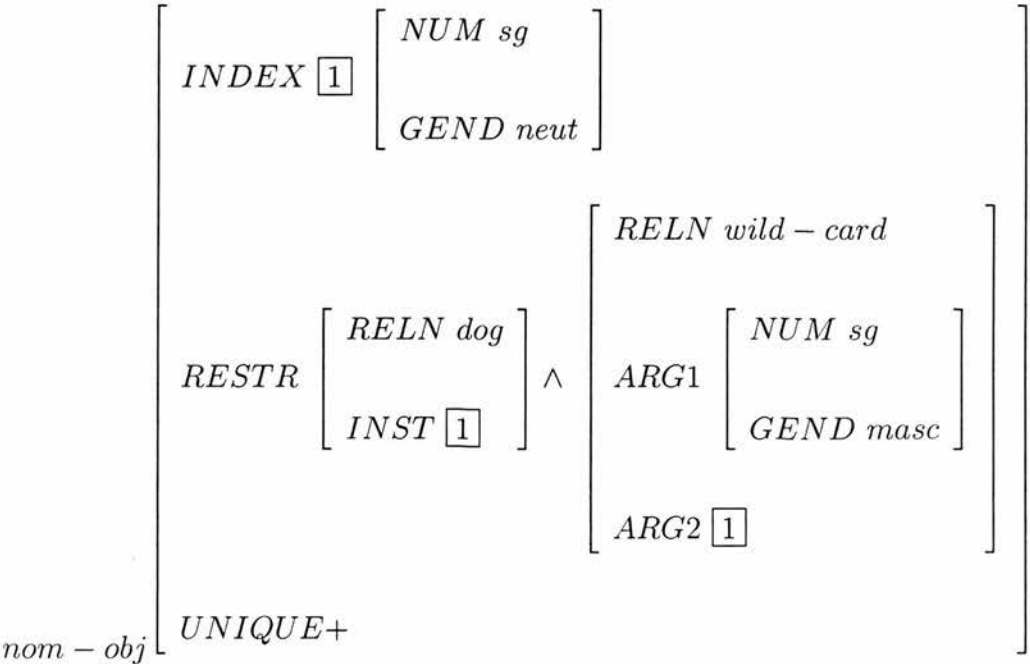
<sup>5</sup>The rest of this hypothesis concerning the requirement for a single pseudo-possessives per noun head and the relative order of genitives will be discussed in section 5.5.5.

meaning of the head noun. Consider (399): the noun *skili* (dog) is a typical non-relational noun and it is shown to cooccur with an extrinsic possessive *tu kipuru* (the gardener's) in (399a) and the clitic *tu* (his) in (399b).

- (399) a. *to skili tu kipuru*  
 the-SG.NEUT dog-SG.NEUT the-GEN.SG.MASC gardener-GEN.SG.MASC  
 'the gardener's dog'
- b. *to skili tu*  
 the-SG.NEUT dog-SG.NEUT his-CL.SG.MASC  
 'his dog'

Following [Barker, 1991], I assume that extrinsic possessives and the noun head they depend on are associated with a two-place relation. I call this the *wild-card* relation. In HPSG terms, the *wild card* relation is conceived of as a restriction *psoa*. To illustrate, the content value of an NP such as *to skili tu* (his dog) that consists of the non-relational *skili* and an extrinsic possessive clitic, is as shown in (400).

(400)



The *CONTENT* value of the NP *to skili tu* (his dog).

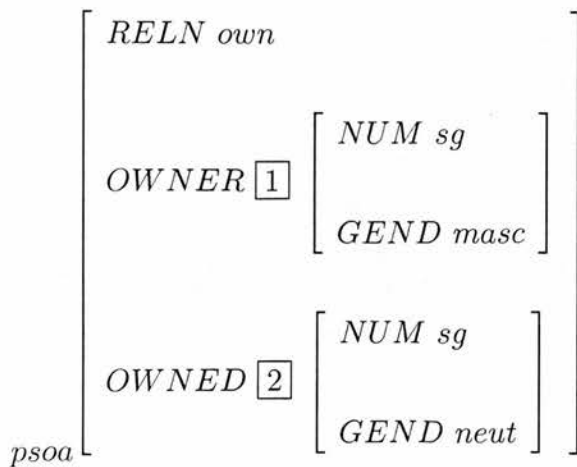
The NP *to skili tu* (his dog) is required to refer to an entity that is the unique dog in the resource situation (see chapter 3), and in addition, that stands in a *wild-card* relation with a male entity (see the value of ARG1).<sup>6</sup> The *wild-card* psoa indicates that the referent of the clitic *tu* (his) and that of the head noun (i.e. the anchor of index [1]) may be related in a number of ways: the male entity that the masculine clitic refers to may be the owner of the dog, or he may have put a bet on the dog, or he may be the person that takes care of the dog which is not his own, etc.<sup>7</sup> Technically, the two attributes of the *wild-card* psoa ARG1 and ARG2 bear objects of sort *index* as their sort value. In particular, the value of one of them is token-identical to that of the INDEX of the noun head, whereas the value of the other is token-identical to that of the INDEX of the extrinsic possessive *tu*. The *wild-card* relation can be thought of as the analogue of a pronoun: it is a “*pro*-relation” and is anaphoric to some established relation in the discourse that holds between two entities, like a pronoun refers to some entity in the discourse. For instance, if we know from context that an ownership relation holds between the referent of *tu* (his) and that of *skili* (dog), then the *wild-card* relation will be anaphoric to the relation in (401), where [1] is constrained to be anchored to a non-aggregate male entity and [2] is constrained to be anchored to a dog:

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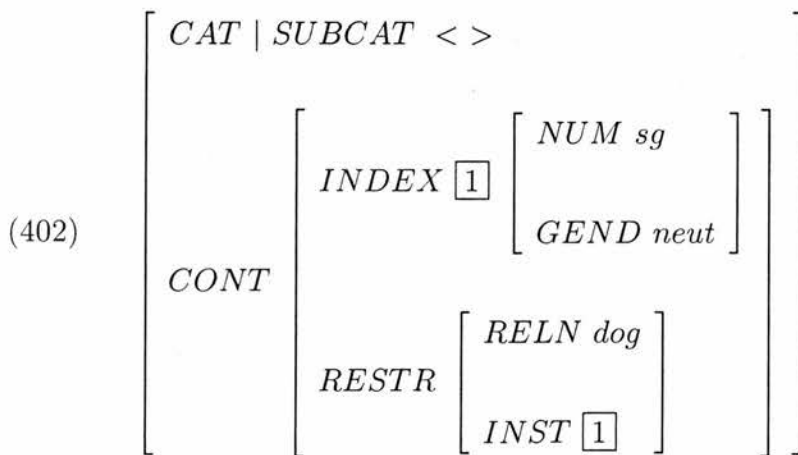
<sup>6</sup>The requirement that *tu* (his) should be anchored to a singular masculine entity is in effect captured in terms of contextual psoas. Such psoas are located in the CONTEXT | BACKGROUND attribute and they express the restrictions (a) that *tu* must be anchored on a non-aggregate and (b) that *tu* must be anchored on a male entity. For expository clarity, I have chosen not to represent the context attribute of *to skili tu* (his dog).

<sup>7</sup>The *wild-card* relation is analogous to the *poss* relation in [Pollard and Sag, 1994]. The *poss* relation has two attributes: POSSESSOR and POSSESSED. I have avoided the traditional terminology in order to emphasize that an extrinsic possessive may participate in any relation, not just possession.

(401)



Let us next consider the subcategorization properties of non-relational nouns, and how they license extrinsic possessives. Non-relational nouns do not take obligatory complements. Rather, they may occur on their own without giving rise to ungrammaticality. Therefore, I am assuming that non-relational nouns have a non-transitive instantiation with the empty list as their SUBCAT value. This is illustrated for the non-relational noun *skili* (dog) in the skeletal AVM in (402).



*The SUBCAT and CONTENT value of the non-transitive non-relational noun skili (dog).*

Alternatively, non-relational nouns may syntactically combine with extrinsic possessives. That is, I am assuming that non-relational nouns have a transitive instantiation which enables them to license an extrinsic possessive genitive. The

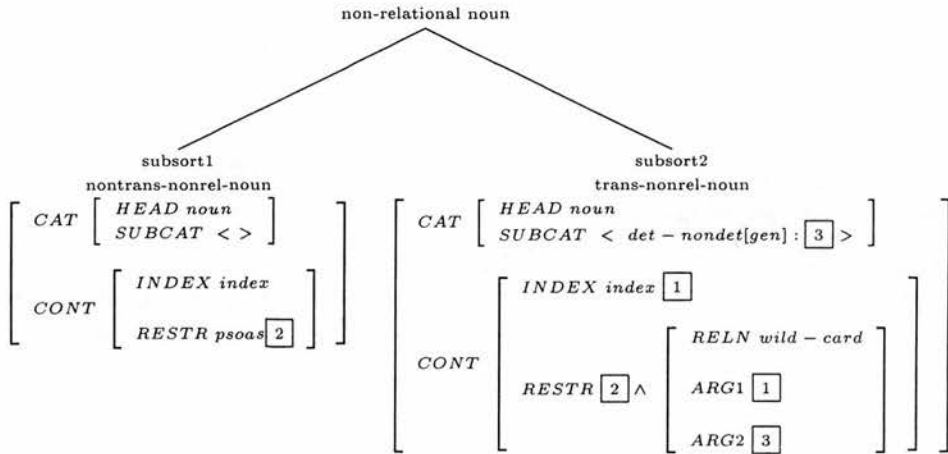
SUBCAT value of the latter is not the empty list but rather a list of length one. Through their SUBCAT, transitive non-relational nouns subcategorize for a genitive NP, i.e. an extrinsic possessive. Furthermore, the content of transitive non-relational nouns differs: they carry an extra restriction *psoa*—the *wild-card* *psoa*. The transitive version of the non-relational noun *skili* (dog) is given in (403) below.

$$(403) \quad \left[ \begin{array}{l} CAT \mid SUBCAT < det - nondet[gen] : \boxed{1} > \\ \\ CONT \left[ \begin{array}{l} INDEX \boxed{2} \left[ \begin{array}{l} NUM \textit{sg} \\ GEND \textit{neut} \end{array} \right] \\ \\ RESTR \left[ \begin{array}{l} RELN \textit{dog} \\ INST \boxed{2} \end{array} \right] \wedge \left[ \begin{array}{l} RELN \textit{wild - card} \\ ARG1 \boxed{2} \\ ARG2 \boxed{1} \end{array} \right] \end{array} \right] \end{array} \right]$$

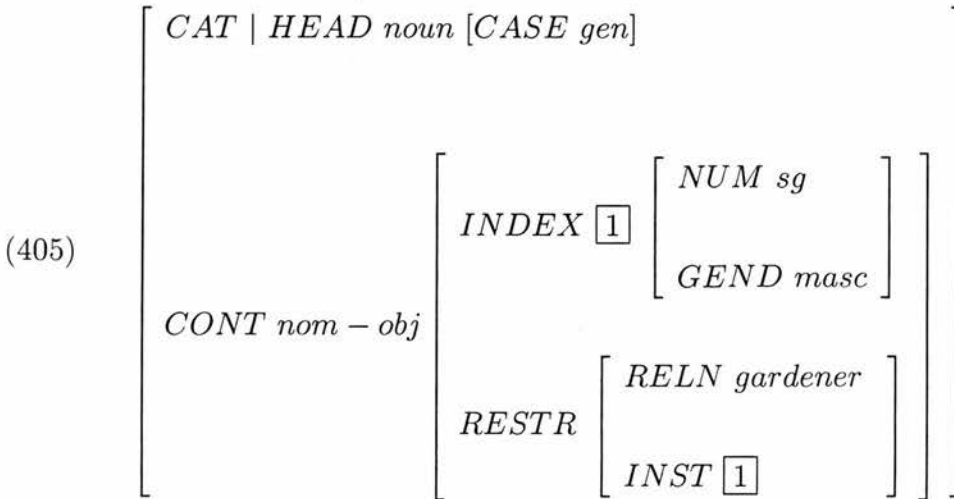
*The SUBCAT and CONTENT value of the transitive skili (dog).*

The two instantiations of non-relational nouns can be conceived as disjoint sorts: the *nontransitive-nonrelational-noun* (*nontrans-nonrel-noun*) sort and the *transitive-nonrelational-noun* (*trans-nonrel-noun*) sort. These are illustrated in (404).

(404)



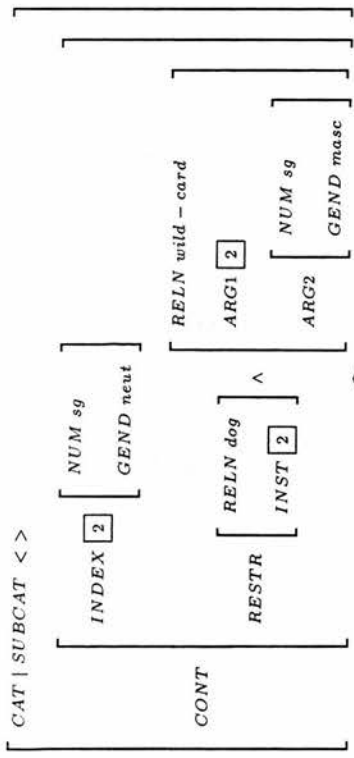
The transitive *skili* may combine with an extrinsic possessive genitive such as *tu kipuru* (the gardener's). The skeletal AVM in (405) illustrates the HEAD and CONTENT value of *tu kipuru*.



The HEAD and CONTENT value of the possessive *tu kipuru* (the gardener's).

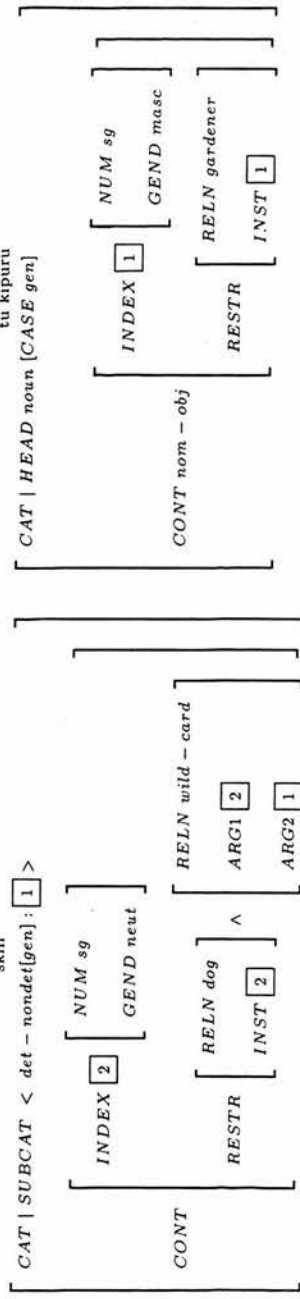
The genitive *tu kipuru* (the gardener's) qualifies as a complement of the transitive *skili* (dog): the former is an NP, it is thus subsumed under the sort *det-nondet*, and it is marked genitive. In addition, the CONTENT value of *tu kipuru* is of sort *nom-obj*, that is, it carries an index. Therefore, *tu kipuru* may saturate the single subcategorization requirement of *skili* and fill one argument in the *wild-card* relation. The tree-diagram in (406) illustrates the syntactic combining of *skili*

with **tu kipuru** and the instantiation of values on the mother phrase. The subcat list of the mother is empty by the Subcategorization Principle, and the content value originates from the head daughter **skili** by the Semantics Principle. The index value of ARG2 corresponding to the possessive **tu kipuru** is instantiated by structure-sharing.



head  
skili

complement  
tu kipuru







A genitive in construction with the abstract noun *diatagi* is unambiguously an extrinsic possessive, and it is associated with the referent of *diatagi* by the *wild-card* relation. The content value of *i diatages mas* (our orders) is as shown in the AVM in (412).

(412)

$$\begin{array}{l}
 \left[ \begin{array}{l}
 \text{INDEX } \boxed{1} \left[ \begin{array}{l} \text{NUM } pl \\ \text{GEN } fem \end{array} \right] \\
 \\
 \text{RESTR } \left[ \begin{array}{l} \text{RELN } order \\ \text{INST } \boxed{1} \end{array} \right] \wedge \left[ \begin{array}{l} \text{RELN } wild - card \\ \text{ARG1 } \boxed{1} \\ \text{ARG2 } \left[ \begin{array}{l} \text{NUM } pl \\ \text{PER } 1st \end{array} \right] \end{array} \right] \\
 \\
 \text{UNIQUE+}
 \end{array} \right]
 \end{array}$$

*nom - obj*

*the CONTENT value of i diatages mas (our orders).*

The index of *i diatages mas* must be anchored to a locally unique plurality of abstract entities that are orders. In addition, the *wild-card* restriction *psoa* in (412) denotes that these orders are somehow connected with some other aggregate including the speaker (i.e. the referent of *mas*). This connection is contextually defined. The two-place *wild-card* relation is anaphoric to an established relation in the discourse holding between two entities. For instance, if we know from context that an aggregate including the speaker (i.e. the referent of *mas*) are the recipients of the orders, as in (410) above, then the *wild-card* relation in (412) is anaphoric to a “resolved” relation such as the one in (413) below, where  $\boxed{1}$  is required to anchor on a plurality of orders, and  $\boxed{2}$  is required to anchor on an aggregate of entities that includes the speaker:

(413)

$$psoa \left[ \begin{array}{l} RELN \textit{ order} \\ \\ ORDER - ER \boxed{1} \left[ \begin{array}{l} NUM \textit{ pl} \\ GEND \textit{ fem} \end{array} \right] \\ \\ RECIPIENT \boxed{2} \left[ \begin{array}{l} NUM \textit{ pl} \\ PER \textit{ 1st} \end{array} \right] \end{array} \right]$$

In the current analysis, abstract nouns such as *diatagi* (order) have a non-relational version that is very similar to concrete non-relational nouns such as *skili* (dog). The non-relational *diatagi* that subcategorizes for an (extrinsic) possessive is given in (414).

$$(414) \left[ \begin{array}{l} CAT | SUBCAT < \textit{ det - nondet[gen] : } \boxed{1} > \\ \\ CONT \left[ \begin{array}{l} INDEX \boxed{2} \left[ \begin{array}{l} NUM \textit{ pl} \\ GEND \textit{ fem} \end{array} \right] \\ \\ RESTR \left[ \begin{array}{l} RELN \textit{ order} \\ INST \boxed{2} \end{array} \right] \wedge \left[ \begin{array}{l} RELN \textit{ wild - card} \\ ARG1 \boxed{2} \\ ARG2 \boxed{1} \end{array} \right] \end{array} \right] \end{array} \right]$$

*The SUBCAT and CONTENT value of the non-relational diatagi (order).*

The homophonous relational and non-relational versions of abstract nouns can be viewed as disjoint sorts. For instance, propositional attitude nouns that pattern with *diatagi* (order) may be taken to inherit their subcat list and content value from one of the following sorts: (a) *relational-abstract-noun* (*rel-abstr-noun*), (b)

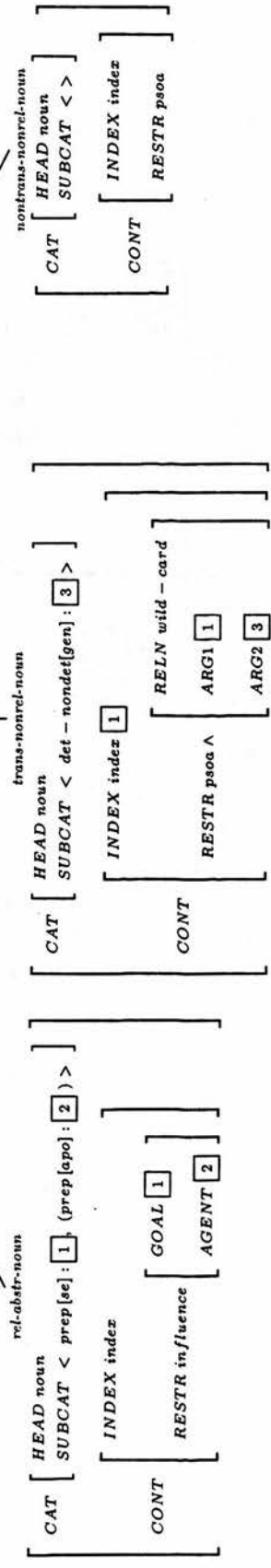
*transitive-nonrelational-noun* (*trans-nonrel-noun*) and (c) *nontransitive-nonrelational-noun* (*nontrans-nonrel-noun*).<sup>9</sup> The version of *diatagi* that subcategorizes for a GOAL *se* (to) phrase and an AGENT *apo* (by) phrase (see (409) above) inherits from the sort *rel-abstr-noun*. The version of *diatagi* that subcategorizes for an (extrinsic) possessive and “links” it with one argument of the *wild-card* relation (see (414)) inherits from the sort *trans-nonrel-noun*. Finally, *diatagi* that occurs on its own inherits from *nontrans-nonrel-noun*. For ease of reference, these three sorts are illustrated in (415).<sup>10</sup>

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<sup>9</sup>We have already seen the sorts *trans-nonrel-noun* and *nontrans-nonrel-noun* in (404) above.

<sup>10</sup>The restriction *psoa* in *rel-abstr-noun* is of sort *influence*. This sort can be taken to subsume influence-type of relations, and the *order* relation can be thought of as one of them. A similar proposal is made for the control verb *order* in [Pollard and Sag, 1994].

abstract  
relational/non-relational noun



To summarize: in this section I presented an HPSG account of intrinsic and extrinsic possessives. Both types of genitives satisfy subcategorization requirements of appropriate types of nouns. However, intrinsic possessives are “thematic”: they are assigned a thematic role, or in HPSG terms, they have identical index values to the attributes of the head noun’s restriction *psoa*. On the other hand, extrinsic possessives and the head nouns they depend on are associated with the *wild-card* relation.

## 5.3 Pseudo-possessives in HPSG

In this section, I discuss the syntactic status and semantic type of pseudo-possessive NPs. In the current analysis, pseudo-possessives are treated as modifiers of noun categories and their content value is taken to be a *psoa*.

### 5.3.1 Pseudo-possessives as modifiers

We have seen in chapter 4 that the distribution of pseudo-possessives is much freer than the distribution of possessives. For example, pseudo-possessives are compatible with the whole range of nouns denoting states or activities, and moreover, with propositional attitude nouns. On the other hand, only a subset of these nouns may admit a possessive genitive, and in addition a possessive in construction with such a noun cannot be associated with an “object” reading (see section 4.5). Further, pseudo-possessives may occur in either definite or indefinite NPs, whereas, possessives are excluded from indefinites, unless they are specific (see section 4.6.2)—and this applies to NPs with either an abstract or a concrete noun head.

In order that the more constrained distribution of possessives is accounted for, they have been treated as complements of appropriate noun types. To account for the relatively more free distribution of pseudo-possessives, they will be analysed as modifiers of noun categories. Though heads may impose selectional restrictions on their modifiers, in principle, they impose fewer restrictions on modifiers than on their arguments. Consequently, since pseudo-possessives are modifiers, they

are more free than possessives that are arguments. To illustrate: assuming that possessives are complements, whereas pseudo-possessives are modifiers, we can naturally account for the fact that nouns such as *fovos* (fear) resist a possessive associated with a THEME reading (e.g. *\*o fovos tis Marias<sub>Th</sub>*; ‘\*Maria’s<sub>Th</sub> fear’), but may cooccur with a pseudo-possessive (e.g. *o fovos tis apotihias*; ‘the fear of failure’). Psych nouns in Greek do not subcategorize for genitive object complements, rather they assign their THEME role to a *gia* (for) prepositional phrase. On the other hand, the modifier *tis apotihias* is free to cooccur with any noun category, provided selectional restrictions are satisfied. Indeed, this particular kind of fear (the fear of failure) is an entity that does not conflict with our general assumptions about the world, whereas something like *o fovos tis haras* (the fear of pleasure) seems to be a less conventional concept.<sup>11</sup> Similarly, the adjective *green* is free to combine with any noun category, provided selectional restrictions are not violated. Thus, we may have *the green tree*, as this phrase denotes a “recognizable” entity in the world, whereas, *the green idea* seems to be a much more controversial object.

As shown in chapter 3, in HPSG terms, modifiers select for the modifiee by their head feature MOD. Likewise, pseudo-possessives carry in their MOD value selectional restrictions that the noun category they combine with should satisfy. Pseudo-possessive genitives are syntactically *nominal* categories. For the most part, we have seen examples of definite or indefinite noun phrase pseudo-possessives (e.g. *o fovos tis apotihias*; ‘the fear of failure’, where *tis apotihias* is a definite noun category, or *i perigrafes podosferikon agonon*; ‘the football match descriptions’, where *podosferikon agonon* is an indefinite NP). Nonetheless, we also find pseudo-possessives of other nominal sorts, e.g. *takunia trion ponton* (three centimeter heels), where the pseudo-possessive *trion ponton* is a numeral phrase (see the analysis of the cardinals provided in chapter 3). Since pseudo-possessives are syntactically nominals, they inherit the feature declaration of sort *nominal*, including the feature MOD that may take as its value an object of sort *synsem* or an object of sort *null* (see section 3.2). However, possessives are also *nominal* categories, and, therefore, they also inherit MOD. Then how is it that pseudo-

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<sup>11</sup>Of course, the fear of pleasure can make sense if appropriately contextualized, e.g. in a “psycho-analytical” context, where a certain patient fears pleasure and does not allow herself to be content).

possessives are modifiers (technically, they have a MOD value of sort *synsem* and thus select for their modifiee), whereas possessives cannot function as modifiers (technically, their MOD value is an object of sort *null*)?

In the current system, possessives and pseudo-possessives can be formally distinguished by means of their content values: as we have already seen, possessives are *nominal-objects*, whereas, the content value of pseudo-possessives is a *psoa* (see next section). I assume that only genitives with a *psoa* content value (i.e. pseudo-possessives) have a MOD value of sort *synsem*. By contrast, genitives with a content value of sort *nom-obj* (i.e. possessives) have a MOD value of sort *null*. It follows that only pseudo-possessives but not possessives are modifiers. Pseudo-possessive genitives are instantiations of the feature-structure in (416):

(416)

$$\begin{array}{c}
 \left[ \begin{array}{c}
 \left[ \begin{array}{c}
 \textit{HEAD noun} \\
 \textit{MOD synsem}
 \end{array} \right] \\
 \textit{CAT}
 \end{array} \right] \\
 \textit{synsem} \left[ \begin{array}{c}
 \textit{CONTENT psoa}
 \end{array} \right]
 \end{array}$$

*Skeletal sign for pseudo-possessives.*

An HPSG treatment of pseudo-possessives as modifiers may straightforwardly capture the few constraints governing their distribution, e.g. that they cannot cooccur with complex event nouns, in the sense of [Grimshaw, 1990] (see section 4.3.3). This is illustrated in (417) below (repeated from chapter 4): the example in (417a) is ill-formed, as the singular *diorismos* (appointment), a complex event that may have an onset (when negotiations concerning the intended appointment start) and a termination point (when the post is finally given), cooccurs with two genitives, the innermost being a pseudo-possessive. On the other hand, (417b) is grammatical as the plural *diorismi* is unambiguously a result noun, therefore, it is compatible with two genitives of distinct types.

(417) a. \*o diorismos tis Marias tis kivernisis tu Pa.so.k

the appointment of Maria of the Pa.so.k government

b. i diorismi anergon tis kivernisis tu Pa.so.k

‘the appointments of the unemployed of the Pa.so.k government’

Pseudo-possessives may cooccur with non-relational nouns, which—as we have seen—may be concrete such as *gata* (cat) or abstract such as *diorismi* (appointments), and moreover, both types may be transitive or non-transitive. Transitive concrete or abstract non-relational nouns are subsorts of *trans-nonrel-noun* and they subcategorize for an (extrinsic) possessive. Nontransitive non-relational nouns are subsorts of *nontrans-nonrel-noun* and do not carry any subcategorization requirement, rather their SUBCAT value is the empty list (see section 5.2.2). Pseudo-possessives select for transitive-nonrelational-nouns and nontransitive-nonrelational-nouns in terms of their MOD feature. Transitive non-relational nouns have a SUBCAT value of sort *strict-trans* (*strictly-transitive*) whereas, non-transitive non-relational nouns have a SUBCAT value of sort *elist* (*empty-list*). The sorts *strict-trans* and *elist* are objects in the hierarchy of subcat list sorts (cf. [Davis, 1994]). They are given in (418) and (419), respectively.

(418) [ *SUBCAT strict – trans* < *det – nondet[gen]* > ]

(419) [*SUBCAT elist* < >]

Pseudo-possessives select for nouns which have a SUBCAT value of sort *elist* or *strict-trans*. In addition, they are required to combine with *nominal-objects* (referential noun categories). The MOD value of pseudo-possessives, an object of sort *synsem*, is skeletally given in (420):

(420)

$$\text{synsem} \left[ \begin{array}{l} \text{CAT} \left[ \begin{array}{l} \text{HEAD } \textit{noun} \\ \text{SUBCAT } \textit{elist} \vee \textit{strictly-trans} \end{array} \right] \\ \text{CONTENT } \textit{nom-obj} \end{array} \right]$$

*The MOD value of a pseudo-possessive genitive.*

### 5.3.2 The semantic type of pseudo-possessives

The genitive in (421) below is a pseudo-possessive: as we have previously seen, psychological nouns such as *fovos* (fear) resist an object pronoun or referential NP (i.e. an object possessive), however, they may cooccur with a pseudo-possessive. The pseudo-possessive *tis apotihias* (of failure) in (421) denotes the *failure-like* property, which in combination with the noun's content identifies a particular kind of fear—the fear of failure.

- (421) o fovos tis apotihias  
the fear the-GEN failure-GEN  
'the fear of failure'

We have often mentioned that pseudo-possessives are non-referential genitives: they denote properties rather than referring to individuals, and can be thought of as analogous to non-intersective adjectives (see section 4.2.2). The anaphoric potential of pseudo-possessives is very different from that of possessives: the former cannot be realized as pronominal clitics or relative pronouns that are anchored to entities in the discourse (see section 4.4.1 and section 4.4.2, respectively). Rather, they are similar to anaphoric elements such as *tetios* (such), which are employed in *concept anaphora*, as opposed to *pronominal anaphora* (see section 4.4).

Therefore, I do not treat pseudo-possessives as *nominal-objects*, in the HPSG sense. Rather, I propose that their CONTENT value is an object of sort *psoa*

(*parametric state of affairs*). This signifies that pseudo-possessives bear no index that would enable them to refer to individuals in the discourse. From this analysis, directly derive the pronominalization asymmetries associated with the two types of Greek genitives: clitics and relative pronouns have a CONTENT value of sort *pron* (*pronoun*), which is subsumed under *nom-obj*. Pseudo-possessives cannot be realized as clitics or relative pronouns, since their content value is a *psoa*, not a subsort of *nom-obj*.

Consider the skeletal feature structure in (422) below.

$$(422) \left[ \begin{array}{l} CAT \mid HEAD \mid MOD : [RESTR \boxed{1}] \\ \\ CONTENT \textit{psoa} \left[ \begin{array}{l} RELATION \textit{failure - like} \\ ARG - SOA \boxed{1} \end{array} \right] \end{array} \right]$$

*Skeletal AVM for the pseudo-possessive tis apotihias ('of failure').*

As shown in (422), the content *psoa* of a pseudo-possessive bears an attribute ARG-SOA which is coindexed with the restriction of the nominal selected by the pseudo-possessive's MOD feature (see tag  $\boxed{1}$ ).<sup>12</sup> That is, the content of a pseudo-possessive is essentially a property that bears another property as its argument: this argument-property comes from the noun category that the pseudo-possessive modifies. In this case, it comes from the noun *fovos* (fear) that *tis apotihias* (of failure) combines with. The restriction value of *fovos* is as shown in (423) below. This restriction signifies that the noun *fovos* should be employed to refer to a state of fear.

<sup>12</sup>Following a suggestion of [Pollard and Sag, 1994], I have here assumed that restrictions on indices are possibly conjunctive *psoas* rather than sets of *psoas*. Thus, identity between the value of ARG-SOA in pseudo-possessives and the value of RESTR of the noun head is preserved: both values are objects of sort *psoa* or potentially, conjunctions of *psoas*.

$$(423) \left[ \begin{array}{l} RELN \textit{ fear} \\ INST \left[ \begin{array}{l} NUM \textit{ sg} \\ GEND \textit{ masc} \end{array} \right] \end{array} \right]$$

The *RESTR* value of the noun *fovos* (*fear*).

The restriction of *fovos* and the ARG-SOA of the pseudo-possessive genitive *tis apotihias* are coindexed by structure-sharing. This is possible since pseudo-possessives select for their syntactic sister through their head feature *MOD*, as we have seen in the previous section. Once a pseudo-possessive actually combines with a noun category, the *RESTR* value inside *MOD* will be instantiated, and similarly for the ARG-SOA value inside the content.<sup>13</sup> For instance, when *tis apotihias* (of failure) combines with *fovos* (*fear*), the *MOD* | *RESTR* and ARG-SOA values of the pseudo-possessive will be instantiated as shown in (424).

(424)

$$\left[ \begin{array}{l} CAT | HEAD \textit{ MOD} : [RESTR \boxed{1}] \\ CONTENT \textit{ psoa} \left[ \begin{array}{l} RELATION \textit{ failure - like} \\ ARG - SOA \boxed{1} \left[ \begin{array}{l} RELN \textit{ fear} \\ INST \left[ \begin{array}{l} NUM \textit{ sg} \\ GEND \textit{ masc} \end{array} \right] \end{array} \right] \end{array} \right] \end{array} \right]$$

In this section, I have presented an HPSG account of pseudo-possessive genitives that distinguishes them from possessives both at the syntactic and the semantic level. In the following section, I show how possessives and pseudo-possessives can be systematically related.

<sup>13</sup>The actual combining of a noun category and a pseudo-possessive and how the semantic value of the mother phrase is compositionally derived will be illustrated in section 5.5.4 below.

## 5.4 Relating possessives and pseudo-possessives

In the previous sections, I have shown that possessives and pseudo-possessives have distinct semantic values and in addition pseudo-possessives select for a noun category through their MOD feature, whereas possessives function as noun complements. However, the two types of genitives coincide with respect to the rest of their properties, e.g. they are both projections of nominal categories, they are genitive marked, they can be definite or indefinite, etc. In fact, a given genitive may have both a possessive and pseudo-possessive reading. This is illustrated for *ton antarton* (the guerillas) in (425), repeated from chapter 4: *ton antarton* in (425a), which contains the stage-level predicate *stamatisan ta ximeromata* (ceased at dawn), is most naturally associated with a possessive reading. On the other hand, *ton antarton* in (425b) with the individual-level predicate *ine pantote efnidies* (are always sudden) is more likely to be interpreted as a pseudo-possessive.

(425) a. *i epithesis ton antarton stamatisan ta ximeromata*

the guerillas' attacks ceased at dawn

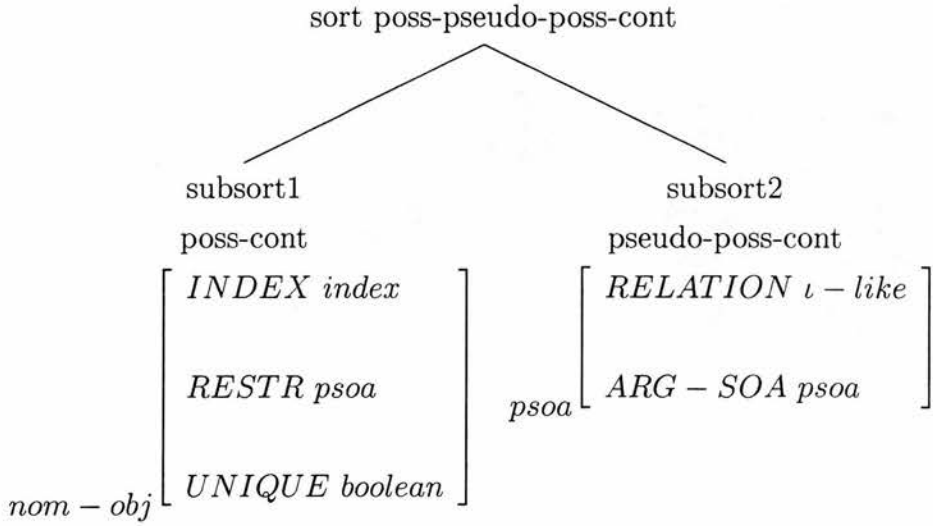
b. *i epithesis ton antarton ine pantote efnidies*

the guerilla attacks are always sudden

Since possessive and pseudo-possessive nominals to a large extent coincide, I assume that they are not entirely distinct in the lexicon, rather the possessive and pseudo-possessive readings for any given nominal are related in a systematic manner. The two distinct denotations of genitives may be viewed as emerging from disjoint sorts subsumed under a single supersort in the hierarchy of content values. Therefore, a given genitive can have two instantiations—a possessive and a pseudo-possessive one—depending on which sort it inherits its content value from. In addition, the pseudo-possessive version inherits the property of functioning as a modifier, whereas, the possessive version functions as a complement for appropriate noun types. The following partition illustrates the possessive and pseudo-possessive content value sorts (*poss-cont* (*possessive-content*) and *pseudo-poss-cont* (*pseudo-possessive-content*), respectively) conflated under a single supercategory,

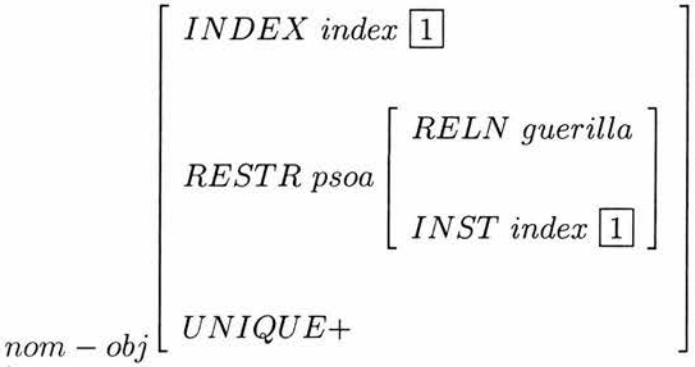
namely, *poss-pseudo-poss-cont* (*possessive-pseudo-possessive-content*).<sup>14</sup>

(426)



Accordingly, the possessive and pseudo-possessive denotation of *ton antarton* (the guerillas) are given in (427) and (428), respectively, where the ARG-SOA *psoa* in the pseudo-possessive's content comes from the noun category the pseudo-possessive modifies.

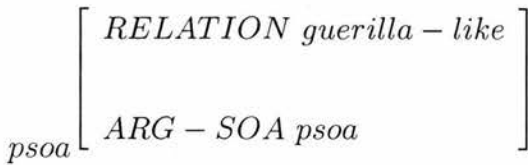
(427)



*The content of the possessive ton antarton*

<sup>14</sup>The RELN value *ι-like* subsumes all sorts of properties denoted by pseudo-possessives. For instance, the property *guerilla-like* (cf. (425b) above) is a subsort of *ι-like*.

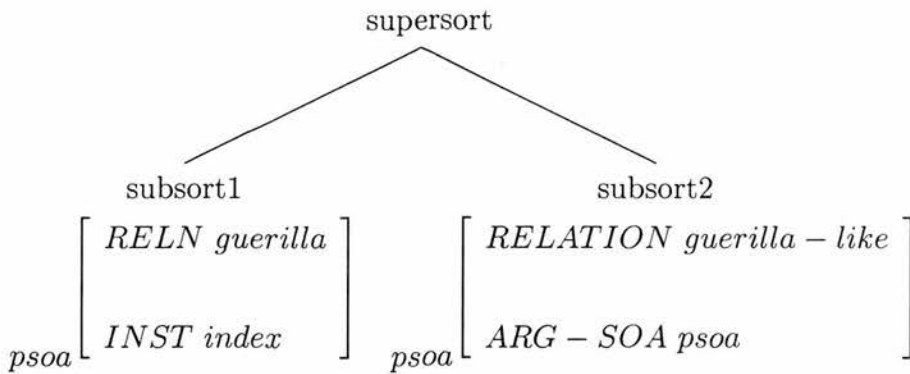
(428)



*The content of the pseudo-possessive ton antarton*

In fact, pseudo-possessive *psoas* such as the one given in (428) can be systematically related with their counterpart restriction *psoas* such as the RESTR *psoa* in (427). The property *guerilla* that certain entities instantiate, being thus guerillas, and the property *guerilla-like* that determines a particular kind—an entity instantiating the property *attack* may thus be of the guerilla-like type—can be viewed as the two sides of a single coin. These two properties are related sorts in a hierarchy of properties, i.e. a hierarchy of objects that model properties assumed to populate the empirical domain of natural language and the world. The properties *guerilla* and *guerilla-like*, viewed as related sorts, are given in (429).

(429)



*Related sorts in the hierarchy of properties*

## 5.5 The licensing of Greek NPs with genitive daughters

In the previous sections of this chapter, an HPSG account of Greek genitives has been presented that treats possessives as complements of particular noun classes

and pseudo-possessives as modifiers. Moreover, possessives and pseudo-possessives have been assigned distinct content sort-values that reflect their distinct anaphoric potentials. In the rest of this chapter, I focus on more technical issues related to the syntactic licensing of NPs with a possessive and/or pseudo-possessive genitive daughter, and moreover, I demonstrate how the semantics of these phrases is derived compositionally from the semantics of their parts.

### 5.5.1 An ID-Schemata analysis of phrases: some problems

In [Pollard and Sag, 1994], the various types of (headed) phrases, e.g. *head-subject phrases*, *head-complement phrases*, *head-adjunct phrases*, etc. are taken to be licensed by Immediate Dominance Schemata (ID Schemata). A small number of ID Schemata are defined that capture structural universals, and every headed phrase is required to satisfy exactly one of the ID Schemata. On the other hand, the semantics of distinct types of phrases is determined by the Semantics Principle. However, the ID Principle (i.e. the disjunction of the ID Schemata) and the Semantics Principle of HPSG run the risk of growing considerably complex, in order that other types of phrases that have not been considered in [Pollard and Sag, 1994] are also accounted for.

As an illustration, let us consider how phrases consisting of a noun head and a possessive genitive may be licensed in terms of ID Schemata. We have motivated an account of possessives as syntactic complements of particular noun classes, which enables us to capture generalizations concerning the distribution of this type of genitive in the lexicon (see section 5.2). Moreover, as we have seen in chapter 4, possessives are associated with a definiteness requirement, that is, they occur in definite NPs, and not in indefinites.<sup>15</sup> This is demonstrated in (430) (repeated from chapter 4):<sup>16</sup>

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<sup>15</sup>For the time being, we will ignore the fact that possessives may occur in “specific” indefinites (see section 4.6.2)

<sup>16</sup>As shown in chapter 4, possessive genitives may occur in partitives: *ena apo ta skilia tu Yani* (one of Yani’s dog), where *tu Yani* is located inside the definite phrase of the partitive, is well-formed.

(430) a. to skili tu Yani dangose ton gitona  
 the dog the-GEN Yanis-GEN bit the neighbour  
 ‘Yanis’s dog bit the neighbour’

b. \*ena skili tu Yani dangose ton gitona  
 a/one dog the-GEN Yanis-GEN bit the neighbour  
 (a/one dog of Yanis’s bit the neighbour)

As has been shown in chapter 3, a noun, adjective or numeral category in Greek is marked definite (UNIQUE+) by the definite article. For instance, in (430a), *to* marks definite the noun *skili* (dog). In the current analysis, we treat possessives as complements of *definite* noun heads. For example, in (430a), the possessive *tu Yani* will be viewed as a complement of the definite noun *to skili* (the dog), rather than a complement of the indefinite *skili* (dog). Therefore, we may account for the infelicitous (430b): this example is problematic because a possessive is shown to cooccur with an indefinite noun *skili*, whereas indefinite nouns do not license possessive genitives.

However, if we are to account for the licensing of NPs with a possessive complement daughter in terms of ID Schemata, then we need to define a very specific schema that exclusively licenses this particular type of phrase. Viz.:

(431) *Definite-Head-Complement Schema*

The DAUGHTERS value is an object of sort *head-comp-struct* (*head-complement-structure*) and the DAUGHTERS | HEAD-DAUGHTER | SYNSEM | LOCAL | CONTENT | UNIQUE value is *plus (+)*.

The ID schema in (431) captures the head-complement relation holding between a noun category and a possessive genitive, and moreover, it requires that the (noun) head should be definite (UNIQUE+): the Definite-Head-Complement Schema licenses a head-complement phrase with a definite head. However, such a schema is far too specific. If constraints on the various types of phrases are captured in terms of individual ID Schemata such as (431), then a very large number of such schemata will have to be defined, and moreover, these schemata will inevitably

overlap in part. To illustrate: if we assume an ID schema such as (431) above for the licensing of phrases consisting of a noun category and a possessive genitive, we will also need to define a distinct *Head-Complement-Schema* to account for *head-complement-structures* without a definite head, e.g. phrases consisting of a verb and its complement(s). Viz.:<sup>17</sup>

(432) *Head-Complement-Schema*

The DAUGHTERS value is an object of sort *head-comp-struct* (*head-complement-structure*).

An obvious disadvantage of this approach is that it “duplicates” information, thus inducing redundancy. Moreover, by assuming that phrases are licensed in terms of totally separate schemata, we fail to capture possible structural commonalities. For instance, NPs consisting of a (definite) noun head and a possessive and VPs consisting of a verb and its complement(s) essentially fall under the same structural pattern—both consist of a head and its argument(s). It is desirable to be in a position to capture this common property of these two distinct types of phrases, however, an approach in terms of ID Schemata such as those in (431) and (432) above does not allow us to do so.

A similar problem arises with the Semantics Principle: in [Pollard and Sag, 1994], this principle determines the semantics of *head-complement phrases* and *head-adjunct phrases*.<sup>18</sup> However, adjuncts that Pollard and Sag are concerned with are referential. Then, in order to account for the semantics of head-adjunct phrases with a pseudo-possessive adjunct-daughter (i.e. phrases that contain a non-referential adjunct), we will have to complicate the Semantics Principle further.

Sag (1995) sketches an HPSG account of English relatives in terms of *multiple inheritance*. In this paper, he demonstrates how commonalities between distinct

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<sup>17</sup>The ID schema in (432) differs from the homonymous ID schema in [Pollard and Sag, 1994]: the latter in addition requires that the subcat value of the head should contain a single element, the subcategorized subject.

<sup>18</sup>The finalized version of the Semantics Principle in [Pollard and Sag, 1994] also accounts for quantifiers.

phrasal types can be captured in terms of inheritance, and, moreover, that redundancy induced by ID Schemata can be eliminated from the grammar. In [Sag, 1995], phrases are taken to instantiate a number of properties that are represented in the grammar only once, in terms of distinct (phrasal) sorts. In order that all of the properties of a given phrase are accounted for, the phrase is assumed to be connected with a number of sorts by multiple inheritance. In the following sections, I provide an account of the syntactic licensing and semantics of nominal phrases with a possessive and/or pseudo-possessive genitive that relies on multiple inheritance. For example, NPs with a possessive complement-daughter will be viewed as inheriting from two distinct sorts: (a) a sort expressing the property that a phrase can consist of a head and its complement(s) and (b) a sort expressing the property that a transitive noun category can be definite (UNIQUE+) (see section 5.5.3). The former property is common to all syntactic categories consisting of a head and its complement(s). The latter property, definiteness, is common to all definite nominal categories (noun, adjective or numeral projections). Before proceeding with Greek NPs, I outline the multiple inheritance analysis provided in Sag (1995) in somewhat greater detail.

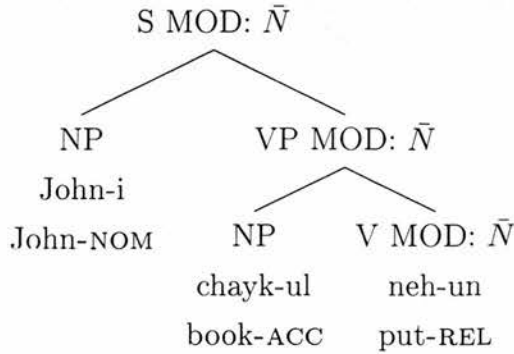
### 5.5.2 A multiple inheritance approach to English relatives

Providing an HPSG account of relative clauses is a particularly intriguing task. As we have seen in many places above, in HPSG, modifiers select for the modifiee by their head feature MOD. Consequently, in the case of relatives, an obvious problem arises: how can we stipulate a MOD specification on a relative clause. In certain languages, the verb of relative clauses carries an idiosyncratic affix that can be argued to be a relative marker. This is illustrated for Korean in (433):

- (433) a. John-i chayk-ul ku sangca-ey nuh-ess-ta  
 John-NOM book-ACC that box-LOC put-PAST.DECL  
 ‘John put the book in the box’
- b. [[John-i chayk-ul neh-un] sangca-ka] khu-ta  
 John-NOM book-ACC put-REL box-NOM big-DECL  
 ‘the box in which John put the book is big’

Since the suffix *un* is idiosyncratic to verbal heads of relative clauses, *un*-verbs can be lexically specified as [MOD  $\bar{N}$ ]. MOD, being a head feature, will propagate along the projection of such verbs, as illustrated in the tree-diagram in (434). Thus, relative clauses will qualify as modifiers of  $\bar{N}$ s.

(434)



Clearly, this strategy cannot apply to English, as the verbal head of English relatives is completely undistinguished from that of other clauses. In [Pollard and Sag, 1994], the [MOD  $\bar{N}$ ] specification at the top of a relative clause is due to an empty head that takes the relative clause as its complement. However, this approach turns out to be extremely complex and runs into several significant problems. Sag (1995) provides a quite distinct account of English relatives that relies on multiple inheritance. Consider first *subject wh-relatives*:

(435) 'Zoe, whose mother visited Kim...'

Subject *wh*-relatives such as **whose mother visited Kim** exhibit the same structural pattern as declaratives and interrogatives:

(436) a. Leslie visited Kim (declarative)

b. Who else visited Kim? (interrogative)

All three types of phrases consist of a subject NP and a VP. To capture the structural similarity between these phrases, Sag assumes that they are all subsorts of *subj-hd-ph* (*subject-head-phrase*). Consider (437).

$$(437) \quad \left[ \begin{array}{l} \text{HEAD} - \text{DTR } \textit{phrase} \\ \text{SUBJ} - \text{DTR} \langle X \rangle \end{array} \right]$$

The sort **hd-subj-ph**

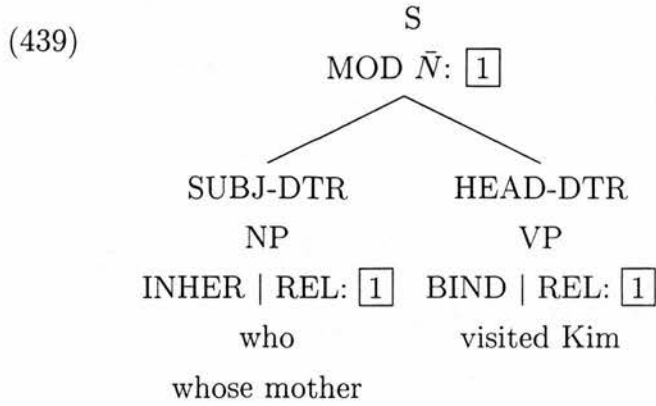
Two attributes are defined for the sort *hd-subj-ph*: HEAD-DTR and SUBJ-DTR. The value of HEAD-DTR is an object of sort *phrase*, whereas that of SUBJ-DTR is a subsort of *list* that contains a single element (this is represented in (437) as  $\langle X \rangle$ .) The features HEAD-DTR and SUBJ-DTR will be defined for every subsort of *hd-subj-ph* and in addition the values of those features in every subsort of *hd-subj-ph* will be an object of sort *phrase* and a list of length one, respectively.

However, a subject *wh*-relative such as *whose mother visited Kim* differs from declaratives and interrogatives in that it may serve as a modifier of a noun projection. To account for this idiosyncratic property of subject *wh*-relatives, Sag assumes that they also inherit from the sort *wh-rel-cl* (*wh-relative-clause*):

$$(438) \quad \left[ \begin{array}{l} \text{HEAD} \mid \text{MOD } \bar{N} : \boxed{1} \\ \text{HEAD} - \text{DTR} \left[ \text{BIND} \mid \text{REL} \{ \boxed{1} \} \right] \end{array} \right]$$

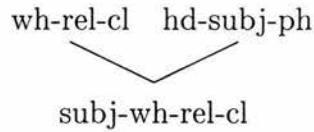
The sort **wh-rel-cl**

A subsort of *wh-rel-cl* is specified [MOD  $\bar{N}$ ], i.e. it is a modifier which selects for a noun projection. In addition, this phrase has a head-daughter which “interrupts” the propagation of the nonlocal feature REL (borne by the subject-daughter)—this is what [BIND | REL {  $\boxed{1}$  }] signifies. Inheritance from both *wh-rel-cl* and *hd-subj-ph* and the *Nonlocal Feature Principle* (cf. [Pollard and Sag, 1994]) yield a subject *wh*-relative, i.e. a sentence whose subject is a relative nominal. The relative subject of that sentence and the nominal it selects through MOD will be “coindexed” (i.e. co-referential) by structure-sharing (see tag  $\boxed{1}$  in the sort *wh-rel-cl* in (438)). The instantiation of values on subject *wh*-relatives is illustrated in the tree-diagram in (439).



Inheritance from the sorts *hd-subj-ph* and *wh-rel-cl* is illustrated in (440):

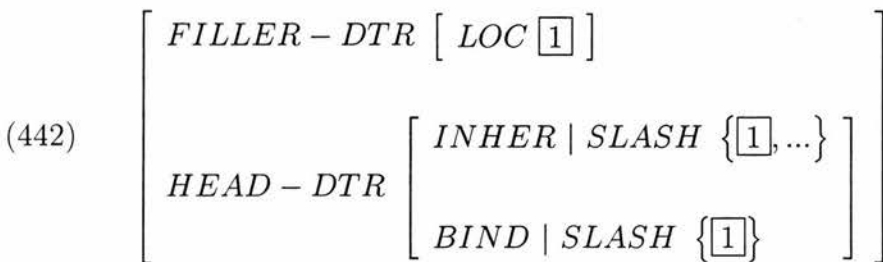
(440)



Another sort of English relative that Sag accounts for are the *non-subject wh-relatives*. E.g.:

(441) ‘the person whom Zoe met\_\_\_’

Finite non-subject *wh*-relatives can be viewed as structurally identical to topicalization examples, e.g. *Kim, Zoe met*. They both consist of a “dislocated” constituent (*whom* and *Kim*, for the relative in (441) and the topicalization example, respectively) and a sentence missing that constituent. In [Sag, 1995], both non-subject *wh*-relatives and topicalization examples are taken to be subsorts of *hd-fill-ph* (*head-filler-phrase*):



The sort **hd-fill-ph**

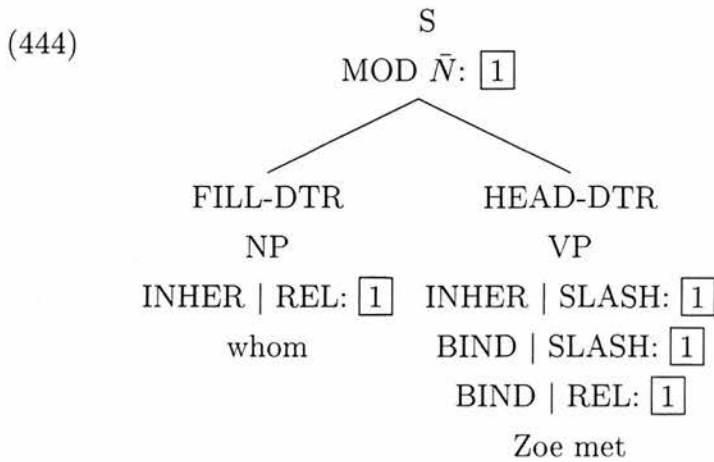
The subsorts of *hd-fill-ph* have a head-daughter specified  $\text{INHER} \mid \text{SLASH} \{ \boxed{1} \}$ . This signifies that their head phrase is missing a constituent. In addition, they have a  $\text{FILLER-DTR}$  that “matches” with the missing constituent of the head (see tag  $\boxed{1}$ ).

Non-subject *wh*-relatives differ from topicalization examples in that they also inherit from the sort *wh-rel-cl* (see (438) above). They thus acquire the  $\text{MOD}$  specification by means of which they select for a noun projection. Inheritance from both *hd-fill-ph* and *wh-rel-cl* entails that the filler-daughter is a relative pronoun or a phrase dominating such a pronoun. This is shown in (443):

$$(443) \left[ \begin{array}{l} \text{FILLER - DTR} [ \text{INHER} \mid \text{REL} \{ \boxed{1} \} ] \\ \text{HEAD - DTR} [ \text{BIND} \mid \text{REL} \{ \boxed{1} \} ] \end{array} \right]$$

*The sort non-subj-wh-rel-cl*

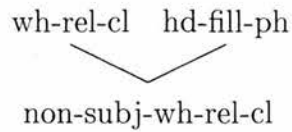
The instantiation of values on non-subject *wh*-relatives is illustrated in the tree-diagram in (444).<sup>19</sup>



Inheritance from the sorts *hd-fill-ph* and *wh-rel-cl* is illustrated in (445):

<sup>19</sup>The filler-daughter of a (finite) non-subject *wh*-relative is syntactically an NP or PP by inheritance from *fin-non-subj-wh-rel-cl*. This sort inherits from *non-subj-wh-rel-cl* (see (443) above) and *fin-hd-fill-ph*, a subsort of *hd-fill-ph* (see (442) above) which yields finite head-filler-phrases.

(445)



Sag's inheritance-based approach further extends to non-*wh*-relatives, e.g. **that** and **that**-less relatives, reduced relatives, etc.

In this section, it was illustrated how distinct types of relatives emerge by multiple inheritance from the sort hierarchy. The line taken in [Sag, 1995] entails the elimination of the Immediate Dominance Principle (cf. [Pollard and Sag, 1994]) that consists of a set of disjunctive constraints for the licensing of the various kinds of phrases. Instead, information necessary for the representation of phrases is expressed only once in a single sort of the hierarchy and from there is directed through inheritance where required. Well-formed phrases do not satisfy ID-Schemata, but rather the individual sorts they are associated with. In the following sections, it will be demonstrated how NPs with a possessive and/or pseudo-possessive genitive derive through multiple inheritance from the sort hierarchy.

### 5.5.3 Greek NPs with a possessive complement-daughter: a multiple inheritance analysis

In this section, I provide an analysis of NPs with a possessive complement-daughter in terms of multiple inheritance. Such NPs are viewed as inheriting from two sorts: (a) a sort expressing the property that a phrase may consist of a head and its complement(s) and (b) a sort expressing the property that a transitive noun may be definite.

As illustrated in section 5.2 above, intrinsic and extrinsic possessives are treated as complements of relational and transitive non-relational nouns, respectively. Therefore, noun phrases consisting of a head and a possessive complement (and, possibly, other complements too) are subsorts of *hd-comp-ph* (*head-*

*complement-phrase*), provided in (446) below.

$$(446) \quad \left[ \begin{array}{l} \text{HEAD} - \text{DTR } \textit{word} \vee \textit{phrase} \\ \text{COMP} - \text{DTRS } \textit{nonempty} - \textit{list} \end{array} \right]$$

The sort **hd-comp-ph**

The sort *hd-comp-ph* is a subsort of *phrase*. Other subsorts of *phrase* are the sorts *hd-subj-ph* and *hd-filler-ph* (see (437) and (442) above, respectively), etc. The subsorts of *hd-comp-ph* bear the features HEAD-DTR and COMPS-DTR. In addition, the value of HEAD-DTR on the subsorts of *hd-comp-ph* is an object of sort *word* or *phrase*,<sup>20</sup> whereas the value of COMPS-DTR is an object of sort *nonempty-list*. That is, subsorts of *hd-comp-ph* consist of a lexical or phrasal head and the non-subject complement(s) of that head.<sup>21</sup> Phrases of any category that consist of a head and its complement(s) are subsorts of *hd-comp-ph*, e.g. VPs, NPs, APs, PPs, etc. By the Subcategorization Principle, instantiations of *hd-comp-ph* are required to satisfy the selectional restrictions the head imposes on its complements and that are expressed in the SUBCAT value of the former.

As we saw in section 4.6 (see also section 5.5.1 above), possessive genitives are not available in just *any* nominal, rather they occur only in definite or specific NPs.<sup>22</sup> In the rest of this section, I demonstrate how the approach to definiteness presented in chapter 3 can be integrated with an inheritance-based analysis of Greek noun phrases, so that the distribution of possessives is accounted for. In brief, only *definite* noun heads are allowed to license intrinsic or extrinsic possessive complements. That is, NPs with a possessive complement-daughter have a definite head-daughter:

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<sup>20</sup>The value of HEAD-DTR for *hd-comp-ph* and its subsorts is in fact an object of sort *sign*. The sort *sign* partitions into the sorts *word* and *phrase*, cf. [Pollard and Sag, 1994].

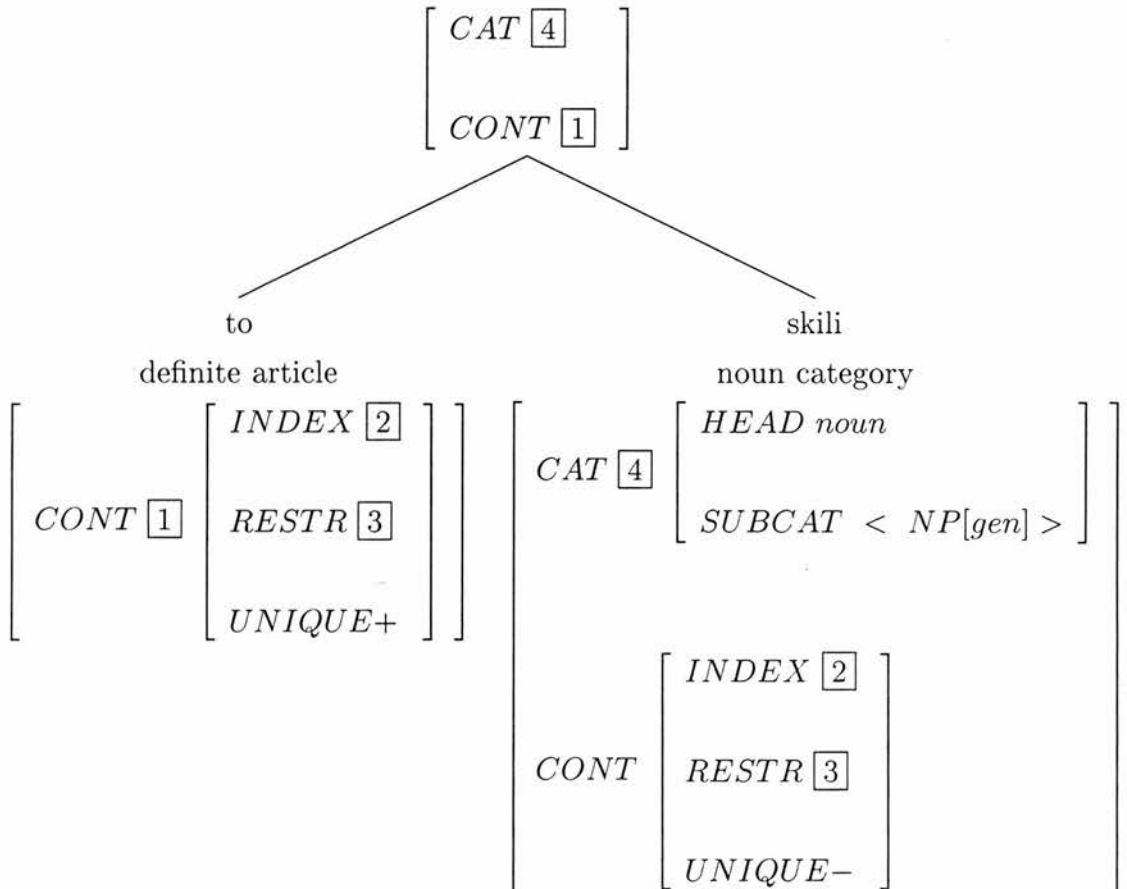
<sup>21</sup>Recall from the previous section that phrases consisting of a head and its subject fall under *hd-subj-ph*.

<sup>22</sup>The correlation between possessive genitives and specificity is not discussed any further. The current approach to definiteness and the licensing of possessives can hopefully be extended to cover the specificity examples once the exact semantic import of specificity is identified.

(447) [ *HEAD - DTR* | *CONT* | *UNIQUE+* ]

Recall from chapter 3 that the definite article in Greek may combine with a noun, adjective or numeral category and yield a definite NP, AP or NumP, respectively. Definite marking is formally expressed by the *UNIQUE+* specification which is assigned a precise semantic interpretation: *UNIQUE+* nominals are constrained to refer to entities that uniquely instantiate a given property in a local setting. The tree-diagram in (448) illustrates the generation of the definite noun *to skili* (the dog). The syntactic category and subcategorization information comes from the noun *skili* (see tag [4]), whereas the content information comes from the definite article (see tag [1]). The latter has incorporated the semantic contribution of the head, and moreover, it introduces the *UNIQUE+* specification. It is definite nouns such as *to skili* that license possessive complements.

(448)



Definite noun categories do not always take possessive complements. There are non-transitive non-relational definite nouns, e.g. the non-transitive version of *to skili* (the dog) and the non-transitive non-relational *i perigrafi* (the description). Such nouns fall under the sort *definite-nontransitive-noun* (*def-nontrans-noun*):

$$(449) \left[ \begin{array}{l} \left[ \begin{array}{l} \text{HEAD } \textit{noun} \\ \text{SUBCAT } \textit{empty - list} < > \end{array} \right] \\ \text{CAT} \\ \text{CONT} \mid \text{UNIQUE+} \end{array} \right]$$

The sort **def-nontrans-noun**

As shown in (449), a subsort of *def-nontrans-noun* involves a definite article and a noun head that bears an empty subcat list. Such definite nominals do not take complements, rather they occur on their own or they may be modified by a pseudo-possessive, adjective, etc.

Definiteness is a necessary but not sufficient condition for the licensing of possessives: a noun category will combine with a possessive genitive provided (a) that category is relational or transitive non-relational and subcategorizes for an intrinsic or extrinsic possessive, respectively, and (b) it is specified **UNIQUE+**, i.e. it is a definite noun category. Such noun categories are subsumed under the sort *definite-transitive-noun* (*def-trans-noun*). See (450), where  $\boxed{1}$  stands for an object of sort *nom-obj*.

(450)

$$\left[ \begin{array}{l} \text{CAT} \left[ \begin{array}{l} \text{HEAD } \textit{noun} \\ \text{SUBCAT } \textit{nonempty-list} < \dots \textit{det} - \textit{nondet}[\textit{gen}] : \boxed{1}, \dots > \end{array} \right] \\ \text{CONT} \mid \text{UNIQUE+} \end{array} \right]$$

The sort **def-trans-noun**

As shown in (450), a subsort of *def-trans-noun* involves a definite article and a noun head that bears a non-empty subcat list. Such definite nominals carry a subcategorization requirement for a possessive genitive (inter alia)—this is what the specification **det-nondet[gen]: 1** signifies.

The sort *def-hd-comp-ph* (*definite-head-complement-phrase*) in (451) below is a subsort of *hd-comp-ph* (see (446) above) which bears a HEAD-DTR value of sort *def-trans-noun* (see (450)).

$$(451) \quad \left[ \text{HEAD} - \text{DTR} : \textit{def} - \textit{trans} - \textit{noun} \right]$$

The sort **def-hd-comp-ph**

NPs with a possessive daughter are subsorts of *def-hd-comp-ph*, the spelled-out version of which is as shown in (452), where **1** stands for an object of sort *nom-obj*.

(452)

$$\left[ \begin{array}{l} \text{HEAD} - \text{DTR} \left[ \begin{array}{l} \text{CAT} \left[ \begin{array}{l} \text{HEAD } \textit{noun} \\ \text{SUBCAT } \textit{nonempty-list} < \dots \textit{det} - \textit{nondet}[\textit{gen}] : \boxed{1}, \dots > \end{array} \right] \\ \text{CONT} \mid \text{UNIQUE+} \end{array} \right] \\ \text{COMP} - \text{DTRS } \textit{nonemptylist} \end{array} \right]$$

The sort **def-hd-comp-ph** (*spelled-out version*)

As shown in (452), subsorts of *def-hd-comp-ph* are definite noun categories consisting of a head-daughter which subcategorizes for a possessive genitive (inter

alia) and complement daughters including an intrinsic or extrinsic possessive.

In the current system, indefinite NPs with a possessive complement-daughter are excluded, as the feature-structure in (453) below is *not* a sort of the hierarchy, and not a well-formed sign for Greek ( $\boxed{1}$  stands for an object of sort *nom-obj*).

(453)

$$\left[ \begin{array}{l} \text{HEAD - DTR } \textit{indef - trans - noun} \\ \text{COMP - DTRS } \textit{nonemptylist} \end{array} \left[ \begin{array}{l} \text{CAT} \left[ \begin{array}{l} \text{HEAD } \textit{noun} \\ \text{SUBCAT} < \dots \textit{det - nondet[gen] : } \boxed{1}, \dots > \\ \text{CONT | UNIQUE-} \end{array} \right] \end{array} \right] \right]$$

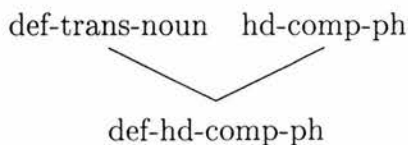
HEAD-DTR in (453) bears the sort value *indef-trans-noun* (*indefinite-transitive-noun*). Subsorts of *indef-trans-noun* are indefinite (i.e. UNIQUE-) noun categories that subcategorize for a possessive genitive. Such nominals qualify as arguments of the definite article yielding thus *def-trans-noun*, which we saw in (450) above. Though *indef-trans-noun* is a valid sort, there is no subsort of *hd-comp-ph* in the hierarchy whose HEAD-DTR feature is specified *indef-trans-noun* ((454) is a abbreviation of (453)):

$$(454) \left[ \begin{array}{l} \text{HEAD - DTR } \textit{indef - trans - noun} \\ \text{COMP - DTRS } \textit{nonempty - list} \end{array} \right]$$

Therefore, indefinite NPs with a possessive daughter are not legitimate objects.

Inheritance from the sorts *hd-comp-ph* and *def-trans-noun* is graphically illustrated in (455):

(455)



The tree-diagram in (456) illustrates the licensing of the (extrinsic) possessive **tu Yani** (Yanis's) by the transitive non-relational definite noun **to skili** (the dog). The mother phrase is a subsort of *def-hd-comp-ph* and satisfies the Head Feature Principle and the Semantics Principle.



### 5.5.4 The licensing of Greek NPs with a pseudo-possessive adjunct-daughter

As we have seen in section 5.3.1 above, in the current system, pseudo-possessives are treated as modifiers of nouns. This treatment enables their relatively free distribution to be naturally accounted for. In HPSG terms, pseudo-possessives select for a noun category through their head feature *MOD*, and, in addition, the value of *SOA-ARG* in the pseudo-possessive's content *psoa* is identical to the restriction value of the noun category selected, by structure-sharing. This is shown in the skeletal AVM below, where  $\boxed{1}$  stands for an object of sort *psoa*.

$$(457) \left[ \begin{array}{l} CAT \mid HEAD \mid MOD : noun [RESTR \boxed{1}] \\ \\ CONTENT \textit{psoa} \left[ \begin{array}{l} RELATION \iota - like \\ ARG - SOA \boxed{1} \end{array} \right] \end{array} \right]$$

*The CATEGORY and CONTENT values of pseudo-possessive genitives*

In this section, we will first consider how phrases consisting of a noun category and a pseudo-possessive are licensed. In [Pollard and Sag, 1994], head-adjunct phrases are licensed by the ID schema 5 (Head-Adjunct Schema). This schema admits feature structures with a *DAUGHTERS* value of sort *head-adjunct-structure* (i.e. an object bearing the attributes *HEAD-DTR* and *ADJUNCT-DTR*) and requires that the *SYNSEM* value of the head-daughter is token-identical to the *MOD* value of the adjunct-daughter.<sup>23</sup> However, assuming a multiple inheritance approach to the licensing of phrases along the lines of [Sag, 1995], NPs with a pseudo-possessive adjunct-daughter can be viewed as inheriting from *hd-adjunct-ph* (*head-adjunct-phrase*), given in (458).

<sup>23</sup>This schema has been employed in chapter 3 to account for the syntactic combining of adjective categories with noun categories, or the combining of the definite article with indefinite categories of an appropriate sort, etc.

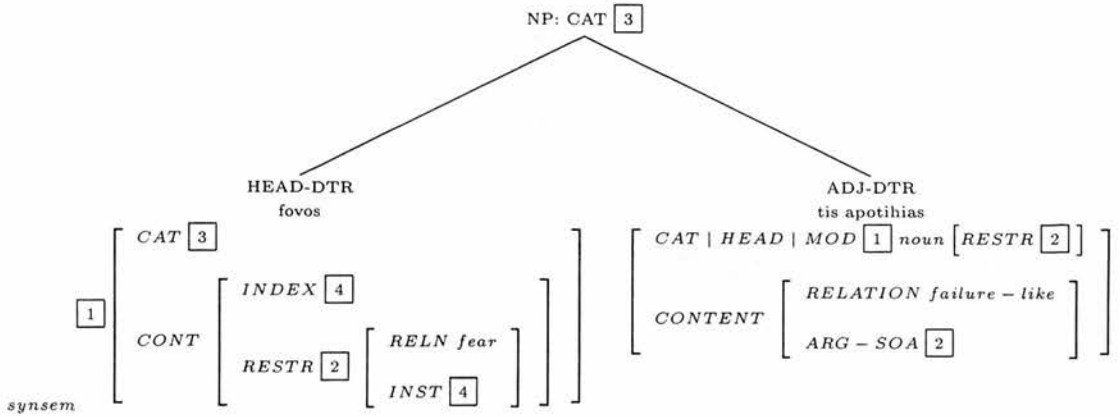
$$(458) \quad \left[ \begin{array}{l} \text{HEAD} - \text{DTR} \mid \text{SYNSEM} \boxed{1} \\ \text{ADJ} - \text{DTR} \mid \text{HEAD} \mid \text{MOD} \boxed{1} \end{array} \right]$$

The sort **hd-adjunct-ph**

The sort *hd-adjunct-ph* in (458) is a subsort of *phrase*. Other subsorts of *phrase* are the sorts *hd-subj-ph* (*head-subject-phrase*), *hd-comp-ph* (*head-complement-phrase*), *hd-fill-ph* (*head-filler-phrase*) that we have seen in the previous sections. A phrase that inherits from *hd-adjunct-ph* will have a head-daughter and an adjunct-daughter, and, moreover, the MOD value on the adjunct-daughter (an object of sort *synsem*) and the SYNSEM value on the head-daughter (of sort *synsem*) will be identical. That is, the sort *hd-adjunct-ph* imposes the same constraints as Schema 5 (Head-Adjunct-Schema) in [Pollard and Sag, 1994].

By way of illustration, let us consider the syntactic combining of the noun **fovos** (fear) with the pseudo-possessive **tis apotihias** (of failure) in the tree-diagram in (459). The SYNSEM value  $\boxed{1}$  of the head-daughter **fovos** is identical to the MOD value of the pseudo-possessive adjunct, by inheritance from *hd-adjunct-ph*. The value of ARG-SOA in the content *psoa* of the pseudo-possessive (which is coindexed with the restriction of the selected noun category in the MOD value) is therefore instantiated (tag  $\boxed{2}$ ). The category features (which are HEAD and SUBCAT) on the mother (see tag  $\boxed{3}$  at the top of the tree) originate from the head-daughter, in accordance with the Head Feature Principle and the Subcategorization Principle.

(459)



We will next consider how the content of a phrase with a pseudo-possessive adjunct-daughter compositionally derives from the content of its parts. In [Pollard and Sag, 1994], the CONTENT value of distinct types of phrases is determined by the Semantics Principle. As previously mentioned, the content of a head-adjunct phrase is required by the Semantics Principle to be identical to the content of the adjunct-daughter which incorporates the content of the head. However, Pollard and Sag (1994) for the most part consider examples with referential adjectives. It turns out that the Semantics Principle will have to be considerably more complex in order that it accommodates the content of other types of head-adjunct phrases.

A quite distinct account for deriving the semantics of the various types of phrases is presented in [Sag, 1995]. Sag proposes that different types of phrases instantiate distinct sorts in the hierarchy of content values. Similarly for head-adjunct phrases. For example, NPs with a relative clause as their adjunct-daughter are construed as subsorts of *hd-rel-adjunct-ph* (*head-relative-adjunct-phrase*). This sort is given in (460).

$$(460) \left[ \begin{array}{l} \text{HEAD} - \text{DTR} \left[ \begin{array}{l} \text{INDEX } \boxed{1} \\ \text{RESTR } \boxed{2} \end{array} \right] \\ \text{ADJ} - \text{DTR} \mid \text{CONT } \boxed{3} \\ \text{CONT } \textit{nom} - \textit{obj} \left[ \begin{array}{l} \text{INDEX } \boxed{1} \\ \text{RESTR } \boxed{2} \wedge \boxed{3} \end{array} \right] \end{array} \right]$$

The sort **hd-rel-adjunct-ph**

The sort *hd-rel-adjunct-ph* is a subsort of *hd-adjunct-ph* (see (458) above). Therefore, it inherits the features HEAD-DTR and ADJ-DTR and the SYNSEM value of the former is identical to the MOD value of the latter. In addition, *hd-rel-adjunct-ph* stipulates that the content value of head-adjunct-phrases of this sort is a *nominal-object*: the INDEX value is identical to that of the head-daughter (tag  $\boxed{1}$ ), whereas the RESTRICTION value equals the conjunction of the restriction of the head-daughter (tag  $\boxed{2}$ ) with the content *psoa* of the adjunct-daughter (tag  $\boxed{3}$ ).<sup>24</sup>

For example, the CONTENT value of the phrase *person who visited Kim*, which is a subsort of *hd-rel-adjunct-ph*, is as shown in (461) below. The index  $\boxed{1}$  originates from *person* (i.e. the head constituent of *person who visited Kim*); the restriction consists of two *psoa*s: the restriction introduced by *person* (denoting that the index  $\boxed{1}$  must be anchored on a person) and the restriction of the relative clause (where an index  $\boxed{1}$  that is restricted to be anchored on a person and another index  $\boxed{2}$  that is restricted to be anchored on an entity named “Kim” fill the VISITOR and VISITED role, respectively).

<sup>24</sup>Like all sentences, relative clauses have a CONTENT value of sort *psoa*.

$$(461) \quad \left[ \begin{array}{c} INDEX \boxed{1} [ NUM \textit{sg} ] \\ \\ RESTR \left[ \begin{array}{c} RELN \textit{person} \\ INST \boxed{1} \end{array} \right] \wedge \left[ \begin{array}{c} RELN \textit{visit} \\ VISITOR \boxed{1} \\ VISITED \boxed{2} \end{array} \right] \end{array} \right]$$

The *CONTENT* value of person who visited Kim

Sag (1995) identifies a further subsort of *hd-adjunct-ph*, namely, *hd-ref-adjunct-ph* (*head-referential-adjunct-phrase*), which subsumes head-adjunct phrases with a referential adjunct-daughter.<sup>25</sup> This sort is given in (462):

$$(462) \quad \left[ \begin{array}{c} ADJ - DTR | CONTENT \boxed{1} \\ \\ CONTENT \boxed{1} \end{array} \right]$$

The sort **hd-ref-adjunct-ph**

The sort *hd-ref-adjunct-ph* is also a subsort of *hd-adjunct-ph* (see (458) above). This sort stipulates an identity that in [Pollard and Sag, 1994] was accounted for by the Semantics Principle: in head-adjunct phrases, the content of the mother is identical to the content of the adjunct-daughter. Subsorts of *hd-ref-adjunct-ph* have a *CONTENT* value which is identical to that of their adjunct-daughter (a referential adjective). This value incorporates the content of the  $\bar{N}$ , since the adjunct-daughter's content incorporates the content of the head-daughter.<sup>26</sup> Consider, for instance, the content of the phrase *red book*, which is a subsort of *hd-ref-adjunct-ph*:

<sup>25</sup>I have called *hd-ref-adjunct-ph* the sort that Sag refers to as *vanilla-hd-adjunct-ph*.

<sup>26</sup>This is possible by structure-sharing: the adjective's content includes the restriction of the  $\bar{N}$  selected through MOD. This is illustrated in detail in section 3.4.3 above.

$$(463) \quad \left[ \begin{array}{l} INDEX \boxed{1} [ NUM \textit{sg} ] \\ \\ RESTR \left[ \begin{array}{l} RELN \textit{red} \\ INST \boxed{1} \end{array} \right] \wedge \left[ \begin{array}{l} RELN \textit{book} \\ INST \boxed{1} \end{array} \right] \end{array} \right]$$

The *CONTENT* value of red book

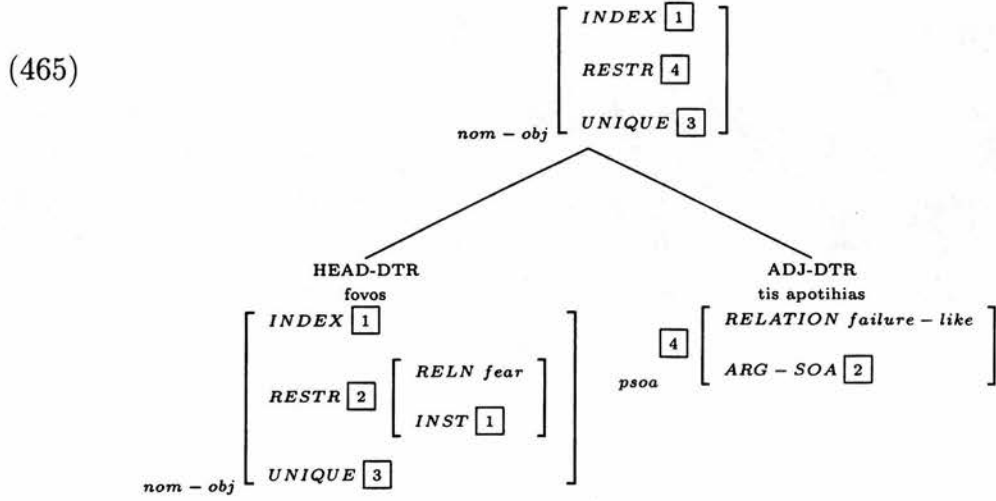
In order to account for phrases with a non-referential nominal as their adjunct-daughter, we define a further subsort of *hd-adjunct-ph*, namely, *hd-nonref-adjunct-ph* (*head-nonreferential-adjunct-phrase*). The content of NPs with a pseudo-possessive daughter derives by inheritance from *hd-nonref-adjunct-ph*. This sort is given in (464):

$$(464) \quad \left[ \begin{array}{l} HEAD - DTR \left[ \begin{array}{l} INDEX \boxed{1} \\ UNIQUE \boxed{2} \end{array} \right] \\ \\ ADJ - DTR | CONT \textit{psoa} \boxed{3} \\ \\ CONT \textit{nom - obj} \left[ \begin{array}{l} INDEX \boxed{1} \\ RESTR \boxed{3} \\ UNIQUE \boxed{2} \end{array} \right] \end{array} \right]$$

The sort **hd-nonref-adjunct-ph**

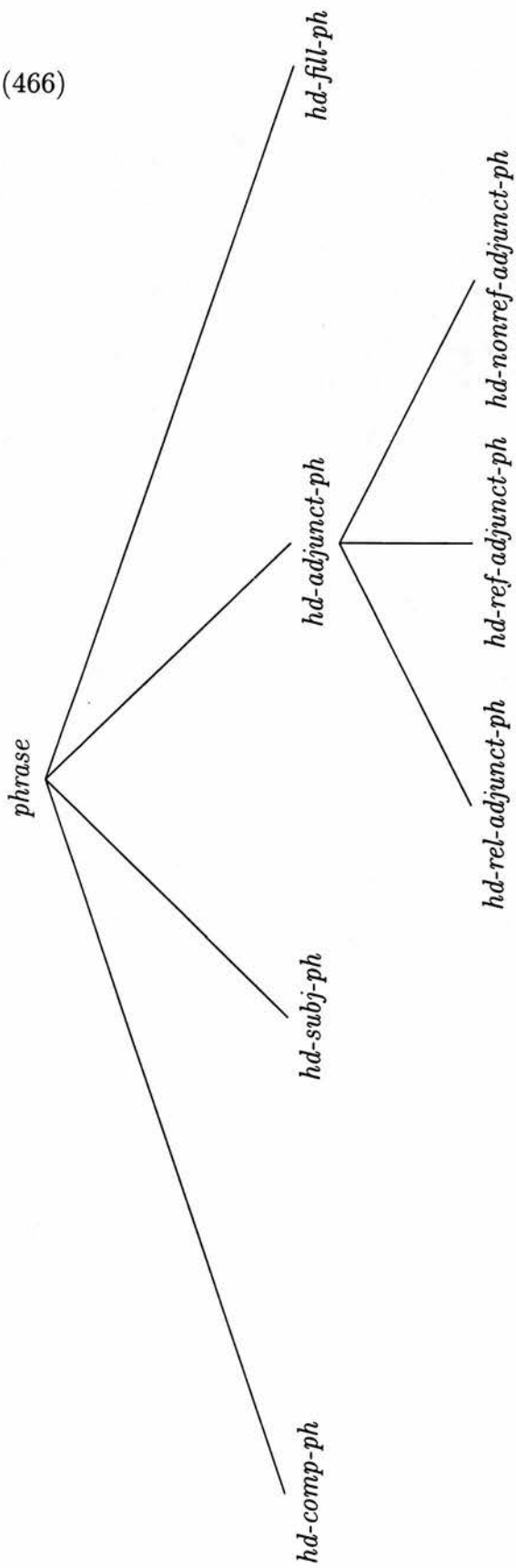
The sort *hd-nonref-adjunct-ph* inherits from *hd-adjunct-ph* the features HEAD-DTR and ADJ-DTR and identity between the SYNSEM value of the head-daughter and the MOD value of the adjunct-daughter. Subsorts of *hd-nonref-adjunct-ph* have a content value of sort *nom-obj*. The INDEX and UNIQUE values originate from the head-daughter (see tags  $\boxed{1}$  and  $\boxed{2}$ , respectively), whereas the RESTR value is identical to the content value of the adjunct-daughter (see tag  $\boxed{3}$ ).

The top AVM in the tree-diagram below shows the content of the phrase *fovos tis apotihias* (fear of failure). This object is a subsort of *hd-nonref-adjunct-ph*.



The lattice in (466) graphically demonstrates the relations holding between the various subsorts mentioned in this section.

(466)



### 5.5.5 The linear order of possessives and pseudo-possessives

In this section, I account for the relative order of possessive and pseudo-possessive genitives. As was shown in section 4.3.4, pseudo-possessives strictly precede possessives inside Greek NPs. This constraint makes part of the hypothesis concerning the distribution of genitives (repeated for ease below):

- (467) *The distribution of genitives in Greek NPs:* No more than two genitives are admissible and they must be of distinct types—one possessive and one pseudo-possessive. Moreover, the pseudo-possessive must precede the possessive.

It can be argued that the relative order of the two types of genitives is a natural consequence of the property of pseudo-possessives to combine with a lexical noun category (i.e. a word). Evidence that pseudo-possessives modify a lexical noun, rather than an NP, comes from the distribution of adjectives. We have seen in chapters 2 and 3 that adjectives are free to precede or follow the noun head in indefinite NPs, and may also intervene between the head and its complements. However, adjectives cannot intervene between a noun head and a pseudo-possessive genitive, rather they precede or follow such groups. This is demonstrated in (468):

- (468) a. arketa leptomeris perigrafes podosferikon agonon  
quite detailed descriptions football matches-GEN  
'quite detailed football match descriptions'
- b. \*perigrafes arketa leptomeris podosferikon agonon  
descriptions quite detailed football matches-GEN
- c. perigrafes podosferikon agonon arketa leptomeris  
descriptions football matches-GEN quite detailed  
'quite detailed football match descriptions'

Similarly for polydefinite NPs. As was shown in chapters 2 and 3, definite adjectives (i.e. sequences consisting of a definite article and an adjective category) may precede or follow definite nouns or intervene between such nouns and their

complements. However, definite adjectives cannot intervene between a noun and its pseudo-possessive adjunct. This is shown in (469).

- (469) a. *to vivlio istorias to agliko*  
the book history-GEN the English  
'the English history book'
- b. \**to vivlio to agliko istorias*  
the book the English history-GEN
- c. *to agliko to vivlio istorias*  
the English the book history-GEN  
'the English history book'

The requirement that pseudo-possessives should precede possessives inside Greek NPs can be viewed as constituting further evidence that pseudo-possessives may modify only lexical nouns. Once a noun head combines with a possessive complement, a noun phrase derives, and pseudo-possessives cannot modify phrases. By contrast, the pseudo-possessive first, possessive second pattern enables the selectional restrictions of pseudo-possessives (i.e. their selecting for lexical noun categories) to be satisfied.

If pseudo-possessives are assumed to combine with lexical nouns, it follows that noun complements, for example, possessives, will syntactically combine with phrasal, rather than lexical heads. However, this is not surprising: as we have already seen in section 5.5, possessive complements combine with definite NP heads, i.e. sequences consisting of a definite article and a lexical or phrasal noun category. In fact, the current approach enables us to account for examples such as (470) (repeated from chapter 2), where the head constituent that licenses the possessive *tu Yani* is a polydefinite phrase (*to podilato to kenurio*).

- (470) *to podilato to kenurio tu Yani*  
the bike the new the-GEN Yanis-GEN  
'Yanis new bike'

Possessives combine with phrases, and these phrases may have a pseudo-possessive adjunct-daughter. The HPSG resources, and, in particular, the Subcategorization Principle, enable heads to combine first with modifiers (e.g. pseudo-possessives) and then with their arguments: an NP consisting of a noun and a pseudo-possessive can be a “transitive” noun category carrying subcategorization requirements that originate from the lexical noun by the Subcategorization Principle (see below).<sup>27</sup>

We will consider next how the requirement that pseudo-possessives should combine with lexical nouns can be formulated in HPSG. The property of pseudo-possessives to select for words rather than phrases cannot be expressed in their MOD attribute: the value of MOD, as conceived in [Pollard and Sag, 1994], is an object of sort *synsem*, whereas whether an expression is lexical or phrasal is expressed at the sign level—words are feature structures of sort *word* and phrases are feature structures of sort *phrase*. However, assuming a multiple inheritance approach, the property of pseudo-possessives to combine with lexical noun heads can be inherited. To this end, I define the sort *lex-hd-nonref-adjunct-ph* (*lexical-head-nonreferential-adjunct-phrase*), given in (471).

(471) [ *HEAD – DTR word* ]

*The sort lex-hd-nonref-adjunct-ph*

The sort *lex-hd-nonref-adjunct-ph* in (471) is a subsort of *hd-nonref-adjunct-ph* (see (464) in the previous section). In addition, it specifies that the head-daughter should be of sort *word*, i.e. lexical. NPs with a pseudo-possessive adjunct-daughter are subsorts of *lex-hd-nonref-adjunct-ph* and consist of a lexical head and a non-referential nominal adjunct.

By way of illustration, consider the combining of the noun *perigrafes* (descriptions) with the pseudo-possessive adjunct *podosferikon agonon* (football matches) in the tree-diagram (472). The phrase *perigrafes podosferikon agonon* is a subsort of *lex-hd-nonref-adjunct-ph*: the head-daughter in (472) is a lexical noun (a word)

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<sup>27</sup>Such an NP may alternatively be non-transitive, in case the pseudo-possessive has combined with a non-transitive non-relational noun.



pseudo-possessives might indicate that this type of modifier may semantically combine only with “simple” properties, rather than “complex” ones, i.e. properties denoted by lexical nouns rather than properties denoted by NPs which contain both a noun and an adjective or pseudo-possessive modifier, etc.

Nonetheless, the HPSG account of possessives and pseudo-possessives provided in this chapter covers all the three requirements of the hypothesis concerning the distribution of genitives in Greek NPs: (a) that no more than a single possessive is admissible per noun head (since there are no Greek nouns subcategorizing for more than a single genitive complement, and this generalization can be expressed in the hierarchy of subcat list sorts for Greek), (b) that pseudo-possessives precede possessives (since pseudo-possessives have the property to combine with lexical noun categories) and (c) that no more than a single pseudo-possessive is admissible per noun head, which follows from the requirement that pseudo-possessives should modify lexical nouns.

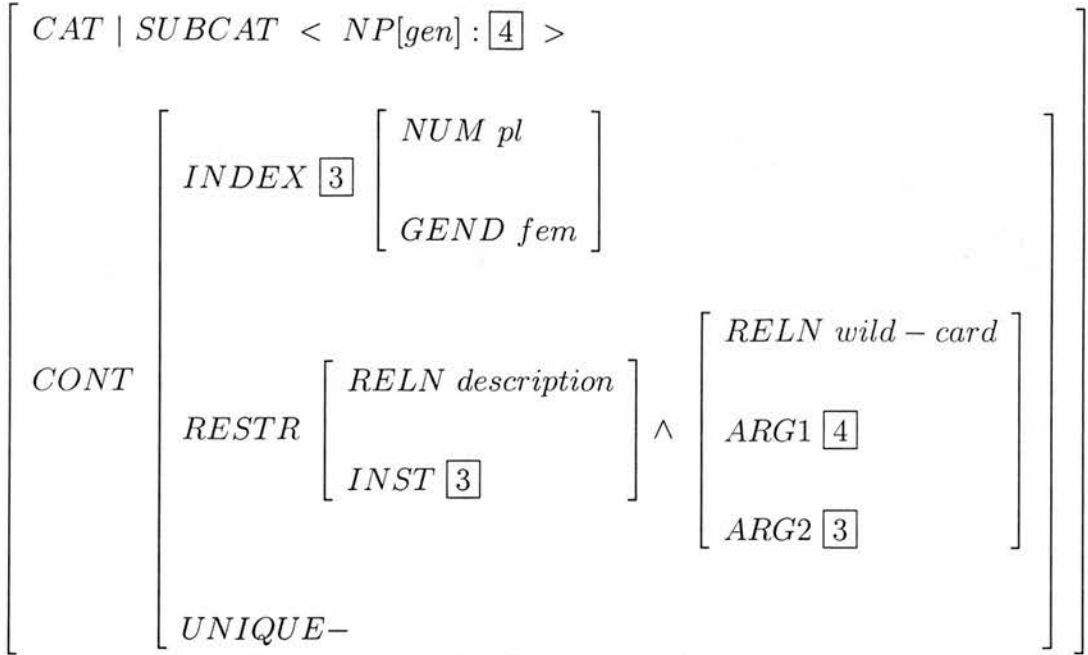
## 5.6 An example

Here I provide a detailed “derivation” of the feature structure of a noun phrase that contains two genitives, both a possessive and a pseudo-possessive:

- (473)    *i perigrafes        podosferikon agonon tu ekfoniti*  
          the descriptions football matches-GEN the-GEN broadcaster-GEN  
          ‘the broadcaster’s football match descriptions’

The head noun *perigrafes* (descriptions) of (473) is as shown in (474).

(474)



*The transitive non-relational perigrafes (descriptions)*

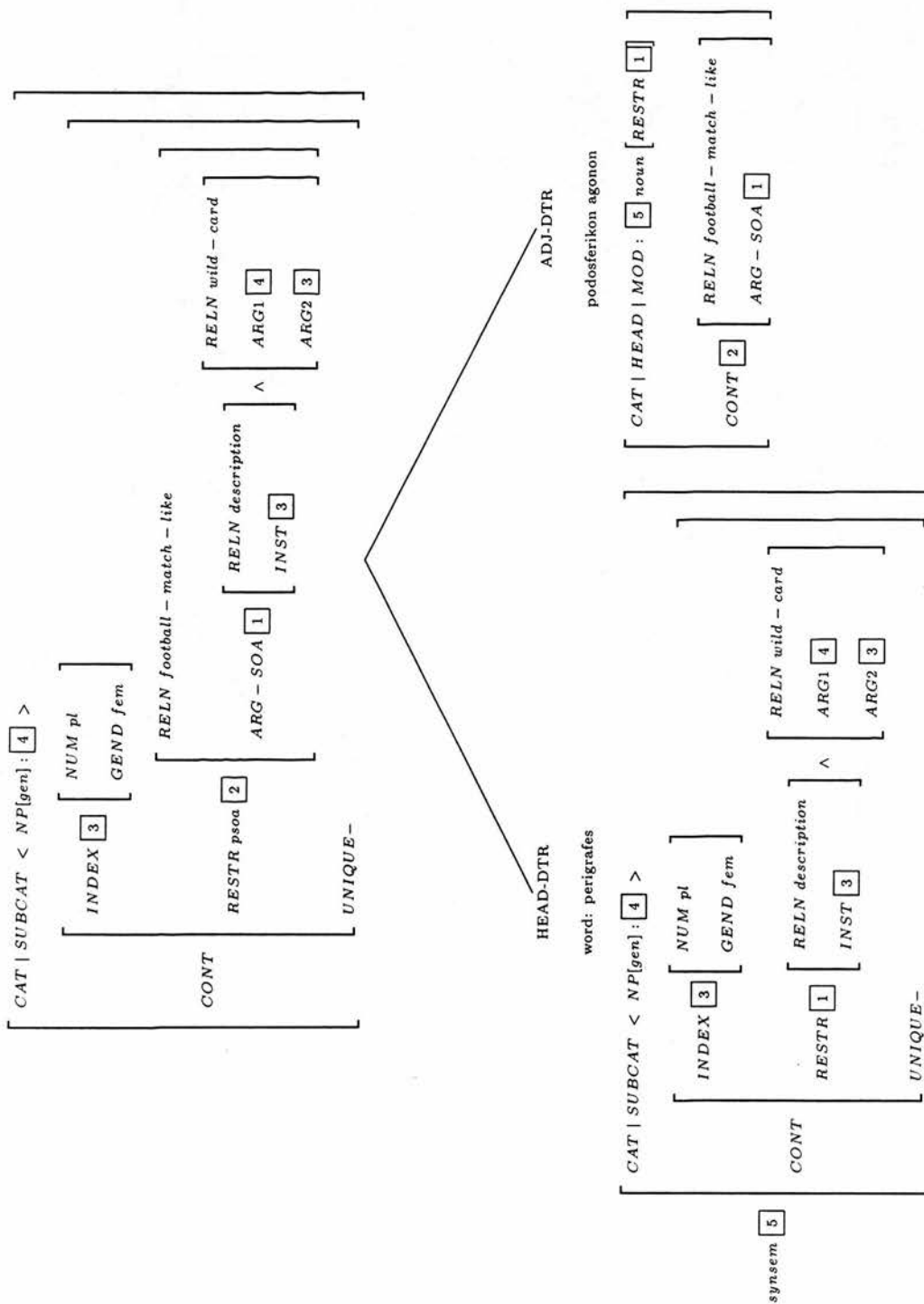
This version of *perigrafes* is a transitive non-relational noun: it subcategorizes for an extrinsic possessive, and, moreover, it is the kind of noun that a pseudo-possessive may combine with.<sup>28</sup> The particular version of *perigrafes* denotes the outcome of describing, rather than the unfurling of a description event over time. Therefore, its CONTENT | RESTRICTION includes the *wild card* psoa which bears two arguments: one linked with the index  $\boxed{3}$  of *perigrafes* and the other with the index of the subcategorized possessive  $\boxed{4}$ .

In the tree-diagram (475), we see that the synsem value  $\boxed{5}$  of the head-daughter is identical to the MOD value of the pseudo-possessive. This is stipulated by inheritance from the sort *hd-adjunct-ph*. Moreover, the RESTR value  $\boxed{1}$  of the noun is identical to the pseudo-possessive's ARG-SOA value. This is specified by structure-sharing on the pseudo-possessive. Finally, the head-daughter is a word, by inheritance from the sort *lex-hd-nonref-adjunct-ph*. The mother phrase in (475) is a noun projection by the Head Feature Principle. In addition, its SUBCAT value is identical to that of *perigrafes*, by the Subcategorization Principle.

<sup>28</sup>Recall that pseudo-possessives select for noun heads with a SUBCAT value of sort *elist* or *strict-trans*, (see section 5.3.1).

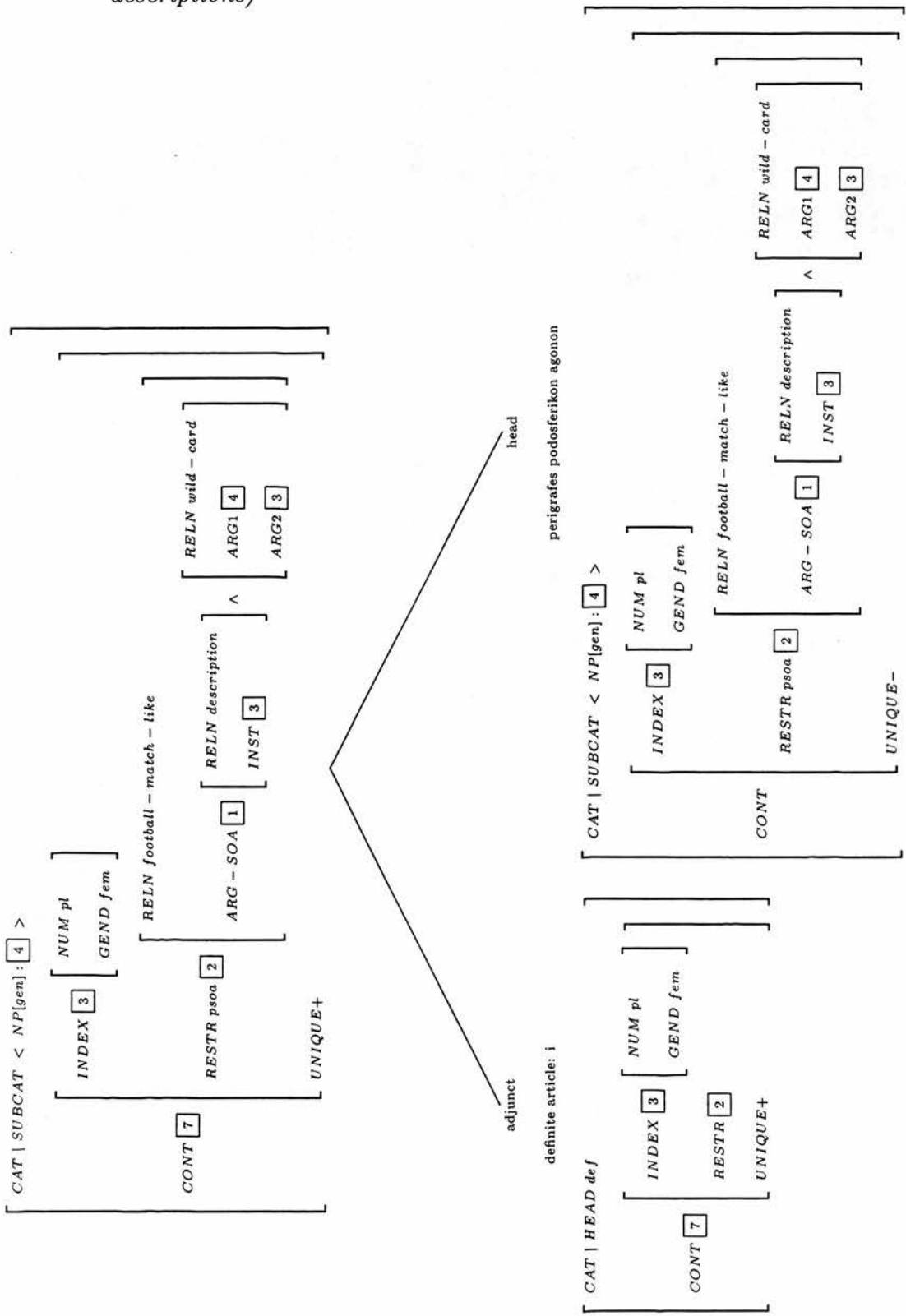
The unsaturated SUBCAT requirements of *perigrafes* will propagate upwards until they are cancelled off. Finally, the CONTENT value derives by inheritance from *hd-nonref-adjunct-ph*. Being specified UNIQUE-, the top NP in (475) qualifies as an argument of the definite article.

(475) *The phrase perigrafes podosferikon agonon (football match descriptions).*



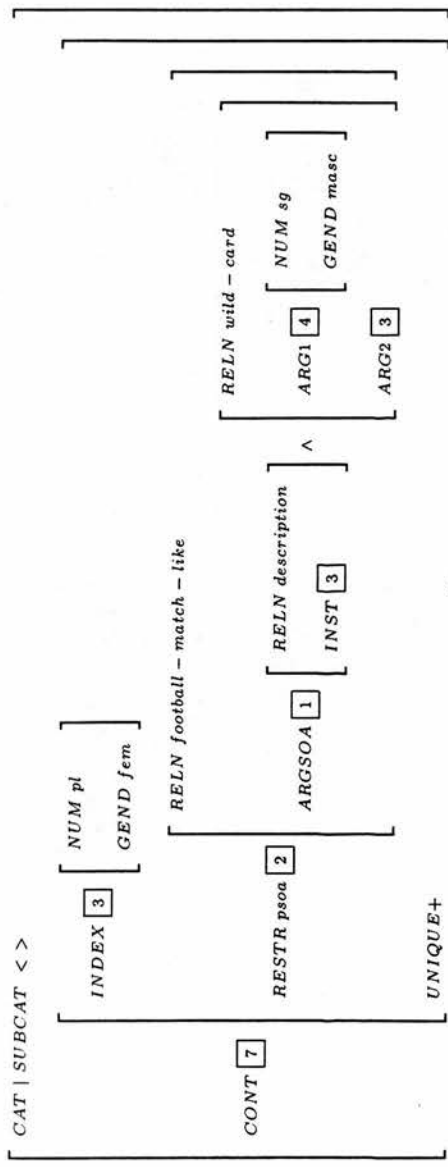
Consider next the tree-diagram in (476). The HEAD and SUBCAT values of the mother NP in (476) originate from the head daughter, i.e. the indefinite NP of (475). On the other hand, the CONTENT value is identical to that of the definite article, which incorporates the restrictions of the head (see tag [7]). Assuming the [Sag, 1995] inheritance-based approach to head-adjunct phrases, the CONTENT value on the top phrase in (476) is due to inheritance from the sort *hd-ref-adjunct-ph*. The NP *i perigrafes podosferikon agonon* (the football match descriptions) is definite and subcategorizes for a possessive genitive. That is, it instantiates the sort *def-trans-noun*.

(476) *The definite phrase i perigrafes podosferikon agonon (the football match descriptions)*



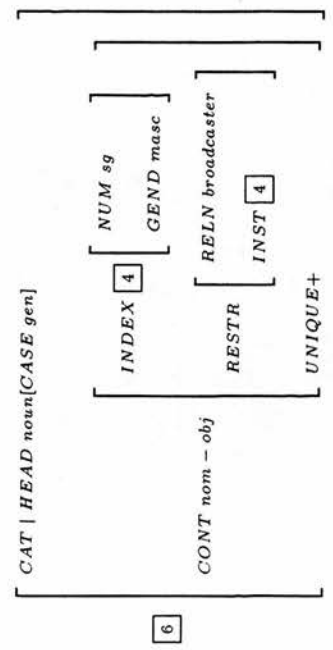
Consider finally the tree-diagram (477). The NP in (477) is a subsort of *def-hd-comp-ph*. It consists of a head-daughter of sort *def-trans-noun* and a possessive complement. The subcategorization requirements of the head daughter in (477) are saturated by its combining with the extrinsic possessive *tu ekfoniti* (the broadcaster's). Therefore, the SUBCAT list of the mother NP is empty, in accordance with the Subcategorization Principle. Finally, the *wild card* relation is instantiated by structure-sharing.

(477) *The phrase i perigrafes podosferikon agonon aftu tu ekfoniti (this broadcaster's football match descriptions).*



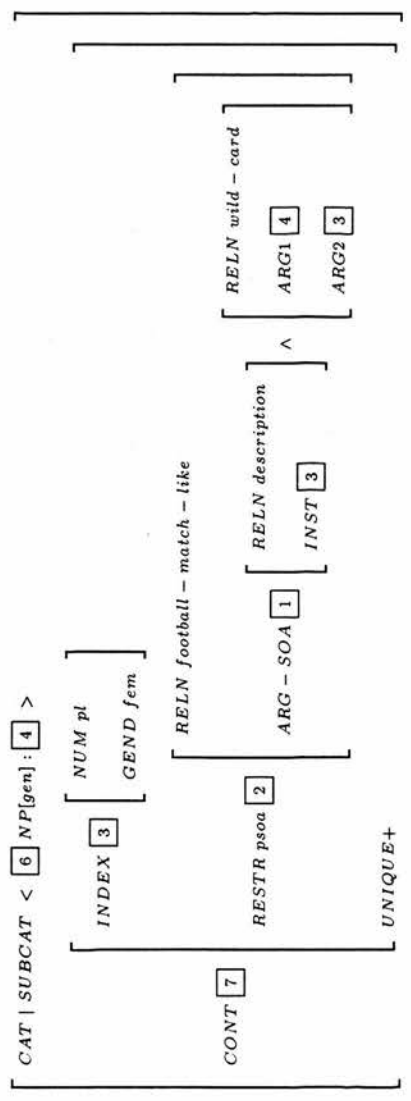
COMP-DTR

tu ekfontiti



HEAD-DTR

i perigrates podosferikon agonon



## 5.7 Summary

In this chapter, I have presented an HPSG account of possessives and pseudo-possessives. Two main types of genitives were described: (a) genitives that have a content value of sort *nom-obj* and that serve as complements of appropriate noun classes—the possessives, and (b) genitives that have a content value of sort *psoa* and serve as modifiers of noun categories—the pseudo-possessives. Further, possessives may be either intrinsic, in which case, they are coindexed with a thematic role in the head noun’s restriction, or extrinsic, in which case, their index fills one argument role in the *wild-card* relation. Moreover, I provided a multiple inheritance analysis of phrases with a possessive and/or a pseudo-possessive genitive. This accounts for (a) how such phrases are syntactically admissible or licensed, and (b) how the semantic content of these phrases compositionally derives from the content of their parts. The HPSG formalization of the possessive and pseudo-possessive theory captures their distinct properties that were discussed in chapter 4.

# Chapter 6

## Conclusions and Further Developments

### 6.1 Overview

This chapter is in two main sections. The first summarizes the contents of this thesis while the second suggests further developments based on the work presented in the previous chapters.

### 6.2 Conclusions

In this work, I have focused on the syntax of definites and possessives in Modern Greek and presented a formal account couched in the framework of HPSG. This account provides an answer to a number of questions concerning the internal structure and syntactic behaviour of nominal categories and the distribution and interpretation of genitives inside Greek NPs.

Nominal categories such as *noun*, *adjective* and *numeral* are traditionally taken to be distinct. However, in Greek such elements and their syntactic projections largely overlap: they may all cooccur with the definite article in monadic definites or polydefinites, and, moreover, along with determiners and DPs, they invariably qualify as maximal nominal projections in canonical and elliptical environments.

In chapter 3, I presented an analysis of the Greek nominal system that argues for adopting a distinct perspective on the classification of syntactic categories. In particular, I proposed that categories such as *determiner*, *noun*, *adjective*, etc. should be viewed as distinct instantiations of a common supercategory—*nominal*, rather than altogether disjoint categories. Once they are all treated as subsorts of *nominal*, we can straightforwardly account for the positioning of the definite article in polydefinites and moreover the distribution of determinerful, determinerless, canonical and elliptical nominals.

The classification of syntactic categories clearly bears on theoretical issues such as the postulation of phonologically null constituents. Empty categories are often posited in order to maintain a symmetrical syntactic analysis across apparently different examples that are however perceived as members of a single class. For instance, the elliptical **several** in *Books were on sale. I bought several.* is sometimes analysed as a string consisting of a determiner and an empty noun category, therefore, it is structurally symmetrical to canonical examples such as **several books**. However, the postulation of empty heads is controversial, on both theoretical and processing grounds: independent motivation for positing such constructs is lacking and moreover parsers are slowed by the need to postulate empty elements.

In the current work, I have demonstrated that generalizations concerning the distribution and other properties of canonical and elliptical nominal categories can be captured in terms of inheritance. Phrases that exhibit a similar behaviour can be construed as members of related sorts in a hierarchy. Their shared properties derive from one or more common supersorts that they are connected with, and they can be represented in terms of sorted feature structures. Thus, linguistic theory is simplified since it can dispense with abstract constructs such as empty constituents that are meant to impose a symmetrical geometry on phrases pertaining to disjoint syntactic classes.

The two types of definite in Modern Greek—monadic definites and polydefinites—

give rise to further questions concerning the syntactic make-up of polydefinites, the contribution of the definite article in the two types of definite nominals, and how “definite concord” can be precisely defined.

In chapter 3, I provided an approach to definiteness that enables us to account for nominal systems that are not determiner-centric, rather they exhibit definite concord phenomena. Greek has such a nominal system that allows for determinerless maximal projections and polydefinites. I have demonstrated the need for distinguishing the definite article from other determiners in this kind of language. Moreover, I have provided a formal analysis of the definite article as a marker of definiteness, from which emerges a straightforward account of polydefinites.

In the analysis provided in this chapter, the definite article does not affect the syntactic category of the phrase it occurs in. Rather, it is an adjunct, in the HPSG sense, and its contribution to the nominal it syntactically combines with is semantic. Definiteness is accounted for in terms of uniqueness: in a referential use of a definite nominal, the index must be anchored on an entity that uniquely instantiates the property the nominal denotes, in a local setting (the resource situation). The uniqueness requirement originates from the definite article(s) and is made available on any sort of definite *nominal object*, i.e. noun, adjective or numeral phrase.

In chapters 4 and 5 of this thesis, I focussed on genitive nominals inside the Greek noun phrase. These exhibit systematic asymmetries: for instance, certain genitives may be replaced with clitics or relativized, whereas others cannot do so, certain genitives are compatible with nominals of all aspectual types (accomplishments, activities and states), whereas others have a much more limited distribution, some genitives may appear in both definites and indefinites, whereas others are excluded from indefinite or non-specific nominals, etc.

Previous work on Greek genitives has not paid attention to such asymmetries. Rather, traditional grammars simply list numerous examples of genitives and classify them according to their function or meaning. On the other hand, in more

recent accounts, emphasis has been put on whether it is possible systematically to relate the so-called *deverbal* nominals or *nominalizations* with their corresponding verbs and provide an account of their argument structure. However, neither of those descriptions captures generalizations concerning a number of syntactic and semantic phenomena associated with genitive nominals.

In chapter 4, I presented and motivated a partition of Greek genitives into two sorts: possessives and pseudo-possessives. From this single hypothesis emerges a natural account of a range of phenomena that have either been neglected, or accounted for individually in systems that therefore fail to capture important interconnections between apparently distinct effects.

The possessive / pseudo-possessive partition relies on both semantic and syntactic criteria. Through a number of diagnostics, it has been demonstrated that pseudo-possessives are a kind of non-intersective modifier (in the sense of Montague Grammar, cf. [Siegel, 1976]) and they denote properties, rather than referring to entities or events in the discourse. In fact, pseudo-possessives are the set of genitives that cannot be replaced by clitic pronouns, neither are they accessible to relativization. On the other hand, possessives are referential genitives that may alternate with pronominal clitics or relative pronouns.

The distinction between possessives and pseudo-possessives provides a clear means to account for their distribution. It has been demonstrated that a noun head cannot cooccur with two genitives of the same type, and, moreover, in case two genitives are present, the pseudo-possessive should precede the possessive. Furthermore, it has been shown that possessives exclusively occur in definite and specific NPs. Finally, possessives interpreted as objects can only appear in nominals that denote a telic event (accomplishment). On the other hand, pseudo-possessives may invariably occur in definite or indefinite nominals and are compatible with all aspectual classes.

In chapter 5, I presented an HPSG-based analysis of possessives and pseudo-possessives. The more limited distribution of possessives has been accounted for by

treating them as subcategorized complements of particular types of nouns. From a semantic point of view, possessives have been analysed as *nominal-objects* that carry a referential index and thus may refer to entities in the discourse. Distinct types of possessives have been identified, depending on the thematic and aspectual properties of the noun head, and an account of both extrinsic possessives and thematic argument possessives (intrinsic possessives) has been provided. On the other hand, pseudo-possessives have been taken to be modifiers rather than arguments, hence, their relatively more free distribution. Semantically, they have been represented as *psoas* that take a *psoa* argument, i.e. treated as properties that take a property-argument.

This analysis has been integrated with the account of definites presented in chapter 3, so as the distinct distribution of possessives and pseudo-possessives in definite and indefinite nominals straightforwardly to emerge, in terms of multiple inheritance.

As an overall conclusion, HPSG's multidimensional architecture that *inter alia* integrates syntactic and semantic information has provided a very appropriate framework for capturing the idiosyncratic syntactic status and semantic import of "markers of definiteness" and also expressing the mutual constraints on the syntax and semantics that characterize possessives and pseudo-possessives.

## 6.3 Further developments

In this section, I sketch directions in which to extend the work presented here in future research.

### 6.3.1 A cross-linguistic account of definites and possessives

An intriguing goal for further research is to extend the current account of definites and possessives so as to cover languages other than Greek that have similar

constructions.

Languages that exhibit definite concord phenomena include Mainland Scandinavian (Swedish, Norwegian, cf. [Börjars, 1994]), Balkan and Semitic.) Poly-definiteness also occurs in the French superlative construction, e.g. *Marie était la femme la plus belle* ('Marie was the most beautiful woman'). The examples in (478) below illustrate definite concord in Hebrew.<sup>1</sup> The Hebrew definite marker *ha* attaches to nouns, adjectives, or demonstratives and yields their definite counterparts.

- (478) a. *ha-sefer ha-'angli*  
the book the English  
'the English book'
- b. *ha-sefer ha-'angli ha-ze*  
the book the English the this  
'this English book'

Hebrew elliptical nominals further illustrate that nominal categories are much less distinct than traditionally assumed. For instance, the definite adjective *ha-emca'i* (the middle) and the determiner *kama* (several) in (479a&b), respectively, both function as maximal nominal categories that occur in argument positions: *ha-emca'i* is understood as the subject of the copula construction in (479a), whereas *kama* is a preposition complement.

- (479) a. *yesh li shlosha banim. ha-emca'i ben eser.*  
There-is to-me three sons. The-middle age ten  
'I have three sons. The middle one is aged 10'
- b. *ha sfarim nir'u meanyenim. il'alti be kama.*  
The books looked interesting. browsed-1.sg in- several  
'The books looked interesting. I browsed through several.'

Data such as those in (478) and (479) show strong similarity to the Greek data discussed earlier and therefore suggest that the approach to definiteness and the

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<sup>1</sup>The data from Hebrew are due to Jonathan Ginzburg.

make-up of nominal categories presented here can be extended to account for languages such as Hebrew.

In order to provide a cross-linguistic account of definite concord phenomena, several additional issues need to be explored. For instance, what types of definite marker occur across languages i.e. whether markers of definiteness are words, as in Greek, or bound morphemes, as in Hebrew. Special attention has to be paid to Scandinavian languages that make use of both definite articles and suffixes. This is illustrated in the following example from Börjars:

- (480) den lilla musen  
the little mouse-DEF  
'the little mouse'

A second point is to explore the type of "host" definite markers attach to: hosts can be either phrases or words in languages like Greek, or they are strictly lexical, as in Hebrew.<sup>2</sup> This is demonstrated by the contrasts in (481). The Greek definite article *to* cooccurs with a (lexical) noun *vivlio* (book) and a (lexical) adjective *agliko* (English) in the polydefinite example in (481a), and a phrase, the NP *agliko vivlio* (English book) in the monadic definite in (481b). On the other hand, the Hebrew definite marker *ha-* resists "attaching to" a phrase, hence, (481d) is ungrammatical.

- (481) a. *to vivlio to agliko*  
the book the English  
'the English book'
- b. *to agliko vivlio*  
the English book  
'the English book'
- c. *ha-sefer ha-'angli*  
the book the English  
'the English book'

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<sup>2</sup>[Börjars, 1994] is particularly concerned with this issue.

- d. \*ha-sefer 'angli  
the book English

A further issue is the co-existence or complementary distribution of demonstratives and definite markers. In this respect, languages like Romanian are particularly interesting, since both options are available and affect word order. This is illustrated by the minimal pair in (482), from [Giusti, 1992]. In (482a), the demonstrative occurs pre-nominally and no definite marker is present. On the other hand, in (482b), the noun carries the definite suffix *-ul* and the demonstrative is post-nominal.<sup>3</sup>

- (482) a. *acest/ acel baiat*  
this/ that boy  
'this/ that boy'
- b. *baiatul acesta/ acela*  
boy-the this/ that  
'this/ that boy'

We turn next to possessives. As was demonstrated in brief in chapter 4, phenomena associated with possessive and pseudo-possessive genitives are not idiosyncratic to Greek, rather they occur in other languages too, and more specifically French. In particular, *de*-phrases inside French nominals exhibit similar asymmetries to those characterizing Greek genitives. In previous work on French *de* nominals (cf. [Sag & Godard, 1994]), the semantics of these phrases were neglected and an attempt was made to account for their syntactic behaviour by imposing certain otherwise unmotivated restrictions on their argument structure. However, an account on these lines lacks both descriptive and explanatory adequacy. It was briefly demonstrated in chapter 4 that the possessive / pseudo-possessive hypothesis I have proposed for Greek makes the correct predictions for French. An intriguing goal for future research is to examine more data from French so as to ensure that the possessive / pseudo-possessive partition can be adopted for French

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<sup>3</sup>Giusti notes that when the demonstrative is post-nominal, it carries the invariable morpheme *-a* that also appears when the demonstrative is pronominalized.

de-phrases.

Moreover, it is worth exploring whether the current approach can be extended to other Romance languages, for instance, Italian. As illustrated in the examples given below, pronominalization asymmetries analogous to those we encounter in Greek and French occur in Italian, too. In (483a), the nominal head cooccurs with two di-phrases.<sup>4</sup> However, only the outermost di-phrase (*di Gianni*) can alternate with a pronominal form, as the contrast between (483c) and (483d) demonstrates. The data in (483) are from [Giorgi and Longobardi, 1991].

(483) a. *la descrizione degli avvenimenti di Gianni*

‘Gianni’s description of the events’

b. *la sua descrizione degli avvenimenti*

‘his description of the events’

c. (\*)*la loro descrizione di Gianni*

(their (= the events) description of Gianni’s)

We know from Greek that pseudo-possessives are never personal pronouns and they linearly precede possessives. The contrast in (483) might suggest that di-phrases in Italian can also be partitioned into two classes: possessives and pseudo-possessives.<sup>5</sup>

Finally, it is worth exploring whether the account of possessives presented here has any important implications for English. It is possible that in terms of the possessive / pseudo-possessive partition we can capture the difference between English “determiner possessives” (e.g. *the city’s* in (484a) below) and post-nominal of-phrases (e.g. *of the city* in (484b)).

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<sup>4</sup>The form *degli* derives by contraction from *di* and the form *gli* of the definite article.

<sup>5</sup>Mallen cf. [Mallen, 1990] discusses data from Spanish that are very similar to the Italian data of Giorgi and Longobardi’s. It is possible that if the possessive / pseudo-possessive partition is correct for French and Italian, it can be extended to other Romance languages, including Spanish.

- (484) a. the city's destruction (by the enemy)  
 b. the destruction of the city (by the enemy)

Interestingly, atelic nominals such as *fear* that resist pronouns or determiner possessives with a THEME interpretation can nevertheless cooccur with *of*-phrases. E.g.:

- (485) a. Zoe's/her<sub>exp/\*th</sub> fear  
 b. the fear of examinations

We have seen that possessive genitives in Greek can be assigned an “object” (THEME or PATIENT) interpretation, provided they occur in a nominal that denotes a telic event (accomplishment). The data in (485) can be taken to suggest that pronouns and determiner possessives in English are like possessive genitives in Greek, therefore, they are sensitive to aspectual distinctions. On the other hand, English *of*-phrases are similar to Greek pseudo-possessives, hence they are compatible with all aspectual classes.

### 6.3.2 An account of clitic climbing in Greek NPs

Another important direction in which to extend the current work comes from NP word order and more specifically the positioning of clitics inside the Greek nominal phrase.

As was shown in passing in chapter 4, pronominal clitics in Modern Greek NPs may attach to the right of a noun, an adjective or other nominal category, such as a demonstrative or a determiner. This is illustrated in (486). In (486a), the clitic host is the noun *vivlio* (book); in (486b), it is the adjective *agliko* (English); in (486c), it is the demonstrative *afto* (this); finally in (486d), it is *ola* (all) that in the current system is analysed as a determiner (see chapter 3).

- (486) a. to agliko vivlio mu  
 the English book my-CL  
 ‘my English book’

- b. to agliko mu vivlio  
the English my-CL book  
'my English book'
- c. afto mu to agliko vivlio  
this my-CL the English book  
'this English book of mine'
- d. ola mu ta aglika vivlia  
all my-CL the English books  
'all my English books'

Clitic climbing in Greek NPs is strictly "local". For instance, as illustrated by the minimal pair in (487) below, a clitic licensed by the noun head of the definite constituent in a partitive construction cannot "climb" outside that constituent and onto the determiner of the partitive. (487b) is therefore ill-formed.

- (487) a. meriki apo tus filus mu  
some of the friends my-CL  
'some of my friends'
- b. \*meriki mu apo tus filus  
some my-CL of the friends

An important goal for future research is to provide an account of the positioning of clitics inside Greek nominals. Such a topic is particularly intriguing for HPSG theory, since it turns out that none of the explanatory resources for dealing with linear order issues in the HPSG framework can provide an obvious solution.

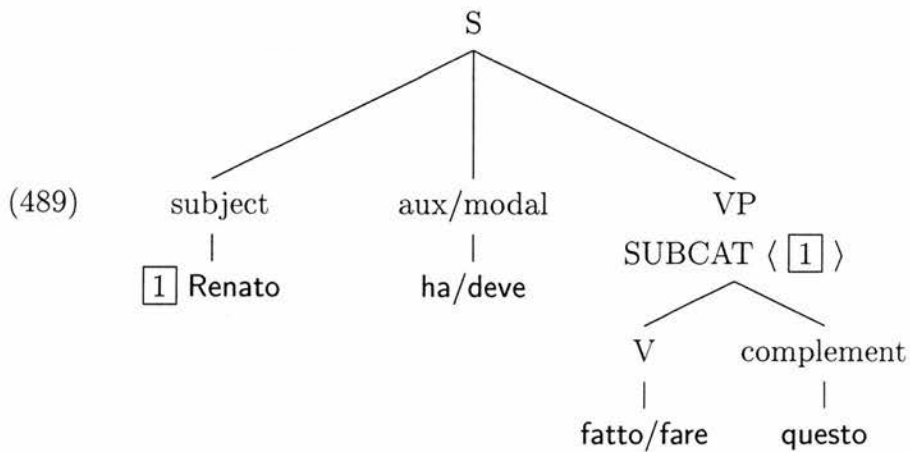
We next outline an influential HPSG approach to clitic climbing along the VP projection (cf. [Hinrichs and Nakazawa, 1994]). Consider the following examples of complex predicates from Italian:

- (488) a. Renato ha fatto questo  
'Renato has done this.'

b. Renato deve fare questo

‘Renato must do this.’

In HPSG, auxiliaries such as *avere* (have) and modal verbs such as *dovere* (must) are taken to subcategorize for a VP complement specified PAST PARTICIPLE and INFINITIVE, correspondingly. A VP is a phrase that includes all the complements of the verb head, except for the subject. The missing subject of VP complements of auxiliaries and modals is identical to that of the inflected auxiliary or modal, by structure-sharing.<sup>6</sup> Therefore, examples such as those in (488) above are analysed as shown in the tree-diagram in (489).



However, the object of a participle (*fatto*) and infinitive (*fare*) can be a clitic that “climbs” onto the auxiliary or modal, respectively, as illustrated in (490).

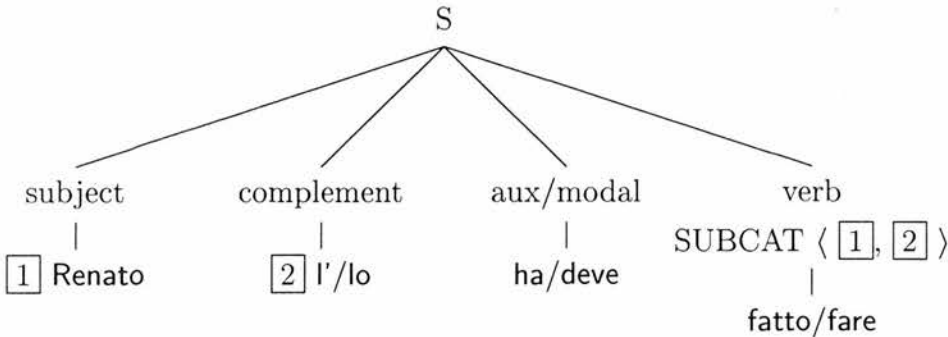
(490) a. Renato l' ha fatto  
 Renato it-CL has done  
 ‘Renato has done it’

b. Renato lo deve fare  
 Renato it-CL must- 3.SG do  
 ‘Renato must do it’

<sup>6</sup>This account was initially developed in the framework of GPSG, cf. [Gazdar et al., 1982], [Gazdar et al., 1985].

Hinrichs and Nakazawa (cf. [Hinrichs and Nakazawa, 1994]) provide an account of clitic climbing, couched in HPSG, in terms of *argument attraction*.<sup>7</sup> Their mechanism is in essence very similar to *functional composition* in categorial grammar (cf. [Morrill, 1988], [Steedman, 1990]). Argument attraction enables auxiliaries and modals to “attract” the object clitics of their participle or infinitive complement. Therefore, instead of subcategorizing for a participle or infinitive VP complement (as was shown in (489) above), auxiliaries and modals may alternatively subcategorize for an unsaturated verb (specified PAST PARTICIPLE or INFINITIVE) and the clitic complements of that verb. Subsequently, clitics are ordered to precede the auxiliary or modal, in terms of linear precedence statements. Therefore, clitic climbing examples such as those in (490) above are analysed as shown in (491). The head daughter in (491) is *ha* or *deve*. This verb is shown to take three complements: (a) a past participle (*fatto*) or infinitive (*fare*) that carries unsaturated subcategorization requirements inside its subcat list (see tags [1] and [2]), (b) an “attracted” clitic complement *l’* and *lo*, respectively, that corresponds to the most oblique element (the direct object [2]) inside the subcat list of *fatto* and *fare*, and (c) a subject (*Renato*) that is coreferential with the least oblique element (the subject [1]) inside the subcat list of *fatto* and *fare*.

(491)



Nonetheless, argument attraction does not suffice to account for the positioning of clitics inside Greek NPs. Recall that clitics may attach to adjectives in Greek. However, adjectives are not on a par with the auxiliaries or modals of the Italian

<sup>7</sup>See also other works stemming from Hinrichs and Nakazawa, e.g. [Monachesi, 1993].

verbal system. Clearly, they cannot be taken to subcategorize for an unsaturated noun and its complements. Evidence comes from adjectives that carry their own subcategorization requirements, such as *trelos* (mad). This adjective can take an *apo* prepositional complement, e.g.:

- (492) o *trelos apo zilia erastis*  
 the mad from jealousy lover  
 ‘the mad with jealousy lover’

No clitic may intervene between the adjectival head *trelos* and the *apo* complement. This indicates that adjectives do not “attract” subcategorized complements of nouns that are realized as clitics. Consider, hence, the following minimal pair:

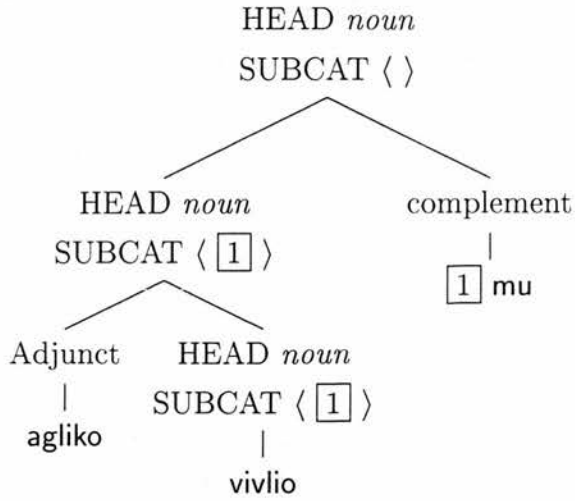
- (493) a. o *trelos apo zilia erastis tis*  
 the mad from jealousy lover her- CL  
 ‘her mad with jealousy lover’  
 b. \*o *trelos tis apo zilia erastis*  
 the mad her-CL from jealousy lover

Clitic climbing onto adjectives in Greek can be accounted for in terms of *order domains* (cf. [Reape, 1990, 1991]). According to Reape’s theory of word order and discontinuous consistency, word order can be defined in terms of word order domains that are ordered sequences of constituents. A phrase is assumed to have a syntactic structure that defines its constituents (daughters) and an order domain that determines the linear order of the words the phrase contains. Elements that are adjacent inside a word order domain may belong to different syntactic constituents. For instance, there can be an order domain  $D = \langle \text{agliko, mu, vivlio} \rangle$  for *to agliko mu vivlio* (the English my-CL book; ‘my English book’), composed by *merging*,<sup>8</sup> though the clitic *mu* is not a syntactic sister of the adjective *agliko* (English), rather it is licensed, in terms of subcategorization, by the  $\bar{N}$  *agliko vivlio*

<sup>8</sup>For details on *merging* and *adjunction*—the two modes for composing word order domains—see chapter 2.

(English book).<sup>9</sup> The tree in (494) illustrates the syntactic dependencies holding in the phrase *agliko mu vivlio*:

(494)

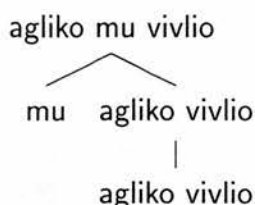


The noun *book* in (494) subcategorizes for a possessive complement that can be realized as a clitic. This subcategorization requirement propagates along the noun projection, by the Subcategorization Principle of HPSG, until it is saturated. Thus, the clitic *mu* (of-mine/my) is eventually selected by the  $\bar{N}$  *agliko vivlio* (English book) and merges into its domain. The composition of the order domain of *agliko mu vivlio* is illustrated in the tree-diagram in (495).<sup>10</sup>

<sup>9</sup>According to the analysis of possessives presented in chapters 4 and 5, the clitic *mu* is in fact licensed by a definite noun category to *agliko vivlio*. For expository convenience, I have chosen not to represent the definite article in the analysis below.

<sup>10</sup>Notice that the ill-formedness of \**o trelos tis-cl apo zilia erastis* (the mad her with jealousy lover) in (493b) above can be accounted for in terms of Reape's theory: the clitic *tis* cannot intervene between the adjective *trelos* (mad) and its PP complement *apo zilia* (with jealousy), because these two constituents are not individual elements in the mother domain, rather the whole phrase *trelos apo zilia* corresponds to a single constituent inside the mother's domain. (Contrast with *agliko mu vivlio* in (495), where *agliko* (English) and *vivlio* (book) are individual elements in the mother's domain and the clitic *mu* may intervene between the two of them.)

(495)



However, Reape's mechanism does not apply to the whole range of clitic climbing examples in Greek. For example, a clitic may climb from inside the NP onto a demonstrative or a determiner. E.g.:

- (496) a. *afta mu ta vivlia*  
          these my-CL the books  
          'these books of mine'
- b. *ola mu ta vivlia*  
          all my-CL the books  
          'all my books'

In the current system, demonstratives such as *afta* and determiners such as *ola* are analysed as heads that take a nominal complement.<sup>11</sup> We cannot account for the position of *mu* in (496a&b) in terms of the domain theory, since demonstrative and determiner phrases do not select for a possessive complement: unlike an NP such as *aglika vivlia* (English books), a phrase such as *afta ta vivlia* (these the books; 'these books') or *ola ta vivlia* (all the books) cannot be shown to subcategorize for a clitic that will in turn union into its domain.

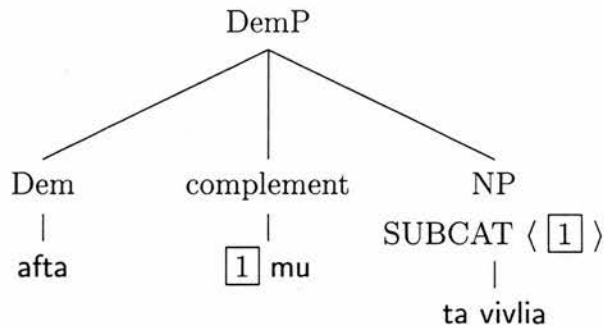
Rather, in order to account for the examples in (496), we will have to employ Hinrichs and Nakazawa's argument attraction. By argument attraction, demonstrative and determiner heads may attract the complement of their nominal complement, in case it is a clitic. In other words, they can be made to subcategorize for an unsaturated noun category and the complement of that category. The "attracted" clitic can be subsequently ordered immediately to the right of the demonstrative or determiner by means of linear precedence statements. (497)

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<sup>11</sup>For further detail, see chapter 3.

provides an illustration of an analysis of (496a), in terms of argument attraction. The head daughter is the demonstrative *afta* (these) that takes two complements: (a) the NP *ta vivlia* (the books) that carries an unsaturated subcategorization requirement (tag  $\boxed{1}$ ), and (b) the “attracted” clitic *mu* that corresponds to the unsaturated subcategorization requirement of the NP (hence, it is represented by the same tag  $\boxed{1}$ ).

(497)



In this section, it has been demonstrated that neither argument attraction nor the theory of order domains, as they currently stand, suffice to account for the idiosyncratic clitic climbing inside Greek nominals. Rather, only a combined use of both systems will enable us to account for this phenomenon. It is an intriguing goal for further research to explore how these two devices can be integrated so as a unified treatment of instances of clitic climbing to be provided.

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