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The Syntax of Relational Adjectives in Romance: a Cartographic Approach

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patience and his support in the sleepless nights I spent working before deadlines: he had confidence in me when I doubted myself.

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LIST OF ABBREVIATIONS

Adj	Adjective
Adv	Adverb
AdvP	Adverb phrase
AgrP	Agreement phrase
AN	Adjective-Noun (languages)
ANA	Adjective-Noun-Adjective (languages)
AP	Adjective phrase
Asp	Aspect
Aux	Auxiliary
CA	Classifying adjective (Cetnarowska & Trugman 2012)
ClA	Classificatory adjective
CN	Complex nominal
CP	Complementizer phrase
Dem	Demonstrative
DirMod AP	Direct modification adjective
DP	Determiner phrase
EA	Ethnic adjective
FocP	Focus phrase
FP	Functional phrase
IP	Inflection phrase
KP	Case phrase
LF	Logical form
Mod	Modality
NA	Noun-Adjective (languages)
NP	Noun phrase
NUM	Number marker
Num	Numeral
PA	Pseudo-adjective
PART	Participle marker

PP	Prepositional phrase
QA	Qualifying adjective
RC	Relative clause
redRC AP	Adjective derived from a (reduced) relative clause
RelA	Relational adjective
RelAP	Relational adjective phrase
SUP	Superlative marker
T	Tense
ThA	Thematic adjective
TopP	Topic phrase
VP	Verb phrase

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INTRODUCTION

This dissertation investigates the syntax of Relational adjectives in adnominal position in Romance languages. Its starting point is the observation that there are ordering restrictions between co-occurring Relational adjectives in Romance. Its goal is to give a unified account for these ordering restrictions, once verified that they follow the same patterns.

Adjective placement in the DP has been widely debated in the last decades (Hetzron 1978; Dixon 1982; Sproat & Shih 1991; Cinque 1994, 2010; Scott 2002; Bouchard 2002, 2005; Shlonsky 2004; Laenzlinger 2005, 2011; Valois 2006, 2013; Svenonius 2008; among many others). It has been discussed whether a universal ordering of attributive adjectives does exist, how this ordering would be like, how to account for departures from such an unmarked serialization and how to make this hypothesis compatible with different surface orderings of adjectives in AN languages, NA languages and mixed ANA languages. The state of the art is well summarized by Valois (2013, 28):

> It is widely accepted (aside from a few exceptions e.g. Bouchard 2002) that there is a universal order of adjectives across languages, that this order can be perturbed under certain special circumstances such as emphasis and focus [...] that XP-movement (instead of simple N-movement) solves the thorny problem of "mirror image"[1] [...], at the same time accounting for variation in adjective positioning with respect to the noun across languages.

The existence of a universal unmarked order of adjectives cross-linguistically and the XP-movement hypothesis are the main assumptions made by cartographic studies about the syntax of adjectives. They will be the cornerstones of this dissertation, as well, since it enters the line of research of Cartography (see Cinque and Rizzi 2010), in which

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[1] Postnominal adjectives in Romance languages display a mirror image order with respect to prenominal adjectives in Germanic languages. Such a linearization is not inconsistent with the idea of a universal ordering of adjectives: it represents a problem for simple N-movement approaches, but it can be accounted for under an NP-movement hypothesis. This topic will be addressed in the first chapter.

the existence of ordering restrictions among modifiers is seen as the consequence of their mapping into distinct functional projections hierarchically ordered.

Several hierarchies have been proposed to account for the universal ordering of adjectives (see the above mentioned studies and references cited there) up to Scott (2002), who carries to the extreme the cartography of adjectives suggesting a highly detailed universal hierarchy:

(1)   ORDINAL NUMBER > CARDINAL NUMBER > SUBJECTIVE COMMENT > $^?$EVIDENTIAL > SIZE > LENGTH > HEIGHT > SPEED > $^?$DEPTH > WIDTH > WEIGHT > TEMPERATURE > $^?$WETNESS > AGE > SHAPE > COLOUR > NATIONALITY/ORIGIN > MATERIAL > COMPOUND ELEMENT > N°   (Scott 2002, 114)

The goal of this dissertation is to further integrate Scott's hierarchy studying a field of adjective projections he does not consider, i.e. that of Relational adjectives.

Relational adjectives are denominal adjectives that express a relation between the noun from which they are derived and the noun with which they occur, such as It. *geografiche*, *vinicola* and *notturno* in *scoperte geografiche* 'geographical discoveries', *produzione vinicola* 'wine production', and *attacco notturno* 'nocturnal attack'.

Relational adjectives are often considered marginal adjectives because they differ from (prototypical) Qualifying adjectives in many respects. They create a relation between two nouns, while Qualifying adjectives assign a property to the noun they modify; Relational adjectives cannot be graded and cannot apparently occur in predicative position, whereas Qualifying adjectives generally can. In Romance languages, Relational adjectives are always postnominal, while most Qualifying adjectives can appear both in prenominal and postnominal position.

But what the present research is interested in is the existence of ordering restrictions between Qualifying adjectives and Relational adjectives and between co-occurring Relational adjectives, as well. It will be shown that Relational adjectives are closer to the noun than Qualifying adjectives: this suggests to locate them lower than any other adjective modifier in Scott's hierarchy, just above compound elements[2]. This low

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[2] Noun phrases containing RelAs have been labelled as Complex Nominals in the literature on English. The term, first used by Levi (1978) (as far as I have found), refers to constructions where the head noun can be modified by either a noun (e.g. *autumn rains*) or a Relational adjective (e.g. *autumnal rains*). Rae (2010) shows that such modifiers in English can either form compounds or have a phrasal status and discusses some

portion of the hierarchy can be thought of as a field of projections itself since there are systematic ordering restrictions between different classes of Relational adjectives. It will be discussed which subclasses of Relational adjectives are relevant in terms of syntactic distribution.

Relational adjectives in fact do not appear to be homogeneous as a class. For example Bosque (1993) and Bosque & Picallo (1996) divide them into Thematic adjectives and Classificatory adjectives. The difference between these two types of Relational adjectives is said to rely on the lexical relation they have with the head noun. On the one hand, Thematic adjectives absorb a theta role lexically licensed by the noun, as in It. *invasioni barbariche* 'barbarian invasions' or *elezione papale* 'papal election'. On the other hand, Classificatory adjectives introduce a domain in relation to which the object denoted by the head noun is classified, as in It. *dibattito culturale* 'cultural debate' or *energia solare* 'solar energy'. Such a distinction is particularly relevant here because it is argued to play a role in the syntax of Relational adjectives in Romance. Bosque & Picallo (1996) claim that the relative position of Relational adjectives in Spanish depends on their belonging to the group of Thematic adjectives or to the one of Classificatory adjectives and Ramaglia (2008) extends such a claim to Relational adjectives in Italian.

However, this generalization will be proved unable to fully account for ordering restrictions of Relational adjectives in Romance languages and a new hypothesis will be put forward, i.e. the fact that Relational adjectives are ordered according to the thematic relation they express[3]. This idea has already been applied to the syntax of Relational adjectives. It was proposed by Rae (2010), whose study regards, however, ordering restrictions of modifiers in complex nominals (i.e. constructions made up of a head noun and a modifier which can be either a Relational adjective or a noun, as mentioned in fn. 2) in English. The author claims that the order of these modifiers depends on the semantic relationship they establish with the head noun. Such a proposal has the advantage of unifying the syntactic analysis of Relational adjectives and other attributive adjectives, since the idea that adjectives are ordered according to their semantic classes has a long

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diagnostic criteria to distinguish compounds and phrases. The syntactic status of these constructions in Romance will be discussed in Chapter 2, §2.5.2.

[3] The term *thematic relations* will be referred both to traditional thematic relations (e.g. Theme and Agent) and to their extensions, circumstantial relations like Location, Time and Instrument (cf. the list of thematic roles of prepositional phrases given by Schweikert 2005a).

tradition, as shown by Cinque (1994, 2010), Scott (2002), Laenzlinger (2005, 2011) and references cited there, which discuss similar hierarchies of attributive adjectives.

This dissertation, as stated in its title, aims to cast light on the syntax of Relational adjectives in Romance. But it also has two additional theoretical goals.

First, the study of the syntax of Relational adjectives in Romance will be a test bench for some general assumptions on adjective placement and hierarchy: in particular Cinque's (2010) hypotheses about the syntax of adjectives will be tested on Relational adjectives. The author distinguishes direct modification adjectives, in the specifier position of functional projections hierarchically ordered, and indirect modification adjectives, which are derived from reduced relative clauses, whose order is free. The order of postnominal direct modification adjectives in Romance languages is said to be a mirror image of the order of prenominal direct modification adjectives in Germanic languages. The problem is that such a fixed mirror image serialization can be obscured by the presence of freely ordered indirect modification adjectives. However, if Relational adjectives are considered, this disturbing effect disappears, since Relational adjectives belong to the direct modification only. Hence, the analysis of the distribution of Relational adjectives can be used to verify whether Cinque's (2010) claim about the mirror image order does hold true.

Second, the study of this specific area of adjective modification will give the opportunity of uncovering surprising parallelisms between the nominal and the clausal domain. Schweikert (2004, 2005a) and Takamine (2010), studying the order of prepositional phrases within clauses, in German and Japanese, respectively, claim that these modifiers obey strict ordering restrictions. Not only PPs are argued to be ordered according to the thematic/circumstantial relations they express, but the hierarchies proposed by Schweikert and Takamine to account for ordering restrictions of PPs in German and Japanese will also appear to closely overlap with Rae's (2010) hierarchy of modifiers in complex nominals in English and with the hierarchy proposed here for Relational adjectives in Romance.

Hence, this dissertation, originally thought simply as the study of the syntax of Relational adjectives in Romance, will result on the one hand in a contribution to the mapping of DP structure and on the other in the discovery of unexpected and significant parallelisms between different syntactic domains and languages.

The dissertation is organized as follows. The main assumptions at the basis of Cartography, which represents the theoretical framework of this study, will be discussed in chapter 1, focusing the attention on works which analyse the syntax of modifiers. The major concern will be obviously about adjectives and their ordering restrictions. I will discuss especially works by Cinque (1994, 2010), Scott (2002) and Laenzlinger (2005, 2011), which provide useful guidelines for the study of the distribution of Relational adjectives in Romance. However, I will give space also to adverbs and to prepositional phrases, both in the clause and in the nominal structure. In fact parallelisms in the syntax of adjectives and adverbs have already been noted (e.g. Scott 2002), whereas parallelisms in the syntax of adjectives and prepositional phrases, whose relevance has been mentioned above, will clearly emerge in this dissertation (chapters 3 and 5).

The subject of this research, i.e. Relational adjectives, will be described in chapter 2, exploring their syntactic, semantic and morphological properties. Defining Relational adjectives will not be an easy task since there exist some controversial issues on their denominal nature, their syntactic status, their semantics, their predication possibilities and their usage as arguments. If on the one hand Relational adjectives will be characterized as a whole, on the other hand possible internal subclasses proposed in the literature will be discussed and special attention will be devoted to the difference between Thematic and Classificatory adjectives.

The existence of ordering restrictions among Relational adjectives modifying the same noun will be brought into focus in chapter 3 through a survey of studies on the syntax of Relational adjectives in Romance. The general tendency is to describe the distributional pattern of Relational adjectives according to their belonging to the subclass of Thematic adjectives or Classificatory adjectives (see Bosque & Picallo 1996 for Spanish; Picallo 2002 for Catalan; Ramaglia 2008 for Italian).

Since these hypotheses on Relational adjective ordering will be shown to present some shortcomings, it will be verified whether Rae's (2010) proposal, mentioned above, can be extended to ordering restrictions of Relational adjectives in Romance. Chapter 4 will be devoted to this goal. Most of the data on the relative placement of Relational adjectives regards Italian and Spanish: native speakers' judgements have been collected through questionnaires, whose structure and results are reported in the appendices at the end of the dissertation. The hypotheses put forward on the basis of these data will be

corroborated by other data coming from French, Catalan and Romanian, which rely on native speakers' judgements and examples coming from the literature.

Ordering restrictions of Relational adjectives will appear to be consistent across Romance languages and in line with Rae's (2010) hypotheses on English. The comparison between Romance languages and English will provide further evidence in favour of the idea that the placement of Relational adjectives relies on the thematic relations they express.

In chapter 5 I will suggest that ordering restrictions of Relational adjectives in Romance and English can be derived from the same structure, which can be supposed to be universal in a cartographic perspective. The output of this investigation will be an extended version of Scott's hierarchy. The structural position of Relational adjectives and their licensing will be discussed. The analysis of the relative placement of Relational adjectives and prepositional phrases will also give the possibility of further exploring the nominal structure, especially regarding the generation of prepositional phrases in the extended NP projection.

CHAPTER 1

THEORETICAL FRAMEWORK: CARTOGRAPHY

The goal of this chapter is to present under which theoretical assumptions the ordering restrictions of Relational adjectives in Romance languages will be explained.

This dissertation enters the line of research of Cartography, whose goal, as the name itself suggests, is to draw a detailed map of syntactic structures, and especially of functional projections. The general hypotheses and methodological guidelines of cartographic studies will be discussed in the first section, mainly following Cinque & Rizzi (2010). The second section will be devoted to cross-linguistic left-right asymmetries in the order of modifiers and functional heads suggesting the existence of a unique underlying functional structure.

The following step will be to present some studies adopting a cartographic point of view. Keeping adjectives as the core of the discussion (§1.4), studies on adverbs (§1.3) and clausal PPs (§1.5) will be considered, as well, to the extent that they contribute to define the theoretical framework of this dissertation and are related to the formulation of the hypotheses on adjective order. There are in fact striking parallelisms in the syntax of adjectives and adverbs on the one hand and in the syntax of adjectives and PPs on the other. The last section will summarize the key assumptions, both on syntactic configurations hosting adjectives and on adjective order derivation, which will be adopted to account for ordering restrictions of Relational adjectives.

1.1 The Cartographic project

Cartography is a line of research which aims to draw a detailed map of syntactic configurations, focusing on functional projections, in order to ascertain how rich the functional structure of clauses and phrases might be.

The interest in functional projections can be traced back to the late 1980s and has its roots in Chomsky's (1986) claim that functional elements, like lexical categories, can

project syntactic structure with the format of X-bar modules; hence the CP-IP-VP structure. The further step was to split the functional structure. The impulse was given by Pollock (1989), arguing that Infl can be split into an Agr head and a T head. According to Shlonsky (2010), even if the term 'cartography' itself spread only in the late 1990s[1], the birth of cartographic research can be traced back to Pollock's (1989) work because it stimulated linguists to discover new functional heads and their hierarchical organization. Since then IP (Belletti 1990, 2004; Cinque 1999, 2006; Schweikert 2005; Takamine 2010, among others) and CP (Rizzi 1997; Benincà 2001; Benincà & Poletto 2004; Benincà & Munaro 2011, among others) became fields containing a series of functional projections.

Abney's (1987) DP hypothesis extended the functional structure to the noun phrase. The proposal of a functional layer, the DP, above the NP, established a close correspondence between the sentence and the nominal domain, both of them being made up of a lexical layer dominated by functional structure. Since then the DP has been further split to include functional projections hosting adjectives (Cinque 1994, 2010; Scott 2002; Laenzlinger 2005, 2010), projections related to number (Ritter 1991), gender (Picallo 1991), demonstratives (Brugè 2002) and even typically left-peripheral projections of topic and focus (Giusti 1996, 2006, 2014)[2].

Cartographic studies try to ascertain how many functional projections have to be assumed, what are they and how they relate to each other in the syntactic structure.

1.1.1 Cinque & Rizzi (2010)

Cinque & Rizzi (2010) could be seen as Cartography's *manifesto*, defining its status, assumptions and goals, if Cartography was to be considered a framework. Cartography is usually presented as an approach to the study of syntactic structures or as a hypothesis itself about the syntactic configuration. But Cinque & Rizzi (2010) argue that it is not properly an approach or a hypothesis, but rather a research topic, concerning the structural mapping of natural language syntax.

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[1] The emergence of Cartography can be traced back to some workshops held in Siena and Venice in 1999, where the Cartographic Project was discussed (Belletti 2004). Articles related to the project were later collected in a series of volumes titled "The Cartography of Syntactic Structures" published by OUP, which popularized the term 'Cartography' itself.

[2] See Alexiadou, Haegemann & Stavrou (2007) (and references cited there) for a survey on the functional structure in the nominal domain.

It has the flavour of a framework (and it is referred to as such in the title of the present chapter) since cartographic studies adopt a consistent methodology and make similar hypotheses on the nature of syntactic structures and this common ground can be thought as the basis of a paradigm. The core hypotheses of cartographic studies are that:

- each morphosyntactic feature is encoded in the head of an independent functional projection;
- the hierarchies of functional projections are universal, i.e. the type, number and order of functional projections do not change across languages;
- the whole set of functional projections is always present, even if they are not overtly realized;
- differences among languages crucially depend on a) the overt vs. covert realization of functional heads and specifiers and b) their linearization after movement operations take place.

Cinque and Rizzi (2010) note that these assumptions represent the strongest position linguists can take. In fact, they imply that, if there is evidence for a certain functional head/projection in one language, the existence of such a functional head/projection has to be postulated for every natural language. An alternative weaker position would be to claim that there is a universal inventory of functional projections from which languages select the subset of functional projections they need. But the strongest position is said to be methodologically preferable because, adopting the weaker one, some evidence in favour of the strongest claim could be missed.

The complex structural representations implied by Cartography are often seen in contradiction with the simplicity demanded by the Minimalist Program which developed in the same years. But Cinque & Rizzi (2010) claim that the two lines of research are not in opposition, they simply deal with different aspects of language structures: Minimalism is interested in the mechanisms generating syntactic structures, while Cartography focuses on the generated syntactic structures themselves. The simplicity of the mechanisms would not exclude the richness of the structure, combinatorial operations being recursive.

1.2 Left-right asymmetries

The challenge for cartographic studies is to account for word order differences relating them to the same, supposedly universal, hierarchy of projections to which movement operations apply. From this point of view, systematic word order differences are taken themselves as evidence of the universal character of the functional hierarchy. And natural languages seem to provide them under the form of left-right asymmetries.

Cinque (2007, 78-ff) lists left-right asymmetries concerning the order of adjectives, adverbs, circumstantial PPs, prepositions, mood/tense/aspect morphemes, auxiliaries, as reported in examples (1)-(7)[3]. Such asymmetries rely on the fact that functional heads and modifiers show a unique order before the noun/verb lexical head, but both the same and the reverse order after it:

(1)　Order of demonstratives, numerals and adjectives
　　　a. Dem > Num > A > **N**　　　　(English, Malayalam,…)
　　　b. *A > Num > Dem > **N**　　　　0
　　　c. **N** > Dem > Num > A　　　　(Abu', Kikuyu,…)
　　　d. **N** > A > Num > Dem　　　　(Gungbe, Thai,…)

(2)　Order of attributive adjectives (not derived from RCs)
　　　a. $A_{size} > A_{color} > A_{nationality} > $ **N**　　　(English, Serbo-Croatian,…)
　　　b. *$A_{nationality} > A_{color} > A_{size} > $ **N**　　　0
　　　c. **N** $ > A_{size} > A_{color} > A_{nationality}$　　　(Welsh, Irish, Maltese,…)
　　　d. **N** $ > A_{nationality} > A_{color} > A_{size}$　　　(Indonesian, Yoruba,…)

(3)　Order of adverbs
　　　a. $Adv_{no\ longer} > Adv_{always} > Adv_{completely} > $ **V**　　　(English, Chinese,…)
　　　b. *$Adv_{completely} > Adv_{always} > Adv_{no\ longer} > $ **V**　　　0
　　　c. **V** $ > Adv_{no\ longer} > Adv_{always} > Adv_{completely}$　　　((main clause) German, Italian,…)
　　　d. **V** $ > Adv_{completely} > Adv_{always} > Adv_{no\ longer}$　　　(Malagasy, Niuean,…)

(4)　Order of circumstantial PPs
　　　a. Time > Place > Manner > **V**　　　(Basque, Nambikuara,…)
　　　b. *Manner > Place > Time > **V**　　　0
　　　c. **V** > Time > Place > Manner　　　(V/2 clause German)

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[3] For references and further discussion of these left-right asymmetries, see Cinque (2007).

d. **V** > Manner > Place > Time   (Vietnamese, Yoruba)

(5)   Order of directional and locative prepositions
       a. P_{Dir} P_{Loc} NP   (Romanian)
       b. *P_{Loc} P_{Dir} NP   0
       c. NP P_{Dir} P_{Loc} (Iatmul (Papuan))
       d. NP P_{Loc} P_{Dir} (Jero (Tibeto-Burman)

(6)   Order of (speech act) Mood, Tense and Aspect morphemes
       a. Mood Tense Aspect **V**   (Nama, Yoruba,…)
       b. *Aspect Tense Mood **V**   0
       c. **V** Mood Tense Aspect   (Comox,…)
       d. **V** Aspect Tense Mood   (Korean, Malayalam,…)

(7)   Order of auxiliary (restructuring) verbs
       a. Aux_1 Aux_2 Aux_3 **V**   (Italian, English,…)
       b. *Aux_3 Aux_2 Aux_1 **V**   0
       c. **V** Aux_1 Aux_2 Aux_3 (Hungarian, West Flemish,…)
       d. **V** Aux_3 Aux_2 Aux_1 (Hungarian, German,…)

Therefore, it seems that the same distributional pattern applies to functional heads and modifiers in different domains and independently of their categorial nature. Such regular left-right asymmetries cannot be driven by chance. Cinque (2007) accounts for them on the basis of (i) Kayne's (1994) Antisymmetry Theory and (ii) hypotheses of phrasal movements.

Kayne's (1994) Antisymmetry Theory is commonly considered as the basis of cartographic studies. His Linear Correspondence Axiom imposes a strict Specifier-Head-Complement configuration and bans multiple specifiers and adjunction. This forbids, for example, to treat (adjective and adverb) modifiers as adjuncts to explain their different ordering with respect to the noun/verb head. Each modifier is argued to be placed into a unique position inside the functional structure and systematic differences in surface orderings are derived through different types of phrasal movements.

Syntactic movements can obviously obscure the relative order of functional projections; hence the great importance of comparative studies for the cartographic research, in order to determine how the functional projections are hierarchically organized. Since languages differ concerning what functional heads they overtly realize, comparative

evidence is used also to obtain a macro-hierarchy of functional projections by combining the partial orders deduced from different languages.

The cartographic studies discussed in the following sections show how these assumptions and this way of proceeding are applied to account for ordering restrictions of adverbs, adjectives and prepositional phrases.

1.3 Ordering restrictions of adverbs

One could wonder why to talk about adverbs if this dissertation concerns adjectives. Because the syntax of adnominal adjectives resembles that of clausal adverbs. For example the hypothesis of base generation in the specifier of different functional projections has been put forward for adjectives (Cinque 1994), applied to adverbs (Cinque 1999) and later refined for adjectives (Scott 2002; Cinque 2005, 2010; Laenzlinger 2005, 2011; Ramaglia 2008; Rae 2010).

1.3.1 Cinque (1999)

Cinque (1999) shows that there are consistent ordering restrictions in the syntax of adverbs across a great number of languages. He argues that this is due to the fact that they are base-generated within the specifiers of different functional projections rigidly ordered. His reasoning is developed in three steps.

First, he discusses ordering restrictions of adverbs in Italian and French showing that they converge on the same hierarchy of adverb classes. This fixed position of adverbs is possibly obscured by cross-linguistic variation regarding movement options or by the existence of different merging sites for the same adverb with different interpretations. But Cinque (1999) shows not only that a rigid order of adverbs accounts for Romance data, but also that the same hierarchy of adverbial classes can be argued to be at the root of ordering restrictions in totally different languages (like English, Norwegian, Bosnian/Serbo-Croatian, Hebrew, Chinese and Malagasy). The existence of such a fixed order is explained under the generation-in-Spec hypothesis (opposed to adjunction), adopting Kayne's (1994) antisymmetric model of syntax, which admits only one specifier per projection. In fact, if AdvPs are merged in specifier position and each projection has a unique specifier, it follows that the order of adverbs is constrained by the order of the

maximal projections hosting them: this explains the existence of ordering restrictions in adverbial syntax. In addition to this conceptual argument, Cinque (1999) provides empirical evidence in favour of a specifier-based approach: most of the adverbs can be preceded or followed by an active past participle in Italian. This follows from an adverb location in specifier position and from the presence of head positions, one to the left and one to the right of each AdvP. The variable position of the verb respect to (some) adverbial classes can be accounted for in terms of V(P) movement across adverbs.

Second, the author investigates the order of suffixes expressing aspect, modality and tense both in agglutinative and inflectional languages. It seems that the partial relative orders obtained in different languages can be integrated into one and the same general order of functional suffixes. This order in turn results to be the mirror image of the order of free functional morphemes like auxiliaries, as expected according to Baker's (1985) mirror principle. Hence, the ordering restrictions noted can be summed up in a unique overall hierarchy of functional heads.

Third, Cinque (1999, 106), matching the hierarchy of AdvPs with that of functional heads, observes that it is possible to establish a one-to-one relationship between AdvPs and functional heads they semantically correspond to:

(8) [Mood$_{\text{speech act}}$ *franckly* [Mood$_{\text{evaluative}}$ *fortunately* [Mood$_{\text{evidential}}$ *allegedly* [Mod$_{\text{epistemic}}$ *probably* [T$_{\text{past}}$ *once* [T$_{\text{future}}$ *then* [Mod$_{\text{irrealis}}$ *perhaps* [Mod$_{\text{necessity}}$ *necessarily* [Asp$_{\text{habitual}}$ *usually* [Asp$_{\text{repetitive (I)}}$ *again* [Asp$_{\text{frequentative (I)}}$ *often* [Mod$_{\text{volitional}}$ *intentionally* [Asp$_{\text{celerative (I)}}$ *quickly* [T$_{\text{anterior}}$ *already* [Asp$_{\text{terminative}}$ *no longer* [Asp$_{\text{continuative}}$ *still* [Asp$_{\text{perfect}}$ *always* [Asp$_{\text{retrospective}}$ *just* [Asp$_{\text{proximative}}$ *soon* [Asp$_{\text{durative}}$ *briefly* [Asp$_{\text{generic/progressive}}$ *characteristically* [Asp$_{\text{prospective}}$ *almost* [Asp$_{\text{sg.completive (I)}}$ *completely* [Asp$_{\text{pl.completive}}$ *tutto* [Voice *well* [Asp$_{\text{celerative (II)}}$ *fast/early* [Asp$_{\text{repetitive (II)}}$ *again* [Asp$_{\text{frequentative (II)}}$ *often* [Asp$_{\text{sg.completive (II)}}$ *completely*

(8) shows a hierarchy of functional projections in which IP is said to be split. The heads of these functional projections would host abstract semantic features, such as aspect, tense and modality and adverbs would be merged into the specifier of the functional projection they are semantically related to. Such a hierarchy is considered to be universal and part of the UG.

The following section will show that the generation-in-Spec hypothesis accounts for ordering restrictions of adjectives, as well. Special attention will be addressed to the derivation of surface orders and different types of phrasal (and head) movement will be discussed.

1.4 Ordering restrictions of adjectives and PPs in the noun phrase

Works by Cinque (1994) and Scott (2002) represent a cornerstone in the literature on adjective order. They claim that attributive adjectives are ordered according to the semantic class they belong to. They argue in favour of a universal hierarchy of adjectives, based on semantic classes, from which all adjective orders can be derived. Their main assumptions will be discussed; then the DP structure and the derivation of surface orders of adjectives and PPs will be further explored following Laenzlinger (2005, 2011) and Cinque (2010).

1.4.1 Cinque (1994)

Cinque (1994) studies the syntax of adjectives in Romance and Germanic languages, noting that there are systematic differences and that such differences can be explained on the basis of the same underlying structure.
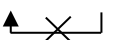
There appear to be regularities in the relative ordering of adjectives, independently of their position with respect to the noun, mostly prenominal in Germanic languages, both pre- and postnominal in Romance. Cinque (1994) recognizes unmarked serializations of the different classes of APs:

(9)   a. poss. > cardinal > ordinal > speaker-oriented > subject-oriented > manner >
         thematic   (event nominals)
      b. poss. > cardinal > ordinal > quality > size > shape > color > nationality
                                                                 (object-denoting nominals)

These left-to-right serializations correspond to the top-down positions of merging of the adjectives in the DP structure, so that (10) corresponds to (9b):

(10)   [$_{DP}$ D° [Adj$_{poss}$ [Adj$_{card}$ [Adj$_{ord}$ [Adj$_{qual}$ [Adj$_{size}$ [Adj$_{shape}$ [Adj$_{color}$ [Adj$_{nation}$ [$_{NP}$ N°

In fact, adjectives are said to be merged to the left of the noun both in Romance and Germanic and their surface postnominal position in Romance is ascribed to the raising of the N to a functional head intermediate between N and D:

(11) a. [D.. [AP Y [AP N]]]   (Romance languages)

  b. [D.. [AP Y [AP N]]]   (Germanic languages)

Regarding the exact merging site of adjectives, Cinque (1994) argues that APs are generated in the specifiers of distinct functional projections hierarchically ordered. The generation-in-Spec hypothesis is preferred over the alternative adjunction hypothesis on the basis of three claims. First, the existence of an unmarked order is the immediate consequence of the hierarchical organization of the functional projections, while it is not expected under adjunction, which should be free. Second, the limit on the number of adjectives modifying the same head would follow from the limited number of functional projections hosting adjectives, while no limits are provided for adjunction. Third, the fact that APs are merged to the left of the noun has to be stipulated under the adjunction hypothesis, but it comes for free under the generation in specifier position since the specifier is to the left of the head.

The N-raising hypothesis raises some expectations regarding the order of the adjectives. Given that the base order is argued to be the same and the only difference regards the raising of the noun past some adjectives in Romance languages, postnominal adjectives in Romance are expected to be ordered like prenominal adjectives in Germanic:

(12) English (no N-movement): Adj_1 Adj_2 N[4]
      Romance (N-movement): N Adj_1 Adj_2 (expected)
                             N Adj_2 Adj_1 (unexpected)

But postnominal mirror image orders do exist in Romance (and other) languages and appear to challenge the N-raising hypothesis itself. This is the reason why Cinque

---

[4] When adjectives are referred to as Adj1, Adj2, Adj3 etc., Adj1 is always used to identify an adjective which is assumed to be higher in the nominal structure than Adj2, which in turn is assumed to be higher than Adj3 and so on.

(2010) gets rid of N-movement and replace it with an NP-movement. This proposal will be discussed below; the same solution will be found in Laenzlinger (2005, 2011).

1.4.2 Scott (2002)

Scott (2002), comparing data from several languages, proposes that adjectives are ordered according to a rich hierarchy of semantic classes[5]:

(13) ORDINAL NUMBER > CARDINAL NUMBER > SUBJECTIVE COMMENT > $^?$EVIDENTIAL > SIZE > LENGTH > HEIGHT > SPEED > $^?$DEPTH > WIDTH > WEIGHT > TEMPERATURE > $^?$WETNESS > AGE > SHAPE > COLOUR > NATIONALITY/ORIGIN > MATERIAL > COMPOUND ELEMENT > N° 　　　　　　　　　　　　　　(Scott 2002, 114)

Scott (2002) studies ordering restrictions of attributive adjectives along the same lines as Cinque (1994): he rejects the idea that adjectives are adjoined iteratively to the head noun, it being unable to explain ordering restrictions, and welcomes the hypothesis that APs are base-generated in the specifiers of different functional projections rigidly ordered. But, while Cinque (1994) leaves the nature of the functional projections hosting APs unspecified, Scott (2002), following Cinque's (1999) account for adverbs, argues that, in parallel with adverbs, adjectives occupy the specifier of semantically related functional projections (e.g. ColourP, NationalityP, ShapeP, etc.):

«If adverbs are, as Cinque suggests, the specifiers of such FPs as $Mood_{speech\ act}P$, $Asp_{proximate}P$, $T_{future}P$ – that is, of the FPs that reflect the semantic classes by which they pattern in linear ordering – it seems reasonable, and by Uniformity indeed theoretically desiderable, to assume that adjectives, their nominal counterparts, are likewise treated as the specifiers of FPs that reflect the semantic classes according to which they are ordered.» 　　　　　(Scott 2002, 98)

---

[5] Such a fine-grained hierarchy of adjectives is not always accepted. For example Svenonius (2008) refuses it claiming that it is «not well-motivated outside of the adjectival ordering phenomenon that they are introduced to describe» (Svenonius 2008, 35).

Adjective ordering restrictions themselves are said to reveal this hierarchy of functional projections, the heads of such FPs being lexically empty. What follows is an example of the structure of the split DP given by Scott (2002, 106):

```
DP
├── D
│   that
└── D'
    ├── AdvP
    │   really
    └── Subj. CommentP
        ├── AP
        │   cool
        └── Subj.CommentP'
            ├── e
            └── SizeP
                ├── e
                └── LengthP
                    ├── AP
                    │   long
                    └── LengthP'
                        ├── e
                        └── ColourP
                            ├── AP
                            │   red
                            └── ColourP'
                                ├── e
                                └── NP
                                    dress
```
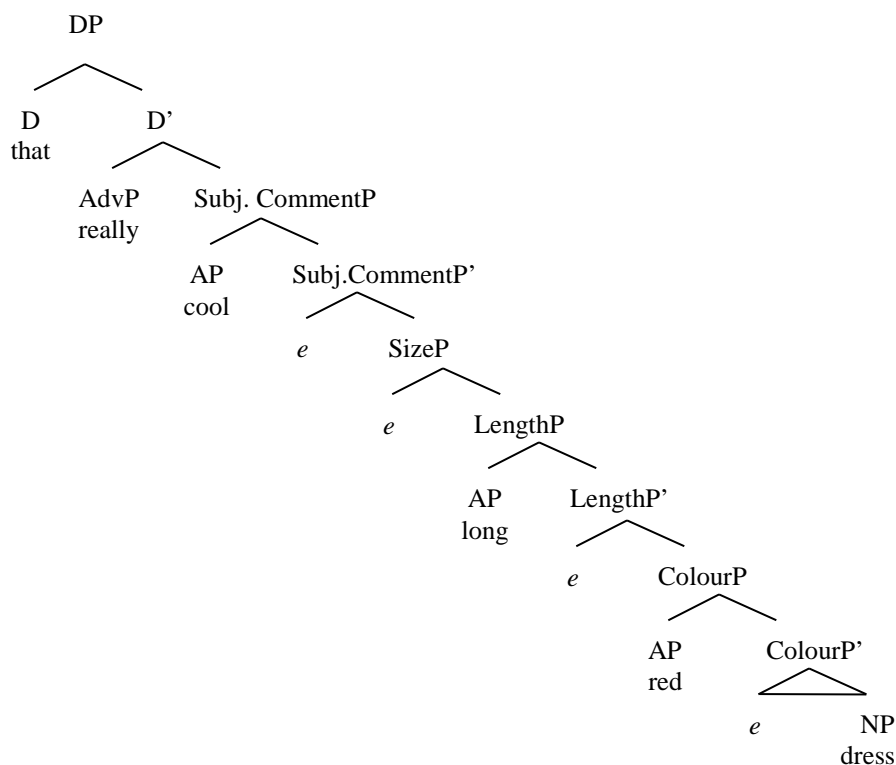
Fig.1.1. Scott's (2002) structure for *that really cool long red dress.*

The author stresses the fact that the interpretation of an adjective strictly depends on which FP it is merged in[6]. Moreover, he highlights that each of these FPs can host in its specifier any element (e.g., APs, NPs or PPs) that is related to the semantic features encoded in the head of the projection. This claim is crucial to Rae (2010) (Ch.3, §3.3.1) since she accounts for ordering restrictions of modifiers in CNs on the basis of the same assumptions, with the difference that her modifiers can be both adjectives and nouns.

---

[6] In the example above *cool*, having the meaning of 'excellent', occupies the specifier of a Subj.CommentP, but if it had the interpretation of 'not hot', it would be merged in the specifier of a TemperatureP. The possibility of different merging sites for an adjective like *cool* is reflected in the syntax: it is said to mean 'excellent' in *a cool long red dress*, but 'not hot' in *a long cool red dress*, displaying a different relative order of *long* and *cool*.

1.4.3 Laenzlinger (2005, 2011)

Laenzlinger (2005), studying adjectives in French, especially in object-denoting nominals, develops an analysis of adjective ordering based on a complex DP structure. Laenzlinger (2011), comparing thirteen languages (in addition to French), shows that the hypotheses put forward for French seem to suit them, as well. He tries to derive attributive adjective orders from the hierarchies in (14), based on Cinque (1994) (see (9) above):

(14) a. $D > Adj_{quant} > Adj_{quality} > Adj_{size} > Adj_{form} > Adj_{color} > Adj_{nationality} > NP$
   b. $D > Adj_{speaker\text{-}oriented} > Adj_{subject\text{-}oriented} > Adj_{manner} > Adj_{thematic} > NP$

He adopts the specifier-based approach discussed above and assumes that APs are base-generated in the specifier position of their semantically corresponding projections. Since adjectives are merged to the left of the noun, some kind of movement has to be hypothesized if they appear to its right. But Laenzlinger (2005, 2011) rejects N-movement in favour of NP-movement, claiming that the latter, but not the former, can capture all the orders of adjectives in postnominal position.

Laenzlinger (2011), like Cinque (1994) and Scott (2002), states that in languages generally displaying prenominal adjectives (e.g. English, German, Russian, Serbo-Croatian, Japanese[7]) the relative order of APs reflects their order of Merge in the structure, which corresponds to the hierarchies in (14):

(15) a. [Quant numerous [Qual wonderful [Size big [Nation American   [NP cars (Eng)
  b. [Quant zahlreiche [Qual wunderbare [Size grosse [Nation amerikanische [NP Autos (Ger)

  c.[Quant mnogočislennye [Qualvelikolepnye [Col krasnye [Natamerikanskije [mašiny (Rus)
    numerous   beautiful   red   American   cars
  d. [Quant mnogi [Qual divni [Color crveni [Nat američki [NP automobili   (Serbo-Croatian)
    numerou   beautiful red   American cars

  e. [Qual subarasii [Size tiisana [Color akai [NP kuruma   (Japanese)
    wonderful   small   red   cars

---

[7] Laenzlinger (2011) recognizes that prenominal adjective ordering in Japanese does not seem to be so rigid and that this could challenge Cinque's (1994)/Scott's (2002)/Laenzlinger's (2005) adjective hierarchy, unless Japanese adjectives are analysed as reduced relative clauses whose order is free.

As for languages displaying all postnominal adjectives, Laenzlinger (2011) focuses on Hebrew, whose postnominal APs are ordered in a mirror image fashion with respect to the hierarchies in (14). Following Shlonsky (2004), he analyses the reverse postnominal order of adjectives in (16) as the result of a successive roll-up pied-piping movement, illustrated in Fig.1.2 (Laenzlinger 2011, 184):

(16)   parrot švecariyot xumot rišonot   (Hebrew)
        cows Swiss   brown first
        'the first brown Swiss cows'
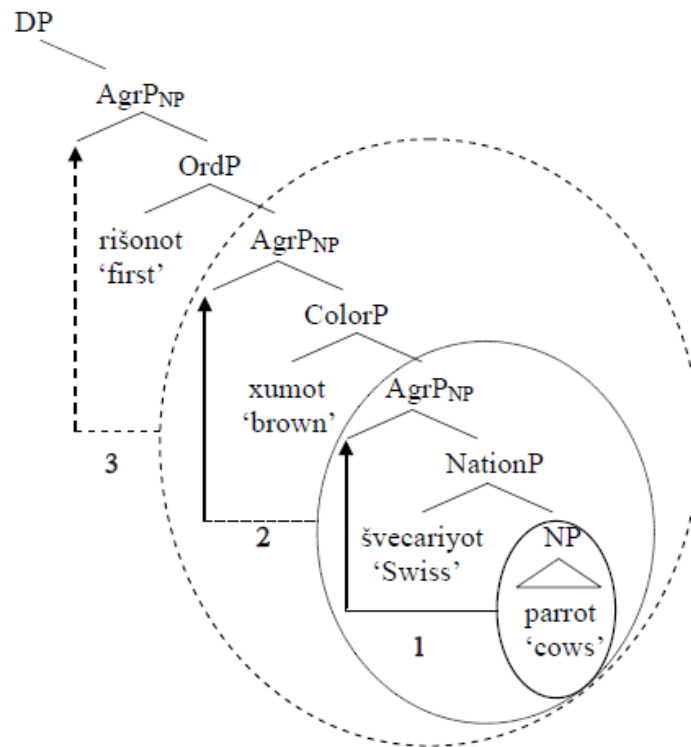
Fig.1.2. Pied-piping movement reversing the order of postnominal APs in Hebrew

Romance languages are classified as mixed languages as far as the adjective position is concerned, since they display both pre- and post-nominal adjectives. On the basis of examples like (17) for French (Laenzlinger 2005, 658), the relative order of two postnominal adjectives is said to be either the same as the order of the corresponding prenominal adjectives in English, as in (17a), or its mirror image, as in (17b):

(17) a. une voiture [rouge]$_1$ [française]$_2$ / a [red]$_1$ [French]$_2$ car   (linear matching)

   b. une voiture [italienne]$_2$ [magnifique]$_1$ / a [beautiful]$_1$ [Italian]$_2$ car

   une voiture [rouge]$_2$ [magnifique]$_1$ / a [beautiful]$_1$ [red]$_2$ car   (mirror image)

To account for such a distribution, Laenzlinger (2005, 2011) assumes that the noun raises as a phrase: the movement of the NP would be triggered by agreement feature checking and its landing site would be a projection of agreement (FP$_{Agr(NP)}$). Each adjective-related FP[8] is argued to be associated with a FP$_{Agr(NP)}$ where adjective-noun agreement is checked[9]:

(18)   [$_{DP}$ D° ... [$_{FPAgr(NP)}$ [$_{FPadj}$ Adj$_{quality}$ [$_{FPAgr(NP)}$ [$_{FPadj}$ Adj$_{size}$ [$_{FPAgr(NP)}$ [$_{FPadj}$ Adj$_{shape}$ [$_{FPAgr(NP)}$ [$_{FPadj}$ Adj$_{color}$ [$_{FPAgr(NP)}$ [$_{FPadj}$ Adj$_{nationality}$ [$_{NP}$ N°

On the one hand, when the order of two postnominal adjectives follows the hierarchy in (14), it means that the NP has moved alone past the two FP$_{adj}$s targeting the specifier of the higher FP$_{Agr(NP)}$, with a possibly cyclic movement through the specifier of an intermediate FP$_{Agr(NP)}$:

(19)   [$_{DP}$ D° ... [$_{FPAgr(NP)}$ voiture [$_{FPadj1}$ rouge [$_{FPAgr(NP)}$ [$_{FPadj2}$ française [$_{NP}$ ~~voitures~~

NP-movement

On the other hand, Shlonsky's (2004) derivation of Hebrew adjective ordering is extended to Romance to account for cases of postnominal mirror image orders: a FP$_{Agr(NP)}$-movement is said to take place producing a snowballing effect on adjective linearization.

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[8] These FPs are labelled QualityP, SizeP, ColorP, etc., as well as generically FP$_{adj1}$, FP$_{adj2}$, FP$_{adj3}$, etc.

[9] Laenzlinger (2005) states that the NP moves to Spec,FP$_{Agr(NP)}$ in French to check the relevant agreement features with APs. This movement can be supposed to take place overtly in Romance languages, displaying a morphologically strong adjective-noun agreement, but covertly in English, displaying a morphologically weak adjective-noun agreement. Hence, the mainly postnominal position of APs in Romance vs. their prenominal position in English can be accounted for. But German, Greek and Hungarian could represent a problem for a similar analysis since they have prenominal adjectives despite showing strong DP-internal agreement. Laenzlinger (2005, 661) tries to solve the problem arguing that «in Romance agreement in number and gender is established (or checked) in a Spec-head configuration, while in Germanic (plus Greek and Hungarian) it is established under Chomsky's (2000) downward *Agree* operation».

(20) illustrates Laenzlinger's (2005) derivation of Fr. *une voiture italienne magnifique* (N > Adj$_{nationality}$ > Adj$_{quality}$) vs. En. *a beautiful Italian car* (Adj$_{quality}$ > Adj$_{nationality}$ > N). The author proposes a two-step derivation: (i) the NP moves past the lower FP$_{adj}$ to the specifier of an intermediate FP$_{Agr(NP)}$ producing the order *voiture italienne*; (ii) this FP$_{Agr(NP)}$ raises to the specifier of an higher FP$_{Agr(NP)}$ causing the mirror image order of adjectives (*une voiture italienne magnifique*)[10]. In other words, the NP, after raising past Adj$_2$, further raises above Adj$_1$ pied-piping the lower Adj$_2$, and thus producing the mirror image order[11]:

(20) [$_{DP}$…[$_{FPAgr(NP)}$ [$_{FPAdj1}$ magnifique [$_{FPAgr(NP)}$ voiture [$_{FPAdj2}$ italienne [$_{NP}$ ~~voiture~~

NP-movement

snowballing FP-movement
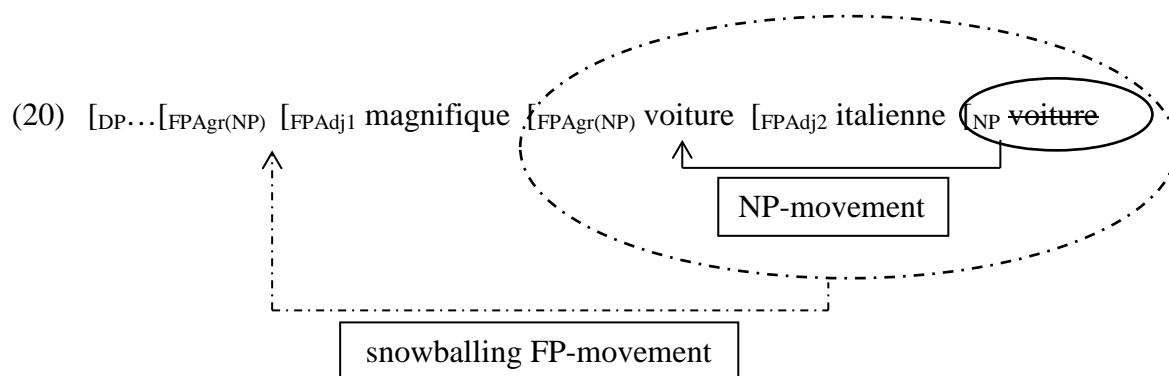
Therefore, Laenzlinger (2005) assumes two types of phrasal movements to account for adjective order in French (Romance): NP-movement and FP$_{Agr(NP)}$-movement. NP-movement postnominalizes the adjectives preserving their relative order (19), while FP$_{Agr(NP)}$-movement reverses it (20). Languages differ with respect to the types of movements they admit; the following table, based on Laenzlinger's (2005, 2011) claims, relates the type of adjective order to the type of movement involved and shows in which languages they can be found:

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[10] There would be a third step since, according to Laenzlinger (2005, 2011), the FP$_{Agr(NP)}$ would further raise to the specifier position of a determiner-related FP$_{Agr(NP)}$.

[11] Laenzlinger (2005, 662), on the basis of examples in (i), conjectures that «this type of pied-piping movement with snowballing effects is limited to a one-step move within NP in French», and in Romance languages in general, since the mirror image order cannot concern more than two adjectives:

(i)   a. un poulet froid délicieux (*énorme)   (French)
       b. un pollo freddo delizioso (*enorme)   (Italian)
       c. un pollo frío rico (*enorme)   (Spanish)

Adjective order	Type of movement	Languages
[Adj$_1$ Adj$_2$ N]	no NP-raising[12]	English, German, Swedish, Russian, Serbo-Croatian, Hungarian, Japanese, Tatar
[N Adj$_1$ Adj$_2$]	NP-raising	Irish
[N Adj$_2$ Adj$_1$]	FP$_{Agr(NP)}$-movement	Malagasy, Gunbe, Indonesian, Thai, Hebrew
[N Adj$_1$ Adj$_2$] [N Adj$_2$ Adj$_1$]	both NP-raising and FP$_{Agr(NP)}$-movement	Romance languages

Table 1.1. (Postnominal) adjective ordering and phrasal movements[13].

But Laenzlinger (2005, 2011) also suggests that a short D-movement takes place in the nominal structure. This hypothesis relies on a complex DP structure, the DP being split into two functional projections (not distinguished in the structural representations above). The higher DP (DP$_{deixis}$) is said to be devoted to the pragmatic interpretation of the noun phrase, while the lower DP (DP$_{determination}$) expresses determination[14]. The D head is argued to be merged in the lower DP$_{determination}$ and then raised (overtly or covertly) to the higher DP$_{deixis}$. A functional projection of agreement (FP$_{Agr(NP)}$) is postulated between the two DPs: such a projection attracts the NP for determiner-noun agreement checking in Romance languages (while lower FP$_{Agr(NP)}$s are devoted to adjective-noun agreement checking). This complex DP structure and movements driven by feature checking requirements are represented in (21):

(21) [$_{DPdeixis}$ D [$_{FPAgr}$ NP [$_{DPdeterm}$ D̶ [$_{FPAgr}$ N̶P̶ [$_{FPadj}$ Adj$_{quality}$ [$_{FPAgr}$ N̶P̶ [$_{FPadj}$ Adj$_{size}$ ... N̶P̶
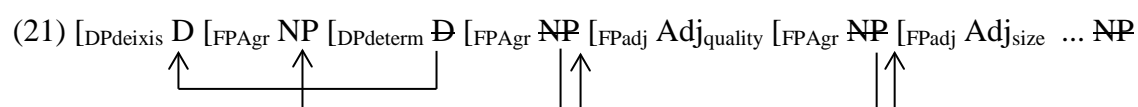
A fourth type of movement is assumed to account for the prenominal position of some adjectives in French (Romance). In fact, under the hypothesis that the NP moves to the FP$_{Agr(NP)}$ between DP$_{deixis}$ and DP$_{determination}$, all the adjectives are expected to occur postnominally. But this is not always the case in French.

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[12] No NP-raising past APs is assumed, but this does not exclude other types of phrasal movements involving the NP (see Laenzlinger 2011 for further details).

[13] See Laenzlinger (2005, 2011) for references.

[14] This split-DP hypothesis is modelled analogically on Rizzi's (1997) split-CP analysis, DP$_{deixis}$ corresponding to his ForceP and DP$_{determination}$ to his FinP.

Laenzlinger (2005, 2011) considers the prenominal position in French as marked, available only for weak adjective forms (e.g. *gros avions* 'big airplanes'), adjectives with an empathic or strong subjective interpretation (e.g. *superbes creatures* 'wonderful creatures') and quantifiers (e.g. *nombreux accidents* 'numerous accidents'). Adjectives occurring prenominally are supposed to be merged in their semantically corresponding FPs and then raised to specific FPs in the determiner domain. This AdjP-movement is argued to be triggered by interface factors: incorporation required by weak short forms, subjective emphasis and scope quantification. Three FPs are assumed to host prenominal APs, WeakP, SubjP and QuantP, hierarchically ordered as in (22)[15]:

(22) [DPdeixis ces [QuantP nombreuses [SubjP superbes [WeakP petites [FPAgr voitures [DPdeixis ~~ces~~
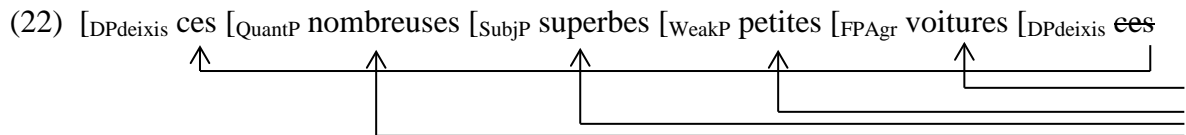
There are derivations in which all the four types of movements appear to be involved, like the following proposed by Laenzlinger (2005, 669) to account for adjective order in *petites voitures rouges magnifiques* 'beautiful small red cars':

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[15] In the case of deverbal nominals Laenzlinger (2005, 2011) suggests that prenominal adjectives target a left periphery projection labelled ModifP.

23
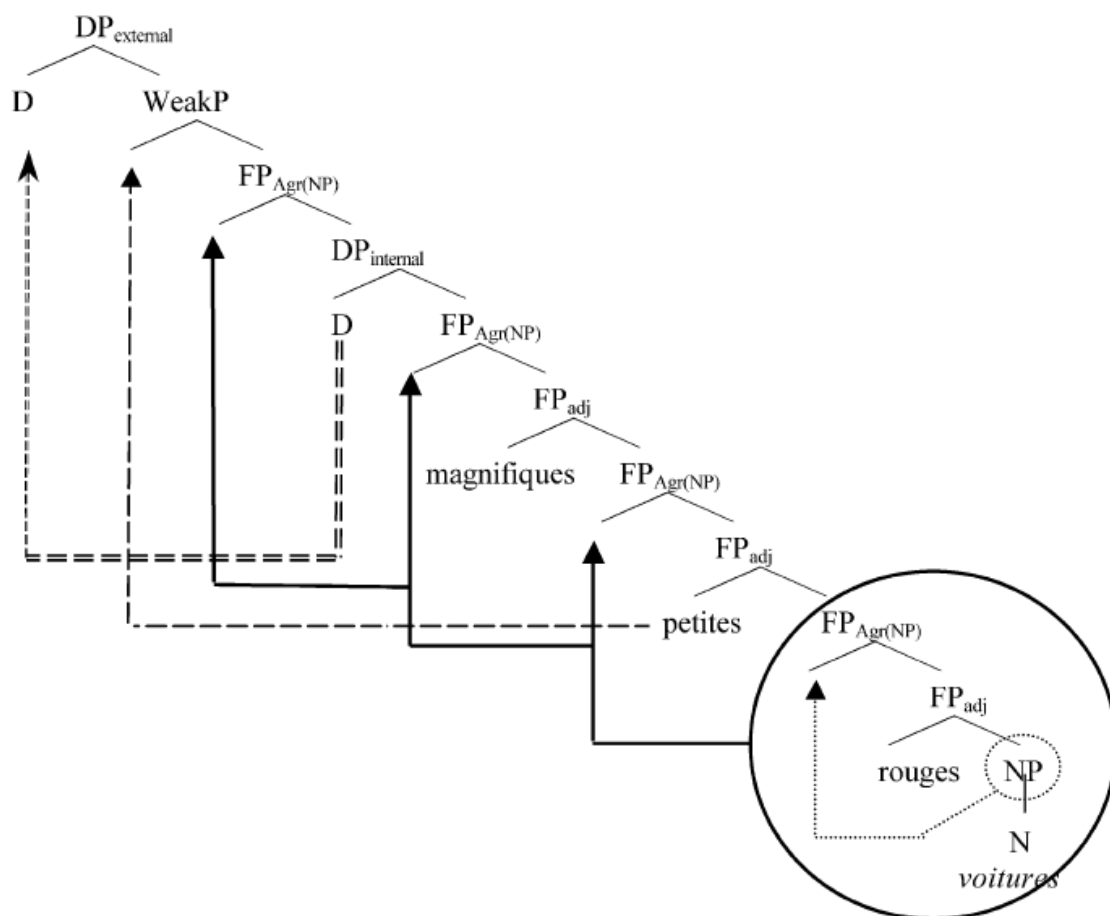
Fig. 1.3. Laenzlinger's (2005) derivation for *petites voitures rouges magnifiques*.

Finally, Laenzlinger (2005) assumes the existence of a predicative projection, hosting predicative adjectives in the nominal structure. Such a PredP is collocated higher than FPs hosting attributive adjectives, but lower than the determiner domain[16]; like the other adjective-related FPs, it is associated with a projection of agreement ($FP_{Agr(NP)}$).

Laenzlinger (2005, 2011) also deals with the interference of PPs in adjectival sequences and makes some assumptions about their structural position. He adopts Kayne's (2002, 2004) approach to PPs and, partially following Kayne (2002) and Cinque (2010), argues that PPs are built outside the NP in two steps: (i) the DP complement of the preposition is merged low in the nominal structure[17], but attracted higher by a Case head (K); (ii) the preposition is subsequently merged as a head.

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[16] This hypothesis is preferred by Laenzlinger (2005) over a lower position proposed for PredP in a former version of his work (Laenzlinger 2000).

[17] It is said to be merged in the NP-shell if it is an argument.

The author claims that the PP domain is higher than the adjective domain on the basis of the evidence coming from head-final languages which display the unmarked order PP < Adj < N. Laenzlinger (2011) suggests the structure in (23):

(23)   [DP > PP-adjuncts > PP/DP-arguments > Adjectives > [NP…]]]

But the noun plus the adjectives can raise above the PP-related projections[18], causing the final position of the PPs. The derivation of the surface order Adj < N < PP-arguments < PP-adjuncts of Germanic languages is provided in (24), while the order N < Adj < PP-arguments < PP-adjuncts of Hebrew is derived in (25), with a further raising of the NP past the adjectives (of the roll-up type):

(24)   [DP > PP-adjuncts > PP/DP-arguments > Adjectives > [NP…]]]

(25)   [DP > PP-adjuncts > PP/DP-arguments > Adjectives > [NP…]]]
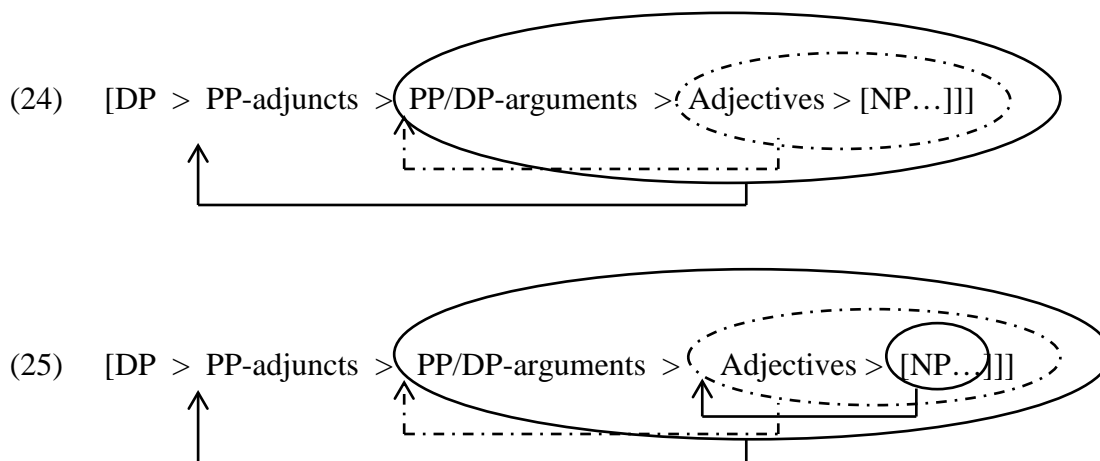
As for Romance languages, Laenzlinger (2005, 2011) notes that the most common order is N < Adj < PP (whose derivation is the same as that in (25) for Hebrew), but there are also instances of the order N < PP < Adj (in this case the adjective is said to be predicative rather than attributive and to occupy a PredP):

(26)   a. une fille splendide sans   lunettes   (French)
            a   girl splendid   without glasses
        b. ?une fille sans   lunettes splendide
            a   girl without glasses   splendid

The order N < PP < Adj is explained assuming that the NP can raise alone past PPs (while the derivation of the order N < Adj < PP implies that the NP pied-pipes the adjective(s) in its movement above the PPs).

Laenzlinger (2011) also studies the relative order of complement PPs. Looking at examples like (27) for French, the author notes that the unmarked order of argument PPs in French (Romance) is that in (28). The author relates this order to the structure/ derivation in (29): the NP raises above all PP-arguments[19] (and the extended projection made up of the NP plus PP-arguments is subsequently raised past the PP-adjuncts):

(27)   un don généreux d'argent   aux   pauvres par la   banque
        a   gift generous of money to-the poor   by the bank
        'a generous gift of money to the poor by the bank'

(28)   N < PP$_{de=theme}$ < PP$_{à=benefic}$ < PP$_{par=agent}$

(29)   [$_{DP}$… [$_{FPpp}$ [ADJUNCT] [[$_{FPde}$ [THEME] [$_{FPà}$ [BENEFICIARY] [$_{FPpar}$ [AGENT] [$_{nP}$ [$_{NP}$ N
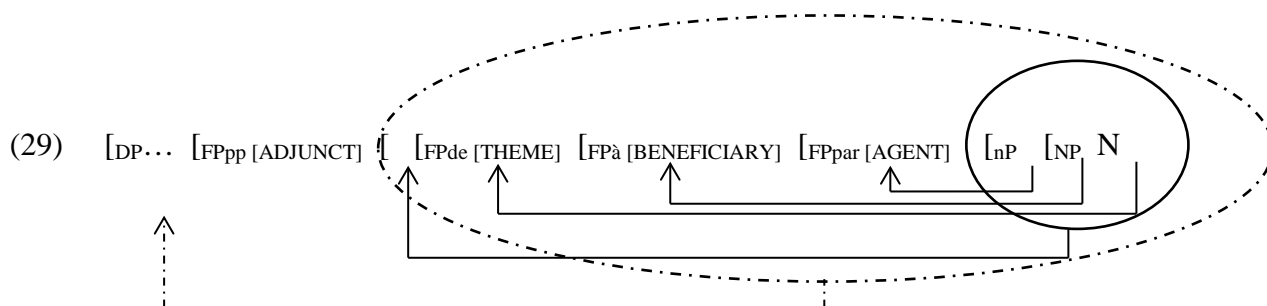
But dealing with Japanese, which is a head-final language (hence with PPs preceding the noun), Laenzlinger (2011) provides the example in (30), claimed to reveal the unmarked order in (31):

(30)   ginkô niyoru mazushii hito   e no   okane-no kandaina kifu
        bank by   poor   people to-Dat gift-Gen generous gift
        'a generous gift of money to the poor by the bank'

(31)   Oblique PP < Dative PP < Genitive PP < NP

---

[19] The derivation shows that the DP complements of the prepositions are first-merged in the NP-shell and then raised to PP-related functional projections.

Laenzlinger (2011, 227) argues that «such an unmarked order indicates the hierarchy of functional projections within the Mittelfeld of the noun phrase, since the noun (i.e. NP) does not raise at all». Hence, he seems to propose two different underlying structures for (27) and (30), but it appears to me that they can be derived from the same hierarchy of PPs, the surface order of postnominal PPs in (28) being the mirror image of the order of prenominal PPs in (31). Laenzlinger (2011) assumes that (i) the NP in Romance raises past APs with a snowballing movement that reverses their order and (ii) the extended projection containing the NP and PP-arguments raises past PP-adjuncts reversing the order of PP-arguments with respect to PP-adjuncts. Therefore, it could be the case that the NP raises past PP-arguments progressively pied-piping them, as well[20]. The derivation of the order of PPs in Romance would be that in (32)[21], where the NP always moves with a snowballing movement:

(32) [DP… [FPpp [ADJUNCT] [[FPpar [AGENT] [[FPà [BENEFICIARY] [[FPde [THEME] [NP N
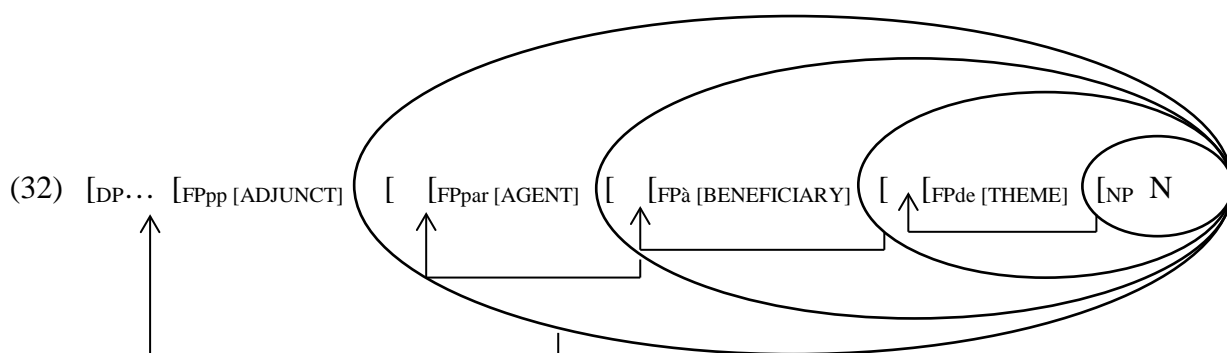
Not having enough data to test such a hypothesis, I leave the question open.

Most of Laenzlinger's (2005, 2011) claims are summarized in Fig.1.4 (Laenzlinger 2011, 35). The structure of the noun phrase, similarly to that of the clause, can be decomposed into three domains: the lowest one is the Ɵ-domain where noun's arguments first-merge. What follows is the modifier-domain where FPs containing APs and PPs (the former lower than the latter) alternate with Agreement FPs. Finally, the determiner-domain, containing two D-positions, a determiner-related $FP_{Agr(NP)}$ and left-periphery

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[20] Such a reverse order would be expected under Cinque's (2006, 2010) analysis of PPs: in fact prepositions, once merged, are said to force the movement of the remnant in their specifier in VO languages. See Cinque's (2006) derivation of PP order in the clause discussed in section 1.5.2.

[21] The fact that DP complements of Ps are externally merged inside the NP-shell has not been represented for clarity's sake.

projections. The arrows (partially) show the movements he assumes to account for the postnominal positions of APs and PPs in Romance languages:
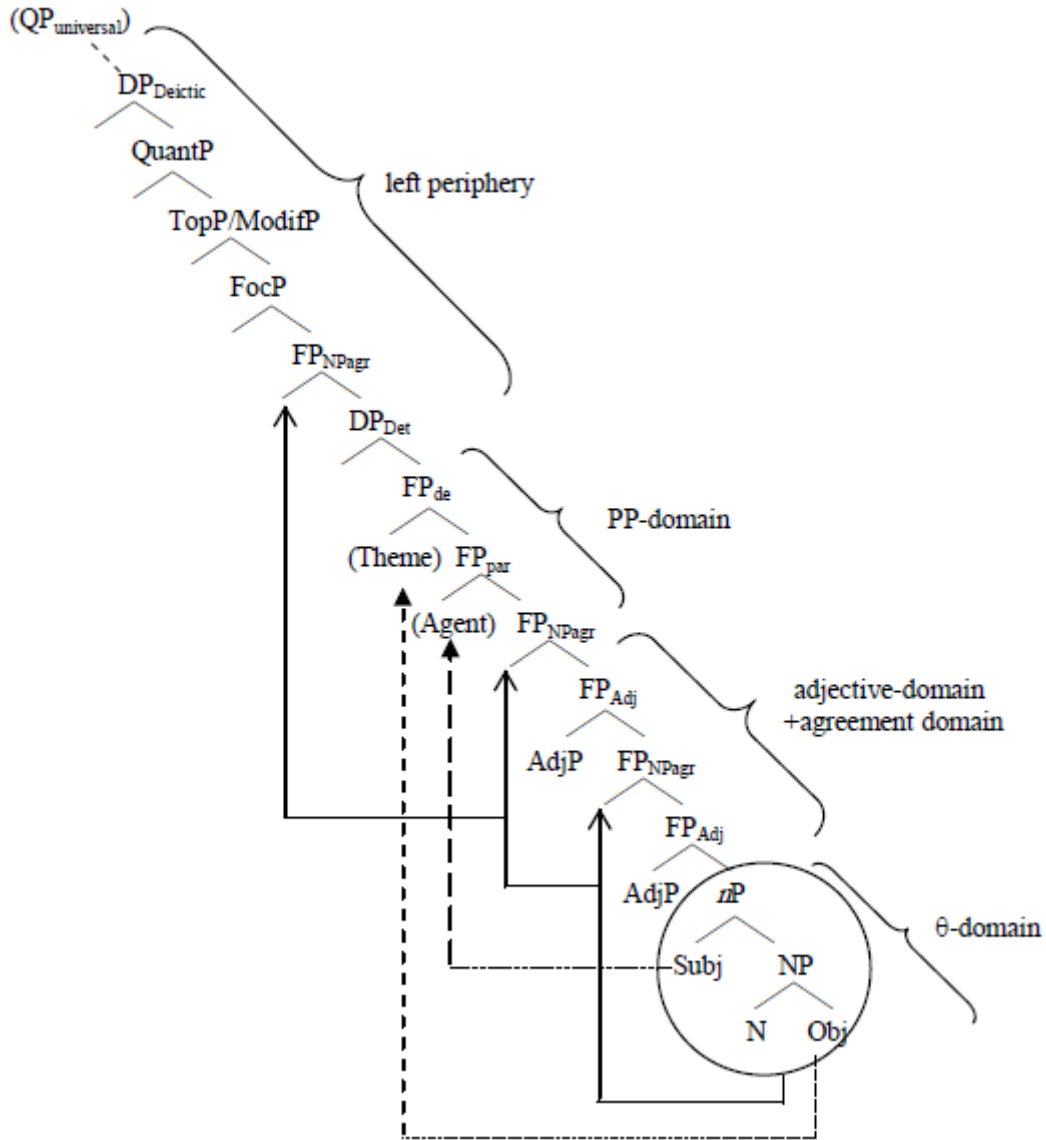
Fig. 1.4. Laenzlinger's (2005, 2011) DP structure.

1.4.4 Cinque (2010)

Cinque's (2010) analysis of the syntax of adjectives shares some assumptions with Laenzlinger's (2005, 2011) one, i.e. the hierarchy of functional projections hosting APs, the specifier-based approach, the NP-movement (in place of N-movement), the distinction

of two different sources for adjectives. But there are several different claims, as well, especially regarding the derivation of adjective order.

Cinque (2010, 2014) shows that the scenario of adjective distribution is complicated by the existence of two different types of adjectives: adjectives in direct modification, in the specifier position of functional projections hierarchically ordered, and adjectives which are derived from reduced relative clauses, whose order is free[22]. Each syntactic source correlates with different semantic properties of the adjective, as the following table summarizes:

reduced RC source	direct modification source
restrictive reading	non-restrictive reading
intersective reading	non-intersective reading
implicit relative clause reading of 'possible'	modal reading of 'possible'
relative (to a comparison class) reading	absolute reading
comparative reading (of superlatives)	absolute reading (of superlatives)
epistemic reading of 'unknown'	evaluative reading of 'unknown'
discourse anaphoric reading of 'different'	NP-dependent reading of 'different'
specific or non-specific reading	specific reading
stage-level or individual-level reading	individual-level reading
literal reading	literal or idiomatic reading

Table 1.2. Sets of interpretative properties associated with direct vs. indirect modification

The author compares English (Germanic) and Italian (Romance) and notes that adjectives display some systematic interpretative asymmetries between the prenominal and the postnominal position. In English prenominal adjectives are ambiguous between the two sets of interpretations, while postnominal adjectives display only the interpretative properties associated with the reduced RC source. In Italian adjectives are ambiguous in postnominal position, whereas in prenominal position they always show the interpretative properties related to the direct modification source. It follows that the interpretation possibilities of postnominal adjectives in English are opposite to those of prenominal

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[22] The difference between 'direct' and 'indirect' modification can be traced back to Sproat & Shih (1991). They note that Mandarin has two types of adjectives, with or without the particle *de*. Adjectives without *de*, showing ordering restrictions parallel to those noted for English, are instances of 'direct modification', while adjectives marked with *de*, whose order seems to be free, belong to the 'indirect modification'.

adjectives in Italian; in other words they have different syntactic sources. Moreover, the order of two adjectives in the ambiguous positions (i.e. prenominally in English, postnominally in Italian) is related to their interpretative properties, and hence to their syntactic source, as shown in (33):

(33)   En: AP in a redRC > DirMod AP > **N** > AP in a redRC

        It: DirMod AP > **N** > DirMod AP > AP in a redRC

From (33) it is clear that the order of postnominal adjectives in Italian is the mirror image of that of prenominal adjectives in English. If we consider this in addition to the different syntactic source of English postnominal adjectives and Italian prenominal ones, it is evident that there is no way of capturing such a distribution with N-raising. To see how Cinque's (2010) adjective order derivation works, let us start from the structural configuration he proposes for the noun phrase.

(34) [DemonstrativeP … [NumeralP …   [[$_{reducedRC}$ AP] …   [AP …   NP]]]]

                                reduced RC modification   direct modification

                                        redRC APs   DirMod APs

From a syntactic point of view, the two sources differ regarding the relative distance from the head noun, as (34) shows, and the presence vs. absence of a rigid order. DirMod APs are said to be structurally closer to the head noun than redRC APs and rigidly ordered, being merged in the specifier position of hierarchically ordered functional projections (cf. Cinque 1994). On the basis of examples like (35), the author claims that the order of postnominal DirMod APs in Romance languages is a mirror image of the order of prenominal DirMod APs in Germanic languages:

(35)   a. an [enormous]$_1$ [black]$_2$ dog   vs. un cane [nero]$_2$ [enorme]$_1$
        b. a [round]$_1$ [Chinese]$_2$ table   vs. un tavolo [cinese]$_2$ [rotondo]$_1$

He argues that the order of prenominal adjectives in Germanic languages reveals the hierarchy of functional projections, and that the mirror image order of postnominal adjectives found in Romance languages can be accounted for by the phrasal movement of

the NP with progressive *pied piping* of its modifiers[23]: the NP raises from specifier to specifier of Agr(eement)Ps found above each of the FPs hosting DirMod APs and cyclically pied-pipes the category that dominates it, producing a snowballing effect on the order of adjectives (cf. Laenzlinger 2005, 2011):

(36) $[_{DP}\ldots\ [_{AgrP}\ [_{WP}\ AP_{size}\ [W°\ [_{AgrP}\ [_{XP}\ AP_{color}\ [X°\ [_{AgrP}\ [_{YP}\ AP_{nation}\ [Y°\ [_{NP}\ N°$

Such a movement of the NP past the adjectives is not always obligatory in Romance. It is required when adjectives of nationality (37a) or relational adjectives (37b) are involved, but it appears to be optional with higher adjectives (e.g. colour, shape, size, quality) (37c) and impossible with even higher adjectives (37d):

(37) a. *un cinese vaso   vs. un vaso cinese   'a Chinese vase'
       b. *un elettronico ingegnere vs. un ingegnere elettronico 'an electrical engineer'
       c. un prezioso contributo   vs. un contributo prezioso   'a precious contribution'
       d. un sedicente erede   vs. *un erede sedicente   'an alleged heir'

Indirect modification adjectives are merged higher than DirMod APs and are freely ordered. They can appear pre- or post-nominally in Germanic, but they necessarily follow the noun in Romance. This implies that the whole constituent made up of the NP and its DirMod APs (FP$_4$ in Fig.1.5) raises above redRC APs. Inside the constituent raising above the reduced RC there can be further movements of the NP past DirMod APs, as described above. Hence, the derivation proposed by Cinque (2010) for adjective order in Romance is the following:

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[23] Cinque (2005) applies the NP-movement hypothesis to account for Greenberg's Universal 20, according to which the relative order of demonstrative, numeral and adjective in postnominal position can be either the same of the prenominal position (Dem > Num > A) or its mirror image (A > Num > Dem). Both the orders are explained in terms of NP-raising: the former is obtained if the NP moves alone, the latter if the NP raises pied-piping its modifiers.
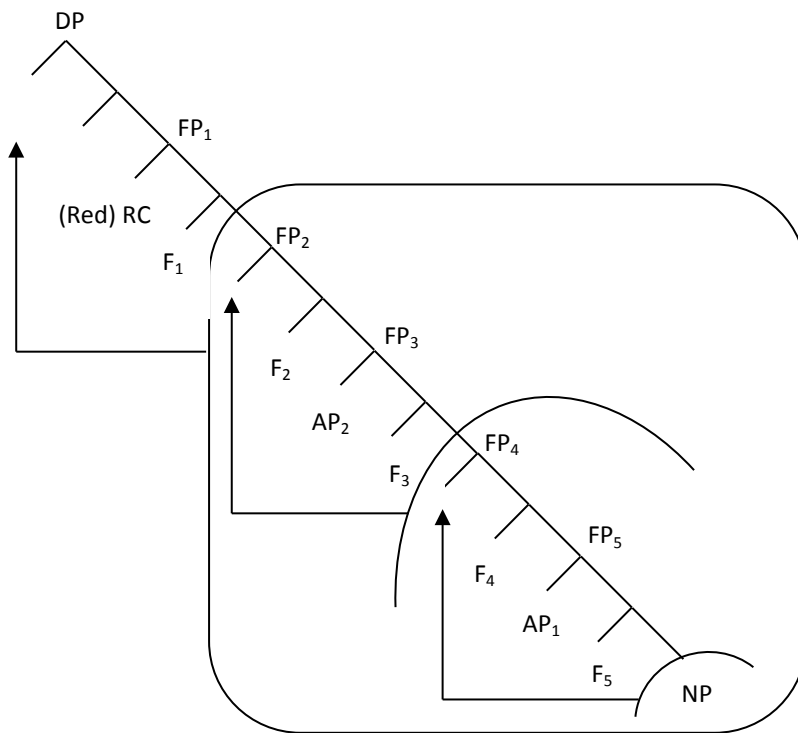
Fig.1.5. Cinque's (2010) derivation of (DirMod and redRC) APs order in Romance.

The syntactic differences between DirMod adjectives and redRC adjectives (closer vs. farther position to/from the noun and rigid vs. free order) are especially visible in those languages in which the two adjective sources are morphologically distinct (e.g. Mandarin Chinese, Bosnian/Croatian/Serbian, Romanian). But in languages like Italian and English such differences seem to be neutralized. For example, at a first glance, adjective orders like those in (38), if compared to (36) above, appear to challenge Cinque's (2010) hypotheses:

(38) a. En. a black enormous dog / It. un cane enorme nero
      b. En. a Chinese round table / It. un tavolo rotondo cinese

The order of DirMod adjectives in (36) is said to be fixed, but (38) shows that it can be reversed both in English and in Italian. However, they do not constitute real counterexamples to Cinque's claims since the most external adjective of each sequence in (38) can be argued to be a reduced RC adjective and not a direct modification one. The existence of adjectives that can act both as direct and indirect modifiers is said to obscure the fact that DirMod APs are always rigidly ordered.

As for prenominal adjectives in Romance, they remain in their merge position in Cinque's (2010) derivation, which does not require an AP-movement, differently from Laenzlinger's (2005, 2010). Prenominal adjectives are not considered to be necessarily marked in Romance, though they can be. From this point of view, Cinque's (2010) account can be integrated with Giusti's studies on the left periphery of the nominal structure (Giusti 2006, 2014), suggesting that any attributive adjective can be moved to a Contrast projection (KonP) in the left periphery of the DP, where it receives an emphatic interpretation[24].

Finally, Cinque (2010) considers the position of adjectives with respect to PPs. He shows that a postnominal adjective in Romance can precede or follow a PP, the difference being that an adjective found between the noun and the PP(s) can be either in direct or indirect modification, while an adjective occurring after the PP(s) can only be an indirect modification adjective:

(39)   a. I greci *industriosi* di Megara di sicuro saranno premiati   (Italian)
        b. I greci di Megara *industriosi* di sicuro saranno premiati
           'The industrious Greeks of Megara will certainly receive a prize'

Cinque (2010), adopting Kayne's (2002, 2004) analysis of prepositions, suggests that a preposition is not directly merged with its complement. The derivation of PPs consists in (i) the merge of a K(ase) head which attracts the DP complement to its specifier, (ii) the merge of P, which can attract the remnant so that the PP appears as the rightmost element of the noun phrase. Hence, an adjective can follow a PP only if it is derived from a reduced relative clause (i.e. it belongs to the indirect modification type), since only relative clauses can be merged above PPs and forces the movement of the remnant to their left. The final position of the adjective or the PP depends on whether P or C (the overt/covert complementizer of the redRC forcing remnant movement like P) is merged higher. (40) and (41) are Cinque's (2010) derivations for (39a) and (39b), respectively:

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[24] Giusti (1996, 2006, 2014), like Laenzlinger (2005, 2011), proposes a split DP system, parallel to Rizzi's (1997) split CP: the distinction between DP(CaseP) and dP(NumP) resembles that between ForceP and FinP.

(40) a. [gli [industriosi [greci [Megara]]]] → merge of C_1 and attraction of *industriosi*

b. [industriosi C_1 [[i [t [greci Megara]]]]] → merge of C_2 and attraction of the remnant

c. [[i [t [greci [Megara]]]] C_2 [industriosi C_1 t]] → merge of K and attraction of the DP to its Spec

d. [[Megara] K [[i [t [greci]]] C_2 [industriosi C_1 t]] → merge of P and attraction of the remnant

e. [[[i [t [greci]]] C_2 [industriosi C_1 t]] di [[Megara] K t]]

(41) a. [gli [industriosi [greci [Megara]]]] → merge of K(ase) and attraction of the DP to its Spec)

b. [[Megara] K [gli [industriosi [greci t]]]] → merge of P (*di*) and attraction of the remnant

c. [[gli [industriosi [greci t]]] di [[Megara] K t]] → merge of C_1 and attraction of *industriosi*

d. [industriosi C_1 [[i [t [greci t]]]] di [[Megara] K t] → merge of C_2 and attraction of the remnant

e. [[[[i [t [greci t]]]] di [[Megara] K t] C_2 [industriosi C_1 t]]

The cartographic hypotheses on adjective order described so far will guide the study of ordering restrictions of Relational adjectives in Romance. However, the goodness of these syntactic hypotheses (as well as of Cartography as an approach) has been questioned by some linguists. An example of alternative analysis is summarized in the following section.

1.4.5 Alternatives to the cartographic approach

Cartography has been sometimes accused of being equivalent to a mere descriptive template. In Cinque's (1994 and subsequent) work it is argued that the fixed unmarked order of direct modification adjectives simply follows from the hierarchy of functional projections hosting them. But, according to Bouchard (2009), a weak point of this analysis is the fact that the selectional restrictions among such FPs remain unspecified, so that we are given a list of hierarchically ordered FPs without being told why they are ordered that way. Such a list of FPs is claimed not to have an explicative power since it would correspond to those sequences of semantic categories proposed in traditional and typological studies to account for adjective ordering. In particular the author argues that

Lists describe, they do not explain. A good theory is based on a model that contains only a few arbitrary elements and it accurately describes many observations. In Cartography, the lists contain a very large amount of arbitrary elements and make no predictions. Lists are merely assertions of existence: they are inventories of facts, they tell us what is. Lists do not deal with modalities of existence: they do not tell us what is possible. In the current absence of indications about what are possible functional elements and the selectional restrictions among them, the lists of these elements do not explain anything.   (Bouchard 2009, 258)

Bouchard (2002, 2005, 2009) proposes an alternative account for adjective ordering. Given that «language is a system which links concepts and percepts» (Bouchard 2009, 261), principled explanations of linguistic data are looked for both in the conceptual system of human brains and the sensorimotor systems of human bodies. Each sign is a combination of a concept (*signifié*) and a percept (*signifiant*) and syntax is said to provide a *signifiant* to a combination of *signifiés*. In the case of adjectival modification the combinatorial *signifiant* is Juxtaposition, which can give birth to two possible orders, AN or NA, according to a linearization parameter («The predicator precedes/follows the element it applies to»). In head-initial languages the predicator is expected to follow the head which it saturates/modifies, hence the order is expected to be NA.

In French this linearization represents the unmarked case, even if prenominal adjectives are available, as well. This is accounted for by suggesting that different *signifiants* correspond to different *signifiés*, i.e. the orders AN and NA are linked to different types of predication: the predication of the properties of the adjective targets the denotation of the noun with the order NA (e.g. *église ancienne* 'old church'), a subpart of it with the order AN (e.g. *ancienne église* 'former church).

The fact that English, despite being a head-initial language like French, displays bare adjectives mostly in prenominal position, would be due to a morphological difference in the way it encodes Number. The locus of number marking is D in French, but N in English; hence a nominal expression in English is a complex [N + NUM]. Bouchard (2002, 2009) claims that bare adjectives have to target the N alone, but if they were postnominal in English, they would target the whole [N + NUM]. Therefore they are forced to be prenominal, in order to target only the N subpart of the complex [N + NUM].

Bouchard's proposal rejects both the idea of a universal hierarchy of projections hosting adjectives and the hypothesis of N(P) movement. He accounts for the existence of an unmarked order of adjectives through the notion of 'Concept':

Principle of Adjective Serialization
The more the property expressed by an Adj can form a relevant and usual Concept with the N, the more this Adj tends to be close to the N, i.e., to modify the N more directly than other Adjs.   (Bouchard 2009, 268)

Bouchard (2005) claims that Concepts (differently from kinds) can be context-dependant. Hence, this principle predicts on the one hand the tendency to prefer a certain order (in line with the type of Concepts which are generally built) and on the other hand a certain flexibility of this ordering itself, since the formation of Concepts is susceptible to the context. He argues that if *une solution européenne commune* 'a common European solution' is considered more natural than *une solution commune européenne* 'a European common solution' is simply because it is easier to think of contexts where *une solution européenne* forms a Concept rather than contexts where *une solution commune* does.

According to Bouchard (2009), another weak point of the cartographic analysis of adjective ordering lies exactly in the correlation between adjective ordering itself and pragmatic factors. In fact, if the (preferred) order of adjectives can be said to vary on the basis of the pragmatic situation, the selectional restrictions of the FPs hosting adjectives (i.e. the order of these projections) are not expected to fluctuate depending on pragmatic factors.

Moreover, the author raises the issue of how many semantic categories can be encoded in the syntactic structure. As already discussed, cartographic studies on adjective ordering usually present highly detailed hierarchies of adjective FPs. Scott (2002), suggesting one of the most fine-grained hierarchies, claims that the head of such FPs would contain abstract semantic features corresponding to the semantics of the adjective they host in specifier position. This is judged by Bouchard (2009) not only to be redundant, but also to raise the problem of which semantic classes can be argued to project in the syntax, since the set of semantic categories according to which adjectives can be classified is not a finite/closed one[25].

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[25] See also Giurgea (2009) for the criticism towards cartographic accounts of adjective ordering.

However, I would like to emphasize that these (and similar) topics are discussed by Scott (2002) himself, clearly sharing cartographic assumptions: he shows to be aware of the necessity of further research about the number and nature of FPs hosting adjectives, wondering which semantic classes are relevant in syntactic terms, and he does not hide the existence of marked orders determined by pragmatic factors. But he does not consider these problematic issues a threat to the general lines of his work; he simply refers to them as topics for future research. For example he does suggest that marked orders can be reconciled with his fixed hierarchy of FPs if one hypothesizes a Focus projection as a possible landing site for adjectives in marked orders.

Therefore, even if admitting that these topics deserve a closer examination, they are not believed to undermine Cartography as an approach. Regarding the criticism of Cartography as a mere descriptive template, I would add that Cartography does not pretend to give a conceptual explanation of why adjective order is such as it is. Its main goal is to provide generalized descriptions of syntactic facts which could be the input for future explicative models. The importance of its attempt to describe linguistic data tracing them back to the same universal structure is certainly not lowered by its descriptive character.

1.5 Ordering restrictions of PPs in the clause

This section is devoted to present some observations on the order of PPs in the clause. Such an exploration of the sentence domain could seem useless in a dissertation regarding the syntax of adjectives in the noun phrase. But the relevance of this topic has been already mentioned in the introduction announcing the existence of similar ordering restrictions between PPs in the clause and RelAs in the noun phrase. Such a striking parallelism will be discussed extensively in chapters 4 and 5.

1.5.1 Schweikert (2005)

Schweikert (2004, 2005a) studies the distribution of PPs in the German *Mittelfeld* and shows that, despite an apparent free order, there are strict ordering restrictions. He classifies PPs according to their thematic content, isolating fourteen PP types (Temporal, Locative, Manner, etc.). Then, assuming that a base ordering among PPs does exist and

that different orders can be related to movement operations, he looks for syntactic tests that can give evidence in favour of such an assumption. He employs three tests which are sensitive for movement, hence useful to ascertain whether PPs are in their base position or in a derived one: quantifier scope, pair-list reading and informational focus.

The 'quantifier scope' test exploits scope relations between two quantified expressions in a sentence, where the higher quantifier is expected to take scope over the quantifier it C-commands or its trace. This predicts that, if a lower quantified expression has been moved across a higher one, there will be scope ambiguities, since it can be the case that the lower quantifier takes scope over the crossed operator or that the crossed operator takes scope over the trace of the moved quantifier. Therefore Schweikert (2004, 2005a) combines PPs containing a quantifier two by two and looks at their scope relations: if scope ambiguities emerge, it means that movement is involved and that the surface position of PPs does not coincide with their position of Merge. For example, starting from the base sentence in (42), Schweikert (2005a, 67-68) compares (43) and (44), involving a Temporal PP and a Reason PP:

(42)   Ich bin in jedem Jahr wegen   mindestens einer Krankheit zum   Arzt   gegangen.
        I   am in every year because of_at_least one   disease   to_the doctor go.PART
        'I went to the doctor every year because of at least one disease.'

(43)   Ich bin wegen mindestens einer Krankheit in jedem Jahr zum Arzt gegangen.
        ∃ (reason) ∀ (time)
        ∀ (time) ∃ (reason)

(44)   Ich bin in mindestens einem Jahr wegen jeder Krankheit zum Arzt gegangen.
        ∃ (time) ∀ (reason)
        *∀ (reason) ∃ (time)

Two interpretations are available for (43) since each quantifier can take scope over the other. Differently in (44) the existential quantifier can take scope over the universal one, but the opposite interpretation is not admitted. From this contrast Schweikert (2005a) concludes that (44) reveals the base order (i.e. Temporal PP > Reason PP), while the order in (43) is derived through the movement of the Reason PP over the Temporal PP.

The 'informational focus' test reveals an asymmetry regarding constituent order in German: when there are two constituents, the rightmost can always bear informational

focus (i.e. it can be seen as answer of a constituent question), whereas the leftmost can bear it only if its Merge position is higher than that of the second constituent. Schweikert (2005a, 79) provides the following example, testing the combination of a Temporal PP and a Locative PP:

(45)   Hans hat am Sonntag in München geschalfen.
        Hans has on Sunday in Munich   sleep.PART
        Hans slept in Munich on Sunday.

(46)   Wo hat Hans am Sonntag geschlafen?
        Hans hat am Sonntag <u>in München</u> geschalfen.
    ?? Hans hat <u>in München</u> am Sonntag geschalfen.

(47)   Wann hat Hans in München geschlafen?
        Hans hat in München <u>am Sonntag</u> geschalfen.
        Hans hat <u>am Sonntag</u> in München geschalfen.

In (46) the questioned Locative PP can be found to the right, but not to the left of the Temporal PP, whereas in (47) the focused Temporal PP can both precede or follow the Locative PP. According to the assumptions on the position of focused constituents, this contrast implies that the base order is Temporal PP > Locative PP.

Finally, the 'pair-list reading' test regards the presence vs. absence of scope ambiguities between an interrogative operator and a universal quantifier. Look at (48)-(49), reported from Schweikert (2005a, 83), involving a Temporal PP and a Locative PP:

(48)   Wo   hat Hermann an jedem Tag gespielt?
        Where has Hermann on every day play.PART
        'Where did Hermann play each day?'

(49)   Wann hat Hermann in jeder Stadt gespielt?
        When has Hermann in every town play.PART
        'When did Hermann play in every town?'

The question in (48) is ambiguous between a single constituent reading and a pair-list reading. In the former case the answer is the single place where Hermann played every day (e.g. Wimbledon); under the latter interpretation the answer would be a list of pairs of

places and days (e.g. Wimbledon-Monday, New York-Tuesday, etc.). In the case of (49) we easily get the single constituent reading, but a great effort is needed to access a pair-list interpretation. The pair-list reading is available only when the quantifier takes scope over the interrogative, which in turn is possible only if the interrogative operator has been generated lower than the quantified expression and has successively moved across it, so that the quantifier can c-command its trace. The fact that the pair-list reading is accepted for (48), but not for (49), tells us that the Locative PP is merged lower than the Temporal one and not *vice versa*.

The results of the three tests converge on the same hierarchy of PP types[26]:

(50)   EVIDENTIAL > TEMPORAL > LOCATIVE > COMITATIVE > BENEFACTIVE > REASON > SOURCE > GOAL > MALEFACTIVE > INSTRUMENTAL /MEANS/ PATH > MATTER > MANNER   (Schweikert 2005a, 132)

Schweikert (2005a) notes that the application of the 'pair-list reading' test to PPs in other languages (e.g. English and Dutch) results in the same hierarchy, even if the unmarked surface orders of PPs are different from that in German. He recognizes five different patterns (Schweikert 2005a, 247):

(51)   1. $PP_1\ PP_2\ PP_3\ PP_4\ PP_5\ V$ (German, dependent clauses)
       2. $V\ PP_5\ PP_4\ PP_3\ PP_2\ PP_1$ (English etc.)
       3. $V\ PP_1\ PP_2\ PP_3\ PP_4\ PP_5$ (German main clauses)
       4. $PP_1\ PP_2\ PP_3\ V\ PP_5\ PP_4$ (Dutch)
       5. $PP_1\ PP_2\ PP_3\ V\ PP_4\ PP_5$ (to be expected)

Preverbal PPs can appear only in direct order (pattern 1), while postverbal PPs can be found either in direct order (pattern 3) or inverted (mirror image) order (pattern 2). Mixed cases involve a partial movement of the verb, which climb the lower PPs but not the higher ones: again all the PPs preceding the verb are in direct order, whereas those following it can be in direct order (pattern 5) or inverted order (pattern 4). Schweikert (2005a) looks for a derivation able to account for such distributions of PPs.

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[26] The only difference between the three hierarchies of PPs regards the relative position of Instrument, Means and Path, which in fact are grouped together in the final hierarchy.

He explores a pied piping analysis: assuming that pattern 1 in (51) reveals the structural position of PPs, the other orders are obtained through a VP movement with or without pied-piping of PPs. But the author gives up this derivation, it being incompatible with his morphological approach (cf Schweikert 2005a, ch. 5), and he adopts what he calls the 'cyclic approach', where verb and modifiers move independently around the higher modifiers (the merge of each modifier corresponds to a 'cycle'). Schweikert (2005a) assumes for each PP a structure *à la* Kayne (2002, 2004) made up of a Case projection (KP), whose head attracts the object of the preposition to its Spec, and a higher PP. But he enriches the extended PP projection with LPrepP, which is claimed to provide a landing site for the lower PP complex (a LPrepP itself) in its movement upwards. Another projection, LVP, is added on the top, to provide a landing position for the raising VP[27].

The following figures show how Schweikert (2005a) derives the mirror image order of postnominal PPs. First, the lowest extended PP projection is merged with the VP; $LPrep_{max}P$ does not attract material since there is no lower PP; $LV_{max}P$ is merged and attracts VP to its specifier (Figure 1.6):
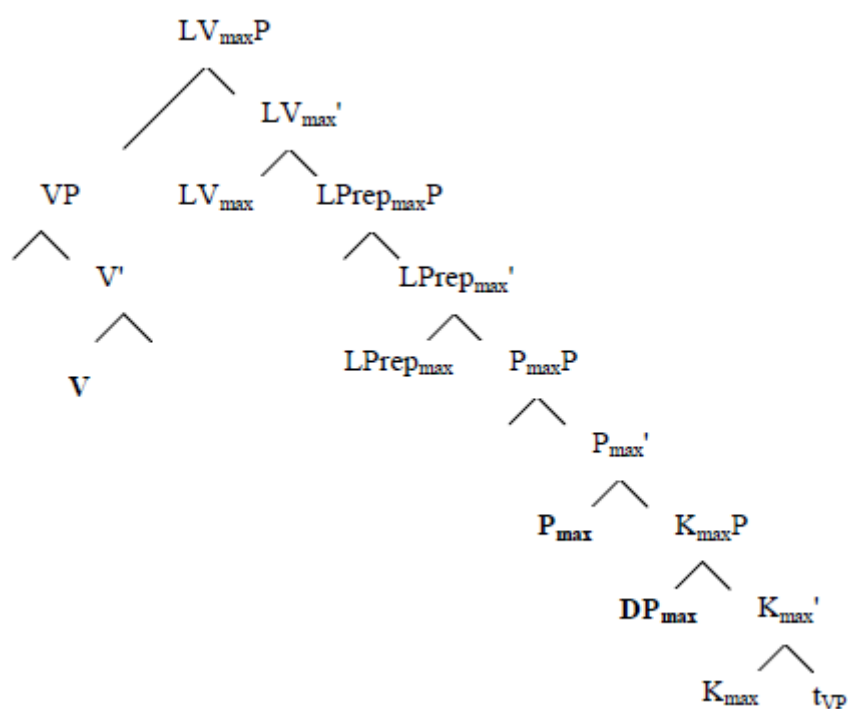
Fig. 1.6. Schweikert's (2005a) derivation of the mirror image order of postverbal PPs (I)

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[27] In Kayne's proposal the preposition itself acts as a probe and attracts the VP in its specifier.

The next extended PP projection is merged and $LPrep_{max-1}P$ attracts its lower counterpart $LPrep_{max}P$ (Figure 1.7):
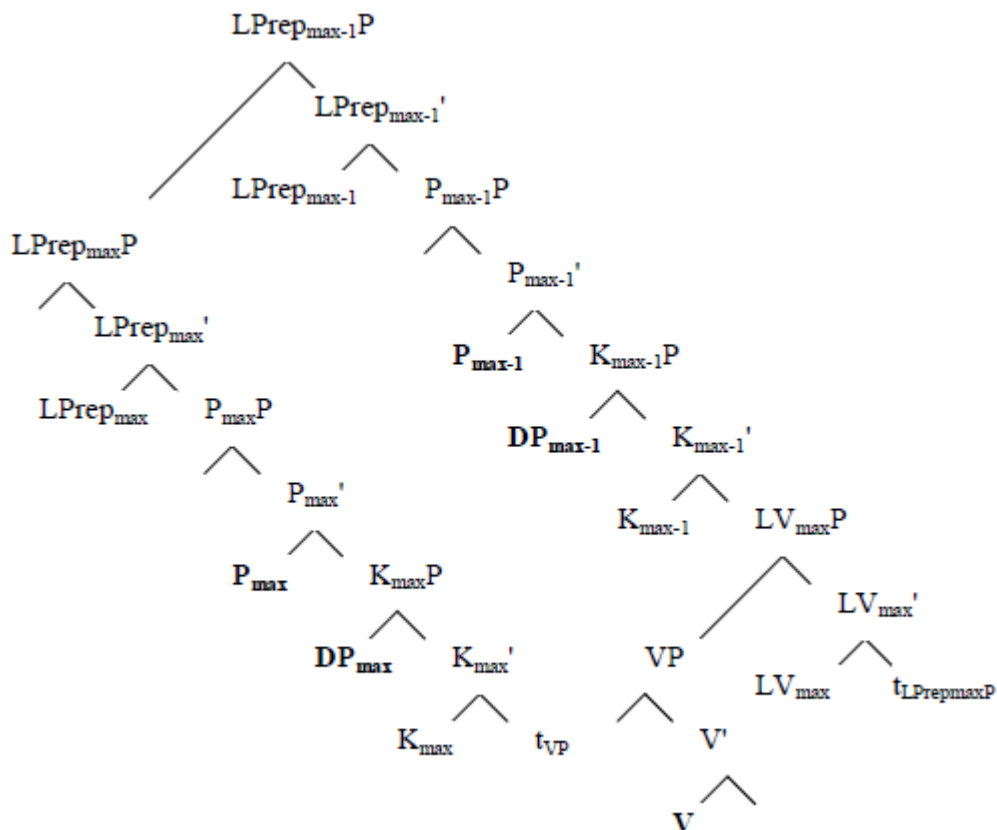
Fig. 1.7. Schweikert's (2005a) derivation of the mirror image order of postverbal PPs (II)

Then $LV_{max-1}P$ is merged and attracts its lower counterpart, $LV_{max}P$, containing the VP (Figure 1.8). Thus the expected linearization with the verb preceding mirror-image ordered PPs is obtained. If a third PP is added, the derivation follows the same steps: merge of the extended PP projection, attraction of the lower LPrepP by the higher LPrepP, merge of LVP, attraction of the lower LVP by the higher LVP. In fact Schweikert (2005a, 284) describes all the derivation process as «movements driven by cyclic attractions of similar elements: $LPrep_nP$ attracts $LPrep_{n+1}P$, LV_nP attracts $LV_{n+1}P$».
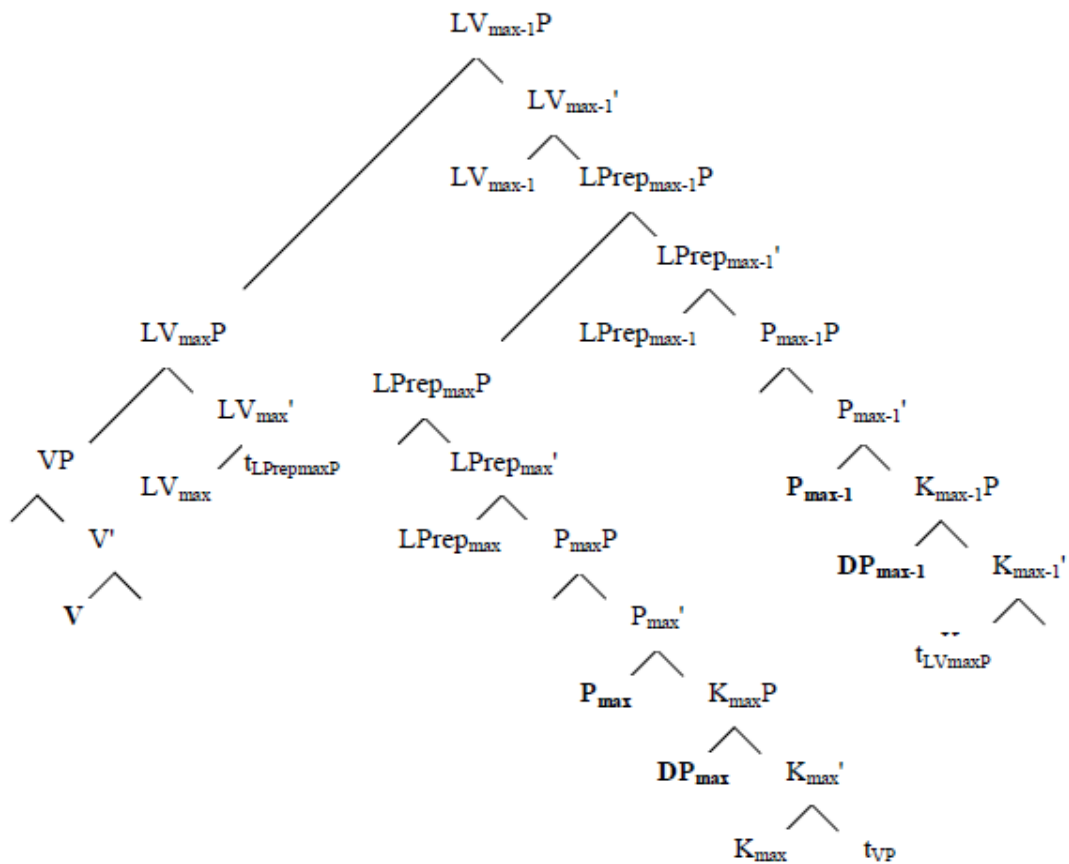
Fig. 1.8. Schweikert's (2005a) derivation of the mirror image order of postverbal PPs (III)

See directly Schweikert (2005a, chapter 6) for a detailed discussion of derivation possibilities, which goes beyond the goal of this dissertation. It is worth mentioning that Schweikert (2005b) attempts to map PPs onto Cinque's (1999) hierarchy of adverbs and functional heads.

1.5.2 Cinque (2006)

The fact that PPs are merged in a rigid hierarchical order is argued by Cinque (2006), as well. He adds some more pieces of evidence to those provided by Schweikert (2004, 2005a). The author shows that the free ordering of PPs (noted in sentences like *I met John in the park on Friday / I met John on Friday in the park*) is only apparent and proves that there are contexts in which a clear asymmetry between the two orders can be detected. In particular this happens when:

- two PPs are part of an idiom:

(52)   a. Gianni parla sempre [**di corda**]   [**in casa dell'impiccato**].   (Italian)
              Gianni talks always about rope in the house of the hanged man
              'G. always makes blunders'
        b. %Gianni parla sempre [**in casa dell'impiccato**]   [**di corda**].
           Gianni talks always in the house of the hanged man about rope

- the pronominal object of the preposition in the rightmost of two PPs is phonologically reduced:

(53)   a. John talked [**to Mary**] [**about 'm**]
        b. *John talked [**about Mary**] [**to 'm**]

- the DP inside the first PP binds the anaphoric DP of the second PP:

(54)   a. John talked [**to the men**] [**about each other**].
        b. *John talked [**about the men**] [**to each other**].

- there is preposition stranding:

(55)   a. Who$_i$ did John talk [**to t$_i$**] [**about Harry**] yesterday?
        a'. Who$_i$ did John talk [**to Harry**] [**about t$_i$**] yesterday?
        b. $^{??}$Who$_i$ did John talk [**about t$_i$**] [**to Harry**] yesterday?
        b'. $^{??}$Who$_i$ did John talk [**about Harry**] [**to t$_i$**] yesterday?

- there are multiple adverbial PP pro-forms:

(56)   a. [**Koga**] [**kăde**] šte hodiš tova ljato?   (Bulgarian)
           When where will go-you this summer
           'When will you go where, this summer?'
        b. *[**Kăde**] [**koga**] šte hodiš tova ljato?
           Where when will go-you this summer
           'Where will you go when, this summer?'

In these contexts the canonical order is argued to emerge. Different orders of PPs (where possible) are related by Cinque (2006) to focus sensitive operations which influence the PP ordering. The author notes that, if canonical orders are considered, the distribution of PPs across languages shows a left-right asymmetry: when they precede the verb, they display a unique order (let's say $PP_1 > PP_2 > PP_3$), while after the verb they can occur in the same order or in its mirror image ($PP_3 > PP_2 > PP_1$). Cinque (2006) relates these distribution to other well-known left-right asymmetries (see §1.2) and accounts for the order of PPs through a derivation parallel to that adopted for APs, involving phrase movement (VP-raising) with a possible snowballing effect on PP ordering. (4), repeated as (57), shows the relative ordering of Time, Place and Manner PPs across languages:

(57) a. Time > Place > Manner > **V**
      b. *Manner > Place > Time > **V**
      c. **V** > Time > Place > Manner
      d. **V** > Manner > Place > Time

(57a) is considered the order of merge of PPs and the postverbal position of PPs in (57c-d) is justified through a VP-movement: (57c) is obtained if the VP raises alone, (57d) if it moves up progressively pied-piping the PPs. Both derivations are represented:
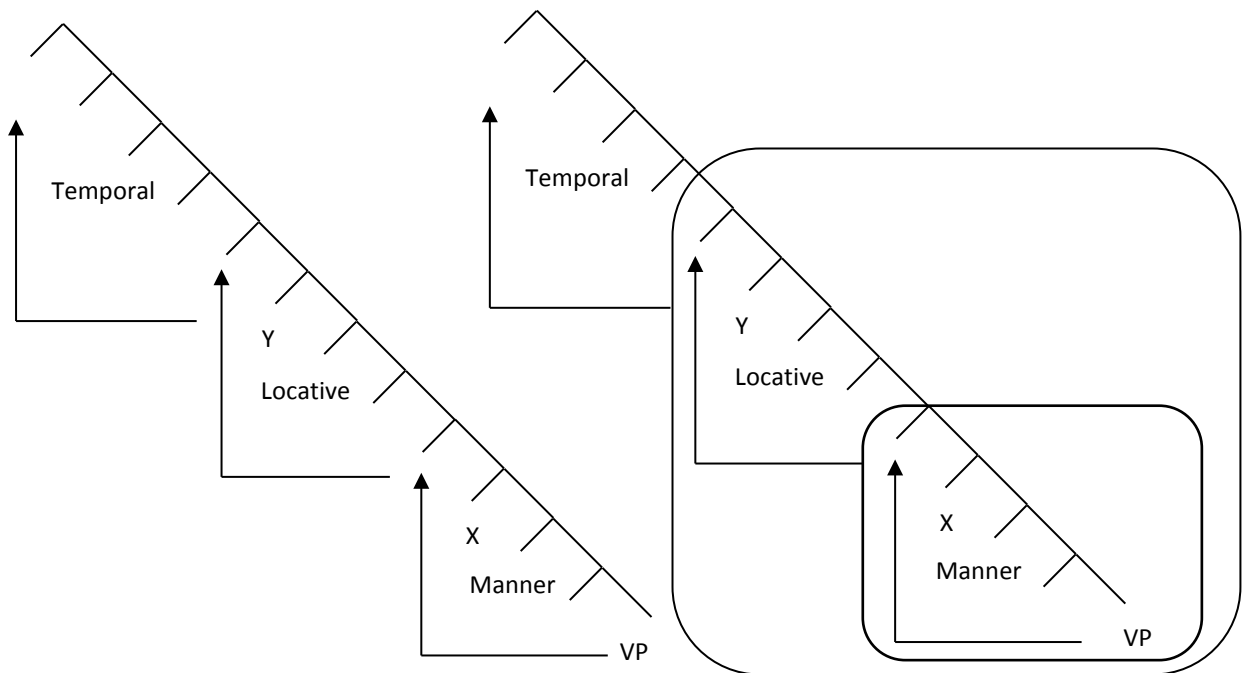
Fig.1.9. Cinque's (2006) derivations of the order of PPs in postverbal position.

Adopting Kayne's (2002, 2004) proposal according to which prepositions are not directly merged with their DP complements, Cinque (2006) suggests this derivation for the mirror image order of postverbal PPs in (35d)[28]:
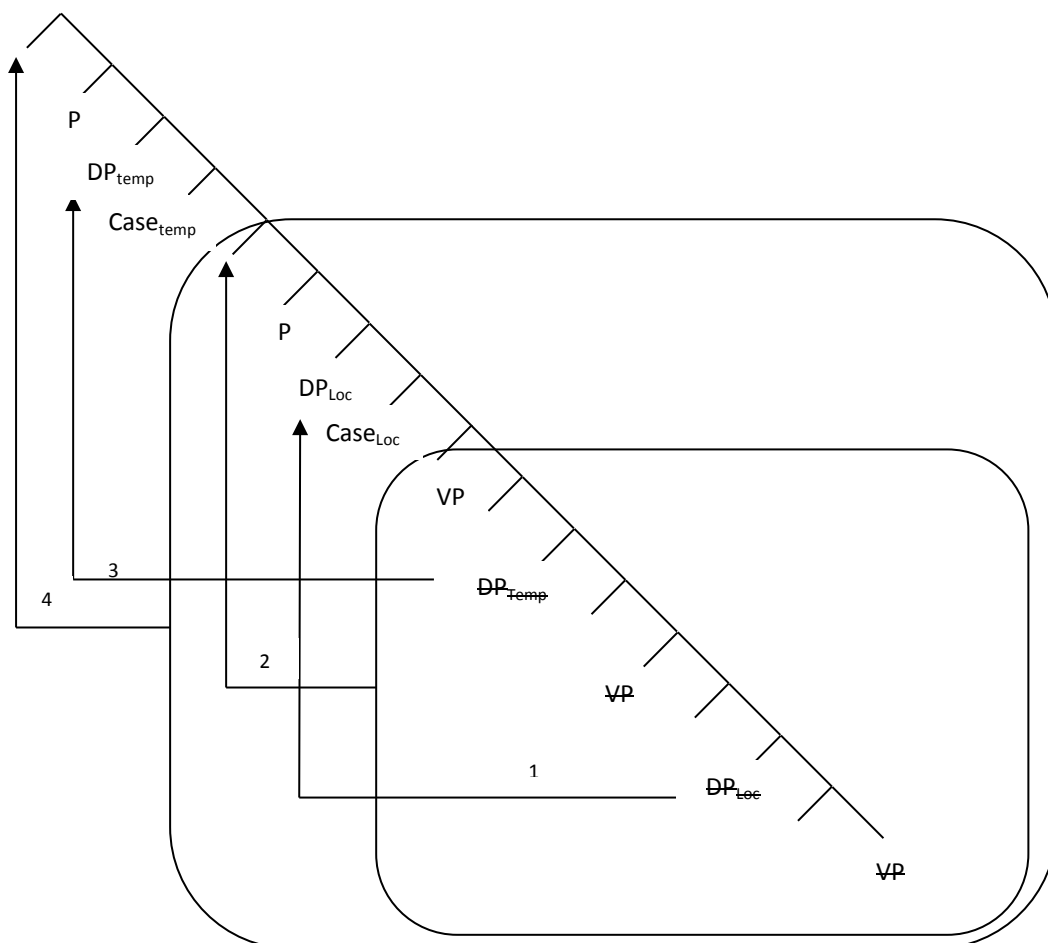
Fig. 1.10. Cinque's (2006) derivation of the mirror image order of postverbal PPs

1.5.3 Takamine (2010)

Takamine (2010) studies the ordering of modifier PPs in Japanese. In line with Schweikert (2005a), she argues in favour of the base-generation of PPs in a hierarchical

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[28] Cinque (2006) states that there seems to be a paradox in the c-commanding relations between PPs: he analyses two series of phenomena, one suggesting that PP_1 has to c-command PP_2, one suggesting the opposite pattern. The advantage of the derivation in Fig.1.10 is that it accounts for such a paradox. In fact, if at the end of the derivation the temporal DP c-commands the locative DP, there is an intermediate stage of the derivation in which the locative DP c-commands the temporal one.

structure. Takamine (2010) considers nine PP types, a subset of Schweikert's (2004, 2005a) ones: Temporal, Locative, Comitative, Reason, Source, Goal, Instrumental/Means, Material, Manner. She states that the order of PPs in Japanese seems to be free due to scrambling phenomena which change the base order of constituents. The author applies three tests to PPs combinations to verify whether their surface order is a base order or a derived one: the 'focus-neutral order' test, the 'informational focus' test and the 'quantifier scope' test.

The 'focus-neutral order' test aims to elicit the unmarked order of PPs in terms of information structure since such an unmarked order is argued to coincide with a base order. The author employs general questions to elicit unmarked orders since she expects that an answer suitable for a general question should not be informationally marked. She considers answer pairs with different ordering of two PPs and shows that a preference emerges between the two order possibilities: the preferred order is argued to be the base order of PPs. The following example regards the relative order of a Temporal PP and a Comitative PP, which turns out to be Temp PP > Com PP (Takamine 2010, 68-69):

(58) Taro nitsuite oshietekudasai.
      Taro about   tell.please
      'Please tell us about Taro'

      a. Taro-wa [_{Temp} kinyoobi-ni] [_{Com} tomódachi-to] koobe-ni   ikimashita
         Taro-TOP   Friday-TEMP   friends-COM   Kobe-GOAL   went
         'Taro went to Kobe with his friends on Friday'
      b. ?Taro-wa [_{Com} tomódachi-to] [_{Temp} kinyoobi-ni] koobe-ni   ikimashita
         Taro-TOP   friends-COM   Friday-TEMP   Kobe-GOAL went
         'Taro went to Kobe with his friends on Friday'

The other two tests, i.e. the 'informational focus' test and the 'quantifier scope' test are modelled on Schweikert's (2005a) diagnostics discussed above. See Takamine (2010, 69-ff) to verify how they are applied to PPs in Japanese.

Like in Schweikert's (2005a) study, the three tests give converging results[29]. On this basis Takamine (2010) proposes the hierarchy of PP types in (59):

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[29] The three hierarchies resulting from the tests diverge only for the position of Reason PPs; the author posits them between Comitative PPs and Source PPs, this position being implied by two tests out of three (see Takamine 2010, 93).

(59) TEMPORAL > LOCATIVE > COMITATIVE > REASON > SOURCE > GOAL > INSTRUMENTAL/MEANS > MATERIAL > MANNER   (Takamine 2010, 94)

The author notes that her PP hierarchy for Japanese corresponds to Schweikert's (2005a) PP hierarchy for German and that this reinforces the hypothesis of a (possibly universal) hierarchical structure hosting PPs[30].

1.6 Discussion

Let us focus on adjective order and compare Laenzlinger's (2005, 2011) and Cinque's (2010) accounts. As aforementioned, they propose distinct derivations of adjective orders in Romance, despite sharing some structural assumptions and the idea that attributive adjectives are rigidly ordered. The most relevant difference for the present study regards how they account for the order of adjectives in postnominal position, since Relational adjectives, which we are going to analyse, are obligatorily postnominal in Romance.

Let us consider (60), where the noun is followed by two postnominal adjectives and see how it would be accounted for in the two approaches:

(60)   a. un cane nero enorme   vs.   b. un cane enorme   nero   (Italian)
         a dog black enormous   a   dog enormous black
        'an enormous black dog'

Adjective order in (60) is a challenge for every approach assuming that attributive adjectives are rigidly ordered, since their placement appears to be free. Both authors explain such a distribution without renouncing the idea of a hierarchical structure determining adjective order, but the solutions they propose are different.

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[30] Takamine (2010), like Schweikert (2005b) tries to map PPs onto the aspect and modal field through the analysis of scope facts. Takamine (2010, 167) finds out that «the two highest PPs, Temp and Loc, can appear in several positions between the lowest Asp head and the middle high modal head Mod_{DN1}. The two lowest PPs, Material and Manner, on the other hand, must stay in the positions below the lowest Asp head. The remaining PPs have more mobility than the two lowest PPs, but they still have to stay in the Aspect domain». The author says that there are (at least) three ways to derive such multiple positions of PPs: (i) a base-generation analysis assuming that PPs are base-generated in multiple positions; ii) a head-movement analysis, according to which modal and aspect heads move across rigidly ordered PPs; iii) a PP-movement analysis in which PPs are merged in unique positions, but can move across modal and aspect heads (changing their scope in relation with those heads). Takamine (2010) argues in favour of the latter approach.

Following Laenzlinger's (2005, 2011) derivation, the two sequences would be simply related to two different types of movements: (60b) is obtained if the NP moves alone above the APs, (60a) if the NP moves up pied-piping the projection it dominates and thus reversing the order of the adjectives (what Laenzlinger refers to as snowballing FP-movement). According to the author, the two types of movements co-exist in the derivation of adjective order in Romance.

From Cinque's (2010) point of view, instead, (60b) would be a marked option. In his system, as for Laenzlinger (2005, 2011), (60a) is derived through an NP-movement with progressive pied-piping of the adjectives. But (60b) would not be the result of a different type of movement of the NP[31]: that order would be due to the fact that the rightmost adjective is a reduced relative clause. Its presence would obscure the fixed order of direct modification adjectives, which is the mirror image with respect to the order of their English prenominal counterparts.

The question is what derivation to follow. The answer can be found looking at the syntax of those adjectives which can be used as adjectives of direct modification only. By doing so, the disturbing effect of reduced RC adjectives, which hide the real distribution of direct modification adjectives, can be eliminated.

This brings Relational adjectives, which we are going to study, into play, since, unlike other postnominal adjectives in Romance, they cannot be generally used as predicates and, hence, they cannot access the relative clause source. Look at (61):

(61)   a. la ripresa economica americana
          the recovery economic American
     b. *la ripresa americana economica
          the recovery American economic
          'the American economic recovery'

Cinque (2010) claims that the contrast between the grammaticality of (61a) and the ungrammaticality of (61b) is in favour of his hypotheses: when adjectives unequivocally have a direct modification source, they are rigidly ordered and this order is the mirror image of their order of merge, which is revealed by prenominal adjectives in English (cf. the English translation in (61)).

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[31] Cinque (2010) does not exclude the possibility for the NP to move alone, without pied-piping its modifiers, but it would not be the case of Romance.

Therefore, this study on the syntax of Relational adjectives also aims to further test the hypotheses on adjective order derivation themselves.

Independently of which derivation of adjective order is assumed, Relational adjectives, being direct modification adjectives, are expected to show ordering restrictions. This is expected to be clearly visible in languages where they occur prenominally and their base order is not obscured by phrasal movements (e.g. English). But it is their ordering in Romance languages that can cast light on the type(s) of movement to be postulated to derive adjective order in postnominal position in Romance. Under Laenzlinger's (2005, 2010) account, we should expect to find them either in the same order as their English prenominal counterparts or in its mirror image, since both NP-movement and FP-movement are admitted. Under Cinque's (2010) account, however, the expectation is that their order in postnominal position in Romance is always the mirror image of their order in prenominal position in Germanic languages, since the NP is claimed to raise pied-piping its modifiers.

The theoretical implication of the data will be discussed in the fifth chapter.

RELATIONAL ADJECTIVES AS A CLASS OF ADJECTIVES

Relational adjectives (henceforth RelAs) are often considered marginal adjectives because they differ from (prototypical) qualifying adjectives in many respects. They do not fulfill the properties of the core adjectival class, such as gradability, comparativeness and predicative use. They are usually described as the negative counterpart of qualifying adjectives (hence QAs) and often classified as 'pseudo-adjectives'.

The goal of this chapter is to define RelAs as a class: §2.1 briefly describes what the label 'relational adjective' stands for, while §2.2 deals with some alternative terms used for RelAs. Then I will discuss which properties these adjectives display (§2.3) and whether they are a homogeneus class or not (§2.4). Finally, some controversial issues on Relational adjectives will be discussed in the last section.

2.1 A brief history of the notion of Relational adjective

The notion of 'relational adjective' appears to come from the French descriptive grammar. Bally ([1944] 1965, 97) uses the label *adjectifs de relation* to define adjectives such as *solaire* in *chaleur solaire* 'solar heat' and *cranienne* in *boîte cranienne* 'cranial box', claimed to display some peculiar properties that set them apart from ordinary adjectives. Bally lists three properties: first, they are not gradable (**chaleur très solaire*); second, they always occur in postnominal position in Romance languages (*solaire chaleur); third, they cannot be used as predicates (**Cette chaleur est solaire*). Bally (1965, 97) considers RelAs as cases of functional transposition, since a RelA «transpose des substantifs sans rien changer à leur valeur de substantifs», i.e. it would be simply a noun converted into an adjective through a suffix.

This description of RelAs, as well as the term itself, is usually attributed to Bally (1944), but it had already appeared in Frei's (1929) French grammar. The author ascribes to RelAs the same properties later described by Bally: non-gradability, lack of predication possibilities and postnominal position. He claims that these properties enable to set RelAs

apart from QAs and crucially distinguish them when the same adjective can be employed either as a RelA or as a QA. He focuses his attention on the fact that most RelAs can be turned into QAs being used in a figurative way: e.g. *un problème vital* 'a vital problem' can be 'a problem concerning life', if the adjective is interpreted in its proper relational sense, or 'an important problem', if the adjective is used figuratively as a QA (Frei [1929] 2007, 98). Frei considers RelAs as pertaining mostly to the written register, mainly in specialized languages (e.g. scientific or administrative language).

But the notion of 'relational adjective' is even older than Frei's (1929) French grammar. Rainer (2013) notes that the idea of RelAs as nouns transposed into adjectives, even though popularized by Bally, can be traced back at least to Dornseiff (1921). According to him these adjectives «verrücken bloß den Substantivbegriff ins Attributive» (Dornseiff 1921, 193), i.e. they shift a nominal concept into an attributive one. Rainer (2013) goes back still further to the Arabic roots of the notion of 'relational adjective', claiming that both the concept and the term are due to Arabic grammarians. In fact in the Arabic grammar there are denominal adjectives with a relational interpretation called *nisba*, meaning literally 'relation'. According to Rainer (2013), the term 'relational adjectives' was introduced into the Western linguistics through Arabic grammar by the French Sylvestre de Sacy (dated 1810): it contains a chapter called 'Adjectif relatif' describing *nisba* adjectives.

2.2 Terminology

The label 'relational adjectives' is widespread both in Romance and English literature (Schmidt 1972; Brinker 1974; Bosque 1993; Nowakowska 1995; Valassis 2001; Mezhevich 2002; Boleda & McNally 2004; Fabregas 2007; Gunkel & Zifonun 2008; Bisetto 2010; Marchis 2010; Rae 2010; Rainer 2013, among others). The term is used not only in the specialized literature, but also in grammars addressed to a larger public[1]. However, other labels have been used, as well: 'denominal adjectives' (Fradin 2007),

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[1] As for Italian, see Serianni (1988), Dardano & Trifone (1997), Trifone & Palermo (2000), Renzi et al. (2001), Salvi & Vanelli (2004), Lo Duca & Solarino (2006), Prandi (2006), Schwarze (2009), although not all these grammars give a description of RelAs consistent with the analysis sketched above. Some of them (Serianni 1988; Dardano & Trifone 1997; Trifone & Palermo 2000; Lo Duca & Solarino 2006) recognize the peculiar properties of RelAs, but do not consider RelAs as a separate group of adjectives, classifying them as a subgroup of QAs.

'(denominal) nonpredicating adjectives' (Levi 1973, 1978), 'pseudo-adjectives' (Postal 1969; Bartning 1980), 'associative adjectives' (Ferris 1993; Pullum and Huddleston 2002; Giegerich 2005). Each label gives emphasis to a specific feature of RelAs, regarding their syntax ('nonpredicating adjectives'), morphology ('denominal adjectives') or semantics ('associative adjectives', 'relational adjectives').

RelAs are sometimes generically referred to as 'denominal adjectives', since they are (mostly) derived from nouns. But being a denominal adjective is not a sufficient condition to be relational and, according to Gil & Gutiérrez (2012), neither is a necessary condition. It is not a sufficient condition since there are plenty of adjectives that are denominal, but do not display syntactic and semantic properties of RelAs, e.g. *courageous*, *lucky*, *shameful*[2]. It is not a necessary condition either because, even if most RelAs are denominal, there are some non-denominal adjectives which have a relational behaviour, like colour adjectives in It. *romanzo rosa* 'romantic novel' (lit. pink novel) or *cronaca nera* 'crime news' (lit. black news). This topic will be better investigated in §2.5.

Levi (1973, 1978) calls them 'nonpredicating adjectives' «because these adjectives do not regularly appear in predicate (post-copular) position, and because they can be shown to be semantically unlike true predicating adjectives» (Levi 1978, 16). Thus, she focuses on one of the syntactic properties these adjective display in order to identify them. However, she is aware that the label 'nonpredicating adjectives' is too wide-ranging: it puts together both RelAs like *rural* in *rural policemen* and non-RelAs like *heavy* in *heavy smoker*. What distinguishes the adjectives under investigation would be their denominal nature; hence, Levi decides to further specify the label 'nonpredicating adjectives' adding 'denominal' to it. Therefore, Levi (1973, 1978) defines RelAs as the intersection between the group of nonpredicate adjectives and the group of denominal adjectives, as shown in *Figure 2.1*, reported from Levi (1973, 339):

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[2] Fradin (2007, 1), for example, isolates four types of denominal adjectives.

DENOMINAL ADJECTIVES   **NONPREDICATE ADJECTIVES**

traditional
lucky
orderly
stony
windy
disastrous
cheerful
useful
wealthy
icy
…

PSEUDO-ADJECTIVES

Parisian   linguistic
Markovian   industrial
Nixonian   rural
Persian   monthy
American   criminal
…   athletic
            bodily
            national
            electrical
            …

Deadverbials

former
present
eventual
future
occasional
joint
frequent
careful
…
REAL
PRIMARY

Figure 2.1. Levi's (1973) denominal nonpredicate adjectives[3]

Bartning (1980) uses the term 'pseudo-adjectives'. She takes it from Postal (1969), who employs the label 'proper pseudo-adjectives' referring to adjectives now commonly known as Ethnic adjectives. They are adjectives such as *American*, *Persian*, *Jewish*, ascribing geographical, racial, religious or political features to their referents; they can be considered a subclass of RelAs. The term 'pseudo' is employed by Postal (1969) to claim that they are not real adjectives: it is «intended to suggest that they are derived from nonadjectival structures» (Postal 1969, 219). The author argues that these adjectives have a special denominal derivation, such that the phrase *the American attack on Columbia* would correspond to *America's attack on Columbia*. As for Bartning's (1980) choice of identifying RelAs in general as 'pseudo-adjectives', she knows this term could raise some ambiguity. In fact she explicitly says that the term could be used in a broad sense, as well, to group together all adjectives that cannot occur in predicative position, hence also non-relational adjectives like *ancien* in *un ancient professeur* 'an old professor' (Bartning 1980, 19). Thus, like Levi (1973, 1978), she recognizes that the group of RelAs is not coextensive with that of non-predicative adjectives existing non-predicative adjectives which are not relational. But she goes farther, observing that, on the other hand, not all

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[3] The term 'pseudo-adjectives' is explicitly said to come from Postal (1969). Examples of Real and Primary adjectives are *true* in *a true poet* and *main* in *the main reason*, respectively.

RelAs fall in the group of non-predicative adjectives, since there are some RelAs which can occur in predicative position, like *universitaire* 'universitary' in la *réforme dont on parle est universitaire* 'the reform which is spoken of is academic' (Bartning 1980, 42). The (im)possibility for RelAs to be used as predicates is a moot question. On one hand, at a first glance, all RelAs seem to refuse the predicative use so much that they inspired the label 'non-predicating adjectives', as just seen. On the other hand, a deeper analysis reveals some inconsistencies regarding the behaviour of RelAs with respect to predicativity. For the time being this topic will not be further discussed, but it will be dealt with again below. Bartning's delimitation of the group of 'pseudo-adjectives' is summarized by the scheme she gives in Bartning (1980, 21):

ADJECTIFS NON-PRÉDICATIFS   ADJECTIFS PRÉDICATIFS

ADJECTIFS DÉNOMINAUX

PSEUDO-ADJECTIFS

simple (robe)	bleuâtre
vrai (héros)	rougeaud
ancien (professeur)	
	beau
contemporain	chaud
precedent	grand
	bleu
(côté) gauche	rouge
	aveugle
bon (danseur)	
grand (fumeur)	buvable
	inévitable
	adorable
	menteur

présidentiel alimentaire électrique gouvernemental tropical 1 populaire 1

universitaire industriel mensuel

français parisien nixonien

malheureux corageux barbu vanilla

tropical 2 populaire 2

Figure 2.2. Bartning's (1980) French 'pseudo-adjectives'[4]

Finally, the label 'associative adjectives' (Ferris 1993; Pullum and Huddleston 2002; Giegerich 2005) stresses the fact that these adjectives do not simply ascribe a property to the head noun: they express a property which «does not apply directly to the denotation of the head nominal, but rather to some entity associated with it», so that, for

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[4] Some RelAs in the scheme are numbered because they have two different readings, one relational and another qualifying (see §2.3).

example, *clerical duties* are duties associated with being a clerk (Pullum & Huddleston 2002, 556). According to Giegerich (2005), 'associative adjectives' express the basic relationship of 'associated with' (hence, the term), which is then augmented by the speaker's encyclopaedic knowledge. This would account for possible different interpretations of the same adjective when modifying different nouns, as in *electrical clock* and *electrical engineer*, and possible different interpretations of different RelAs when modifying the same head, as in *electrical clock* and *musical clock*.

All along this dissertation, the adjectives under investigation will be named 'relational adjectives', mainly for two reasons. On one hand the choice is motivated by the fact that this term is the most common in the scientific literature; on the other hand the intention is to avoid the ambiguity that other labels imply, since terms like 'nonpredicating adjectives' and 'denominal adjectives' identify groups of adjectives larger than RelAs[5].

When dealing with RelAs in Germanic languages, and especially in English, the term *Complex Nominal* (CN) will come up. The label was introduced by Levi (1978) to indicate constructions made up of a head noun and a modifier which can be either a RelA or a noun (e.g. *autumn/autumnal rains*) (on which also see Rae 2010).

2.3 Relational adjectives vs. Qualifying adjectives

RelAs are usually defined by contrasting them with prototypical qualifying adjectives. The usual approach in the literature consists in a property-to-property comparison between RelAs themselves and QAs, as exemplified below. What follows is an analysis of the peculiar properties of RelAs, i.e. what is said to characterize them as a separate class of adjectives (§2.3.1). However, it must be specified that a particular adjective is not relational or qualifying *a priori*: even a core RelA like *presidential* can act as a QA in an appropriate context like *a real presidential behaviour*. There is the possibility of a categorial shift, so that a RelA can be turned into a QA, displaying all the properties of a QA, as it will be shown (§2.3.2).

The present description of RelAs is based on Indo-European languages - mainly Romance languages, which are those under investigation, and Germanic languages, where RelAs show a similar behaviour (such a parallelism is the reason why some properties can

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[5] But the labels mentioned so far could appear in quotations from works that employ them.

be exemplified with English data, as well as with Romance ones[6]). This choice has been motivated by the fact that this study concerns the syntax of RelAs in Romance languages. But it is worth saying that the properties usually attributed to RelAs in European languages cannot be entirely ascribed to all RelAs crosslinguistically, as Bisetto (2010) shows, studying RelAs in Japanese and Arabic (see §2.3.3).

2.3.1 Properties of Relational adjectives

When thinking about adjectives, prototypical qualifying adjectives like *interesting*, *nice* or *small* cross one's mind. (Some of) their properties are listed in (1):

(1)　i.　They can occur in predicative position:
　　　　　this book is interesting
　　ii.　They can be graded:
　　　　　it's a very interesting book
　　iii.　They can be iterated:
　　　　　an interesting interesting book
　　iv.　They can be used in comparative constructions:
　　　　　it's the most interesting book I ever read
　　v.　They show polarity:
　　　　　an interesting/boring (=not interesting) book
　　vi.　They can be coordinated with another QA:
　　　　　an interesting and funny book
　　vii.　They can occur pre- or postnominally in Romance languages[7]:
　　　　　It. *un libro interessante / un interessante libro* 'an interesting book'

These adjectives do not share their properties with all other (qualifying) adjectives[8], but they are considered representative of the core adjective category.

RelAs are usually described as the negative counterpart of QAs. The definitions of RelAs available in the literature are themselves a clear example of this common practice:

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[6] The English examples in the opening lists of features differentiating RelAs and QAs parallel the Romance examples in the following discussion.

[7] The two positions are not always equivalent: they can be associated with different syntactic sources and distinct interpretative properties. (see the discussion of Cinque (2010) in chapter 1).

[8] For example the possibility of occurring in prenominal position is blocked for colour adjectives, which can appear prenominally only under constrained marked conditions (see Giusti 1996, 2006).

> Los adjetivos que se suelen llamar "relacionales" [...] se caracterizan precisamente porque no son calificativos, es decir, porque no denotan cualidades o propiedades de los sustantivos, sino por el hecho de que establecen conexiones entre esas entidades y otros dominios o ámbitos externos a ellas, y de acuerdo con las cuales sitúan o clasifican a los sustantivos sobre los que inciden. (Bosque 1993, 3)

Bosque (1993) states that what characterizes RelAs is the fact they are not QAs: while QAs attribute a quality or property to the head noun, RelAs relate the noun to an external domain, according to which the noun is classified. Similarly, Demonte (1999) defines both RelAs and QAs as expressing properties, but claims that the two types of properties are dissimilar since a QA assigns a single property to the head noun (e.g. the colour in *libro azul* 'blue book'), while a RelA assigns a set of properties to it, i.e. all those properties defining the noun on which the RelA is formed (e.g. all those properties defining the sea in *puerto marítimo* 'sea port').

The morpho-syntactic behaviour of RelAs is usually depicted in contrast with QAs, as well. Bisetto (2010) summarizes the properties traditionally ascribed to RelAs in the list quoted in (2); some of them have been briefly introduced discussing the notion of 'relational adjective' itself[9]:

(2)   i.   Lack of predication possibility   (Bisetto 2010, 66)
            *this output is industrial/*this decision is senatorial*
      ii. Lack of gradable properties
            *a very industrial output/*a very senatorial decision*
      iii. Lack of iteration possibility
            industrial industrial output
      iv. Lack of comparativeness
            *more industrial/*more senatorial*
      v.   Lack of polarity
            *the output is non-industrial/*the decision is non-senatorial*
      vi. Lack of coordination with qualifying adjectives
            the big and wooden table
      vii. Argument properties

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[9] In the subsequent discussion these properties will be exemplified with Italian examples, unless otherwise specified.

It. *problemi menopaus-ali = problemi della menopausa* 'menopause troubles'

viii. Strict adjacency to the modified noun in a unique position

wooden big table → big wooden table (but *table wooden*)

**processo veloce chimico* lit. process fast chemical → *processo chimico veloc*e lit. process chemical fast 'fast chemical process'

**chimico processo* lit. chemical process → *processo chimico* lit. process chemical 'chemical process'

ix. Equivalence with the base noun

It. *govern-ativo* 'governative' from *governo* 'government'

It is evident that the first six properties are the negative counterpart of the properties attributed to QAs in (1)(i-vi). Moreover the unique position of RelAs, which must be postnominal and strictly adjacent to the head noun, can be contrastively compared with the possibility for QAs of occurring both pre- and postnominally.

It must be said that three of the properties listed above in (2) are questionable: lack of predication possibility, argument properties and equivalence with the base noun. They deserve an in-depth analysis and will be further investigated in a separate section (§2.5) with other controversial issues regarding Relational adjectives. Now let us turn to the list of properties in (2) to discuss the uncontroversial features of RelAs, starting from the lack of gradable properties (3a) and, hence, the lack of comparativeness (3b):

(3)   a. *C'è un'emergenza molto sanitaria in Liberia.
          'There is a very medical emergency in Liberia.'
       b. *Devo risolvere un problema più energetico di quello che pensavo
          'I have to solve a more energetic problem than I thought.'

The lack of gradable properties is linked to the lack of iteration possibility: in fact, when an adjective is iterated, the effect is like that of modifying the adjective with *very* (e.g. *a long long way* is like *a very long way*) and RelAs cannot be modified by degree adverbs. These properties follow from the fact that RelAs, contrary to prototypical QAs, are not scalar adjectives.

Neither are they polar adjectives, i.e. they do not have a polar counterpart (cf. QAs *tall/short*, *big/small*, etc.). They can only be related to a paradigm containing possible alternatives within the same classifying domain. According to Bartning (1980, 79), most RelAs imply a multiple opposition as in Fr. *politique financière/culturelle/*

commerciale/fiscal/sociale 'financial/cultural/commercial/fiscal/social policy', while some RelAs show rather a binary opposition like in (*vêtements*) *féminins/masculins* 'female/male (clothes)' or (*univers*) *materiel/spiritual* 'material/spiritual (universe)'. But the polar opposition is excluded[10].

RelAs cannot be coordinated with QAs, since the result is ungrammatical, e.g. It.*attività mattutine e divertenti* 'morning and funny activities' (vs. the grammaticality of two coordinated RelAs, e.g. *attività mattutine e pomeridiane* 'morning and afternoon activities'). This property does not seem to hold crosslinguistically, as it will be shown discussing Bisetto (2010), but it is surely valid for Romance languages.

Looking at the position of RelAs with respect to the noun they modify, it appears highly constrained in Romance languages, in contrast with the greater freedom of placement of QAs. First of all, they are obligatorily postnominal:

(4)   a. invasione francese / *francese invasione   (Italian)
          'French invasion'
      b. instrumentos quirúrgicos / *quirúrgicos instrumentos   (Spanish)
          'surgical tools'
      c. développement industriel / *industriel développement   (French)
          'industrial development'

Secondly, RelAs are strictly adjacent to the head noun. It means that RelAs cannot be separated from the noun by inserting a QA: therefore a QA can precede the complex formed by the noun and the RelA (examples a.) or follow it (examples b.), but it cannot occur between the noun and the RelA (examples c.):

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[10] The negative forms of RelAs, obtained through the prefix *non-* in French, would imply both a binary opposition and a multiple one, as Bartning (1980, 81) shows with the figure reported in (i), where the horizontal arrow represents the binary opposition and the vertical arrow the multiple one:

(i)   langues romanes ⟷ langues non-romanes
      ⇕
      langues germaniques
               orientales   langues non-romanes
               slaves, etc.
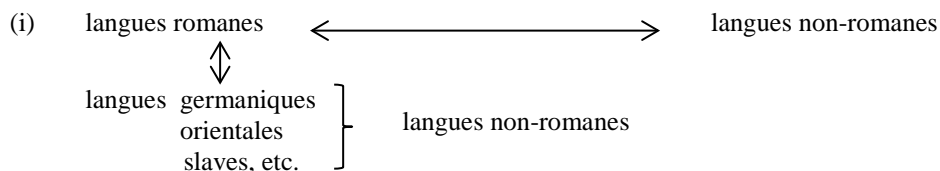
The confirm of the non-polarity of RelAs would come from their refusal of the negative prefix *in-*, admitted by QAs, so that *condition humaine* 'human condition' is ambiguous between a relational and a qualifying reading, whereas *condition inhumaine* 'inhuman condition' can receive only the qualifying interpretation, being ungrammatical under the relational one.

(5) a. una pericolosa invasione francese   (Italian)
    b. un'invasione francese pericolosa
    c. *una invasione pericolosa francese
       'a dangerous French invasion'

(6) a. pequeños instrumentos quirúrgicos   (Spanish)
    b. instrumentos quirúrgicos pequeños
    c. *instrumentos pequeños quirúrgicos
       'small surgical tools'

(7) a. un rapide développement industriel   (French)
    b. un développement industriel rapide
    c. *un développement rapide industriel
       'a fast industrial development'

The properties discussed so far are usually presented as the defining criteria of RelAs. But this claim can be maintained only if they are considered as a bundle of properties concurring to define the class of RelAs. In fact some of them cannot identify RelAs by themselves being shared by nonprototypical/marginal adjectives other than RelAs. For example intensional adjectives like *fake* or *alleged* cannot be graded (*a very alleged murderer*) or predicated (**This murderer is alleged*) like RelAs.

At least another property is said to differentiate RelAs from QAs, i.e. the fact that RelAs, which express relations, cannot be bases for nominalizations referring to qualities (see Valassis 2001 for French and Picallo 2002 for Catalan). In (8) this distinguishes the qualifying vs. relational use of the adjective *popolare* 'popular':

(8) a. una canzone popolare → la popolarità della canzone
       a popular song   → the popularity of the song
    b. una rivolta popolare → *la popolarità della rivolta
       a popular rebellion   → *the popularity of the rebellion

Moreover, a property often used to characterize RelAs is the fact that most of them appear to be paraphrasable with a prepositional phrase. This feature is given a lot of importance by Valassis (2001), who bases his definition of RelAs on it. In fact, according to Valassis (2001, 98), «sera dit relationnel tout dénominal qui peut être paraphrase par un syntagme de forme Prép+N dans laquelle le nom est le même que celui dont la base a servi

à la formation du dénominal», i.e. RelAs should satisfy two requirements: a) be denominal and b) be paraphrasable with a PP whose internal noun is the same noun on which the RelA is formed.

Similarly, Brinker (1974), studying RelAs in Italian, describes RelAs as adjectives that transpose a preposition and a noun according to the simplified *formula* N_1 + Prep N_2 → N_1 + RelA, where RelA = rootN_2 + suffix, modelled on pairs like *serata di musica* 'evening of music' → *serata musicale* 'musical evening' (Brinker 1974, 7). But Bortolotto (2012) already noted that, even if RelAs often correspond to PPs, this is not always the case: e.g. if *luce solare* 'sunlight' can be paraphrased as 'light of the sun', *orologio solare* 'solar clock' is 'a clock that works through the sun'. Some Italian grammars (Serianni 1998; Dardano & Trifone 1997) report Brinker's *formula*, but precise that the N+RelA construction sometimes cannot be easily converted into a parallel N+PP construction with the same meaning (e.g. *sigarette nazionali* 'national cigarettes' are not simply 'the cigarettes of the nation', but rather 'the cigarettes produced by the government monopoly', Serianni 1988, 164).

In conclusion, RelAs and QAs are different from a semantic, morphologic and syntactic point of view. However, an adjective cannot be classified *per se* as a RelA or QA because, as already mentioned, there are adjectives potentially ambiguous between a relational and a qualifying reading: their interpretation could depend on the noun they modify, as well as on the context, which can force one of the two readings.

2.3.2 Class shifts

There are cases in which different adjectives deriving from the same base noun specialize in expressing either the relational reading or the qualifying one. An example is the Italian couple *muscolare – muscoloso* 'muscular', where the first adjective is a RelA and the second one is a QA, as the paraphrases in (9) underline:

(9)   a. dolori muscolari 'muscular pains'
          = pains located in the muscles
       b. braccia muscolose 'muscular arms'
          = arms which are muscular/strong

But there are lots of cases in which the same adjective is ambiguous between a relational and a qualifying reading, as well. Look at (10): the adjective *nervoso* 'nervous' has a relational interpretation in (10a) and a qualifying one in (10b). This example shows that a potentially ambiguous adjective can be disambiguated by the head noun, since it blocks/forces one of the two interpretations:

(10)   a. sistema nervoso 'nervous system'
          = system made up of nerves
       b. ragazza nervosa 'nervous girl'
          = girl which is nervous

But an adjective can be ambiguous even when modifying the same noun. There is the famous English example of *criminal lawyer* (Gunkel & Zifonun 2008, 284), which means 'lawyer dealing with criminal cases' under a relational reading, but 'lawyer who is a criminal' under a qualifying interpretation. This relational-qualifying ambiguity is widespread in Romance languages, as well:

(11)   calore tropicale 'tropical heat'
       a. = heat in the tropics
       b. = heat like that in the tropics

Bally (1965) considers all RelAs as instances of a functional transposition which turns a noun into an adjective. The author claims that in cases like *chaleur tropicale* a further transposition has taken place, a semantic one (Bally 1965, 116), which consists in the transformation of a RelA into a QA. The author presents the relational interpretation as the original/base reading of the adjective, from which its qualifying reading has developed[11].

The same process of shifting from a relational to a qualifying reading has been described by Bartning and Noally (1993). They adopt the term 'double PAs' (= double

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[11] But there are cases of ambiguity which can be traced back to Latin, as the following examples show for *paternus* 'paternal', RelA in (i), but QA in (ii):

(i)   monitis parere paternis   (Ov. *Met*. 2, 126)
      'to obey to father's advice'

(ii)   in fratres animus paternus   (Hor. *Carm*. 2,2,6)
      'fatherly feelings towards brothers'

Pseudo-adjectives; see Bartning 1980, as well) to group adjectives resulting from the intersection of the RelAs class with the QAs class, thus all the adjectives displaying both readings. Their analysis of 'double PAs' in French is based on five examples belonging to this group: *civil* 'civil', *maternel* 'maternal', *sulfureux* 'sulphureous', *sympathique* 'sympathetic/nice' and *populaire* 'popular'. Looking at the behaviour of these adjectives, a general trend emerges: they were born as RelAs and developed a QA use only later. But, despite the fact that these 'double PAs' appear to have a relational origin and to acquire the qualifying reading afterwards, Bartning and Noally (1993) do not describe the process as a unidirectional evolution. They say it is better to use the term *fluctuation* since there is usually a flux from relational to qualifying readings, but there can be a later reflux towards relational uses when the relational values of the adjective multiply and diversify. The adjective *populaire* in French would be an example of a later regression of qualifying readings towards relational ones.

Bosque (1993) similarly claims that the shift from RelAs to QAs is much more frequent than the opposite one. The transfer from a qualifying to a relational reading would be limited to colour adjectives, which can encode racial or political features (e.g. *invasión amarilla* 'Chinese invasion' (lit. yellow invasion)), and to adjectives denoting physical properties interpreted as classificatory features (e.g. *tejido adiposo* 'adipose tissue'). The author points out that a RelA is turned into a QA when the class it refers to is converted into a quality; for example Ethnic adjectives and adjectives derived from proper names are typically recategorized as expressing qualities for cultural reasons, so that it can be spoken of *un temperamento muy inglés* 'a very English temperament' or *un monument un tanto napoleónico* 'a rather Napoleonic monument'. According to Bosque (1993), RelAs having a corresponding QA can be divided into two groups since the relational and qualifying meanings can be listed independently in the lexicon or it can be the case that the qualifying meaning is calculated from the relational one. Examples of the first type would be *teatral* 'theatrical' ('pertaining to theatre' vs. 'emphatic'), *humano* 'human' ('concerning men' vs. 'kind-hearted') or *astronómico* 'astronomical' ('related to astronomy' vs. 'exaggerated'). On the other hand *ayuda legal* 'legal aid' (an aid 'regarding law' vs. 'which is legal') would be an example of the case in which the qualifying reading can be deduced from the relational one.

Even Bartning (1980) does not analyse all 'double PAs' in the same way. She distinguishes three subtypes, exemplified in (12) (Bartning 1980, 100):

(12) a. politique nixonienne 'Nixonian politics'
          solution markovienne 'Markovian solution'
      b. chaleur tropical 'tropical heat'
          gestes maternels 'maternal acts'
      c. traditions populaires 'popular traditions'
          ingénieur économique 'economic(al) engineer'

The first group includes RelAs derived from proper names and ethnic RelAs; they display a relational reading and a qualifying reading paraphrasable with LIKE (cf. COMME in Bartning 1980, 102), which is not lexicalized: *politique nixonienne* 'Nixonian politics' can be 'Nixon's politics' (relational interpretation) or 'a politics LIKE that by Nixon' (qualifying interpretation). The second group similarly puts together adjectives ambiguous between a relational reading and a qualifying reading paraphrasable with LIKE; the difference would be that this latter reading is lexicalized in such adjectives: *chaleur tropicale* 'tropical heat', as the paraphrases in (12) above show, can be 'the heat in the tropics' (relational interpretation) or 'a heat LIKE that in the tropics' (qualifying interpretation). Finally, the third group collects adjectives that can behave like RelAs or QAs, but in this latter case they are not paraphrasable with LIKE: e.g. *traditions populaires* 'popular traditions' can be 'traditions concerning people' (relational interpretation) or 'widespread traditions' (qualifying interpretation).

The attention has been focused hitherto on the semantic swaying between a relational and a qualifying reading. But it is obvious that the difference goes beyond the semantic ground since each reading is connected to specific morpho-syntactic properties distinguishing RelAs from QAs, as shown in the previous section. Thus, when an adjective is interpreted as relational, it displays all the properties of RelAs and *vice versa*, when it is interpreted as qualifying, it displays all the properties of QAs. This provides us tools to disambiguate the status of an adjective in a given context; for example Bartning (1980, 105) uses a test based on the lack/presence of gradable properties, but all the morpho-syntactic differences discussed so far can be brought into play.

Multiple readings of adjectives will be dealt with again after introducing the distinction between Thematic adjectives and Classificatory adjectives, two subclasses of RelAs.

2.3.3 Relational adjectives crosslinguistically

It has already been clarified that the profile of RelAs given in the present work is based mainly on Romance (and Germanic) languages. In fact looking at RelAs in other languages (distant from the Indo-European ones), it seems quite hard to find defining criteria of the class of RelAs which hold crosslinguistically. Bisetto (2010), for example, shows that the behaviour of RelAs in Japanese and Arabic is quite different from that of RelAs in Romance languages.

According to Bisetto (2010, 71), Japanese has some denominal adjectives with the suffix *–teki* which seem to receive a relational interpretation: e.g. *kagaku-teki* 'chemical' (chemistry+suff) or *gainen-teki* 'conceptual' (concept+suff). The intuition that they are interpreted as RelAs would be reinforced by the fact that expressions containing them are translated in Romance languages with constructions involving a RelA. However, they do not present most of the properties ascribed to RelAs in Romance/Germanic languages. The following examples, taken from Bisetto (2010, 72) reveal that *–teki* adjectives in Japanese a) can occur in predicative position, b) can be modified by degree adverbs and c) can be coordinated with QAs:

(13)   a. kono katei wa kagakuteki da   'This process is chemical'
         b. ichiban kagakuteki   'ichiban chemical'
         c. hayakute kagakutekina katei   'a speedy and chemical process'

On one hand the fact that RelAs in Japanese can be used as predicates should not be seen as totally contrasting with the behaviour of RelAs in Romance, since also in Romance languages a RelA can be predicated, even if under constrained conditions (see §2.5.5). As for the gradable properties displayed by RelAs in Japanese, they should be further studied in their environments to see whether the adjective receives a true relational interpretation. On the other hand, if coordination possibilities are examined, it is more difficult to reconcile the behaviour of RelAs in Japanese with that of their Romance counterparts: in fact the coordination between a RelA and a QA is impossible in Romance languages, but apparently possible in Japanese. The position of the RelA in a sequence of adjectives raises some problems, as well, since it seems that RelAs do not have to obligatorily occupy the position closer to the noun in Japanese.

Arabic *nisba* adjectives are denominal adjectives ending in *–iyy* which have a relational interpretation (sometimes competing with a qualifying one as in Romance languages). Unfortunately the defining criteria used to set RelAs apart from other adjectives in Romance are of little use in Arabic. First, the copula can be used only in specific cases, so the predication test has no value. Second, adjectives generally cannot be modified by degree adverbs in Arabic; this excludes the degree test, as well. However, in order to ascertain if *nisba* adjectives have (at least some) properties in common with Romance RelAs, two other tests can be applied, those regarding the position of RelAs in a sequence and their coordinability with QAs. But they give opposite results. Example (14) shows that when a RelA and a QA modify the same noun, the RelA has to be closer to the noun than the QA: hence, regarding their position, Arabic *nisba* adjectives parallel Romance RelAs. But example (15) shows that *nisba* adjectives can be coordinated with QAs and this differentiates them from RelAs in Romance:

(14)   al-tayyārāt al-siyāsiyyah al-mu'āsirah
        tendencies political   contemporary
        'contemporary political tendencies'

(15)   mašakil iqtiṣādīyya wa-istratiğiyya
        'strategic and industrial problems'

On the basis of these data, Bisetto (2010) concludes that the properties usually attributed to RelAs are not able to identify them crosslinguistically. She claims that RelAs should not be pointed out as a special class of adjectives, even if she recognizes that they have some peculiar properties: denominal origin, non-scalarity, equivalence with their base nouns, argument properties. However, although it has been shown that the properties described in the previous sections cannot be extended to RelAs in all languages, they will not be rejected as the defining properties of RelAs in Romance languages.

2.4 Split classification of Relational adjectives

We discussed what characterizes RelAs as a class and what distinguishes them from other types of adjectives. But RelAs are not considered a homogeneus class in the literature and several split classifications of RelAs have been suggested.

Bartning (1980) recognizes two types of N-PA (Noun+Pseudo-Adjective) constructions in French: N-PA *sous-classificateur* like (16) and N-PA *à relations grammaticales* like (17):

(16)   a. société industrielle / *d'industrie
            'industrial society'
        b. Cette ville est universitaire.
            'This town is universitary.'

(17)   a. décision gouvernementale / du government
            'governmental decision'
        b. *L'élection est présidentielle.
            'The election is presidential.'

The type *sous-classificateur* is characterized as follows: the head noun is not a nominalization, the adjective cannot be paraphrased with a PP introduced by the preposition *de*, there are not regular semantic relationships between the noun and the adjective and the adjective can be generally used as predicate. On the other hand N-PA *à relations grammaticales* show a (nearly) opposite pattern of features: the head noun can be a nominalization, as in (17) (even if it is not obligatory, as the table below shows), the adjective can be paraphrased with a PP (some of them with a PP introduced by the preposition *de*), the semantic relationship between the noun and the adjective is recoverable and the adjective cannot generally occur in predicative position. *PA doubles*, i.e. adjectives ambiguous between a relational and a qualifying reading (discussed in §2.3.2), are considered a separate group.

Bartning (1980) further divides adjectives expressing grammatical relations in subgroups according to the type of head noun (nominalization vs. non-nominalization) and the function of the adjective with respect to the predicate, as illustrated in the following table adapted from Bartning (1980, 29-ff.). Among pseudo-adjectives modifying nominalizations, type (1A) realizes the subject or the object of the predicate, type (1B) corresponds to a PP, while type (1C) is said to express recoverable relations but not clause-like ones. Pseudo-adjectives modifying non-deverbal nouns in (2) perform the same functions with the difference that the predicate is implicit.

	Relations grammaticales	
	N = nominalisation	
1A	V-O	élection présidentielle (x élit le president)
	V-S	decision gouvernementale (le gouvernement décide (x))
1B	V-PP[LOC]	débarquement lunaire (x débarque (y) sur la lune)
	V-PP[INST]	travail manuel (x travaille avec les mains)
	V-PP[TEMPS]	publication mensuelle (x publie y chaque mois)
1C	(V)-PP[DESTINATION]	formation professionelle (formation pour la profession)
	(V)-PP[CONCERNANT]	revendications culturelles (revendications concernant la culture)
	(V)-PP[SELON]	discrimination raciale (discrimination selon la race)
	N = non- nominalisation	
2A	S-[PRODUIT]-O	industrie lainière (l'industrie produit de la laine)
	S-[S'OCCUPE DE]-O	agence immobilier (l'agence s'occupe des immeubles)
	O-[AVOIR]-S	culture populaire (le people a une culture)
	O-[PRO-VERBE]-S	métiers féminins (les femmes exercent le metier)
	Attr-[ÊTRE]-S	globe terrestre (la terre est un globe)
2B	S-PP[LOC]	troupes frontalières (les troupes (se trouvent) à la frontière)
	S-PP[INST]	témoin oculaire (le témoin (a vu x) de ses propes yeux)
	S-PP[TEMPS]	fleurs printanières (les fleurs (poussent) au printemps)
2C	S-PP[DESTINATION]	locaux commerciaux (les locaux (sont) pour le commerce)
	S-PP[CONCERNANT]	questions politiques (questions concernant la politique)
	S-PP[SELON]	contrat legal (contrat selon la loi)
	Absence de relations grammaticales	
3	**Sous-classification**	ville universitaire, secte religieuse, niveau culturel
4	**PA doubles**	politique giscardienne, chaleur tropicale

Table 2.1. Bartning's (1980) split classification

Following a parallel, but different path, Bosque (1993) and Bosque & Picallo (1996) propose to divide Spanish RelAs in two subclasses, labelled Thematic adjectives and Classificatory adjectives. The difference between the two subclasses relies on the type of lexical relation they have with the head noun: Thematic adjectives (hence, ThAs) are said to absorb a theta role lexically licensed by the head noun[12], whereas Classificatory

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[12] The question whether a ThA really saturate an argument or not will be discussed in §2.5.4.

adjectives (hence ClAs) introduces a domain according to which the object denoted by the head noun is classified (Bosque & Picallo 1996, 352). Therefore, *sedera* 'silk' in (18a) is a ThA since it saturates the role of THEME lexically licensed by the deverbal noun *producción*, while *automovilística* 'car' in (18b) is a ClA because it simply classifies the type of tour according to the means with which it is done:

(18)   a. producción sedera 'silk production'   (ThA)
          invasión americana 'American invasion'
        b. excursión automovilística 'car tour'   (ClA)
          análisis sintáctico 'syntactic analysis'

The distinction between ThAs and ClAs is presented as the difference between theta role absorbers and adjuncts. Bosque & Picallo (1996) do not explicitly say which theta roles can be lexically licensed by nouns and, hence, absorbed by RelAs; but along their work they mention three roles associated with ThAs: THEME, AGENT and POSSESSOR. On the other hand they list some of the relations ClAs could express, but they say that there are many other relations and that a taxonomic classification of such relations goes beyond their goals:

(19)   Locative (Path):   acrobacias aéreas 'air acrobacies'
       Locative (Source):   calor solar 'solar heat'
       Locative (Goal):   viaje estelar 'star trip'
       Locative (Place):   poblado lacustre 'lake town'
       Cause: discriminación racial 'racial discrimination'
       Goal/Benefactive: literatura infantile 'children's literature'
       Benefactive: crema dental 'toothpaste'
       Instrumental: curación manual 'manual cure'
       Source: residuos industriales 'industrial residues'
       Purpose: material quirúrgico 'surgical material'

Another split classification of RelAs has been proposed by Demonte (1999), still dealing with RelAs in Spanish. She divides RelAs into three classes:

a) el adjetivo tiene el valor semántico que correspondería a una función gramatical canónica [...]; estos valores sólo se dan cuando el nombre

modificado es una nominalización; b) el adjetivo adopta uno de entre una serie de valores semánticos adjuntos (locativo, instrumental, causal, final, posesivo, etc.) y c) el adjetivo tiene un significado integrable en el nombre; este significado corresponde a ese etéreo pero perfectamente identificable significado parte/todo, continente/contenido, fondo/forma [...]

(Demonte 1999, 162)

Thus, the RelA can saturate an argumental function (when the head noun is deverbal) or it can express semantic relations which are usually carried by adjuncts (LOCATION, INSTRUMENT, etc.). Otherwise its meaning can be somehow integrated in that of the head noun. Hence, there would be RelAs that correspond to a) arguments and b) adjuncts, and finally c) RelAs that do not express a specific semantic relation. Examples of each group are provided in (20):

(20)   a. rechazo senatorial 'senatorial rejection'
           masaje cardíaco 'cardiac massage'
       b. energía eólica 'wind energy'
           vista aérea 'aerial view'
       c. código civil 'civil code'
           año escolar 'school year'

Demonte (1999) further divides groups a) and b) in subclasses according to the type of relation these adjectives express with respect to the head noun. She classifies RelAs modifying nominalizations (group (a)), on the base of their function and role:

(21)   Subject   Agent   exportaciones chilenas 'Chilean exportations'
                     Experiencer   sufrimiento materno 'maternal suffering'
       Object   producción lechera 'milk production'
       Argument   Locative   viaje espacial 'space trip'
                     Instrument   producción manual 'manual production'
                     Purpose   cortejo amoroso 'love courtship'

Regarding RelAs modifying non-deverbal nouns (group (b)), the author says that it is more difficult to define a close exhaustive list of semantic relations they can express. Her representative list is exemplified in (22):

(22) Locative   merienda campestre 'country pic-nic'
      Time   flores primaverales 'spring flowers'
      Instrument   testigo ocular 'eyewitness'
      Cause/Agent   infección viral 'viral infection'
      Purpose/Beneficiary manual escolar 'schoolbook'
      Possession   avión ministerial 'ministerial plane'

These three classifications appear to be quite similar, but not completely overlapping. What follows is an attempt of comparing them:

	Subclasses of Relational adjectives		
Bartning (1980)	PA *à relations grammaticales*		PA *sous-classificateur*
Bosque (1993); Bosque & Picallo (1996)	Thematic adjectives	Classificatory adjectives	
Demonte (1999)	Adjetivo relacional correspondiente a una función gramatical	Adjetivo relacional correspondiente a una función semántica adjunta	Adjetivo relacional de significado integrado en el nombre

Table 2.2. Split classifications of RelAs

Demonte's (1999) distinction between arguments and adjuncts resembles Bosque & Picallo's (1996) distinction between Thematic and Classificatory RelAs. However, a closer look shows that these subclasses do not coincide. Bosque & Picallo's (1996) class of ThAs seems to be narrower than Demonte's (1999) group of argumental RelAs. Demonte (1999) includes in this class RelAs expressing LOCATIVE, INSTRUMENT and PURPOSE when modifying nominalizations, e.g. *viaje espacial* 'space trip' and *producción manual* 'manual production', reported in (21). On the other hand similar examples are given by Bosque & Picallo (1996) to exemplify the possible semantic content of ClAs, e.g. *viaje estelar* 'star trip' and *curación manual* 'manual cure', in (19) above. In a complementary way Bosque & Picallo's (1996) ClAs seem to be a wider class than Demonte's (1999) adjuncts. Not only because they include the cases just mentioned, but also because Bosque & Picallo (1996) put in this class adjectives like *cómico* in *actor cómico* 'comic actor' where the relation between the head noun and the ClA is vague,

while Demonte (1999) suggests a separate class for adjectives whose semantics is somehow integrated in the semantics of the noun.

Demonte's (1999) 'integrated' adjectives appear to correspond to some extent to Bartning's (1980) subclassifying pseudo-adjectives (i.e. RelAs which do not express a 'regular' semantic relation). Instead Bartning's (1980) pseudo-adjectives *à relations grammaticales* comprise all RelAs whose relation with the head noun can be retrieved: a clear-cut distinction between arguments and adjuncts or thematic and classificatory adjectives is missing in Bartning's (1980) classification.

These classifications are simply different ways of dividing the domain of RelAs; therefore none of them will be pointed out as the best one. They will be discussed again in the third chapter, with special attention to Bosque & Picallo's (1996) distinction between ThAs and ClAs since it is argued to have a syntactic correlation, conditioning the position of RelAs in a sequence.

It should be clear that a RelA is not thematic or classificatory *per se*, as an adjective is not relational or qualifying *a priori*: adjectives can be ambiguous between a thematic and a classificatory reading as stressed by Bosque (1993). The author states that, having three classes of adjectives (QAs, ThAs and ClAs), there should be cases of ambiguity in all the possible combinations between the three classes. (23) shows such ambiguities:

(23)   a. reforma constitucional   (ThA – QA)
           'constitutional reform'
      b. problema lógico   (ClA – QA)
           'logic(al) problem'
      c. estructura molecular (del acero)   (ThA – ClA)
           'molecular structure (of steel)'

Constitucional in (23a) can be interpreted as thematic (if it is a reform 'of the constitution') or qualifying (if it is a reform 'which is allowed by the constitution). *Lógico* in (23b) can have a classificatory reading (referring to a problem 'concerning logic') or a qualifying reading (referring to a problem 'which is logical'). Such ambiguities are similar to those discussed in §2.3.2 between a RelA (not specified whether thematic or classificatory) and a QA. Now cases of ambiguity between the two subclasses of RelAs have to be added to the paradigm. In (23c) the adjective is thematic if we consider

estructura molecular 'molecular structure', where *molecular* saturates the POSSESSOR lexically licensed by the noun *estructura*, while it is classificatory if we consider *estructura molecular del acero* 'molecular structure of steel', being the POSSESSOR slot already saturated by a genitive DP.

It has been shown above that the interpretation of an adjective as relational or qualifying can depend on the type of noun it modifies. This is true for the difference between thematic and classificatory, as well. The Italian examples in (24) contain an adjective three ways ambiguous, being thematic in (24a), classificatory in (24b) and qualifying in (24c)[13]:

(24) a. circolazione sanguigna   (ThA)
          'blood circulation'
       b. vasi sanguigni   (ClA)
          'blood vessels'
       c. uomo sanguigno   (QA)
          'hot-tempered man' (lit. blood man)

Along this section some hints on the semantics of RelAs have been introduced. Bartning (1980), Bosque & Picallo (1996) and Demonte (1999) give an outline of the semantic relations RelAs can express. However, there is no agreement among linguists about their number and nature; in particular there is a debate between authors claiming that the number of relations is potentially unlimited (Mezhevich 2002; Rainer 2013) and linguists trying to define close lists of the relations available (Levi 1978; Rae 2010). This debated topic will be discussed among other controversial issues on RelAs in the following section.

2.5 Controversial features of Relational adjectives

Five problematic issues will be considered: the denominal nature of RelAs and the equivalence between RelAs and their base nouns (§2.5.1), the syntactic status of 'N+RelA' constructions, trying to ascertain whether they are phrases or compounds

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[13] Bortolotto (2012), studying RelAs in Italian, speculates that all ThAs can be used as ClAs, but not *vice versa*, suggesting that, if a ThA is considered, it should be possible to think at least of a context in which it can be employed as a ClA. This would mean that the class of RelAs coincides with the group of ClAs and that ThAs are a subclass of them. The question is left open.

(§2.5.2), the semantics of RelAs (§2.5.3), the possibility for a RelA to be an argument (§2.5.4) and the lack of predication possibility (§2.5.5). All these topics are worth mentioning in a study regarding N+RelA constructions.

2.5.1 The denominal nature of Relational adjectives

Two questions will be debated in this section: first, whether the denominal nature is a necessary condition for an adjective to be relational; second, whether RelAs are proper adjectives or rather nouns in disguise.

2.5.1.1 Remarks on morphology

RelAs have been defined as denominal adjectives that express a relation between the noun from which they are derived and the noun with which they occur. Some of the properties usually ascribed to RelAs have been challenged (see Bisetto 2010), but their denominal nature does not seem to be under discussion. The requirement of a denominal origin is mentioned in most the definitions of RelAs and in the corresponding lists of properties ascribed to them. Therefore, it is considered one of their core properties, even if it has already been said that the denominal character is not a necessary nor a sufficient condition for an adjective to be relational, as in the Romance languages many RelAs are not denominal and many QAs are also denominal (Bosque 1993 and Gil & Gutiérrez 2012).

Bosque (1993) mentions colour adjectives as possible instances of non-denominal RelAs; they are not prototypical RelAs, but they can acquire a relational interpretation. Moreover, according to Gil & Gutiérrez (2012), there are other non-denominal adjectives which could be identified as relational. The authors study what they call *adjetivos descriptivos* 'descriptive adjectives' in Spanish: they are defined as adjectives that classify the entity denoted by the head noun. Examples of descriptive adjectives are those in *línea recta* 'straight line', *agua dulce* 'fresh water', *hijo legítimo* 'legitimate child'. Gil & Gutiérrez (2012) claim that they resemble ClAs and that descriptive adjectives in general can be considered as a subclass of RelAs. Such adjectives can alternate between a qualifying and a descriptive meaning (e.g. *café dulce* 'sweet coffee' vs. *agua dulce* 'fresh (lit. sweet) water' and *petición legítima* 'legitimate petition' vs. *hijo legítimo* 'legitimate

child'), reminding of qualifying/relational alternations described above. Moreover descriptive adjectives are said to share lots of properties with RelAs (constrained predicative use, non-gradability, position, coordination possibilities), the only difference being that they are not denominal. However, despite this claim about the existence of non-denominal RelAs, the requirement of a denominal origin is usually mentioned when defining RelAs and their properties, as noted before. Hence, along this dissertation only prototypical denominal RelAs will be considered.

The denominal origin of RelAs has led many linguists to study their morphology, especially looking for correspondences between their meaning and their suffixes. But, even if some regularities can be pointed out, there is not a single-meaning-to-single-suffix correspondence. The suffix is usually considered as a mere transpositional device. For example Brinker (1974), who studies RelAs in Italian and stresses their paraphrasability with PPs, looks for correspondences between suffixes involved in the formation of RelAs and prepositions used in their paraphrases. But he notes that different suffixes can be related to the same preposition, as in *esplorazione della luna* 'exploration of the moon'/ *esplorazione lunare* 'moon exploration' and *statua di marmo* 'statue of marble' / *statua marmorea* 'marble statue', or, *vice versa*, the same suffix can correspond to different prepositions, as in *produzione di automobili* 'production of car' / *produzione automobilistica* 'car production' and *escursione in automobile* 'tour by car' / *escursione automobilistica* 'car tour'. He concludes that there is correspondence neither between the suffix and the preposition nor between the suffix/preposition and the semantics of the adjective. Suffixes would be just categorizing elements, turning nouns into adjectives, without semantic content. But the selection of the suffix, even if not depending on the semantic relations involved, is not free. According to Wandruszka (2004), studying the morphology of RelAs in Italian, it can be linked to the form and meaning of the head noun, so that, for example, in Italian the suffix *-ario* is expected to be preferably combined with the nominal suffix *-ità* (e.g. *sanità* 'sanity' → *sanitario* 'sanitary'), while *-ale* with the nominal suffixes *-zione/-ura/-ore/-orio/-oide/-ico* (e.g. *cultura* 'culture' → *culturale* 'cultural', *gravitazione* 'gravitation' → *gravitazionale* 'gravitational'), both of them occurring with nouns ending in *-mento*, as well (e.g. *testamento* 'testament' → *testamentario* 'testamentary', *documento* 'document' → *documentale* 'documentary').

The morphology of RelAs is not going to be studied in any detail here; the semantics of RelAs will be dealt with again in §2.5.3.

2.5.1.2 Nouns in disguise or proper adjectives?

RelAs are morphologically adjectives but they seem to have more in common with nouns than with (prototypical) adjectives and this is why some authors debate whether they are real adjectives or nouns in disguise. Both positions will be discussed.

The assumption that RelAs are equivalent to their base nouns is generally based on English pairs such as *linguistic/language difficulties* or *industrial/industry output*, where the RelA is interchangeable with its underlying noun. But other pieces of evidence are provided by Levi (1978). The author lists six arguments in favour of this RelA-noun equivalence:

(25) i.   Non degreeness
           very urban riots / *very (city) riots*   vs. *very destructive riots*
      ii. Conjunction of Like Constituents
           literary and musical criticism   vs.*literary and bitter criticism*
           solar and gas heating
      iii. Countability
           monochromatic / *monoplane*   vs. *monohigh*
      iv. Semantic classes
           ± definite: *American* (+) / *national* (-)
           ± concrete: *lunar* (+) / *constitutional* (-)
           ± animate: *presidential* (+) / *electric* (-)
           ± human: *papal* (+) / *bovine* (-)
           + masculine: *paternal* / + feminine: *maternal*
           ± common: *financial* (+) / *Chomskyan* (-)
      v.   Case relations
           Agentive: *presidential refusal*
           Objective: *lunar explorations*
           Locative: *marginal note*
           Dative/Possessive: *feminine intuition*
           Instrumental: *manual labour*
      vi. Nominalization
           marginal width (on a page) vs. *a marginal contribution*
           the marginality of the width   *the marginality of his contribution*

Some of the properties in (25) have already been discussed in section 2.3. Levi (1978) wants to stress that RelAs share syntactic and semantic properties more with nouns

than with prototypical adjectives: like nouns, but differently from true (predicative) adjectives, RelAs cannot be preceded by degree adverbials (i); they can be coordinated with other RelAs or nouns, but not with true adjectives (ii); like nouns and unlike true adjectives, they can be counted (i.e. preceded by a quantifying prefix) (iii); like nouns, and in opposition to true adjectives, they fail to undergo the process of nominalization (vi). Moreover RelAs are said to be classifiable into the same semantic classes as nouns (iv) and to bear case relations that are normally attributable to nouns (v).

On these bases Levi (1978, 18) claims that RelAs «derive all their semantic content – rather than just part – from antecedent nouns, and it is only at a very late stage in the derivation that the node label Adj is introduced to replace the prior label of N».

Similarly, Fabregas (2007) argues that RelAs have the morphological shape of adjectives, but behave like nouns and provides further evidence for this claim. For example, following Bosque (2002), he underlines the fact that RelAs display noun-like number properties since the coordination of two singular RelAs can modify a plural noun (26a) (the same is true for the coordination of two singular nouns (26b), but not for the coordination of two singular core adjectives (26c)):

(26) a. los embajadores   mejicano   y   argentino   *Spanish*
          the ambassadors.pl. Mexican.sg. and Argentinian.sg
      b. los embajadores   de   Mejico   y   de Argentina
          the ambassadors.pl. from Mexico   and Argentina
      c. *los embajadores   alto   y   bajo
          the ambassadors.pl. tall.sg. and short.sg.

According to Fabregas (2007), the dissociation of morphological shape and grammatical behaviour can be explained if RelAs are assumed to be nouns which contain in their internal syntactic structure a semantically defective matrix of features spelled out as an adjectival suffix. In his configurational analysis, Fabregas (2007, 14) claims that the morphological base of the RelA is a little *n* projection, which selects the root and determines its grammatical category; it is subsequently merged with an adjectival head, a^{def}, which is semantically defective and unable to project its label, so that the resulting structure is an nP. However, a^{def} adds uninterpretable features that force the word to agree with a full NP, the head noun: this is why it has the shape of an adjective.

```
              nP
             /  \
            n    a^def
           / \
          n°   √
```
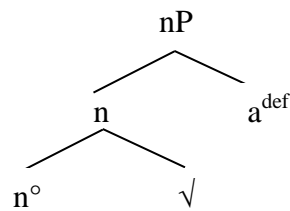
Fig. 2.3. Fabregas's (2007) internal structure of Relational adjectives.

The hybrid nature of (a subclass of) RelAs is recognized by Alexiadou and Stravrou (2011), as well. They deal with Ethnic adjectives (hence EAs), a subgroup of RelAs that «usually refer to groups of animate entities which share a feature concerning geographical (sub)division (region, country, town, etc.) or a feature of race, religion, political entity or ethnicity – hence their name 'ethnic'» (Alexiadou & Stavrou 2011, 117). EAs are adjectives like *Italian* in *Italian invasion*: they modify deverbal nouns and seem to bear an (external) Ɵ-role[14]. The ability to absorb a theta role is the most prominent aspect of the nominal nature of EAs, according to Alexiadou and Stravrou (2011). But the equivalence between EAs and nouns is weakened by the fact that EAs show defective anaphoric properties. Postal (1969) shows that EAs, unlike genitive phrases, are anaphoric islands:

(27)　　a. *the American proposal to the UN reveals its/her rigid position
　　　　　b. America's proposal to the UN reveals its/her rigid position

Alexiadou and Stavrou (2011) prove that EAs in Greek cannot bind an anaphor (28), cannot provide an antecedent for personal pronouns (29) and cannot control a relative pronoun (30):

(28)　　*i　germaniki　katastrofi　　tu eaftu　tus/ton eafton　　　tus
　　　　　the German　destruction　the self　(GEN.SING/PL).their (CL.GEN)
　　　　　'the German destruction of itself/themselves'

(29)　　*I　eliniki$_i$ adinamia na　　min paradexomaste$_i$ ta　lathi　mas$_i$
　　　　　 the Greek weakness SUBJ not admit-1PL　　the faults our.1CL.GEN

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[14] Alexiadou and Stravrou (2011) claim that they do not have to be confused with their homophonous counterparts, i.e. classificatory adjectives like *Italian* in *Italian bag*, which are considered to be 'deep' adjectives.

'The incapability of us Greeks to acknowledge our mistakes'

(30) *Oli katadikasan tin Amerikaniki epithesi sti Servia, i   opii fisika exun
      All condemned the American   attack   to Serbia, who, of course, have
      parelthon   se tetjes energies
      a long history   in such acts
      'Everybody condemned the American attack to Serbia, who, of course, have a
      precedent in such activities'

Alexiadou and Stavrou (2011) account for the idiosyncrasy of EAs, which share properties of both nouns and adjectives, through the following derivation:
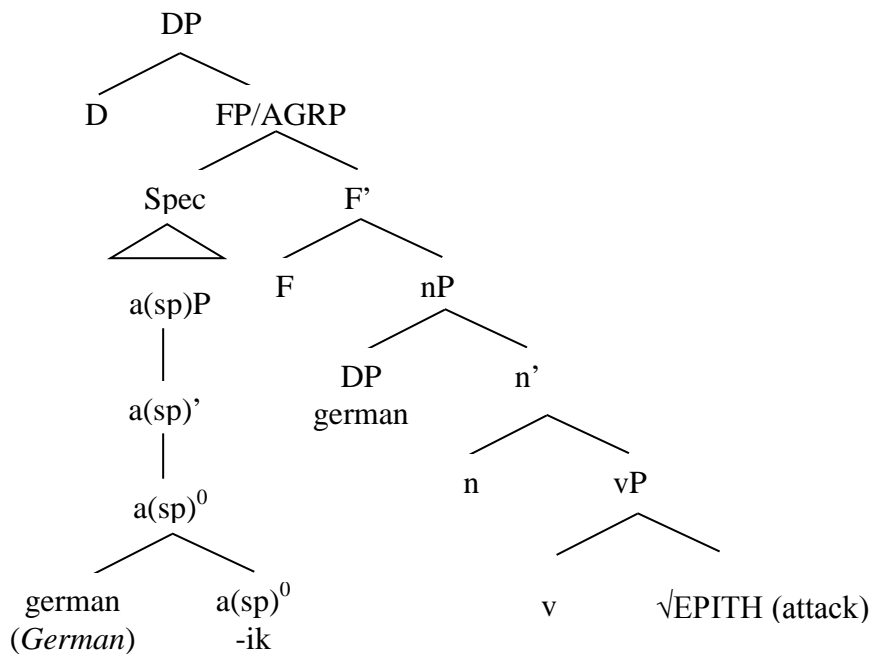
Fig.2.4. Alexiadou and Stavrou's (2011) derivation of *germaniki epithesi* 'German attack'.

The EA, as a noun, is merged in Spec,nP, where it receives the Agent theta role. Then a(sp)P, whose head is an adjectival suffix, is merged in the specifier of a higher functional projection[15]. The noun underlying the EA is forced to move up to a(sp)P, where it adjoins to a(sp)°. This movement forces the transformation of the noun into an adjective, but the role the noun was assigned in its deep position is still visible thanks to the chain formed by the moved category and its trace.

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[15] Alexiadou & Stavrou (2011, 136), on the basis of Cinque's works, note that «aPs are standardly taken to occupy the specifier position of functional categories intermediary between D and N». See chapter 1.

Alexiadou and Stavrou's (2011) goal is to explain why EAs, like nouns, bear thematic roles, but, unlike nouns, are anaphoric islands. They suggest that the nominal nature of EAs is visible for the thematic interpretation, whereas it is opaque for anaphoric properties since anaphoric rules are sensitive to surface configuration and LF sees only the derived position/category (which is an adjectival one).

But there are also linguists arguing against the nouniness of RelAs/EAs. For example, Boleda et al. (2012) and Arsenijević et al. (2014) provide a uniform account for EAs as proper adjectives. Such a proposal is based on McNally & Boleda's (2004) claim that RelAs can be analysed as intersective adjectives assuming that they denote properties of kinds. Hence, Boleda et al. (2012) and Arsenijević et al. (2014) argue that EAs combine with descriptions of kinds, being intersective modifiers of the kind description; they would introduce a contextually-determined relation R between the kind described by the nominal property and the nation associated with the EA. (31) reports the semantic derivation of *French wine* proposed by Arsenijević et al. (2014):

(31)   a. $\llbracket \text{wine} \rrbracket$: $\lambda x_k [\text{wine} (x_k)]$

       b. $\llbracket \text{French} \rrbracket$: $\lambda P_k \lambda x_k [P_k(x_k) \wedge R(x_k, \text{France})]$

       c. $\llbracket_{\text{NP}} \text{French wine} \rrbracket$: $\lambda x_k [\text{wine}(x_k) \wedge R(x_k, \text{France})]$

       d. $\llbracket \text{Num}^0 \rrbracket$: $\lambda P_k \lambda y_0 \exists x_k [P_k(x_k) \wedge R(y_0, x_k)]$[16]

       e. $\llbracket_{\text{NumP}}[_{\text{NP}} \text{French wine}]]\rrbracket$: $\lambda y_0 \exists x_k [\text{wine}(x_k) \wedge R(x_k, \text{France}) \wedge R(y_0, x_k)]$

French in (31) is a Classificatory adjective (according to Bosque & Picallo 1996), but nothing is said to change if it is used as a Thematic adjective: in fact the same derivation is suggested for *French discovery*, where the noun is simply considered to describe a kind of eventuality. R is suggested to express a relation of Origin. This would explain why thematic EAs seem to be forced to bear an agentive theta-role (see §2.5.4): they express the origin of the eventuality type[17]. EAs' failure to enter into binding/anaphora relations becomes a consequence of this approach, EAs being ordinary adjectives rather than argument-saturating 'nouns in disguise'.

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[16] Number is said to convert the kind description into a token description.

[17] But this analysis predicts that thematic EAs can have other interpretations, as well. This topic will be better discussed when dealing with RelAs as arguments in §2.5.4.

To sum up, this analysis assimilates ClAs and ThAs treating both as proper adjectives. Recall that also Fabregas (2007) proposes a unified analysis for ClAs and ThAs, but his point of view is opposite respect to Arsenijević et al.'s (2014) one, since he treats both as covert nominals. Alexiadou & Stavrou (2011), instead, give a differentiated analysis, considering thematic EAs as nouns (at least in terms of interpretation), while ClAs as proper adjectives.

I will not go deeper into this topic since I assume that the formation of RelAs is a morphological process rather than a syntactical one and this dissertation concerns the syntax of RelAs rather than their morphology[18].

2.5.2 The status of 'N+RelA' constructions: phrases vs. compounds

Scholars have different (even opposite) positions about the syntactic status of N+RelA constructions: on the one hand Bosque and Picallo (1996) claim that RelAs can be only phrases, while on the other hand Marchis (2010, 2011) proposes to treat all RelAs as being part of a compound; between the two poles there are approaches which consider some RelAs to be phrases and others to form a compound with the noun they classify (Ralli & Stavrou 1997; Giegerich 2005; Rae 2010; Cetnarowska & Trugman 2012).

It seems tempting to analyse Romance N+RelA constructions as lexical units because of their interpretative similarities with corresponding English endocentric compounds of the type N+N (Sp. *crema dental* vs En. *tooth paste*). For example, Bally (1965) considers French N+RelA constructions as special compounds and Brinker (1974) defines the same constructions in Italian as 'free compounds', i.e. compounds where both the noun and the RelA are part of a series of paradigmatic possibilities (e.g. *patrimonio lessicale/artistico/culturale/letterario* 'lexical/artistic/cultural/literary heritage' or *patrimonio/ricchezza/campo/studio lessicale* 'lexical heritage/ richness/field/study).

But Bosque and Picallo (1996) argue that all RelAs, even ClAs, constitute full XPs projections in Spanish. They bring some pieces of evidence. First, RelAs are overtly inflected for gender and number, whereas compounds do not have internal inflection (*taxis drivers*). Second, NPs modified by ClAs can undergo syntactic processes quite untypical of compounds: in Spanish they allow the head noun to be null, as shown in

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[18] See derivations of RelA order in chapter 5, where these modifiers are directly merged in the nominal structure as RelAs, differently from Rae (2010), who makes them start as nPs.

(32a), and in Catalan the noun modified by a ClA can be pronominalized with *en/ne*, as shown in (33a) (in contrast with the ungrammaticality of the same constructions in (32b)-(33b), involving compounds):

(32)   a. las incursiones aéreas y las [e] terrestres.
            'the aerial raids and the terrestrial ones'
        b. Vi los hombres-rana y los *(hombres-) anuncio.
            'I saw the frogmen and the sandwich men.'

(33)   a. (D'incursions) n'he vist d'aèries I de terrestres.
            'As for raids, I have seen them aerial and terrestrial.'
        b. *(D'homes) n'he vist de bala I d'objecte.
            'As for men, I have seen bullet-men and object-men.'

Thus, Bosque and Picallo (1996) claim that all RelAs (both Thematic and Classificatory ones) are syntactic constructions[19].

An opposite position is taken by Marchis (2010, 2011), who proposes an analysis of RelAs as compounding across languages. The author argues that in Spanish and Romanian N+ThA constructions correspond to subordinate endocentric compounds, whereas N+ClA constructions are instances of attributive compounds[20].

As for ThAs, she claims that they are one of the strategies available to build endocentric subordinate compounds, together with incorporation in English and *de* arguments in Romance. She argues that these strategies represent different ways to realize the Genitive case of the argument: their differences would be Case-related, i.e. due to how the Case is checked. The author shows that *de* Genitive phrases and ThAs have a similar behaviour in Romance languages (e.g. they express the same complement-head relations

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[19] The authors precise that this does not exclude that some N-ClA constructions can become lexicalized units (fn.18). They provide examples like *goma arábiga* 'arabic glue', *jardín inglés* 'English garden' and *novela rosa* 'pink novel' (= 'romantic novel'). However, they say explicitly that these complexes are lexicalized units (idiom-like expressions), but not compounds, since they can undergo syntactic processes, as in *No hay novelas como las rosas* 'There are no novels like the romantic ones'.

[20] Her analysis is based on Bisetto and Scalise (2005)'s classification of compounds, which divides compounds into three groups according to the grammatical relation that links the constituents of the compound: subordinate compounds show a head-complement relation, as in *taxi driver*; attributive compounds express a modification relation, as in *blue cheese*; coordinate ones are compounds whose constituents are tied by the conjunction 'and', as in *dancer-singer*. Furthermore, compounds can be either endocentric like *love story* or exocentric like *pickpocket*.

and neither ThAs nor Genitive arguments can occur in predicative position); then she makes a list of pros and cons for an analysis of both ThAs and *de* phrases as compounds.

She admits that considering ThAs (and *de* phrases) as compounds arises some problems, in particular those pointed out by Bosque and Picallo (1996) and discussed above, but she proposes the following arguments in favour of a compound analysis. First, Bosque and Picallo's claim that RelAs are full XP projections is said not to be incompatible with the compound hypothesis since there are cases of nominal compounds which include syntactically complex phrases, like *bikini-girls-in-trouble genre*. Second, Marchis (2010, 2011) claims that the fact that ThAs are inflected is not a problem for the compound hypothesis since they can be DPs[21]. Third, scholars widely accept that Romance compounds can be constructed with prepositions, such as in Sp. *gafas de sol* 'sunglasses' and *camisas a rayas* 'striped T-shirt'. Fourth, there are N+RelA constructions assumed to be lexical units which undergo syntactic processes, as Bosque and Picallo (1996) themselves recognise (see footnote 19 above). Fifth, RelAs can combine with other RelAs in subordinate structure and this is said to remind of the subordinate relation between the head and the non-head in subordinative compounds. Finally, another piece of evidence would be the fact that RelAs cannot be separated from their head noun.

Marchis (2011, 181) argues that «in the light of the above mentioned arguments, there is strong evidence to consider Th-adjectives and *de* genitives in Romance as instances of endocentric compounds on a par with incorporation in Germanic». However, Marchis's (2010, 2011) arguments do not seem to provide such a strong evidence for this claim: she shows that the behaviour of RelAs in Romance is compatible with the compound status of N+RelA constructions, but not that these structures are necessarily compounds.

Now let us consider positions which are intermediate between the extreme claims made by Bosque & Picallo (1996) (i.e. all RelAs are phrases) and Marchis (2010, 2011) (i.e. all N+RelA constructions are compounds). The studies which are going to be

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[21] This would be excluded only when the compound is formed via incorporation. Marchis (2010, 2011) follows Harley's (2008) account of incorporation compounds like *truck driver*, according to which they are formed when a phrasal element is merged with a root before the root is merged with a categorizing node; the argument of the root would be an nP and not a DP (as the ungrammaticality of *the-truck-driver* and *trucks-driver* shows). Harley (2008) claims that if an nP is merged with D material, the Case-related nP feature must be check DP-internally and no longer via incorporation. Hence Marchis (2010, 2011) suggests that the difference between ThAs/*de* phrases and incorporation is simply Case-related.

presented are based on non-Romance languages (Greek, English, Polish), but it will be later claimed that similar analyses can be proposed for Romance, as well.

Ralli & Stavrou (1997) study Adjective-Noun combinations in Modern Greek, with a special attention for those involving a RelA, and explain why RelA+N constructions often resemble compounds, even if they are not necessarily morphological formations. The authors show that it is possible to distinguish morphological A-N constructions (A-N compounds) from syntactic A-N constructions (what they call A-N constructs). This can be done on the basis of syntactic and semantic criteria, like the coordinability of the adjective with another adjective, which provides evidence in favour of the syntactic origin of the construction, or the loss of compositional meaning, which on the contrary suggests the lexical nature of the combination. Properties of A-N compounds are listed by Ralli & Stavrou (1997) with reference to Modern Greek:

(34) i. Adjectives in A-N compounds are not amenable to a conjoined reading:
meghalos, psixros polemos
   big   cold   war

 ii. Adjectives in A-N compounds cannot be modified and cannot have complements:
metrios   psixros polemos
   moderately cold   war

 iii. The order of adjectives in A-N compounds cannot be modified:
*epistimoniki iera   eksetasi   vs. *iera   epistimoniki eksetasi*
scientific   sacred examination   sacred scientific   examination
'Scientific (Spanish) Inquisition'

 iv. The noun cannot move past the adjective in indefinite DPs in Greek if an A-N compound is involved:
mia xara   pedhiki < mia pedhiki   xara
   a   delight children's   a   children's delight
'a playground'

 v. A-N compounds cannot show double definiteness:
pighan   stin   pedhiki ti   xara
   they went to <u>the</u> children's <u>the</u> delight
(pedhiki xara = playground)

 vi. Adjectives in A-N compounds have to precede the head noun in definite DPs:
o   polemos o   psixros
   the war   the cold

vii. The A-N compound sequence cannot be interrupted by a parenthetical:

*etia   tu   kikloforiaku itan   i   laiki, kata   ti   ghnomi ton
cause   the-GEN traffic jam   was   the folk, according to the opinion of
polon,   agora
many (people), market

viii. Adjectives being part of A-N compounds cannot be used predicatively:

*i   lista tu   ine mavri
the list -his (his list) is black

ix. The meaning of A-N compounds is opaque rather than compositional:

psixros polemos
cold   war

   A-N constructions involving RelAs generally seem to have a phrasal status if these criteria are considered: RelAs can be conjoined (i) and modified by a narrow class of degree adverbs (ii); their order is said to be free, depending on pragmatic conditions (iii); they can occur both pre- and post-nominally in indefinite DPs (iv); a parenthetical can separate the adjective from the noun in RelA-N constructions (vii); RelAs can be used as predicates (even if under constrained conditions, see §2.5.5) (viii); finally, constructions containing RelAs often show a compositional meaning (ix):

(35) i.   theatriki ke kinimatoghrafiki kritiki
           theatrical and cinematographical review
           'drama and cinema review'

     ii.   i   kirios viomixaniki zoni
           the mainly industrial   area
           'the main industrial area'

     iii. theoritiki sinxroni ghlosolojia   vs.   sinxroni theoritiki ghlosolojia
           theoretical modern linguistics   modern theoretical linguistics

     iv.   dhokimi piriniki > piriniki dhokimi
           testing   nuclear   nuclear testing

     vii. i   viomixaniki, opos oli   borite na dhite, zoni
          the industrial,   as   all you can   see,   area

     viii. afti i   zoni ine viomixaniki vs. ? afto to dhiataghma itan proedhriko
           this the area is   industrial   this the decree   was presidential

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ix. ipurjiko   dhiataghma

   ministerial decree

But on the one hand Rally & Stavrou (1997) do not exclude the existence of A-N compounds involving RelAs (e.g. *gheoghrafik-o platos* 'geographical weight = latitude') and on the other hand explain why RelA-N constructions have the flavour of compounds even if they do not display the properties usually ascribed to compounds:

> The classificatory role of relational adjectives brings the constructs close to compounds in that both types of constructions represent entities with attributive/generic meaning and often new concepts, although the meaning of A-N compounds is less transparent and non-compositional, while A-N constructs have a more transparent and compositional meaning.
>
> (Ralli & Stavrou 1997, 258)

Hence, the compound-like character of RelA+N combinations does not exclude that these constructions are generated in the syntax. Ralli & Stavrou (1997) convincingly show that RelA+N combinations can involve either compounding or syntactic generation.

Similarly Giegerich (2005) claims that RelA[22]+N constructions in English can originate either in the lexicon or in the syntax, just as the corresponding NN constructions.

He argues that the typical properties of RelAs (e.g. their impossibility of occurring in predicative position, the fact that they are not amenable to syntactic modification) can be seen to correlate with a lexical origin, but can also be explained in a different way[23].

According to Giegerich (2005) even the ordering restrictions between two RelAs could be related either to a lexical or a syntactic status of the construction. It could be linked to the well-attested recursiveness of compounding constructions: the complex *juvenile cardiac arrest* would be parallel to the NN compound *childhood heart disease*, where *heart disease* is itself a compound which is the head of another compound. But a phrasal status of the adjectives cannot be excluded since sequencing restrictions are

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[22] Associative adjectives in his terminology.

[23] For example, the impossibility of using RelAs in predicative position does not guarantee the lexical status of RelA-N constructions, since the adjective ability to occur in that position is determined by its semantics.

typical of (phrasal) prenominal adjectives in English (*a wealthy German relative* vs **a German wealthy relative*)[24].

The author investigates the semantic properties of RelA+N complexes and states that «associative AdjNs may express an argument-predicate structure inherited from a predicate contained in the noun; or they may express the less structured relationship of 'associated with', 'to do with'», whose specific content is provided by encyclopaedic knowledge (Giegerich 2005, 579). *Papal visit* and *presidential elections* are examples of the first type; *papal emissary* and *presidential plane* are instances of the second group. For the author both these relationships place the constructions under analysis in the lexicon.

Another feature suggesting the lexical status of RelA+N constructions would be the very restricted distribution of some RelAs: a clear extreme case is the adjective *vernal* (corresponding to *spring*) which for many speakers occur only with *equinox*.

But the application of diagnostic tests for compoundness gives different results. Giegerich (2005) asks native speakers to judge whether the substitution of the head noun with the pro-form *one* is acceptable or not, since it is considered a reliable test in order to distinguish compounds and phrases. However, their judgements do not appear to be consistent. Hence, he tests another criterion often used in the distinction between compounds and phrases, namely stress: compounds are said to be fore-stressed, while phrases are associated with end-stress. One would expect that RelA+N complexes which admit the pro-*one* substitution (a property of phrases) cannot have fore-stress (which is a feature of compounds), but this is not what the author finds out: there are RelA+N constructions which appear to be phrases according to the pro-*one* substitution diagnostic and compounds on the basis of the stress criterion. According to Giegerich (2005, 588) «this means not only that associative AdjNs can originate variously in the lexicon and in the syntax but also that there are actually individual associative AdjNs which are simultaneously lexical entities ('compounds') in some respects and syntactic entities ('phrases') in other respects. It follows that the lexicon and the syntax are not separate, distinct modules in the grammar. They overlap». Therefore, some associative AdjN constructions would be phrasal, some would be lexical, others would be phrasal and lexical at the same time, revealing an overlapping area between the syntax and the lexicon.

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[24] Recall that in this dissertation the second hypothesis is assumed, claiming that ordering restrictions of adjectives are determined by their merging in different syntactic positions, hierarchically ordered.

Cetnarowska and Trugman (2012), studying nominal phrases hosting Classifying adjectives[25] in Polish, distinguish lexical and syntactic RelA+N constructions, as well. The authors divide Classifying adjectives (CAs) into three subclasses (i.e. CAs in 'tight units', 'migrating' CAs and CAs in lexical idioms), which are argued to have different semantic and syntactic properties.

Idiomatic CA-N constructions (e.g. *Red army*) are claimed to form in the lexicon since their meaning is not compositional and these CAs fail tests which indicate syntactic status: they cannot be used in predicative position and cannot participate in splits licensed by contrastive focus/topic, as the idiomatic expression *boża krówka* 'ladybird' shows:

(36) *Krówka byla boża.
     cow-DIM was God's.
(37) *Boża   to   do nas krówka nie przyjdzie, tylko łaciata.
     God-ADJ to-TOP to us   cow-DIM not come-FUT only spotted
     'God's cow (=ladybird) will not come to us, but a spotted one will.'

'Migrating' adjectives (whose name refer to the fact that they can occur either pre- or post-nominally) are analysed as proper syntactic phrases, since they are grammatical both in predicative position and in splits licensed by contrastive focus/topic, as *naftowa lampa* 'oil lamp' shows:

(38) Lampa była naftowa.
     lamp was oil-ADJ
     'The lamp was an oil lamp.'
(39) Naftowych to u nas w sklepie lamp nie ma, ale halogenowych mamy duży wybór
     oil-ADJ it-TOP at us in shop lamps not have but halogen-ADJ we-have big choice

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[25] Their Classifying adjectives do not correspond entirely to Bosque and Picallo's (1996) (Relational) Classificatory adjectives. In fact they claim that «whereas the majority of CAs are relational adjectives (also known as (de)nominal or substantive adjectives), some primary (non-derived) adjectives may acquire a classifying interpretation, as well as those derived from participles or PPs» (Cetnarowska and Trugman 2012, 141). These are some of the examples they give for each subgroup of Classifying adjectives:

(i)   a. Relational: sportowy samochód   'a sports car'
                      olimpiada kulturalny 'cultural Olympic games'
       b. Primary: linia krzywa   'a curved line'
                      panda wielki   'a giant panda'
       c. Derived from participles and PPs: tłuszcz utwardzony 'hydrogenated oil'
                                             literature międzywojenna 'interwar literature'

'As for oil lamps, there are none in our shop, but as for halogen ones, we have a large selection of them.'

Postnominal 'tight units' CAs are taken to form taxonomies (e.g. in *red panda* vs. *giant panda*). They would constitute an intermediate type between idiomatic CAs and 'migrating' ones, showing properties of both lexical compounds and syntactic phrases: they cannot be used in predicative position (40), unless the context explicitly mentions the existing taxonomy, in which case the predicative use is licensed to some degree (41):

(40) *Panda, którą widziałam w zoo, była wielka.
    panda which I-saw   in zoo, was big
    'The panda which I saw at the zoo was a giant panda.'
(41) $^?$Panda była wielka, a nie czerwona.
    panda was big   and not red
    'The panda was a giant one, and not a red one.'

In conclusion Cetnarowska and Trugman (2012) claim that Polish Classifying adjectives represent a heterogeneous class which contains phrases ('migrating' CAs), lexical elements (idiomatic CAs) and semi-lexical formations ('tight units' CAs). The idea is that they are not discrete categories, but form a continuum between the lexicon and the syntax, similarly to what Giegerich (2005) suggests for English.

The idea of a continuum between the syntax and the lexicon can be found also in Rae (2010). The author deals with English complex nominals, whose modifiers can be either nouns or RelAs, and claims that they can be syntactic constructions or compounds. She says that on the one hand syntactic constructions are argued to be semantically transparent and compositional, amenable to syntactic processes and end-stressed (in English). On the other hand compounds are claimed to be semantically specialized, invisible to syntactic processes and fore-stressed. But Rae (2010) shows that CNs cannot be classified in such a dichotomic way since there are CNs showing mixed properties, some ascribable to compounds and others referable to syntactic constructions. Hence, she suggests the existence of a continuum from phrasal NNs to compounds:

SYNTAX

PHRASAL NNs

End-stress   Transparent predicates   Lack of semantic specialization
e.g. *winter 'holiday*, *steel 'bridge*, *gas 'cooker*, *oceanic 'rock*

LEXICALISED PHRASAL NNs

End/fore-stress   Transparent predicates   (Lack of) semantic specialization
e.g. *November 'rain*, *olive 'oil*, *'sunglasses*

COMPOUNDS

Fore-stress   Opaque predicates   Semantic specialization
e.g. *'mother ship*, *'housewife*, *'buttercup*

LEXICON

Fig. 2.5. Phrases and compounds in a syntax – lexicon continuum (Rae 2010)[26].

I think that this model could be applied to N+RelA constructions in Romance, as well. I align with Ralli & Stavrou (1997), Giegerich (2005), Cetnarowska & Trugman (2012) and Rae (2010), who claim that (RelA)+N+(RelA) structures can be either phrasal constructions or compounds.

This syntax-lexicon continuum makes it difficult to distinguish syntactic constructions from compounds, especially when RelAs are involved. For example, Bisetto (2004), studying nominal compounds in Italian, claims that N+RelA combinations can be said to constitute compounds when the adjective has a double function, i.e. to extend the denotation of the head noun to the domain of the modifier and to specify the extended meaning of the noun itself. She provides examples like *scatola cranica* 'cranium' (lit. cranial box) and *nave spaziale* 'space ship'. But I think that such a criterion could be easily misunderstood.

Tests that trace a clear-cut boundary between constructions generated in the syntax and constructions generated in the lexicon can hardly be found. Even Ralli & Stavrou's (1997) criteria are difficult to apply in Romance languages when RelAs are involved.

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[26] This is a simplified version of Rae's (2010) representation.

Leaving (Greek) language-specific criteria apart, the application of the other tests does not give clear results. For example the arguments regarding the order of RelAs and their predicative use turn out to be particularly problematic. Regarding the latter issue, see §2.5.5. As for the former topic, according to Ralli & Stavrou (1997, 246), «in structures other than compounds, there is no fixed order for relational adjectives, their positioning rather being conditioned pragmatically, according to the intended meaning», in opposition to the rigid order in A-N compounds. But the goal of this dissertation will be to show that there are specific ordering restrictions between RelAs in Romance, so that their order cannot be argued to be free or simply depending on pragmatics. Such a claim is not incompatible with the phrasal status of RelAs in these constructions, so that the presence of a fixed order cannot be assumed as evidence for compoundness.

Anyway, keeping in mind that N+RelA constructions can potentially be compounds or, at least, can undergo a lexicalization process, I will try to use the most syntactic-like N+RelA combinations when testing my hypotheses on the order of RelAs. Since Ralli & Stavrou (1997), Giegerich (2005), Cetnarowska & Trugman (2012) and Rae (2010) seem to agree that N-A (or A-N) compounds are characterized by a loss of compositional meaning, semantically opaque constructions will be left apart. Fortunately, as we will see, the hypothesis proposed will require to consider only N+RelA combinations where the RelA expresses a clearly detectable semantic relation. This will allow us to possibly avoid potential compounds, i.e. those constructions whose semantics is opaque, but at the same time it introduces us to the next question: how many (and which) relations can RelAs express?

2.5.3 The semantics of Relational adjectives

Semantic relations are themselves a problem, since there is neither agreement on their nature nor on their number. Hence, the question concluding the previous section is not easy to answer. There are different positions on this matter in the literature concerning RelAs: on the one hand, some linguists claim that the number of relations is potentially unlimited (Mezhevich 2002; Rainer 2013); on the other hand, some authors try to define closed lists of relations available in CNs (Levi 1978; Rae 2010).

According to Rainer (2013, 26), RelAs «indeed seem to be able to express any relation […] except for the privative relation and for cases where some specific relation is

blocked due to the interference of a rival pattern». Hence, the idea is that RelAs can potentially express any type of relation, but the existence of other means to express the same semantic content could interfere with the use of RelAs. The competitors of RelAs are genitives, nominal compounds and prepositional phrases. These rival patterns can live side by side (e.g. German *Wollsocken* 'wool socks' and *wollene Socken* 'wollen socks') or there could be a blocking effect (i.e. the possibility for RelAs to express some relations could be blocked by the interference of a rival prevailing pattern (e.g. Spanish *calcetín de lana* 'wool sock', lit. sock of wool, vs. *calcetín lanero)[27]). If it were possible to eliminate these interfering factors, there should be no apparent constraints on the use of RelAs, which would be potentially unlimited.

A different perspective is that of Levi (1978), who attempts to give a closed list of semantic relations available in CNs in English. The author hypothesizes two options for the formation of CNs: predicate deletion and predicate nominalization. As for the former strategy, she singles out 9 Recoverably Deletable Predicates: Cause, Have, Make, Use, Be, In, For, From, About. Table 2.3 combines Levi's (1978) and Rae's (2010) lists of relations, providing Italian examples to show that the same relations can be found in the interpretation of N+RelA constructions in Italian (Romance):

Relation	Examples
Agent	Japanese production, presidential visit (Rae 2010) attacco americano 'American attack'
Theme	basket production, whale fishing (Rae 2010) produzione vinicola 'wine production'
Matter (Levi's About)	tax law (Levi 1978), linguistics conference (Rae 2010) scoperte geografiche 'geographical discoveries'
Location (Levi's In)	field mouse (Levi 1978), beach holiday (Rae 2010) manifestazioni londinesi 'London dimonstrations'
Time (Levi's In)	autumnal rains (Levi 1978), evening activities (Rae 2010) invasioni medievali 'Medieval invasions'
Means/ Instrument	solar generator (Levi 1978), computer exam (Rae 2010) attacco missilistico 'missile attack'
Source	solar energy (Levi 1978), garden vegetables (Rae 2010)

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[27] In addition to blocking effects situated at the level of patterns, Rainer (2013) claims that there are blocking effects caused by individual lexemes, with neologisms following the pattern of the nearest neighbour.

	immagine satellitare 'satellite picture'
For-Beneficiary	horse doctor (Levi 1978), world-peace concert (Rae 2010)
	rifugio canino 'dog shelter'
Cause	drug deaths, viral infection (Levi 1978)
	infezione batterica 'bacterial infection'
Made up of	molecular chains, stellar configurations (Levi 1978)
	composizione floreale 'flower arrangement'
Made out of	bronze statue (Levi 1978), steel bridge (Rae 2010)
	superficie marmorea 'marble surface'
Possess.	government land, student power (Levi 1978)
	patrimonio famigliare 'family estate'
Be	pine tree, aquatic habitat (Levi 1978)
	città metropolitana 'metropolitan city'
Measure Duration	3-year computer, five-minute interaction (Rae 2010)
	piano quinquennale 'five-year plan'

Table 2.3. Semantic relations in CNs (Levi 1978[28]; Rae 2010[29])

One problem with such lists is that they never seem to be exhaustive. In fact, other semantic categories like Experiencer (e.g. *amore materno* 'maternal love', *fiducia cristiana* 'Christian faith') and Frequency (e.g. *convegno annuale* 'annual congress', *pagamenti semestrali* 'six-months payments') could be easily added. Moreover, there are CNs whose relation is nontransparent and difficult to classify, as in *intervento chirurgico* 'surgical operation' or *stazione ferroviaria* 'railway station', where the head noun appears to be simply 'related to' the base noun. It has been claimed that these constructions will not been considered to avoid their potential lexicalized/compound status. Nor will all the semantic relations listed in Table 2.3 be considered, but only the less controversial ones (see chapter 4).

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[28] I excluded from the table Levi's CAUSE₁ (e.g. *tear gas*), MAKE₁(e.g. *musical clock*) and HAVE₁(e.g. *industrial area*) because the author herself defines these relations as the least productive among semantic relations available in CNs. The same appears to be true for Italian. Nevertheless, the table does not pretend to contain all the relations RelAs can express; it serves as an overview of what relations have been considered in the study of CNs.

[29] Rae's (2010) selection of semantic relations is conditioned by the purpose of excluding evidently lexical constructions. In this selection I left her relation MEASURE-Numerical (e.g. *3-metre bridge*) aside, since it seems that RelAs in Italian (Romance) cannot express it.

2.5.4 Relational adjectives as arguments

Let us come back to split classifications of RelAs and to the difference between ThAs and ClAs. The question is whether ThAs are proper arguments or rather establish an argument-like relation with the head noun.

ThAs are usually described as corresponding to genitive arguments, which can both express an external argument (42) and an internal one (43), as exemplified by Marchis (2010, 134) for Romanian and Spanish:

(42) decizie guvernamentala   /   decizia guvernului
      la decisión gubernamental /   la decisión del gobierno
      governmental decision   /   the decision of the government

(43) alegerea prezidentiala   /   alegerea presendintelui
      elección presidencial   /   la elección del presidente
      presidential election   /   the election of the president

But ThAs are far from being interchangeable with corresponding genitive phrases. In particular there appear to be some constraints on the possibility of realizing the internal argument of a noun with a ThA. For example Bosque & Picallo (1996) and Marchis (2010) note – in Spanish and Romanian respectively – that the internal argument cannot surface as a ThA in complex event nominals:

(44) la pesca <u>de ballenas</u> por parte de los japoneses   *Spanish*
      'whale fishing by the Japanese'   (Bosque & Picallo 1996, 357)

(45) *la pesca <u>ballenera</u> por parte de los japoneses
      'whale fishing by the Japanese'

(46) *producerea cerealieră de către germani   *Romanian*
      'cereal production by Germany'   (Marchis 2010, 137)

This represents a problem for the claim that ThAs are arguments of the head noun: in fact, according to Grimshaw (1990), complex event nominals are the sole nominals

displaying argument structure; hence examples (44)-(46) seem to suggest that whenever argument structure is present, the internal argument cannot be expressed by a ThA.

Marchis (2010), looking for a solution to this puzzle, follows Cornilescu (2001) and claims that complex event nominals with a + Telic aspect require the realization of the object as telicity identifier. The + Telic aspect must be checked: it is checked at the same time as Case, in the Genitive CaseP. The problem with ThAs would be the fact that they are Case-deficient, so they cannot check the + Telic aspect and serve as event identifier; hence their impossibility of realizing the internal argument in complex event nominals.

Constraints on the argumental use of RelAs have been noticed in the literature especially for Ethnic adjectives (see pp. 79-ff), which are said to absorb only the external Agent role (Kayne 1984; Giorgi and Longobardi 1991; Bosque & Picallo 1996; Marchis 2010; Alexiadou and Stavrou 2011), as the ungrammaticality of the Italian examples in (47)-(48), where the EA realizes the internal argument, seem to confirm:

(47) *l'invasione italiana della Russia
      'the Italian invasion of Russia' (with the meaning 'Russia invades Italy')
(48) *la cattura tedesca al termine della guerra
      'the German capture at the end of the war'

According to Alexiadou & Stavrou (2011), however, EAs are not arguments at all, although they seem to be able to bear the role of the external argument of the head noun. In fact they are claimed not to occur with argument structure nominals, but with referential nouns (see Alexiadou & Stavrou 2011, 124 for the pieces of evidence they provide).

Neither are EAs considered arguments by Boleda et al. (2012) and Arsenijević et al. (2014), who treat them simply as modifiers of the head noun, in line with Boleda & McNally (2004)[30]. The modifier analysis they propose has been summarized in §2.5.1.2, dealing with the nature of RelAs: EAs are said to be intersective modifiers of kind descriptions that combine with such kind descriptions through a contextually-determined relation R. EAs seem to be forced to bear an agentive theta-role since R would be a

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[30] Despite this common ground, Alexiadou & Stavrou (2011) on the one hand and Boleda & McNally (2004), Boleda et al. (2012) and Arsenijević et al. (2014) on the other hand, suggest completely different account for EAs/RelAs, considered pseudo-adjectives with a nominal source visible at some level of interpretation by Alexiadou & Stavrou (2011), but proper adjectives by Boleda & McNally (2004), Boleda et al. (2012) and Arsenijević et al. (2014).

relation of Origin: the agent(-like) participiant in a kind of eventuality can be considered the origin of that eventuality[31].

In this dissertation RelAs (especially ThAs) will not be argued to be real arguments. Nonethless it is worth pointing out that this does not prevent them from absorbing thematic relations, so that RelAs will be claimed to express THEME, AGENT, etc.

2.5.5 Relational adjectives as predicates

Although this dissertation concerns the syntax of RelAs in adnominal position, the constrained use of RelAs in predicative position deserves to be mentioned.

RelAs are commonly said not to occur in predicative position, but their behaviour is not homogeneous from this point of view. Bartning (1980), studying the syntax of RelAs (Pseudo-adjectives in her terminology) in French, tries to make some general assumptions regarding the possibility for a RelA to be used as predicate. Bartning's first hypothesis is that more the grammatical relation expressed by the RelA is perceivable, less the RelA is acceptable in predicative position. But this does not account for the contrast between (49) and (50), both involving a RelA whose grammatical relation is said to be easily recognizable:

(49) *la decision est gouvernementale

the decision is governmental

(50) ces revendications sont syndicales

these demands are union.ADJ

In order to explain it, Bartning (1980) suggests that the predicative use of such adjectives is excluded if the head noun is a [+action] nominalization, as in (49), but admitted if it is a [- action] nominalization, as in (50). Moreover, she points out that a contrastive environment increases the acceptability of the predicative use of RelAs:

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[31] This approach is claimed to have the advantage of explaining why nonagentive interpretations of EAs are possible, as well, as noted by Bosque & Picallo (1996). Arsenijević et al. (2014) argue that eventualities are considered to have as their origins the individuals who immediately cause, initiate or control them; hence EAs cannot absorb a typical Theme role (i.b), but they can express the Theme if it is thought as controlling the kind of eventuality (i.a):

(i) a. the French disappearance from Upper Louisiana
    b. ??the French disappearance from the list of nations that haven't approved the treaty

(51) a. *cette industrie est alimentaire
           this industry is food.ADJ
      b. cette industrie est alimentaire et non pas lainière
           this industry is food.ADJ and not wool.ADJ

A similar relevance of contrastive contexts is observed in Italian by Nowakowska (1995), specifically dealing with restrictions in the use of RelAs in predicative position in Italian. In line with Bartning (1980), the author recognizes that the predicative use is excluded whenever the RelA realizes an argument of the head noun (since it is claimed that an argumental RelA is employed with a referential purpose and that the predicative position is non-referential by definition):

(52) *Il movimento che produce spesso cambiamenti è studentesco
       'The movement that often produces changes is student.ADJ'

A different explanation of the puzzling behaviour of RelAs in predicative position is given by Boleda & Mcnally (2004) on the basis of their account of RelAs as intersective modifiers of kind descriptions. The predicative use of a RelA is acceptable if the subject of the copular sentence denotes a kind (53a), whereas it is not possible if the RelA is predicated of an individual (53b). Given that RelAs express properties of kinds, their arguments have to refer to kinds, as well:

(53) a. La tuberculosi pot ser pulmonar   (Catalan)
           'Tuberculosis can be pulmonary'
      b. *El Martí és tècnic   vs.   El Martí és arquitecte tècnic
           'Marti is technical'   'Marti is a technical architect'

They find some apparent counterexamples in sentences like (54), where the RelAs is predicated of an individual instance of a kind (*this conference*). But they suggest that perhaps RelAs «originate as properties of kinds and then, as those properties become useful for subclassifying instances of these kinds directly, their extension is expanded to include such instances themselves» (Boleda & McNally 2004, 191):

(54) Aquest congrès ès internacional.
   'This conference is international'

So far, the predicative use of RelAs, although constrained, seems to be plausible. But, whenever RelAs occur in predicative position, to the extent that they are acceptable, it is possible to hypothesize that there is a null noun, as in (55):

(55)   a. Ces revendications sont (revendications) syndicales.
         'These demands are union's demands'
       b. Aquest congrès ès (un congrès) internacional.
         'This conference is (an) international (conference)'

Along these lines, RelAs in (50), (53a) and (54) above could not be considered properly predicative; they should be treated again as direct modifiers (of a null head). This is why RelAs are claimed to enter direct modification only.

Surely further studies could have been mentioned and further hypotheses could have been explored about the puzzling controversial features of RelAs previously discussed. But the goal of this sections was mainly to give a general view of the complexity of this special class of adjectives. Now we will enter the core chapters of the dissertation, starting analysing the syntax of RelAs in adnominal position in Romance.

CHAPTER 3

STUDIES ON THE SYNTAX OF RELATIONAL ADJECTIVES

This chapter addresses the core topic of the present research through a survey of studies about the syntax of RelAs in adnominal position. The main constraint on their distribution is that in Romance they have to be postnominal and strictly adjacent to the head noun. This syntactic property is considered one of the core properties of RelAs in Romance (see Ch.2, §2.3.1). The aim of this research is to study their syntax in strings containing two (or more) RelAs: the basic claim is that there are ordering restrictions between RelAs modifying the same noun in Romance languages. These syntactic constraints have often been noticed by linguists studying the syntax of RelAs in the Romance domain. The present chapter collects several observations on this topic and illustrates the accounts given for such ordering restrictions.

The chapter consists of four sections. The first one deals with Latin, this being the common ancestor of Romance languages. The second section concerns Romance languages themselves; it is divided in subsections discussing Romance languages one by one. Each subsection begins with a brief overview of works giving a contribution to the study of RelAs, and of their syntax in particular, even if not specifically dealing with this matter. This panoramic view is followed by the discussion of studies containing some interesting hypotheses or data about ordering restrictions of RelAs in strings, wherever these studies are available. English, a non-Romance language, will be considered in the third section as a representative of the Germanic languages. The attention will be devoted to the analysis of ordering restrictions of modifiers in complex nominals given by Rae (2010): her hypothesis will turn out to be relevant to account for the syntax of RelAs in Romance languages. Finally, the accounts given in the literature for ordering restrictions of RelAs will be reconsidered one by one to see whether they hold crosslinguistically in the Romance domain. Their pros and cons will be discussed and it will be verified if their generalizations can be applied to other Romance languages, different from the one for which they have been proposed (§3.4).

3.1 Latin

Maurel (1993) shows that the behaviour of RelAs in Latin resembles that of RelAs in Romance languages concerning their constrained predicative use, their double reading as RelAs and as QAs, and the parallelism between RelAs and genitives. As far as I know, studies on the order of multiple RelAs in Latin are not available, but Iovino (2012) shows that there are ordering restrictions between RelAs and other adjectives (e.g. QAs) like in Romance languages.

3.1.1 Iovino (2012)

The syntax of RelAs in Latin partially resembles that of RelAs in Romance. In fact Iovino (2012) shows that RelAs tend to be adjacent to the head noun in Latin, too. The difference is that they can be prenominal as well as postnominal in Latin, whereas they obligatorily follow the noun in Romance languages. Iovino (2012), studying the syntax of the noun phrase in Latin, considers strings made up by the noun and two adjectives. She finds that both adjectives can either precede or follow the noun or it can be the case that the noun occurs between the adjectives. Her corpus contains several examples of RelAs of the classificatory subtype, among which there are many Ethnic adjectives. Unfortunately there are no examples of strings with two RelAs, but her account of the distribution of RelAs in Latin is worth mentioning anyway.

When both adjectives are prenominal, RelAs occur internally, adjacent to the noun (Iovino 2012, 246-247):

(1)   a. magnis diurnis   nocturnisque   itineribus (Caes. *Gall.* 7,56,3)
          long   day.ADJ night.ADJ-and marches
          'long day and night marches'
       b. virides pineas   nuces (Col. 7,8)
          green   pine.ADJ nuts
          'green pine nuts'

When the noun is in an intermediate position, RelAs appear to always be postnominal (ibid., 250-251):

(2) a. opportunissimos situs   maritimos (Cic. *rep.* 2,5)
         suitable.SUP   places maritime
         'the most suitable sea places'
     b. finitimas   colonias Romanas (Liv. 7,42,8)
         neighbouring colonies Roman
         'neighbouring Roman colonies'

When both adjectives are postnominal, they tend to be in a mirror image order with respect to the prenominal position; this means that RelAs are again closer to the noun than any other adjective, as in (3) (ibid., 253):

(3) a. dolia   olearia nova (Cato agr. 69,1)
         barrels oil.ADJ new
         'new oil barrels'
     b. ovum gallinaceum coctum (Cato agr. 106,1)
         egg   hen.ADJ   cooked
         'cooked hen egg'

There are only few cases in which the RelA is separated from the noun (only two in Iovino's corpus). This happens when both adjectives are postnominal and maintain the same relative order of the prenominal position (ibid., 260):

(4) res   veteres religiosas (Gell. 2,10,4)
     objects old   religious
     'old religious objects'

Therefore, RelAs appear to be always adjacent to the noun in Latin, independently of the position of the noun itself, with few exceptions. According to Iovino (2012), when the noun is modified by two adjectives in Latin, the most frequent order (37%)[1] is that exemplified in (3), with both adjectives in postnominal position displaying a mirror image order compared to when they are in prenominal position. The second most frequent order (24%) is that exemplified in (2) with a prenominal adjective and a postnominal one.

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[1] Her sample consists of 100 strings made up of a noun and two adjectives, taken from a corpus of Latin literature. See Iovino (2012, 105-ff.) for the structure of the corpus.

Instances of both adjectives in prenominal position are less attested (16%), but they reveal that RelAs can also occur before the noun in Latin, differently from Romance.

The syntax of RelAs appears to be affected by the same constraint both in prenominal and postnominal position: RelAs have to be adjacent to the head noun and a QA cannot break the sequence formed by the noun plus the RelA. The example in (4) seems to be a piece of counterevidence for this claim, but Iovino (2012) notes that postnominal adjective appear in the same relative order of prenominal ones only in 7% of the observed sequences and among them there are only two examples involving a RelA.

Order possibilities for RelAs and QAs in Latin are summarized in (5):

(5)   a. QA RelA N
       b. QA N RelA
       c. N RelA QA
       d. (N QA RelA)

The derivation of the orders in (5) is provided in (6). Following Cinque (2010), Iovino (2012) suggests that (5a) reveals the order of merge of the adjectives[2]; (5b) can be derived through an NP-movement targeting the specifier position of the AgrP above the FP hosting the RelA; (5c) implies a further movement of the NP to a higher AgrP with the pied-piping of the RelA; finally, (5d) could be accounted for through a cyclic NP-movement (see Laenzlinger 2005, 2011):

(6)   a. [$_{DP}$... [$_{FP}$ virides [$_{FP}$ pineas [$_{NP}$ nuces]]]]

       b. [$_{DP}$... [$_{FP}$ opportunissimos [$_{AgrP}$ situs [$_{FP}$ maritimos [$_{NP}$ ~~situs~~]]]]]

       c. [$_{DP}$... [$_{AgrP}$ dolia olearia [$_{FP}$ nova ([$_{AgrP}$ ~~dolia~~ [$_{FP}$ ~~olearia~~ [$_{NP}$ ~~dolia~~]]]]])]

       d. [$_{DP}$... [$_{AgrP}$ res [$_{FP}$ veteres [$_{AgrP}$ res [$_{FP}$ religiosas [$_{NP}$ res]]]]]]

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[2] The leftmost adjective is ambiguous between a direct modification source and an indirect one.

3.2 Romance languages

3.2.1 Italian

Linguists studying Italian RelAs make some general assumptions about their syntax in adnominal position, but there are no specific studies on ordering restrictions of RelAs in Italian, as far as I know, except for Ramaglia (2008), who, dealing with the syntax of adjectives in general, gives some space to this topic.

Brinker (1974), one of the first studies on RelAs in Italian, simply notes that RelAs are strictly adjacent to their head noun, so that they cannot be separated from it, being impossible for a QA to come between the noun and the RelA (e.g. *problemi economici interessanti* vs. **problemi interessanti economici* 'interesting economical problems'). Such high cohesion between the noun and its RelA leads Brinker (1974) to define them as a 'free compound', i.e. a compound where both the noun and the RelAs are part of a series of paradigmatic possibilities (see Ch.2, §2.5.2). Sequences of two RelAs are considered, such as *conferenza episcopale nazionale* 'national episcopal conference', *patrimonio lessicale italiano* 'Italian lexical heritage', *dottrina cristiana cattolica* 'catholic christian doctrine'. But the author's goal is not to study adjective order in sequences of RelAs, rather to give examples of what 'free compound' stands for. Brinker (1974, 13) exemplifies also some cases in which the speaker could doubt about the reciprocal order of two RelAs, e.g. *assemblea generale annuale* 'annual general meeting' or *assemblea annuale generale* 'general annual meeting'. But again the goal is to underline the occasional character of the compound.

Guasti (2001, 333) notes ordering restrictions when two RelAs modify a noun, like in *studio dentistico paterno* vs. **studio paterno dentistico* 'father's dental practice', claiming that the external RelA has to be restrictive with respect to the phrase made up by the noun and its closer RelA.

But the most interesting remarks on this topic comes from Ramaglia (2008).

3.2.1.1 Ramaglia (2008)

Ramaglia (2008) adopts Bosque & Picallo's (1996) distinction between Thematic adjectives and Classificatory adjectives. One of their assumptions on RelAs order in

Spanish is that the distinction between ThAs and ClAs is syntactically relevant since ClAs are always closer to the head noun than ThAs. Bosque & Picallo's (1996) hypotheses will be discussed in detail in the next section devoted to Spanish. They have been mentioned here because Ramaglia (2008) highlights similar ordering restrictions of RelAs in Italian:

(7)   a. politica estera   italiana
            policy   foreign Italian
        b. *politica italiana estera
            policy   Italian foreign
            'Italian foreign policy'

(8)   a. attacco aereo americano
            attack   aerial American
        b. *attacco americano aereo
            attack   American   aerial
            'American air attack'

The author accounts for the ordering restrictions in (7) and (8) claiming that both *estera* and *aereo*, being ClAs, precede *italiana* and *americano*, which are ThAs.

Ramaglia (2008) places RelAs among functional adjectives[3], for which she proposes an analysis following Cinque (1994, 2010), Scott (2002) and Laenzlinger (2005); hence functional adjectives are assumed to be merged in the specifier of distinct functional heads according to their semantic features (see Ch.1). Regarding the exact position of Merge of ThAs and ClAs in the functional hierarchy, Ramaglia (2008) locates them in the NP-shell. She first suggests the generation in the NP-shell for ThAs, claiming that this is expected since ThAs have to be assigned a Θ-role by the head noun. Then the proposal is extended to ClAs because they are said to be closer to the head noun than ThAs in Italian; hence their structural position has to be lower. The author advances two arguments in support of her hypothesis, arguing that (i) ThAs have scope on ClAs and (ii) ClAs are involved in the assignation of Θ-roles, since when both a ThA and a ClA are present, the ThA appears to receive its Θ-role by the semantic complex made up of the head noun and the ClA. On these bases, Ramaglia (2008) suggests the following structure:

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[3] They are opposed to lexical adjectives, the difference being that functional adjectives cannot be used as predicates.
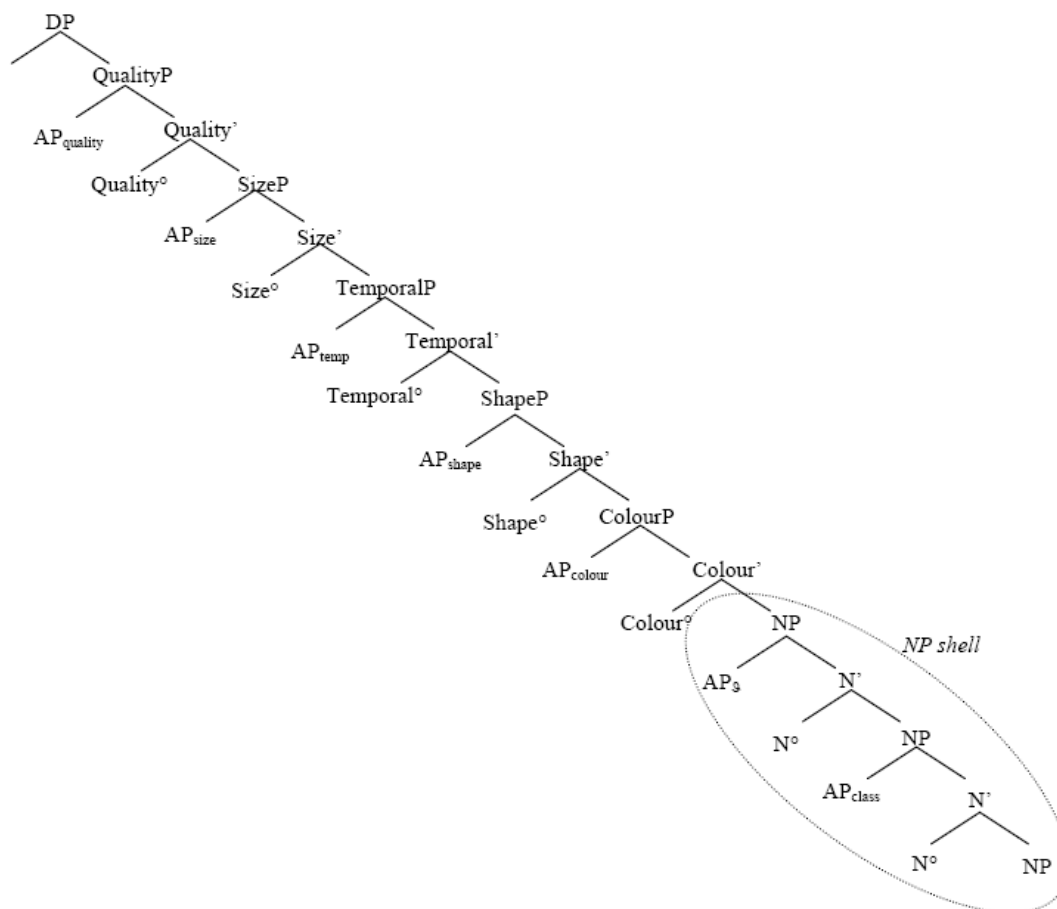
Fig.3.1. Ramaglia's (2008) hierarchy of (functional) adjectives.

3.2.2 Spanish

RelAs have been closely examined in Spanish. Bartoš (1980) strenuously defends RelAs as a separate class of adjectives and the classifications of RelAs introduced in the first chapter have been originally proposed for Spanish, by Bosque (1993) and Bosque & Picallo (1996) on the one hand and by Demonte (1999) on the other hand. These three works are obligatory references in the study of the syntax of RelAs, as well. Bosque & Picallo (1996), in line with Bosque (1993), offer one of the most detailed analyses of the syntax of RelAs in adnominal position in a Romance language and Demonte (1999) makes some very interesting observations which supplement their assumptions.

3.2.2.1 Bosque & Picallo (1996)

Bosque & Picallo (1996) divide RelAs in two subclasses, according to the relation the adjective establishes with the head noun: Thematic adjectives (ThAs) and Classificatory adjectives (ClAs) (see Ch.2, §2.4). What is relevant here is that they argue that this distinction plays a role in the syntax of RelAs.

First the authors discuss the distribution of these adjectives inside the two subclasses; then, they consider the co-occurrence of ThAs and ClAs. Regarding ThAs, they state that in Spanish «the sequential order of Th-adjectives in a given DP is always fixed and obeys the thematic hierarchy. Th-adjectives that absorb the Theme role are closer to the head than those having a Possessor or an Agent role» (Bosque & Picallo 1996, 359-360). This explains why (8a) is grammatical, whereas (8b) is not: *marisquera* 'shellfish' expresses THEME and therefore has to precede *gallega* 'Galician', which absorbs the role of AGENT. It accounts for the different readings of the sequences in (9), as well, since the interpretation of the two RelAs relies on their position in the sequence; the ThA closer to the noun is interpreted as THEME and the external one as AGENT:

(8)   a. producción marisquera gallega
        production shellfish.ADJ Galician
      b. *producción gallega marisquera
        production Galician shellfish.ADJ
        'Galician shellfish production'

(9)   a. estudios rodoredianos femeninos
        studies Rodoreda.ADJ woman.ADJ
        'studies of Rodoreda by women'
      b. estudios femeninos rodoredianos
        studies woman.ADJ Rodoreda.ADJ
        'studies of women by Rodoreda'

Concerning ClAs, the authors argue that «the relative order of several consecutive C-adjectives follows independent patterns of semantic inclusion in successive sub-specifications. A C-adjective strictly adjacent to the head denotes the larger class, being followed by a C-adjective that denotes a sub-class» (Bosque & Picallo 1996, 366). This claim is based on examples like (10):

(10)   a. coma alcohólico metílico
           coma alcoholic   methylic
       b. *coma metílico alcohólico
           coma   methylic alcoholic
           'methilic alcoholic coma'[4]

An advantage of this generalization is that it can explain why in some cases both orders appear to be equally acceptable. This happens when the pattern of semantic inclusion is reversible; in the case of (11) it is possible to classify medieval literature with respect to the place where it was written or to classify French literature according to the period in which it was written:

(11)   a. literatura medieval francesa
           literature medieval French
           'French medieval literature'
       b. literatura francesa medieval
           literature French   medieval
           'medieval French literature'

Finally, regarding the reciprocal order of ThAs and ClAs, Bosque & Picallo (1996, 366), following Bosque (1993), claim that in Spanish a ClA is closer to the noun than any ThA, as anticipated in the previous section. They provide examples like those in (12), where *atómicos* 'atomic' and *manual* 'manual' are ClAs denoting subclasses, of residues and productions respectively, and *soviéticos* 'Soviet' and *cestera* 'basket' are ThAs, the former expressing POSSESSOR and the latter expressing THEME. In both the examples the order is N-ClA-ThA:

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[4] Fabregas (2007) notes that in this case the two ClAs enter a subordinate structure, such that the second ClA refers to a property of the first one; hence the structure is that of (i) (Fabregas 2007, 27):

(i)   a. coma [alcohólico [metílico]]
           coma alcoholic   methylated
           'methylated alcohol coma'
       b. torneo   [gimnástico [rítmico]]
           tournament gymnastic   rhythmic
           'eurhythmics tournament'

This property further distinguishes RelAs from QAs which cannot be subordinate:

(ii)   una mesa [redonda] [grande]
       a   table round   big
       'a big round table' (#a table characterised by a big roundness)

(12) a. unos residuos atómicos soviéticos
          some residues atomic   Soviet
          'some Soviet atomic residues'
      b. una producción manual cestera
          a   production manual basket.ADJ
          'a manual production of baskets'

In order to support their claim they provide examples like (13), where the opposite order (N-ThA-CA) results in ungrammaticality:

(13) *reformas gubernamentales agrarias
      reforms   government.ADJ agrarian
      'agrarian reforms by the governement'

Furthermore, they say that, if a permutation of the order is possible, like in (14), it correlates with a meaning change, depending on the fact that the adjective closer to the noun is interpreted as Classificatory, while the external one as Thematic. The paraphrases of the sequences in (14) reveal that *europea* 'European' is understood as a ClA in (14a), meaning 'with respect to Europe', but as an agentive ThA in (14b), meaning '(made) by Europe'; *vice versa* for *africana* 'African'. These different readings appear to be linked to the position of the adjective in the sequence:

(14) a. política europea   africana
          politics European African
          'African politics about Europe'
      b. política africana europea
          politics African European
          'European politics about Africa'

This account for the distribution of RelAs in Spanish is given by the manual of Spanish language of the Real Academia Española (2010), as well. It seems to hold even for strings containing several ClAs or ThAs, such as the following ones taken from Bosque & Picallo (1996, 377):

(15) a. una construcción civil renacentista   italiana maravillosa
         a   construction civil Renaissance.ADJ Italian   marvellous
                             ClA   ClA   ThA   QA
      'a marvellous Italian civil construction of the Renaissance period'
      b. una producción manual cestera   china   considerable
         a   production manual basket.ADJ Chinese considerable
                             ClA   ThA   ThA   QA
      'a considerable Chinese manual production of baskets'

Therefore, in Bosque & Picallo's (1996) view, what counts is the relative position of the adjectives with respect to the head noun, ClAs being closer than ThAs and ThAs with the THEME role being closer in turn than ThAs with an AGENT / POSSESSOR role, all of them being obviously closer to the noun than QAs. Moreover, according to the authors, in English there is the same relative adjacency of the adjectives to the head noun. Hence, even if RelAs are prenominal in English, but postnominal in Spanish, their position with respect to the noun is the same and the order of RelAs in the two language is a mirror image:

(16)   Noun Cl-adjective Th-adjective   SPANISH
       Th-adjective Cl-adjective Noun   ENGLISH

Bosque & Picallo (1996) gives such a detailed and convincing analysis that their work is necessarily the starting point for every study on the syntax of RelAs, primarily in Spanish, and then in the other Romance varieties to see whether their account can be extended to other languages.

3.2.2.2 Demonte (1999)

Demonte (1999) says that the distribution of RelAs can be described generally as an *incrustación sucesiva*, i.e. a successive incrustation: the adjective closer to the noun establishes a subclass which the rightmost adjective(s) can further subclassify. It is a hierarchical modification with the external RelA modifying the phrase made up of the noun and the inner RelA:

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(17)   a. [[neumonía vírica] secundaria]
           pneumonia viral   secondary
           'secondary viral pneumonia'
        b. [[patrimonio cultural] artístico] valenciano]
           heritage   cultural artistic   Valencian
           'Valencian artistic cultural heritage'

The (sub)classifying power of RelAs depends on the lexical content of RelAs themselves in cases like (18), where the meaning of the external adjective is included in the meaning of the internal one. But when a clear taxonomy does not exist, the order choice relies on the speaker's way of (sub)classifying entities, so that (19a) is as acceptable as (19b):

(18)   a. productos frutales   cítricos
           products   fruit.ADJ citric
        b. *productos cítricos frutales
           products   citric   fruit.ADJ
           'citric fruit products'

(19)   a. televisión digital europea
           television digital European
           'European digital television'
        b. televisión europea   digital
           television European digital
           'digital European television'

Thus, in line with Bosque & Picallo's (1996) proposal about ClAs, her idea is that the choice of one out of the two orders simply reflects the way we sub-classify an entity. But she recognizes the existence of cases in which one order is excluded:

(20)   a. merienda campestre veraniega
           picnic country.ADJ summer.ADJ
        b. *merienda veraniega campestre
           picnic summer.ADJ country.ADJ
           'summer country picnic'

In principle, one could choose to classify a picnic according to the locative dimension and then sub-classify it according to the temporal dimension, or *vice versa*. Hence, a question arises: why is (20a) grammatical and (20b) is not? Demonte (1999) relates these restrictions to the tendency for some adjectives to form stable lexical constructions with the noun they modify.

The author agrees, but only partially, with Bosque & Picallo's (1996) generalizations about the syntax of RelAs. As just seen, Demonte's (1999) idea of a successive incrustation parallels Bosque & Picallo's (1996) claim that ClAs are ordered according to a successive subspecification. Moreover Demonte (1999) recognizes that the assumption according to which a ThA corresponding to the object always precedes a ThA corresponding to the subject is right, as well. What she doubts is that, when a ClA co-occurs with a ThA, the order is obligatorily N-ClA-ThA. She notes that the ThA absorbing the THEME role tends to be closer to the noun than any other RelA, included ClAs, proving Bosque & Picallo's (1996) claim to be disconfirmed by lots of data, such as *producción lechera industrial* 'industrial milk production' and *análisis celular microscópico* 'microscopic cellular analysis'.

3.2.3 French

It has been said that the notion of 'relational adjective' is claimed to come from the French descriptive grammar and that Bally (1944) is usually pointed out as the first author giving a description of RelAs and popularizing the term *adjectifs de relation* itself (Ch.2, §2.1). Since then different aspects of RelAs have been considered in French: their peculiar properties (Bosredon 1988; Monceaux 1997) or, more specifically, their syntactic relationships with the head noun (Breslin 1975), their shifting into QAs (Bartning & Noally 1993) and their constrained predicative use (Nowakowska 2001). Here two monographic studies on RelAs in French will be considered: Bartning (1980) and Valassis (2001), both making some important observations about the syntax of RelAs. Bartning (1980) studies RelAs both in adnominal and predicative position, while Valassis (2001) properly deals with the syntax of RelAs modifying a noun.

3.2.3.1 Bartning (1980)

The author widely discusses the use of RelAs as predicates (see Ch.2, §2.5.5) and actually assigns less space to the description of the behaviour of RelA in adnominal position. But the data she provides are very interesting. She analyses all the possible relationships linking the RelA to its head noun. As shown in the previous chapter, she distinguishes two types of N-PA (Noun+Pseudo-Adjective) constructions in French: N-PA *sous-classificateur* and N-PA *à relations grammaticales*, this latter type being further sub-classified according to the kind of head noun and to the function of the adjective with respect to the underlying predicate. The author wants to show that the same grammatical relations can be expressed when there is more than one RelA modifying the noun. Therefore she supplies the data below, reported as organized by Bartning (1980, 33):

A. Relations grammaticales	
V, S - PP[LOC] - PP[LOC]	ligne aérienne transatlantique
	axes autoroutiers provençaux
V, S - PP[CONCERNANT] - PP[LOC]	politique monétaire européenne
	réglementation pétrolière française
	situation monétaire internationale
	spécialités alimentaires régionales
S - [PRODUIT] - O - PP[LOC]	industrie lainière française
	industrie cotonnière alsacienne
V - S - PP[LOC]	coopération policière internationale
V - O - S	contrôles budgétaires gouvernementaux
V - O - S, LOC	production alimentaire départementale
V - PP[INST] – S	aide financière gouvernementale
V - S - PP[TEMPS]	production française annuelle
V - PP[INST] - PP[LOC] - PP[LOC]	explosion nucléaire souterraine américaine
B. Sous-classification entre PA$_1$ et PA$_2$	
	analyse biochimique médicale
	industrie chimique minérale

Table 3.1. Strings of RelAs in Bartning (1980)

Bartning (1980) does not make a hypothesis to account for such order of RelAs. In fact, she is not interested in the order of RelAs itself, but in the fact that RelAs in strings containing two or three of them can express different detectable relations, corresponding to the subject or the object of the predicate or to a PP expressing LOCATION, INSTRUMENT, etc. But, even if she does not explicitly study the distribution of RelAs as noun modifiers, these data will turn out to be very useful for the goal of the present research. For example, her V-O-S sequence, i.e. *contrôles budgétaires gouvernementaux* 'governmental budget controls' shows that, like in Spanish, the ThA expressing THEME precedes the ThA expressing AGENT in French. Further data about ordering restrictions of RelAs in French come from Valassis (2001).

3.2.3.2 Valassis (2001)

Valassis (2001) is interested in the syntactic status of RelAs in French. He considers the distribution of RelAs with respect not only to other RelAs, but also to other modifiers of the noun. His working hypothesis is double: a) RelAs constitute an autonomous lexical category, different from QAs; b) RelAs are functionally and semantically equivalent to genitive phrases (*N'' fléchis*[5] in his terminology).

The author defines RelAs on the basis of their paraphrasability with PPs (see Ch.2, §2.3.1) and stresses the fact that (some) RelAs seem to correspond exactly to genitives, introduced by the preposition *de* in French. Such a correspondence is argued to be visible at different grounds: morphologically, since RelAs are derived from nouns; distributionally, since RelAs and genitives are usually interchangeable; semantically, since RelAs can express the same relations as genitives (THEME (21a), AGENT (21b) and POSSESSOR (21c)):

(21)   a. la carte terrestre   / de la terre
               the map terrestrial / of the earth
               'the terrestrial/earth's map'
       b. l' enseignement papal / du   pape
               the teaching   papal / of-the pope

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[5] *N'' fléchis* include genitives and some datives like *à Paris* or *en Alsace* (Valassis 2001, 108). Despite this, in the following pages '*N'' fléchis*' and 'genitives' will be used referring to the same constructions.

'the papal/pope's warning'
c. la   voiture présidentielle / du   president
   the car   presidential   / of-the president
   'the presidential/president's car'

Looking at RelAs presented so far in this dissertation, it is clear that RelAs do not always correspond to genitive phrases. But Valassis (2001, 128) specifies that an adjective can be considered relational if there is at least one context where it is interchangeable with a corresponding genitive form, which he refers to as the *paraphrase genitive dèfinitoire*, i.e. the defining genitive paraphrase, of the RelA. Cases where such a substitution is possible are considered the prototypical ones and discussed in Valassis (2001).

The starting point of his work is the hypothesis of an absolute functional and semantic equivalence between RelAs and genitives: it would be due to the fact that RelAs occupy the same structural position as genitives. If this strong hypothesis was right, combinatorial possibilities of RelAs with other nominal modifiers should be modelled on those of genitives. To test this prediction, Valassis (2001) studies the reciprocal order of four noun modifiers, RelAs, QAs, PPs and *N'' fléchis*, looking for the presence/absence of a parallelism between the distribution of RelAs and that of genitives. He first considers combinations of two postnominal modifiers, observing three variables: the general form of the modifiers (adjectival vs. prepositional), the subclass which the modifiers belong to (RelAs and QAs for adjectival modifiers, PPs and *N'' fléchis* for prepositional modifiers) and obviously the placement of such modifiers in the string. He analyses noun phrases introduced by the definite article[6]. What follows is Valassis's (2001, 113) observation grid[7]:

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[6] Valassis (2001, 133) justifies this choice claiming that «l'interprétation possessive et l'interprétation agent (si le nom recteur est un déverbal à interpretation processive) sont incompatibles avec tout autre determinant que le défini». The possessive and the agentive interpretation of genitives would not be always available with determiners different from the definite one; hence his restrictive choice, in order not to exclude some types of genitives and corresponding RelAs.

[7] GP stands for *Groupe Prépositionnel*, i.e. prepositional phrase, and N"cas corresponds to *N" fléchis*.

1ère place			Formes adjectivales		Formes prépositionnelles	
			A	B	C	D
2nd place			Relationnel	Qualificatif	GP	N''cas
Formes adjectivales	A'	relantionnel	**Possible** le voyage présidentiel alsacien	**Impossible** *le voyage inconfortable présidentiel	**Impossible** *le voyage_i en bateau présidentiel_i	**Impossible** *le voyage_i du président alsacien_i
	B'	qualificatif	**Impossible** *le voyage présidentiel inconfortable	**Impossible** *le voyage inconfortable rapide	**Impossible** *le voyage_i en bateau inconfortable_i	**Impossible** *le voyage du président inconfortable
Formes prépositionnelles	C'	GP	**Possible** le voyage présidentiel en bateau	**Possible** le voyage inconfortable du 3 jours	**Possible** le voyage du 3 jours en bateau	**Possible** le voyage du president en bateau
	D'	N''cas	**Possible** le voyage alsacien du prèsident	**Possible** le voyage inconfortable du président	**Possible** le voyage en bateau du président	**Possible** le voyage du president en Alsace

Table 3.2. Order possibilities of two postnominal modifiers in Valassis (2001)

The grid seems to disconfirm the initial hypothesis of a perfect equivalence between RelAs and *N" fléchis*. In fact some differences emerge in the distribution of these modifiers: first, while a *N" fléchi* can be preceded by a QA, a RelA cannot apparently be combined with a QA, at least in the example above[8]; second, when a *N" fléchi* co-occurs with a PP, the order is free, whereas a RelA has to be on the left of a PP in French, as well as it has to be on the left of a *N" fléchi*. These facts show that the difference between adjectival forms and prepositional ones is syntactically relevant since the former are always closer to the noun than the latter. However, this does not imply that the differences between the subclasses are neutralized and, in fact, the claim that RelAs and QAs are different lexical categories is maintained. What is questioned is the relationship between RelAs and genitives: the existence of such a relation cannot be denied, but it seems far from equivalence.

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[8] This does not mean that RelAs never occur with QAs. Valassis (2001) himself recognizes the possibility of such a cooccurence and observes that in this case the RelAs is obligatorily closer to the noun than the QA, as in *une voiture présidentielle confortable* 'a comfortable presidential car' (Valassis 2001, 56). See the first chapter on this topic.

Nothing can be argued from the table about the reciprocal order of two RelAs (or two *N" fléchis*). At first Valassis (2001) expects RelAs not to occupy fixed positions, similarly to their genitive counterparts, which are said to be freely ordered. But the picture changes once he analyses combinations of three postnominal modifiers. In this case a fourth variable is observed (beyond the form of the modifier, its category and position): the type of head noun. Three types of nouns are considered: deverbal nouns, [+Animate] nouns and nouns which are neither deverbal nor [+Animate].

All the potential strings of three postnominal modifiers are summarized by Valassis (2001, 125) in the table reported below:

1ère place → 2nde place ↓		Formes adjectivales		Formes prépositionnelles		3ème place	
		Relationnels	Qualificatifs	GP	N''cas		
Formes adjectivales / R		R-R-R	Q-R-R	GP-R-R	N''cas-R-R	R	FA
		R-R-Q	Q-R-Q	GP-R-Q	N''cas-R-Q	Q	
		R-R-GP	Q-R-GP	GP-R-GP	N''cas-R-GP	GP	FP
		R-R- N''cas	Q-R- N''cas	GP-R- N''cas	N''cas-R- N''cas	N''cas	
Formes adjectivales / Q		R-Q-R	Q-Q-R	GP-Q-R	N''cas-Q-R	R	FA
		R-Q-Q	Q-Q-Q	GP-Q-Q	N''cas-Q-Q	Q	
		R-Q-GP	Q-Q-GP	GP-Q-GP	N''cas-Q-GP	GP	FP
		R-Q- N''cas	Q-Q- N''cas	GP-Q- N''cas	N''cas-Q- N''cas	N''cas	
Formes prépositionnelles / GP		R-GP-R	Q-GP-R	GP-GP-R	N''cas-GP-R	R	FA
		R-GP-Q	Q-GP-Q	GP-GP-Q	N''cas-GP-Q	Q	
		R-GP-GP	Q-GP-GP	GP-GP-GP	N''cas-GP-GP	GP	FP
		R-GP- N''cas	Q-GP- N''cas	GP-GP- N''cas	N''cas-GP- N''cas	N''cas	
Formes prépositionnelles / N''cas		R- N''cas-R	Q- N''cas-R	GP- N''cas-R	N''cas- N''cas-R	R	FA
		R-N'cas-Q	Q- N'cas-Q	GP- N'cas-Q	N''cas- N'cas-Q	Q	
		R-N''cas-GP	Q- N''cas-GP	GP- N''cas-GP	N''cas- N''cas-GP	GP	FP
		R-N'cas-N''cas	Q- N'cas-N''cas	GP- N'cas-N''cas	N''cas- N'cas-N''cas	N'cas	

Table 3.3. Order possibilities of three postnominal modifiers in Valassis (2001) [9]

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[9] GP stands for prepositional phrase, and N''cas corresponds to genitives (and some datives), as above. R and Q obviously stand for Relational and Qualifying adjectives, respectively.

Let us consider only the combinations involving two or three RelAs (those highlighted in the table), which fall under the objects studied in this research. Some of them (sequences in yellow) are excluded on the basis of the evidence from Table 3.2. It rules out the co-occurrence of RelAs and QAs, hence the ungrammaticality of R-R-Q, R-Q-R and Q-R-R. Furthermore it shows that RelAs have to precede PPs and *N" fléchis*, hence the ungrammaticality of R-GP-R, R- N"$_{cas}$-R, GP-R-R and N"$_{cas}$-R-R. Three possible strings remain (highlighted in green): R-R-R, R-R-GP and R-R-N"$_{cas}$. One example for each type of string[10] will be taken from Valassis (2001, 160-ff): R-R-R is exemplified in (22), R-R-GP in (23) and R-R-N"$_{cas}$ in (24)[11]:

(22) a. la réforme ecclésiastique papale française
         the reform ecclesiastical papal French
         'the papal reform of the church in France'
      b. $^?$la réforme ecclésiastique française papale
      c. $^?$la réforme française ecclésiastique papale
      d. $^?$la réforme française papale ecclésiastique
      e. la réforme papale ecclésiastique française
      f. $^?$la réforme papale française ecclésiastique

(23) a. l' enseignement mathématique institutionnel en classe
         the teaching   mathematical institutional   in class
      b. $^?$l' enseignement institutionnel mathématique en classe
         the teaching   institutional mathematical in class
         'the institutional teaching of maths in class'

(24) a. le voyage nuptial   parisien de Pierre
         the trip   wedding.ADJ Parisian of Pierre
      b. *le voyage parisien nuptial   de Pierre
         the trip   Parisian wedding.ADJ of Pierre
         'the wedding trip of Pierre to Paris'

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[10] The author gives three examples per string, respectively with a deverbal noun, a [+Animate] noun and a noun which is neither deverbal nor [+Animate]. I chose to report the examples whose head nouns are deverbal since the data collected for Italian and Spanish and discussed in the next chapter mostly contain nominalizations. Hence, the comparison will be easier. See directly Valassis (2001) for the other examples.

[11] Translations of these and the following examples are mine.

Surprisingly, after providing the examples of the co-occurrence of three RelAs, among which (22), Valassis (2001) hints to the possibility of freely combining RelAs among them, even if at least a general trend in the linearization pattern seems to emerge from the grammaticality judgements above. When he discusses these examples, he is concerned in comparing the distribution of RelAs with that of genitives more than in studying the reciprocal order of RelAs. But, when he specifically deals with the syntax of co-occurring RelAs, he points out some ordering restrictions, based on the following examples (Valassis 2001, 259):

(25)   a. la réforme ecclésiastique papale   Object > [+ humain] Agent
           the reform   ecclessiastical papal
        b. *la réforme papale ecclésiastique[12]
           the reform papal ecclessiastical
           'the papal reform of the church'

(26)   a. l' enseignement mathématique institutionnel   Object > (unmarked) Agent
           the teaching   mathematical institutional
        b. *l' enseignement institutionnel mathématique[13]

---

[12] This judgement of ungrammaticality seems to be in contrast with the judgement of grammaticality of (22e), containing the same sequence followed by a third RelA. If (25b) is not grammatical, neither (22e) is expected to be acceptable.

[13] Unfortunately this example appears to be a bit questionable. First, I think it could be challenged that *institutionnel* really expresses the AGENT. Second, different grammaticality judgements appear along Valassis's (2001) dissertation for this sequence, as well. It is considered completely ungrammatical by Valassis (2001, 259), while it is judged just marginal by Valassis (2001, 163) in ?*l'enseignement institutionnel mathématique en classe*, reported above as (23b). Surprisingly, there is a third passage where it is considered perfectly grammatical, namely Valassis (2001, 224), dealing with the following couples of examples:

(i)   a. le traité cynégétique royal
      b. *le traité royal cynégétique
         'the royal cynegetic treatise'

(ii)   a. l'enseignement mathématique institutionnel
      b. l'enseignement institutionnel mathématique
         'the institutional teaching of maths'

Both the examples are analysed as a combination of one RelA expressing the Object and one expressing the AGENT (even if *royal* is said to be ambiguous between an agentive and a possessive reading). Valassis (2001) points out the existence of an ordering restriction in (i), i.e. Object > AGENT, but he claims that the same ordering restriction would not be working in (ii). The author wonders if the difference in the linearization of RelAs could depend on the presence or absence of a [+Animate/human] feature on the adjective expressing AGENT: its presence on *royal* might force the placement of the adjective in the last position, whereas the absence of the same feature on *institutionnel* might allow the placement of the

the teaching   institutional mathematical
'the institutional teaching of maths'

(27) a. la ferme céréalière municipal   Object > Possessor
          the farm cereal.ADJ municipal
      b. *la ferme municipale céréalière
          the farm municipal cereal.ADJ
          'the municipal farm producing cereals'

Therefore, the claim regarding the order of Thematic adjectives made by Bosque (1993), Bosque & Picallo (1996) and Demonte (1999) for Spanish seems to be confirmed for French, as well. On the one hand example (25) (and to a lesser extent (26)) reveals that the RelA expressing THEME/Object has to precede the RelA expressing AGENT. On the other hand (27) is given as an example of the order Object > POSSESSOR. Hence, POSSESSOR, like AGENT, occurs farther from the head noun than THEME. It seems reasonable since they are both higher than THEME in the thematic hierarchy, but some problems could be raised about the evidence given by an example like (27). The interpretation of *céréalière* as the Object of the construction could be a matter of debate since the head noun is not deverbal. The author himself later argues that

> Pour les noms recteurs non humains et non déverbaux, et probablement [+concrets], la seule position argumentale est celle du Possesseur. Seul les mots iconiques ou des produits manufacturés auraient aussi des arguments Agent et Objet. Pour les déverbaux, deux positions argumentales sont possibles, celle de l'Agent et celle de l'Objet.   (Valassis 2001, 282)

Non deverbal and non-human nouns would have only one argument, the POSSESSOR, with the exception of nouns designating manufactured products, for which the argumental positions of Object and AGENT are available. Nominalizations can also have

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adjective immediately on the right of the noun. This difference between a [+Animate/human] AGENT and an 'unmarked' AGENT emerges again when Valassis (2001, 259) discusses the ordering restrictions mentioned above through the examples (25) and (26). But in this case it is not said to be relevant and, above all, the sequence *l'enseignement institutionnel mathématique* is not judged to be grammatical anymore. Leaving the accounts for these data aside, it is not clear why the same string obtains three different grammaticality judgements.

Object and AGENT as arguments. This constraint implies the difficulty of combining not only THEME and POSSESSOR, but also AGENT and POSSESSOR.

The external position of the RelA expressing the POSSESSOR (provided that the evidence given by examples like (27) is accepted) resembles the placement of the genitive phrase expressing the POSSESSOR, which occurs in the external position, as well, according to Valassis (2001).

This parallelism brings back to Valassis's (2001) initial hypothesis of an equivalence between RelAs and genitives. Such a hypothesis has been partially disconfirmed by Valassis (2001) himself, as summarized in the previous pages, but it does not appear to be completely groundless. Being the equivalence of genitives and RelAs under discussion, the author compares strings containing RelAs with parallel strings containing genitives. At a first glance the results seem to weaken the idea of a close correspondence between the two types of modifiers. For example, he considers the sequence N"$_{cas}$-N"$_{cas}$-N"$_{cas}$, parallel to R-R-R exemplified in (22):

(28) a. *l'enseignement de Pierre de la grammaire aux adultes
         the teaching of Pierre of the grammar to adults
         'Pierre's teaching of the grammar to adults'
      b. *l'enseignement de Pierre aux adultes de la grammaire
      c. *l'enseignement$_i$ aux adultes de la grammaire [de Pierre]$_i$
      d. *l'enseignement aux adultes de Pierre de la grammaire
      e. *l'enseignement de la grammaire aux adultes de Pierre
      f. *l'enseignement$_i$ de la grammaire [de Pierre]$_i$ aux adultes

RelAs and genitives seem to behave differently: three RelAs can modify the same noun, while three genitives cannot co-occur. (28) shows the combination of three genitives displaying their prototypical interpretations (i.e. Object, AGENT and POSSESSOR). These relations can be also realized by PPs and RelAs in French, following the summary in (29):

(29) a. AGENT: genitive (*de* N)
                    PP (*par* N)
                    RelAs
      b. Object: genitive (*de* N)
                    RelAs
      c. POSSESSOR: genitive (*de* N)

PP (*à* N)
RelA

Observing the distribution of genitives and PPs, Valassis (2001) claims that the three interpretations of genitives cannot emerge in the combination of three forms belonging to the same category. Hence the ungrammaticality of the sequences in (28), involving three genitives, is explained. The problem is that, if RelAs are supposed to be interchangeable with genitives, they should undergo the same distributional constraints. On the contrary it is possible to combine three RelAs. Valassis (2001) solves the puzzle claiming that the interpretative possibilities of RelAs go beyond those of genitives. The author distinguishes *casuel* RelAs, corresponding to genitives and displaying their interpretative properties, and *non casuel* or *épithète* RelAs, behaving differently. Therefore Valassis's (2001) initial hypothesis has turned out to be neither completely true nor entirely false: the author concludes that prototypical RelAs are equivalent to genitives, but this correspondence is not manifested by all the members of the category.

The two types of RelAs are argued to occupy different positions in the structure of the extended NP: *casuel* RelAs would be merged in the same positions of the related genitive phrases (with the ordering restrictions pointed out above)[14]; whereas *non casuel* or *épithète* RelAs do not occupy an argumental position. As for the linear order of the two types of RelAs, *non casuel* RelAs are said to appear immediately to the right of the noun, hence before *casuel* RelAs. This claim is based on examples like (30), where *évangélique* is said to be the Object (corresponding to the genitive form *des Evangiles* 'of Gospels') and *chrétien* the *non casuel* RelA:

(30)   l' enseignement chrétien   évangélique
        the teaching   Christian evangelical
        'evangelical Christian teaching'

Non casuel RelAs can accumulate like in (31):

(31)   a. les adjectifs   numéraux ordinaux
            the adjectives numeral   ordinal

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[14] RelAs can correspond to PPs, as well. Look at *française* 'French' in (21), which can be related to the locative PP *in France*; in this case the RelA is expected to occupy the structural position of the PP.

'ordinal numeral adjectives'
b. la parution   périodique annuelle
   the publication periodic   annual
   'annual periodic pubblication'

Valassis (2001) defines the way these adjectives accumulate as an *emboîtement hyponymique*, i.e. they would be ordered following a relation of hyponymy, the external adjective being an hyponym of the adjective to its left. Whenever this relation of inclusion is based on a clear taxonomy, this order cannot be reversed, as proved by the ungrammaticality of *les adjectifs ordinaux numéraux* 'the numeral ordinal adjectives'. Such an observation has been made also by Bosque & Picallo (1996) and Demonte (1999) for RelAs which realize neither arguments nor adjuncts and which would be ordered following an *incrustación sucesiva*.

Valassis's (2001) *non casuel* RelAs resemble Bosque's (1993) and Bosque & Picallo's (1996) Classificatory adjectives. Valassis (2001) speaks of hyponymy instead of sub-classification, but *non casuel* RelAs, like Classificatory adjectives, are argued to be placed immediately after the head noun. Valassis's (2001) *casuel* RelAs in turn seem to parallel Bosque's (1993) and Bosque & Picallo's (1996) Thematic adjectives: they are the most external RelAs and their order reflects the thematic hierarchy.

3.2.4 Catalan

A great contribution to the study of RelAs in Catalan is given by Picallo (1991, 2002). Picallo (1991), studying nominals and nominalizations in Catalan, analyses RelAs (referential adjectives in her terminology) concerning which roles they can express and with which nouns they can occur. A detailed study of RelAs is given by Picallo (2002), discussing RelAs as a class and their distribution in Catalan.

3.2.4.1 Picallo (2002)

Picallo (2002) shows that the account proposed for the syntax of RelAs in Spanish by Bosque & Picallo (1996) holds for Catalan, as well. As discussed above, it consists of three basic assumptions: a) ThAs are ordered according to the thematic hierarchy; b) ClAs

are ordered according to patterns of successive sub-specification; c) ClAs always precede ThAs. The following Catalan data are judged to be evidence in support of these claims.

Firstly, the examples in (32), taken from Picallo (2002, 1677) confirm that immediately to the right of the noun there is the adjective saturating the thematic function of THEME/PATIENT and corresponding to the object of the nominalization, while the external adjective expresses the AGENT and corresponds to the subject of the predicate:

(32)   a. la reforma educative governamental
           'governmental educational reform'
       b. la pesca marisquera francesa
           'French shellfish fishing'
       c. la producció cafetera nicaragüenca
           'Nicaraguan coffee production'

The author notices that this order is rigid and, whenever changed, it implies a different reading of the adjectives or ungrammaticality. In fact on one hand *reforma governamental educative* 'educational governmental reform' is considered acceptable only under the interpretation of 'a reform of the government made by educators' with the first adjectives expressing the THEME and the second one the AGENT. On the other hand **pesca francesa marisquera* 'shellfish French fishing' and **producció nicaragüenca cafetera* 'coffee Nicaraguan production' would be ungrammatical because the inversion of roles between the two adjectives is not conceptually admissible. Therefore, the position of ThAs determines their interpretation and the linear order is confirmed as in (33):

(33)   [Noun [ThA$_{Theme/Patient}$ [ThA$_{Agent}$]]]

Secondly, the distribution of ClAs in Catalan supports the idea of semantic inclusion in sub-specification. Examples in (34) show that ClAs are ordered such that the first ClA to the right of the noun is less restrictive then the second one and the second ClA is in turn less restrictive than the third one; in other words the ClA closer to the noun classifies it and the following ClAs further sub-classify it:

(34)   a. vocal alta posterior
           'back high vowel'

b. adjectiu qualificatiu elatiu postnominal
   'postnominal qualificative adjective'
c. construcció civil renaixentista
   'Reinassance civil building'

The reverse order is not accepted in the case of clear taxonomies (cf. *adjectiu postnominal elatiu qualificatiu* 'qualificative postnominal adjective'); in their absence every order is admissible, simply depending on how something is classified, so that a building can be classified according to its purpose and sub-classified according to the period in which it was built, as in (34c), or *vice versa* (*construcció renaixentista civil* 'civil Reinassance building').

Thirdly, when ThAs and ClAs co-occur, the order seems to be N-ClA(s)-ThA(s) as in Spanish. Picallo (2002, 1682) argues that if a ClA has to be added to a sequence of ThAs (e.g. *producció automobilística alemanya* 'German car production'), it can appear only before them, adjacent to the noun (35a). It cannot occur between them (35b) or as the most external adjective (35c):

(35) a. producció manual automobilística alemanya
         production manual car.ADJ   German
      b. *producció automobilística manual alemanya
         production car.ADJ   manual German
      c. *producció automobilística alemanya manual
         production car.ADJ   German manual
         'car production made by Germany through a manual process'

Therefore, Catalan data seem to confirm all of Bosque & Picallo's (1996) assumptions about ordering restrictions of RelAs.

3.2.5 Romanian

3.2.5.1 Marchis (2010)

Marchis (2010) represents a great contribution to the study of the syntax and morphology of RelAs in Romanian (and Spanish). Unfortunately she does not examine strings of RelAs closely, apart from strings involving two ThAs. Marchis (2010), like

Valassis (2001), is particularly interested in the parallelism between ThAs and genitives. The author claims that ThAs can be analysed on a par with prepositional genitive arguments, even if she shows that there are some properties which set RelAs apart from genitives[15]. Like genitive arguments, ThAs can express THEME and AGENT and their order is revealed by the example in (36) (Marchis 2010, 113):

(36)   a. producția automobilistică germană
            production car.ADJ German
        b. *producția germană automobilistică
            production German car.ADJ
            'German car production'

The author states that ThAs display a strict order in Romanian, with the ThA expressing THEME always closer to the head noun than the ThA expressing AGENT. Hence, this ordering restriction about two ThAs (already noted for Spanish, French and Catalan) appears to be valid across Romance languages.

3.3 English

When Romance RelAs are compared to their counterparts in Germanic languages, it is generally to show that they correspond to compounds. For example Brinker (1974) parallels Italian *incidente stradale* with English *railway-accident*, German *Eisenbahnunfall* and Dutch *spoorwegongeluk*. Studying RelAs in Italian, he claims that N+RelA constructions form a special 'free compound' and uses their correspondence to compounds in Germanic languages as further evidence in favour of this proposal.

This section does not deal with compounds, but with non-lexicalized syntactic constructions containing two RelAs. The goal is to look for ordering correspondences

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[15] Among these properties there is the fact that Romanian does not admit the co-occurrence of two genitive phrases, as (i) shows, but two RelAs, unlike genitives, can modify the same noun without resulting in ungrammaticality, as (36) above reveals:

(i)   *portretul lui Aristotel al lui Rembrandt
            the portray of Aristotel of Rembrandt
            'Aristotel's portray by Rembrandt'

For the other differences see Marchis (2010, 113 ff.); the author discusses the fact that ThAs, unlike genitives, cannot occur in complex event nominals or control purpose clauses.

between Romance and Germanic languages. English will be considered as the representative of Germanic languages.

There are at least two significant contributions to the study of RelAs in English: Levi (1978) and Rae (2010), briefly discussed in the previous chapter, in the section devoted to the semantics of RelAs. I take them up again here.

Rae (2010) in particular offers an interesting account for ordering restrictions of RelAs in English; it will be discussed in detail, it being important for the development of the research plan and hypotheses that follow. As for Levi (1978), she does not deal with the syntax of multiple RelAs strings, but makes an observation which has come up many times in the description of order constraints of RelAs in Romance languages. It regards the position of the modifier expressing THEME, which is claimed to be closer to the head noun than any other modifier in English. It does not matter if it is a RelA or a noun, as the following examples reveal (Levi 1978, 204):

(38)   a. industrial water pollution
        a'. *water industrial pollution
        b. student monetary demands
        b'. *monetary student demands

The hierarchy proposed by Rae (2010), which is going to be discussed, is in line with this claim.

3.3.1 Rae (2010)

Rae (2010) observes that there are some ordering restrictions among modifiers inside complex nominals (CNs) in English. The author suggests that such modifiers (which can be nouns or RelAs) are ordered depending on the thematic relationship existing between the head noun and the modifiers themselves. Therefore, she combines modifiers expressing different thematic relations to see whether their thematic role influences their position in the sequence.

The author chooses to consider only end-stress CNs since this feature seems to correlate with syntactic-like constructions; the goal is obviously to avoid CNs originated in the lexicon which form compounds and are invisible to syntactic processes. In many cases a preferred order between the two modifiers emerges. She does not test every

possible combination of thematic relations because she can rely on the transitivity rule, according to which if A precedes B and B precedes C, then also A precedes C. By proceeding so, Rae (2010) is able to give a hierarchy of thematic relations at the basis of the ordering restrictions she notices.

Rae (2010) considers ten thematic relations: MATERIAL (*metal column*), MEASURE (with the subcategories of MEASURE-Numerical, e.g. *litre container*, and MEASURE-Duration, e.g. *3-year computer*), TIME (*November fog*), LOCATION (*bedroom table*), BENEFICIARY (*world-peace concert*), SOURCE (*olive oil*), INSTRUMENT (*knife wound*), MATTER (*financial report*), THEME, AGENT[16]. The following examples are all taken from Rae (2010) and give an idea of the kind of data she uses and of her way of proceeding. Every example is followed by the order of thematic relations the example itself reveals:

(39)   plastic 'sink   kitchen 'sink   a. plastic kitchen 'sink
                                                          b. *kitchen plastic 'sink
                                                          MATERIAL > LOCATION

(40)   autumnal 'rain   London 'rain   a. autumnal London 'rain
                                                              b. *London autumnal 'rain
                                                            TIME > LOCATION

(41)   concrete 'snack   morning 'snack   a. concrete morning 'snack
                                                              b. *morning concrete 'snack
                                                            MATERIAL > TIME

Despite the difficulty of combining MATERIAL and TIME, these examples suggest the partial hierarchy MATERIAL > TIME > LOCATION. It can be implemented adding BENEFICIARY and MEASURE:

(42)   garden 'sanctuary bird 'sanctuary   a. garden bird 'sanctuary
                                                             b. *bird garden 'sanctuary
                                                            LOCATION > BENEFICIARY

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[16] She states that this selection of thematic relations is conditioned by three main considerations: first, it was necessary to exclude evidently lexical constructions; second, Rae (2010) looks for relations closely corresponding to those of Schweikert's (2005) PPs; third, similar relations are not considered separately since order preference does not result from their combination.

(43) mile 'race   lake 'race   a. *mile lake 'race
                                              b. lake mile 'race
                                              LOCATION > MEASURE

(44) charity 'race   mile 'race   a. charity mile 'race
                                              b. *mile charity 'race
                                              BENEFICIARY > MEASURE

After examples (39)-(44), the hierarchy is MATERIAL > TIME > LOCATION > BENEFICIARY > MEASURE. Rae (2010) tries to add the relation SOURCE to it, even if its position does not seem to be clear:

(45) 3-minute 'timer   supermarket 'timer a. *3-minute supermarket 'timer
                                              b. supermarket 3-minute 'timer
                                              SOURCE > MEASURE

(46) factory 'coffee   charity 'coffee   a. ?factory charity 'coffee
                                              b. ?charity factory 'coffee
                                              ?SOURCE / ?BENEFICIARY

(47) canteen 'sandwich   school 'sandwich   a. *canteen school 'sandwich
                                              b. school canteen 'sandwich
                                              LOCATION > SOURCE

On the basis of examples (45)-(47) the hierarchy becomes MATERIAL > TIME > LOCATION > ?SOURCE/?BENEFICIARY > MEASURE. SOURCE appears to occur between LOCATION and MEASURE, but its relative position with respect to BENEFICIARY is difficult to judge. A further step is exemplified in (48)-(49):

(48) 3-hour 'exam   computer 'exam   a. 3-hour computer 'exam
                                              b. *computer 3-hour 'exam
                                              MEASURE > INSTRUMENT

(49) finance 'exam   computer 'exam   a. *finance computer 'exam
                                              b. computer finance 'exam
                                              INSTRUMENT > MATTER

INSTRUMENT and MATTER result to be low in the hierarchy, close to the head noun. Hence the sequence is augmented as follows: MATERIAL > TIME > LOCATION > ?SOURCE/?BENEFICIARY > MEASURE > INSTRUMENT > MATTER. Finally, Rae (2010)

considers deverbal CNs in order to show the position of THEME and AGENT with respect to the other thematic relations:

(50)   fly 'fishing   trout 'fishing   a. fly trout 'fishing
                                                      b. *trout fly 'fishing
                                                      INSTRUMENT > THEME

(51)   fly trout 'fishing   Japanese trout   a. *fly Japanese trout 'fishing
                                  'fishing   b. Japanese fly trout 'fishing
                                                        AGENT > INSTRUMENT

The data above show that AGENT and THEME are separated by the relation INSTRUMENT, the former being higher and the latter lower. Rae (2010) also tries to determine the exact position of AGENT in the hierarchy, since there are other six relations higher than INSTRUMENT:

(52)   charity food   presidential food   a. *charity presidential food 'production
        'production   'production   b. presidential charity food 'production
                                              AGENT > BENEFICIARY

(53)   winter food   Japanese food   a. winter Japanese food 'production
        'production   'production   b. *Japanese winter food 'production
                                              TIME > AGENT

(54)   office 'debate   clerical 'debate   a. office clerical 'debate
                                              b. *clerical office 'debate
                                            LOCATION > AGENT

The final hierarchy given by Rae (2010) is reported in (55), where THEME is placed together with MATTER and AGENT with SOURCE. THEME is considered the same category as MATTER; the difference would depend on the type of head noun, THEME occurring with deverbal nouns and MATTER with simple nouns. Similarly AGENT is considered parallel to SOURCE, the former modifying a deverbal noun and the latter a simple noun. Example (46) above does not give enough evidence to ascertain the position of SOURCE with respect to BENEFICIARY, but if SOURCE is assumed to occupy the same place as AGENT, the problem is solved. Hence the hierarchy in (55):

(55)   MATERIAL > TIME > LOCATION > AGENT/SOURCE > BENEFICIARY > MEASURE >
       INSTRUMENT > THEME/MATTER > N°   (Rae 2010, 143)

According to Rae (2010), RelAs are merged as nPs in what she calls *complex nominal functional domain*: it is made up of functional projections hosting RelAs in specifier position. The head of each FP probably contains the semantic features which correspond to the semantic relation expressed by the RelA itself (consequently there would be MatterP, LocativeP, TemporalP and so on). The hierarchy of FPs corresponds to the hierarchy of RelAs in (55). The nP is said to raise to a KP to check its thematic feature[17] and subsequently to a RelAP to receive the adjectival suffix: this area of the structure is called *complex nominal checking domain*. If there is no adjectival suffix available, an empty preposition is inserted to license the modifier, which appears at the surface as a noun:
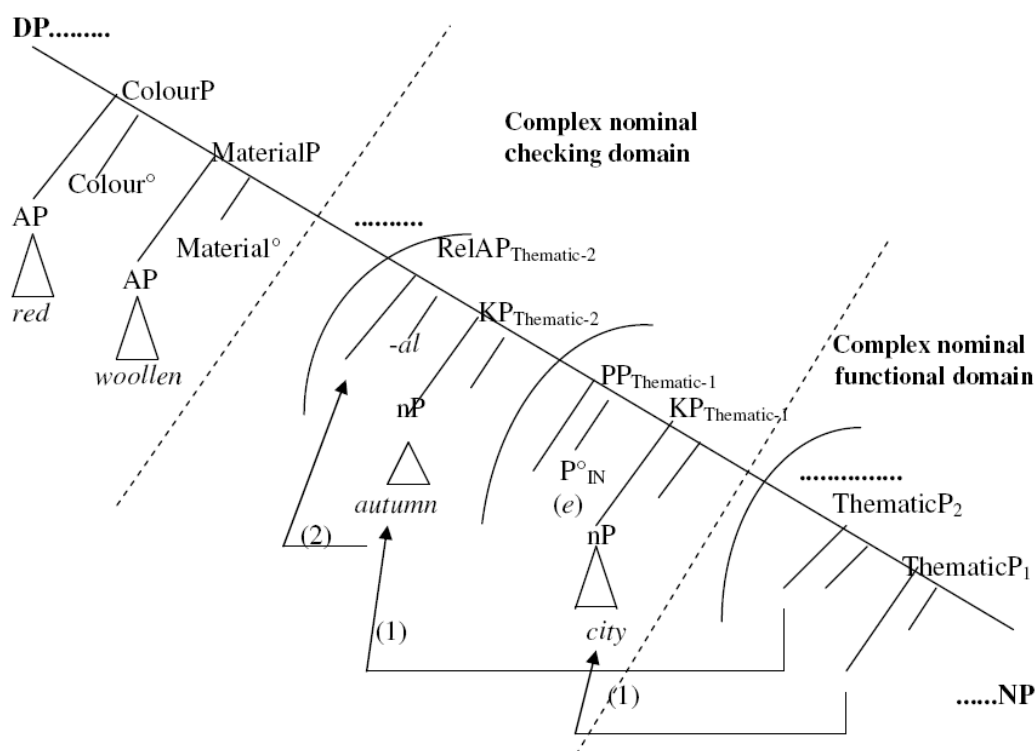
Fig. 3.2. Rae's (2010) derivation of ordering restrictions of RelAs

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[17] Such a movement preserves the order of Merge of RelAs.

This derivation has the advantage that it accounts for both nominal and adjectival modifiers and their ordering restrictions. Moreover Rae (2010, 104) mentions «the theoretical advantage of being able to account for the paraphrasing of most complex nominals with a preposition». But this topic will be further discussed in the fifth chapter when dealing with the relative order of RelAs and PPs.

If Rae's (2010) proposal is worth discussing in itself, it becomes even more interesting when compared with Schweikert's (2005) and Takamine's (2010) studies on ordering restrictions of modifiers in the clause. Recall from the first chapter that Schweikert (2005) and Takamine (2010) analyse the order of PPs in German and in Japanese, respectively, and claim that, despite an apparent free order, these modifiers obey strict ordering restrictions, since they enter a rigid hierarchy. Schweikert's and Takamine's hierarchies of thematic relations for PPs in the clause are reported again in (56) and (57):

(56)   EVIDENTIAL > TEMPORAL > LOCATIVE > COMITATIVE > BENEFACTIVE > REASON >
         SOURCE > GOAL > MALEFACTIVE > INSTRUMENTAL /MEANS/ PATH > MATTER >
         MANNER   (Schweikert 2005, 132)

(57)   TEMPORAL > LOCATIVE > COMITATIVE > REASON > SOURCE > GOAL >
         INSTRUMENTAL/MEANS > MATERIAL > MANNER   (Takamine 2010, 94)

Rae (2010) herself makes the comparison between her hierarchy and Schweikert's (2005) and Takamine's (2010) ones. She notes that the three hierarchies closely overlap, even if they do not coincide. In fact Rae's and Schweikert's hierarchies diverge regarding the relative order of BENEFICIARY and SOURCE, while Rae's and Takamine's hierarchies diverge concerning the position of MATERIAL, which is the highest relation for Rae (2010), but one of the lowest for Takamine (2010). But Rae (2010) gives some possible explanations for such divergences.

As for the relative position of BENEFICIARY and SOURCE, Rae (2010) does not have positive evidence in favour of one of the two linearizations and the placement of SOURCE is based on its parallelism with AGENT. The author recognizes that this could be a mistake; hence the different position attributed to SOURCE cannot be used to invalidate the idea of a universal hierarchy of thematic relations capturing ordering restrictions of modifiers both in CNs and in the clause.

Regarding the placement of MATERIAL in the hierarchy, Rae (2010) states that the relation considered by Takamine under the label MATERIAL is quite different from hers[18]. The data would not be comparable since Rae (2010, 117) provides examples like *steel bridge* and *plastic timer*, whereas Takamine (2010, 53) uses this label referring to examples of the type in (58), which are closer to a MADE UP OF relation or a SOURCE-extracted one, according to Rae (2010):

(58)   Taro-ga   sake-o   kome-kara   tsukuru
       Taro-NOM   sake-ACC   rice-MAT   make
       'Taro makes sake from rice'

This parallelism between the distribution of modifiers in the nominal domain and the distribution of modifiers in the clause is striking, since it establishes a correlation across different domains. I will take it up again in chapter 5.

Before reconsidering the main studies on the syntax of RelAs, Rae's (2010) comments on Bosque & Picallo's (1996) analysis deserve to be considered. Bosque & Picallo (1996), as seen, study the syntax of RelAs in Spanish, but make some assumptions on their syntax in English, as well. The order of RelAs in English is suggested to be the mirror image of that in Spanish, being the relative distance of RelAs from the head noun unvaried. Hence, they suggest the linearization reported in (16), repeated here as (59):

(59)   Noun C-adjective Th-adjective   SPANISH
       Th-adjective C-adjective Noun   ENGLISH

Rae (2010) claims that her data do not seem to be in line with their proposal. Supposing that TIME, LOCATION, SOURCE, BENEFICIARY, INSTRUMENT and MATTER can be considered under Bosque & Picallo's label of ClAs[19], and being THEME and AGENT ThAs, the result is the following (Rae 2010, 151):

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[18] Furthermore Rae (2010) notes that MATERIAL also appears in Scott's (2002) hierarchy of attributive QAs; hence an adjective expressing MATERIAL could be not a RelA at all.

[19] Rae (2010) is very cautious in outlining this correspondence since Bosque & Picallo (1996) hint to the fact that «some of the semantic links that have been proposed between the noun and a C-adjective come close to current thematic role labels» (Bosque & Picallo 1996, 361), but they do not explicitly label their ClAs in terms of thematic relations. They only mention some of these thematic relations, i.e. Location, Cause, Goal, Benefactive, Instrumental, Source and Purpose. Hence, the parallelism remains somehow implicit.

(60)   MATERIAL > TIME > LOCATION > AGENT/SOURCE > BENEFICIARY > MEASURE >
               ClA   ClA   ThA ClA   ClA
       INSTRUMENT > THEME/MATTER > N
            ClA   ThA   ClA

If the correspondences assumed are right, this means that the distribution of RelAs cannot be described on the basis of their belonging to the group of ThAs or to that of ClAs, since neither ThAs nor ClAs appear to be a homogeneus group in terms of distribution. The relations THEME and AGENT, expressed by ThAs, occur among relations corresponding to ClAs. Even if it is not clear whether the position closest to the head noun lodges a ThA (THEME) or a ClA (MATTER), there appear to be ClAs higher than THEME, but lower than AGENT, and ClAs higher than AGENT, as well. This problem will be reconsidered in the last section of the present chapter, where the hypotheses presented so far will be discussed.

3.4 Discussion

Let us examine the hypotheses developed to account for the syntax of RelAs one by one, starting from Bosque & Picallo's (1996) generalizations. Their analysis of ordering restrictions of ThAs as based on the thematic hierarchy is confirmed by a large amount of data: a ThA expressing THEME precedes a ThA expressing AGENT not only in Spanish, but also in other Romance languages, here exemplified by Italian, French and Romanian[20]:

(61)   a. consumo alcohólico juvenil   (Spanish)
          consumption alcohol.ADJ juvenile
       b. #consumo juvenil alcohólico
          consumption juvenile alcohol.ADJ
          'juvenile alcohol consumption'

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[20] Sequences in (b) are not marked as ungrammatical since they can be recovered under constrained pragmatic conditions (see chapters 4 and 5). However, there is a clear asymmetry between the full acceptability of sequences in (a) and the strong marginality of sequences in (b). This is the reason why sequences in (a) will be considered to be the unmarked order of RelAs in Romance and sequences in (b) will be considered highly marked, even if not always ungrammatical. The symbol '#' used to mark sequences in (b) refers to the fact that they are semantically inappropriate in an unmarked context. This symbol will be used throughout the present dissertation.

(62) a. descrizioni paesaggistiche manzoniane   (Italian)
          descriptions landscape.ADJ Manzoni.ADJ
       b. #descrizioni manzoniane paesaggistiche
          descriptions Manzoni.ADJ landscape.ADJ
          'Manzoni's landscape descriptions'

(63) a. exploration spatiale américaine   (French)
          exploration space.ADJ American
       b. #exploration américaine spatiale
          exploration American space.ADJ
          'American space exploration'

(64) a. producţie vinicolă românească   (Romanian)
          production wine.ADJ Romanian
       b. #producţie românească vinicolă
          production Romanian wine.ADJ
          'Romanian wine production'

The assumption that the ThA expressing THEME is closer to the head noun than the ThA expressing AGENT is shared by all the other analyses of Romance RelAs considered in the present chapter (Demonte 1999; Valassis 2001; Picallo 2002; Marchis 2010). Moreover it is part of Levi's (1978) and Rae's (2010) accounts for English. What linguists do not agree on is the position of a RelA absorbing the THEME role with respect to RelAs expressing relations other than AGENT. Turning back to Spanish, for example, Bosque & Picallo (1996) argue that ThAs (among which THEME) always follow CAs, whereas Demonte (1999) suggests that a RelA expressing THEME has to be closer to the noun than any RelA, independently from the relation expressed by the co-occurring RelA. The examples on which these statements are based are the following, where the THEME is underlined:

(65) una producción manual <u>cestera</u>   (Bosque & Picallo 1996, 366)
       a production manual basket.ADJ
       'a manual production of baskets'

(66) análisis <u>celular</u> microscópico   (Demonte 1999, 170)
       analysis cellular microscopic

'microscopic cellular analysis'

There appear to be lots of data in favour of a fix position of the THEME absorber, i.e. adjacent to the noun, across Romance languages and even in Spanish:

(67) a. reconstrucción industrial posbélica   (Spanish)
          reconstruction industrial post-war.ADJ
      b. #reconstrucción posbélica industrial
          reconstruction post-war.ADJ industrial
          'post-war industrial reconstruction'

(68) a. blocco stradale domenicale   (Italian)
          block road.ADJ Sunday.ADJ
      b. #blocco domenicale stradale
          block Sunday.ADJ road.ADJ
          'Sunday road block'

(69) a. traductions bibliques médiévales   (French)
          translations biblical medieval
      b. #traductions médiévales bibliques
          translations medieval biblical
          'medieval biblical translations'

(70) a. producţie ceramică renascentistă   (Romanian)
          production ceramic Renaissance.ADJ
      b. #producţie renascentistă ceramică
          production Renaissance.ADJ ceramic
          'Renaissance ceramic production'

In all the examples above there is a ThA expressing THEME followed by a CA (expressing TIME). Hence, at a first glance the data in (67)-(70) seem to suggest the tendency for the THEME to be placed close to the head noun. If this was proved to be the default option of Spanish, as well, it would be obviously a problem for Bosque & Picallo's (1996) claim that ClAs are always closer to the noun than ThAs. It would show that if one combines a ThA and a CA, their relative position does not depend on their belonging to the group of ThAs or CAs. But the question can be solved only looking at a larger amount of data; this will be done in the next chapter. Naturally, if data confirm such a position of

THEME in Spanish, as in other Romance languages, sequence (65) given by Bosque & Picallo (1996) will have to be explained.

Levi (1978) and Rae (2010) argue that the RelA expressing THEME has to be adjacent to the noun in English. If this generalization is demonstrated to be right also for Romance languages, as it seems, it could lead to think of a possible parallelism in the order of modifiers between Romance languages and English. It could suggest that, despite RelAs are postnominal in Romance languages, but prenominal in Germanic languages, their relative position with respect to the head noun might be the same. For the moment it is just a speculation, but this possibility will be explored in the next chapters.

Concerning ClAs, Bosque & Picallo (1996) identify a successive sub-specification. Similarly, Demonte (1999) notes an *incrustación sucesiva* of adjectives and Valassis (2001) speaks of an *emboîtement hyponymique*. It is worth recalling that these accounts imply that the order of ClAs is fixed when a clear taxonomy is involved, like in (71), but free and dependent on speaker's way of classifying things when such a taxonomy does not exist, like in (72)[21]:

(71) a. coma alcohólico metílico   vs. *coma metílico alcohólico
         'methilic alcoholic coma'   (Bosque & Picallo 1996, 366)
      b. productos frutales cítricos   vs. *productos cítricos frutales
         'citric fruit products'   (Demonte 1999, 169)
      c. adjectifs numéraux ordinaux vs. *adjectifs ordinaux numéraux
         'ordinal numeral adjectives'   (Valassis 2001, 305)

(72) a. literatura medieval francesa / literatura francesa medieval
         'French medieval literature' / 'medieval French literature'
                                                (Bosque & Picallo 1996, 366)
      b. televisión digital europea / televisión europea digital
         'European digital television' / 'digital European television'
                                                (Demonte 1999, 170)

Only Demonte (1999) recognizes the existence of cases in which the order of two ClAs seems to be constrained, but the author ascribes this ordering restriction to the tendency for some adjectives to form stable lexical constructions with the noun they

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[21] For a deeper analysis of these examples, go back to the discussion of the single studies.

modify. However, cases where two ClAs can be combined only in a fixed order are widespread in Romance languages:

(73) a. disputas   teológicas medievales   (Spanish)
          disputations theological medieval
      b. #disputas   medievales teológicas
          disputations medieval   theological
          'medieval theological disputations'

(74) a. traffico urbano mattutino   (Italian)
          traffic urban morning.ADJ
      b. #traffico mattutino urbano
          traffic morning.ADJ urban
          'morning urban traffic'

(75) a. bombardement aérien nocturne   (French)
          bombardment aerial nocturnal
      b. #bombardement nocturne aérien
          bombardment nocturnal aerial
          'nocturnal air bombarment'

(76) a. scandal farmaceutic elveţian   (Romanian)
          scandal pharmaceutical Swiss
      b. #scandal elveţian farmaceutic
          scandal Swiss pharmaceutical
          'Swiss pharmaceutical scandal'

Options (a) are the only (unmarked) options available. However, these order constraints would not be expected under the hypothesis illustrated above, since they do not apply to taxonomies. For example it seems plausible to classify both a pharmaceutical scandal according to the place where it took place and a Swiss scandal according to what it was about, just as it is possible to classify the medieval literature with respect to the place where it was written or to classify the French literature according to the period in which it was written. Therefore, examples (73)-(76) appear difficult to explain under the present hypothesis, since the only possible solution in this picture is to invoke lexicalization. It seems that a piece of the puzzle is missing.

Hence, the main proposals on the syntax of RelAs in Romance languages have turned out to present some shortcomings. Rae's (2010) hypothesis, according to which modifiers in English CNs are ordered on the basis of the thematic relations they express, remains to be explored to see whether it might account for ordering restrictions of RelAs in Romance languages, as well. Next chapter will be entirely devoted to answering this question.

ORDERING RESTRICTIONS IN THE SYNTAX OF RELATIONAL ADJECTIVES

The accounts for the syntax of RelAs in Romance languages discussed in the previous chapter have been proved not to capture entirely the ordering restrictions of these modifiers. Therefore, a new hypothesis will be explored. The question is whether RelAs could be ordered according to the thematic relationship they establish with the head noun. This hypothesis has been put forward by Rae (2010) to account for ordering restrictions of modifiers in CNs in English. It will be verified if such a claim can be extended to RelAs in Romance languages.

The whole chapter is devoted to answer this question. The first section illustrates the hypothesis as it was developed by Bortolotto (2012) for RelAs in Italian and provides some evidence to support this claim. The second section explains how data have been collected: first of all, the hypothesis has been further tested in Italian through a questionnaire on RelA order submitted to native speakers. Its results are discussed in section 3[1]. The same tool has been used to collect data in Spanish: the results of this questionnaire are presented in section 4. The working hypothesis has been tested on RelAs in French (section 5), Catalan (section 6) and Romanian (section 7), as well. A brief summary of the key points of this analysis concludes the chapter.

4.1 Hypothesis to test

As told in the introduction above, the goal of this chapter is to see if Rae's (2010) account holds for Romance languages, as well. Therefore the working hypothesis is that the order of RelAs in the Romance languages depends on the thematic relationship they have with the head noun. This claim has been put forward for the first time by Bortolotto (2012) and further supported by Bortolotto (2015) regarding Italian. The way of proceeding is the same as Rae's (2010). In order to test the prediction, RelAs expressing

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[1] I really thank professor Stefano Campostrini (Department of Economics, University of Venice) for his help in the statistical analysis of the data collected.

different thematic relations are combined two by two. Only RelAs expressing detectable thematic relations are obviously considered.

Before providing the examples on which the claim is based, the selection of thematic relations investigated will be discussed.

4.1.1 The selection of thematic relations

Bortolotto (2012, 2015) considers six relations: AGENT, THEME, MATTER, TIME, LOCATION and INSTRUMENT. They are six out of the ten thematic relations examined by Rae (2010): MATERIAL, SOURCE, BENEFICIARY and (Numerical/ Duration) MEASURE are excluded. This choice is justified by the following reasons.

As for MATERIAL, there are many adjectives expressing this relation in Italian, e.g. in *statua lignea* 'wooden statue', *manufatto bronzeo* 'bronze artefact', *superficie marmorea* 'marble surface'. The problem is that MATERIAL appears both in Rae's (2010) hierarchy of RelA/noun modifiers and in Scott's (2002) hierarchy of attributive QAs:

(1)   **MATERIAL** > TIME > LOCATION > AGENT/SOURCE > BENEFICIARY > MEASURE >
        INSTRUMENT > THEME/MATTER > N°   (Rae 2010, 143)

(2)   ORDINAL NUMBER > CARDINAL NUMBER > SUBJECTIVE COMMENT > [?]EVIDENTIAL >
        SIZE > LENGTH > HEIGHT > SPEED > [?]DEPTH > WIDTH > WEIGHT > TEMPERATURE >
        ?WETNESS > AGE > SHAPE > COLOUR > NATIONALITY /ORIGIN > **MATERIAL** >
        COMPOUND ELEMENT > N°   (Scott 2002, 114)

It is Rae's higher modifier and Scott's lower one; hence, it appears on the boundary between the relational and the qualifying modification. It could be the case that an adjective expressing MATERIAL act as a RelA or as a QA depending on the context. The denominal nature of adjectives expressing MATERIAL is not a warranty of their belonging to the class of RelAs, since the denominal character of an adjective has been proved not to be a sufficient condition to be relational (see Ch.2, §2.5.1.1). Moreover it seems difficult to provide Italian examples parallel to Rae's (2010) *plastic kitchen sink* or *metal bedroom floor* which would be evidence in favour of the placement of MATERIAL higher than LOCATION. Rae (2010) herself has some problems in combining MATERIAL with TIME

since nouns referring to event cannot be made out of something. These evaluations have led to leave MATERIAL aside.

The range of semantic interpretations of RelAs in Romance languages seems to be generally less wide than that of modifiers (which can be both RelAs and nouns) in CNs in English. This is the reason why SOURCE, FOR-BENEFICIARY and MEASURE are not considered.

Regarding SOURCE, Rae (2010) gives examples where the modifier refers to the source from which the object denoted by the head noun is produced (e.g. *olive oil, apple juice*) and examples where the modifier denotes the physical origin of the head noun (e.g. *supermarket coffee, garden vegetables, factory computer, canteen sandwich*). On the one hand there do not seem to exist examples of the first type in Italian, being the source preferably expressed by a PP (e.g. *olio d'oliva* 'olive oil', *succo di mela* 'apple juice'). On the other hand it seems more likely to find examples of the second type: e.g. *verdure ortolane* 'garden vegetable', *brezza marina* 'sea breeze', *proteine animali* 'animal proteins', *marmo carrarese* 'Carrara marble' could be analysed as involving a RelA expressing SOURCE. But they do not appear to be fully comparable with Rae's examples of the *canteen sandwich* type. Hence, this relation is excluded since RelAs do not perfectly cover it in Italian and the comparison between Italian and English could be misleading.

Rae's (2010) FOR-BENEFICIARY appears to be problematic *per se*. She provides examples like *world-peace concert* and *charity event*, whose modifiers are not believed to express BENEFICIARY, but rather PURPOSE. The boundary between the two relations can be subtle and arises some problems. The author also gives examples like *avian sanctuary*, which seems more suitable to exemplify the BENEFICIARY relation. Both types of examples can be found in Italian: PURPOSE-like RelAs (e.g. *spray nasale* 'nasal spray', *colloquio lavorativo* 'job interview', *equipaggiamento bellico* 'war equipment') and more BENEFICIARY-like RelAs (e.g. *rifugio canino* 'dog shelter', *letteratura infantile* 'children's literature', *aree pedonali* 'pedestrian zones'). Rae (2010) mainly uses *world-peace* and *charity* as BENEFICIARY modifiers in her combinatory tests. Not sharing the choice of classifying these modifiers as expressing BENEFICIARY, this relation is put aside.

Finally MEASURE is a double-sided relation for Rae (2010), since modifiers in CNs in English can express both a numerical measure (e.g. *5-metre carpet*, *litre container*, *mile race*) and a duration (*3-year computer*, *3-minute timer*, *eight-hour activity*). The first meaning seems to be excluded for RelAs in Italian, whereas the second one is displayed

by RelAs in examples like *piano quinquennale* 'five-year plan', *soggiorno settimanale* 'week's stay', *lavoro stagionale* 'seasonal job'. This only partial correspondence is the reason of the exclusion.

Therefore six relations remain, i.e. AGENT, THEME, MATTER, TIME, LOCATION and INSTRUMENT. It must be said that RelAs in Italian can express many other relations like POSSESSOR (e.g. *proprietà governative* 'government properties', *patrimonio famigliare* 'family estate'), EXPERIENCER (e.g. *amore materno* 'maternal love', *fiducia cristiana* 'Christian faith'), CAUSE (e.g. *infezione batterica* 'bacterial infection', *stress lavorativo* 'job stress'), MADE UP OF (e.g. *catene molecolari* 'molecular chains', *composizione floreale* 'flower arrangement'). But the choice of limiting the number/type of relations to those mentioned above is in line with the main goal of the research, i.e. to obtain results comparable to Rae's (2010) ones.

4.1.2 Combining Relational adjectives

The combinations of two RelAs expressing different thematic relations are supposed to be judged in unmarked environments where there is a clear asymmetry between the two possible orders. As already clarified in the previous chapter (fn.20), one of the two sequences appears to be fully acceptable, whereas the opposite one is felt as strongly marginal, even if it cannot be said to be totally ungrammatical, since it can be recovered under constrained pragmatic conditions. This is why this second, marginal, order is marked with the symbol '#' (instead of '*') referring to its inappropriateness in an unmarked context. Look, for example, at (3):

(3)   a. rivendicazioni femminili   novecentesche
        demands   woman.ADJ 20th-century.ADJ
    b. #rivendicazioni novecentesche   femminili
        demands 20th-century.ADJ woman.ADJ
        '20th-century women's demands'

(3a) appears to be largely preferred over (3b), which is marginal. However, the acceptability of (3b) highly increases if one is talking about 20th-century demands and wants to further specify that he refers to 20th-century demands made by women; i.e., if the 20th-century demands represent given information in that context and the fact they are

made by women is the new information. These readings have to be excluded since the RelA expressing new information is forced to be the most external one and this can obscure the basic unmarked order so that all combinations seem to be possible. When reading the sequences, a comma intonation has to be avoided, as well.

The following examples are employed by Bortolotto (2015) to show step-by-step how the final hierarchy of thematic relations is obtained. Most of them involve deverbal nouns, which are said to inherit their argumental structure from the corresponding verb. In fact it is easier to make relations like AGENT and THEME available by selecting deverbal nominalizations as head nouns and relations like TIME, LOCATION and INSTRUMENT (corresponding to adjuncts) appear to be more widely available, as well.

In the previous chapter the position of a RelA expressing THEME has been closely examined across Romance languages. So let us start combining a RelA expressing THEME with another RelA expressing AGENT, TIME or LOCATION:

	THEME	**AGENT**	
(4)	esplorazione lunare 'lunar exploration'	esplorazione americana 'American exploration'	a. esplorazione lunare americana exploration lunar American b. #esplorazione americana lunare exploraration American lunar 'American lunar exploration'

	THEME	**AGENT**	
(5)	persecuzioni ebraiche 'Jewish persecutions'	persecuzioni naziste 'Nazi persecutions'	a. persecuzioni ebraiche naziste persecutions Jewish Nazi b. #persecuzioni naziste ebraiche persecutions Nazi Jewish 'Nazi Jewish persecutions'

$\rightarrow$ **THEME > AGENT**

	THEME	**TIME**	
(6)	blocco stradale 'roadblock'	blocco domenicale 'Sunday block'	a. blocco stradale domenicale block road.ADJ Sunday.ADJ b. #blocco domenicale stradale block Sunday.ADJ road.ADJ 'Sunday roadblock'

(7)　abbassamento　abbassamento　a. abbassamento termico　　　　notturno
　　　termico　　　　notturno　　　　drop　　　　temperature.ADJ nocturnal
　　　'temperature　　'nocturnal drop'　b. #abbassamento notturno termico
　　　drop'　　　　　　　　　　　　　　drop　　　　nocturnal temperature.ADJ
　　　　　　　　　　　　　　　　　　　'nocturnal temperature drop'

→ THEME > TIME

THEME　　　　　LOCATION
(8)　circolazione　circolazione　a. circolazione monetaria europea
　　　monetaria　　europea　　　　circulation　monetary European
　　　'monetary　　'European　　b. #circolazione europea　monetaria
　　　circulation'　circulation'　　circulation　European monetary
　　　　　　　　　　　　　　　　　'European monetary circulation'

(9)　consumo　　　consumo　　　a. consumo　　energetico domestico
　　　energetico　　domestico　　　consumption energy.ADJ domestic
　　　'energy　　　'home　　　　b. #consumo　　domestico energetico
　　　consumption'　consumption'　consumption domestic　energy.ADJ
　　　　　　　　　　　　　　　　　'home energy consumption'

→ THEME > LOCATION

The result of combining THEME and AGENT, as expected, is that THEME is closer to the head noun than AGENT. It further confirms the claim according to which two ThAs are ordered following the thematic hierarchy. This assumption has been shown to be widespread in the literature and also supported by data from several Romance languages (Ch.3). Examples (6)-(9) reveal that THEME also precedes TIME and LOCATION in Italian. The position of THEME with respect to non-thematic RelAs has turned out to be a matter of debate in the literature. The conclusion reached at the end of the previous chapter was that a RelA expressing THEME has to be closer to the head noun than any other RelA. The examples above show that this is true for Italian. Hence, our starting point is the sequence in (10):

(10)　N° > THEME > { AGENT / TIME / LOCATION }

If the relation MATTER is considered in place of the relation THEME, the result is the same: a RelA expressing MATTER is strictly adjacent to the noun:

	MATTER	**AGENT**	

(11)	politica demografica 'demographic policy'	politica fascista 'Fascist policy'	a. politica demografica fascista
			   policy demographic Fascist
			b. #politica fascista demografica
			   policy Fascist demographic
			   'Fascist demographic policy'

	MATTER	**AGENT**	

(12)	scoperte geografiche 'geographical discoveries'	scoperte portoghesi 'Portuguese discoveries'	a. scoperte geografiche portoghesi
			   discoveries geographical Portuguese
			b. #scoperte portoghesi geografiche
			   discoveries Portuguese geographical
			 'Portuguese geographical discoveries'

→ **MATTER > AGENT**

	MATTER	**TIME**	

(13)	dibattito politico 'political debate'	dibattito postbellico 'post-war debate'	a. dibattito politico postbellico
			   debate political post-war.ADJ
			b. #dibattito postbellico politico
			   debate post-war.ADJ political
			   'post-war political debate'

	MATTER	**TIME**	

(14)	scoperte geografiche 'geographical discoveries'	scoperte rinascimentali 'Renaissance discoveries'	a. scoperte geografiche rinascimentali
			   discoveries geographical Renaissance.ADJ
			b. #scoperte rinascimentali geografiche
			   discoveries Renaissance.ADJ geographical
			   'Renaissance geographical discoveries'

→ **MATTER > TIME**

	MATTER	**LOCATION**	

(15)	controlli sanitari 'health controls'	controlli aeroportuali 'airport controls'	a. controlli sanitari aeroportuali
			   controls health.ADJ airport.ADJ
			b. #controlli aeroportuali sanitari
			   controls airport.ADJ health.ADJ
			   'airport health controls'

(16)	crisi demografica 'demographic crisis'	crisi europea 'European crisis'	a. crisi demografica europea
			   crisis demographic European
			b. #crisi europea demografica
			   crisis European demographic

'European demographic crisis'

→ MATTER > LOCATION

There seem to be no cases where the RelA expressing MATTER is separated from the noun by another RelA; hence the order is (17), parallel to (10) for THEME:

(17) N° > MATTER > {AGENT/TIME/LOCATION}

Since both THEME and MATTER precede AGENT, TIME and LOCATION, their relative position should be tested. But, at a first glance, there seems to be no way of combining them to define their relative order. The presence of a RelA expressing one of these two relations appears to exclude the possibility of having a second RelA expressing the other. Rae (2010) puts them in the same low position in her hierarchy of thematic relations, claiming that the difference between THEME and MATTER would largely depend on the type of head noun, THEME occurring with deverbal nominalizations and MATTER with simple nouns. But the following examples could be seen as evidence of the possible co-occurrence of THEME and MATTER:

	MATTER	THEME	
(18)	progresso tecnologico 'technological progress'	progresso americano 'American progress'	a. progresso tecnologico americano progress technological American b. #progresso americano tecnologico progress American technological 'American technological progress'
(19)	sviluppo linguistico 'linguistic development'	sviluppo infantile 'children's development'	a. sviluppo linguistico infantile development linguistic child.ADJ b. #sviluppo infantile linguistico development child.ADJ linguistic 'children's linguistic development'

→ ?MATTER > THEME

Unfortunately such examples are not clear enough. They could be seen as evidence for the order MATTER > THEME under the interpretations 'the progress of America

regarding technology' and 'the development of children concerning language'. However, the same strings could be employed to argue in favour of the order THEME > LOCATION since they could also be paraphrased as 'the progress of technology in America' and 'the development of language in children'[2]. It is not an easy problem to solve: the order MATTER > THEME is based on strings whose reading is ambiguous. This is why a question mark precedes the sequence above and the arrow between MATTER and THEME in (20) is put in brackets:

(20) N° > MATTER (>) THEME > {AGENT/TIME/LOCATION}

The relative placement of AGENT, TIME and LOCATION has to be tested. The next relation to be considered is AGENT, which will be combined with TIME and LOCATION:

	AGENT	TIME	
(21)	invasioni barbariche 'barbarian invasions'	invasioni medievali 'Medieval invasions'	a. invasioni barbariche medievali invasions barbarian Medieval b. #invasioni medievali barbariche invasions Medieval barbarian 'Medieval barbarian invasions'
(22)	proteste giovanili 'youth protests'	proteste sessantottine '1968 protests'	a. proteste giovanili sessantottine protests youth.ADJ 1968.ADJ b. #proteste sessantottine giovanili protests 1968.ADJ youth.ADJ '1968 youth protests'

→ AGENT > TIME

	AGENT	LOCATION	
(23)	manifestazioni studentesche 'students demonstrations'	manifestazioni romane 'Rome demonstrations'	a. manifestazioni studentesche romane demonstrations student.ADJ Roman b. #manifestazioni romane studentesche demonstrations Roman student.ADJ 'Rome students demonstrations'

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[2] There are many other examples of this type like *unificazione monetaria europea* 'European monetary unification' and *apertura culturale spagnola* 'Spanish cultural opening'.

(24) sciopero   sciopero torinese   a. sciopero operaio   torinese
      operaio   'Turin strike'   strike   worker.ADJ Turin.ADJ
      'workers strike'   b. #sciopero torinese   operaio
                                                     strike   Turin.ADJ worker.ADJ
                                                     'Turin workers strike'

                                                  → AGENT > LOCATION

The result is that AGENT precedes both TIME and LOCATION, which occupy an external position in the sequence:

(25) N° > MATTER (>) THEME > AGENT > {TIME/LOCATION}

Since both TIME and LOCATION follow AGENT, a claim regarding the exact position of RelAs expressing these relations cannot be made without testing their combination:

      TIME   LOCATION
(26) visite serali   visite ospedaliere   a. visite ospedaliere serali
      'evening visits' 'hospital visits'   visits hospital.ADJ evening.ADJ
                                               b. #visite serali   ospedaliere
                                                  visits evening.ADJ hospital.ADJ
                                                  'evening hospital visits'

(27) escursioni   escursioni   a. escursioni montane   estive
      estive   montane   hikes   mountain.ADJ summer.ADJ
      'summer hikes'   'mountain hikes'   b. #escursioni estive   montane
                                                  hikes   summer.ADJ mountain.ADJ
                                                  'summer mountain hikes'

                                                  → LOCATION > TIME

On the basis of examples like (26) and (27), LOCATION is argued to precede TIME. Hence, the sequence of thematic relations can be augmented as in (28):

(28) N° > THEME (>) MATTER > AGENT > LOCATION > TIME

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Finally, the position of INSTRUMENT has to be tested with respect to the other relations:

	THEME	INSTRUMENT	
(29)	proposte contrattuali 'contract proposals'	proposte telefoniche 'telephone proposals'	a. proposte contrattuali telefoniche proposals contractual telephone.ADJ b. #proposte telefoniche contrattuali proposals telephone.ADJ contractual 'telephone contract proposals'

→ THEME > INSTRUMENT

	AGENT	INSTRUMENT	
(30)	attacco libico 'Libyan attack'	attacco missilistico 'missile attack'	a. attacco missilistico libico attack missile.ADJ Libyan b. #attacco libico missilistico attack Libyan missile.ADJ 'Libyan missile attack'

→ INSTRUMENT > AGENT

Examples (29) and (30) show that INSTRUMENT follows THEME, but precedes AGENT. On this basis there would be enough evidence to claim that INSTRUMENT occupies the position between THEME/MATTER and AGENT and it would not be necessary to test its placement with respect to LOCATION and TIME. In fact these relations follow AGENT, which in turn follows INSTRUMENT; hence, for the transitivity rule, they should follow INSTRUMENT, too. However, such combinations are tested, as well, in order to provide further evidence for the position of INSTRUMENT:

	LOCATION	INSTRUMENT	
(31)	trasporto pedemontano 'foothill transportation'	trasporto ferroviario 'railway transportation'	a. trasporto ferroviario pedemontano transportation railway.ADJ foothill.ADJ b. #trasporto pedemontano ferroviario transportation foothill.ADJ railway.ADJ 'foothill railway transportation'

→ INSTRUMENT > LOCATION

	TIME	**INSTRUMENT**
(32)	attacco notturno	attacco

	TIME	**INSTRUMENT**	

(32)	attacco notturno
	'night attack'
		attacco
		missilistico
		'missile attack'
			a. attacco missilistico notturno
			   attack missile.ADJ nocturnal
			b. #attacco notturno missilistico
			   attack nocturnal missile.ADJ
			   'night missile attack'

<div align="center">

→ **INSTRUMENT** > **TIME**

</div>

Examples (31) and (32) confirm that INSTRUMENT is lower than LOCATION and TIME. Therefore, the sequence obtained is the following:

(33)   **N° > THEME (>) MATTER > INSTRUMENT > AGENT > LOCATION > TIME**

(33) is the sequence proposed to account for ordering restrictions of RelAs in Italian. An interesting result is obtained through comparing this hierarchy with Rae's (2010) hierarchy of thematic relations discussed in the previous chapter and repeated here. The orders of thematic relations they have in common (in bold in Rae's hierarchy) appear to be mirror images:

(34)   MATERIAL > **TIME > LOCATION > AGENT**/SOURCE > BENEFICIARY > MEASURE > **INSTRUMENT > THEME/MATTER > N°**   (Rae 2010, 143)

Hence, even if RelAs are postnominal in Italian while the corresponding modifiers are prenominal in English, their reciprocal order and their relative distance from the head noun is the same. This mirror image, which comes out clearly from the comparison of the two sequences, is revealed by the English paraphrases of the Italian examples themselves. The possibility of such a mirror distribution was hinted at the end of the previous chapter when discussing the position of THEME in Romance and Germanic languages. Now it appears to be confirmed for Italian and English for all the relations compared (i.e. THEME, AGENT, TIME, LOCATION, INSTRUMENT and MATTER). The theoretical explanation of these empirical facts will be delayed to chapter 5. In the following pages further evidence in favour of this distribution will be provided. Data collected through questionnaires not only

will confirm that RelAs are ordered according to the thematic relationship they establish with the head noun in Italian, but will also constitute further proof of the validity of the sequence in (33). Moreover the same sequence will be shown to capture the distribution of RelAs in other Romance languages.

4.2 Method of collecting data

Two questionnaires were drawn to collect data on the order of RelAs in Italian and Spanish, which will be dealt with in the next two sections.

The hypothesis that the order of RelAs depends on a hierarchy of thematic relations, organized as in (33), has been elaborated analysing the syntax of RelAs in Italian; grammaticality judgements on the sequences of RelAs were mainly mine. Hence, the first questionnaire was created to test the validity of the working hypothesis in Italian on a larger scale. It was published online and filled in by (college) graduate Italian native speakers. It was a multiple choice questionnaire: people were given combinations of two RelAs with a head noun so that they had to choose one out of the two possible strings, i.e. N-RelA$_1$-RelA$_2$ or N-RelA$_2$-RelA$_1$. A sentence was given acting as the context in which the strings had to be judged, as exemplified below:

(35)   Nessuna buona notizia arriva dalle ………………………… .

a) previsioni metereologiche mattutine
b) previsioni mattutine metereologiche

No good news comes from ………………………… .

a) morning weather forecast
b) weather morning forecast

Combinations of RelAs expressing THEME, AGENT, TIME, LOCATION, INSTRUMENT and MATTER were considered in order to see whether people's choices were in line with the hierarchy in (33) or not. Every possible combination of thematic relations was tested[3],

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[3] There are only two exceptions, i.e. the sequence MATTER > THEME and MATTER > INSTRUMENT. The former was excluded due to the difficulty of combining two RelAs which unequivocally express these relations, as discussed above. The latter combination was left aside since suitable examples were not found being difficult to combine MATTER and INSTRUMENT.

even if it was not necessary since the transitivity rule could be brought into play. For example in principle there was no need to test the combination of THEME and TIME if proved that people preferred the order THEME > AGENT and AGENT > TIME over their alternative opposite sequences. The order THEME > TIME could have been simply deduced from the transitivity rule. But, as in the illustration of the working hypothesis above, the transitivity rule will not be invoked here in order to look for as much evidence as possible supporting the claim on RelAs order. Totally thirteen possible combinations of thematic relations were tested.

Some fillers were added in order to verify if people had properly understood the instructions and if their answers were appropriate. These fillers had the same structure as the other questions; the difference was that they presented sequences made up of a noun, a RelA and a QA in place of another RelA. They can be used as examples of control since the linearization is obligatorily N-RelA-QA because a QA cannot separate a RelA from its head noun, as universally claimed for Romance languages.

The order of the questions, as well as the order of the options for each question, was randomised. Each case to be judged was provided with a context in order to make the choice easier for the interviewees and to disambiguate, where necessary, RelAs which could receive a double interpretation. For example it is known that EAs can be ambiguous between an agentive and a locative interpretation: something like *Italian wine production* could be paraphrased as 'the production of wine made by Italian people' as well as 'the production of wine in Italy'[4]. Hence, in the sentential context supplied for *scoperte archeologiche italiane* 'Italian archaeological discoveries' (where *italiane* 'Italian' was intended to express AGENT) the locative PP *in Egitto* 'in Egypt' was added to be sure that the EA *italiane* was interpreted as AGENT and not as LOCATION.

The hierarchy in (33) is supposed to account for the distribution of RelAs in Italian in unmarked cases, i.e. in absence of marked pragmatic conditions which could play a role in the linearization of the RelAs. As seen above through example (3), if two RelAs are combined, one being considered as given information and the other as new information, the order is forced to be N - RelA (given information) - RelA (new information), independently from the thematic relations these adjectives express. In these cases the linearization of RelAs is no more governed by the sequence of thematic relations proposed in (33), but by the interfering given-before-new principle. Trying to avoid such marked

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[4] Even if items of this type have often been provided as examples of the order THEME > AGENT.

readings, in the instructions preceding the questionnaire, people were asked to choose what they felt to be the more natural order. These instructions were given to reduce the possible interference of pragmatic factors. However, the complete exclusion of the pragmatic effect described above cannot be granted since the pragmatic context imagined by people for the sentences given cannot be fully controlled in an online questionnaire. People were also given the possibility of choosing both the options, but they were told to do it only if they considered them to be perfectly equal. The possibility of rejecting both the strings was provided, as well.

A parallel questionnaire was created for Spanish: the structure of the questionnaire, the type of examples tested, the instructions, the target of people answering it were the same as those of the Italian questionnaire. The whole questionnaires, as well as their results in detail, are reported in the appendixes at the end of this dissertation.

Data on RelA order in other Romance languages will provided in sections 5 (French), 6 (Catalan) and 7 (Romanian) on the basis of native speakers' judgements and examples coming from the literature on RelAs. They will be compared with the results of the two questionnaires and the ordering restrictions of RelAs will be shown to be consistent across Romance languages.

4.3 Italian

The questionnaire was completed by 64 people with the mean age of 30.7. They come from different areas of Italy, but mainly from Veneto (84.4%). People answering the questionnaire were requested to be graduate. Education levels are distributed as follows: 35.9% graduates, 50% postgraduates, 14.1% with a higher specialization.

Thirteen types of combinations and 42 examples were tested. There were at least three examples for each combination of thematic relations; a fourth example was added whenever considered relevant.

The results will be discussed grouping them according to the thematic relations involved. For every type of combination there will be a bar plot showing the distribution of people's answers. The four columns of the bar plots correspond to the options given: expected order, unexpected order, both, none. The expected order is the linearization expected if the working hypothesis is right (i.e. if the sequence of thematic relations in (33) turns out to capture the distribution of RelAs). The unexpected order is the opposite

one. The option 'both' indicates that people found both the strings to be equally acceptable. The option 'none' stands for the refusal of both the sequences. The string written under the four columns corresponds to the expected order.

The reader will find the whole questionnaire in Appendix A1. Appendix A2 provides the results of the questionnaire more in detail: for each combination of thematic relations there is a table showing RelAs employed to exemplify those relations and a bar plot giving the distribution of people's answers for every case tested.

4.3.1 Results

Let us start from combinations involving THEME:
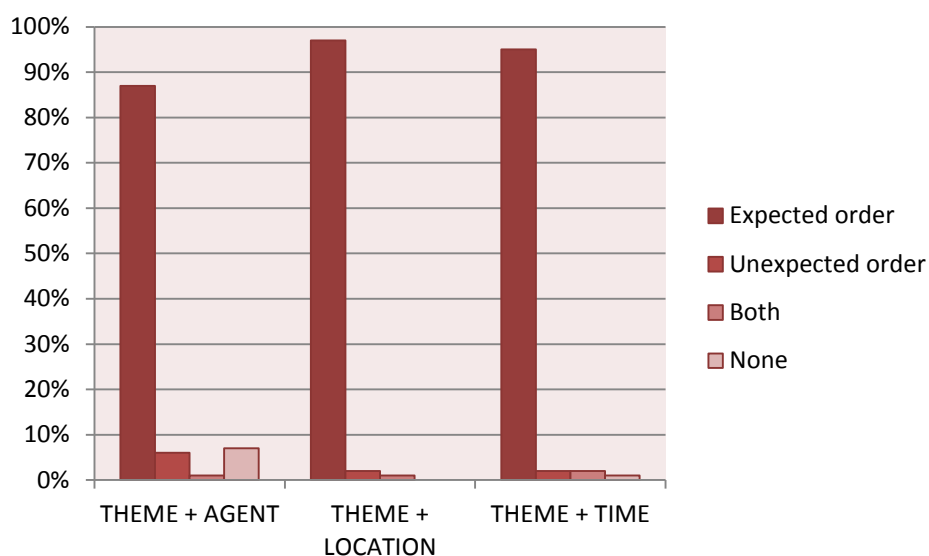
Fig. 4.1. Combinations with THEME. Answers

The bar plot in Fig.4.1 reveals that people's answers are in line with the sequence in (33), placing THEME closer to the noun than any other relation.

The combination of THEME and AGENT, which is the most discussed in the literature, deserves some attention in this group. There were three cases involving THEME and AGENT in the questionnaire (see Appendixes A1 e A2). If they are considered together, the expected order results from 87% of the answers and the unexpected one comes out in 6% of the cases. This is what the bar plot represents. However, the three cases display an asymmetric distribution of the options selected. The percentage of the

expected order of *persecuzioni ebraiche naziste* 'Nazi Jewish persecutions' (64.1%) is evidently lower than that of *esplorazione spaziale americana* 'American space exploration' (96.8%) or *descrizioni paesaggistiche manzoniane* 'Manzoni's landscape descriptions' (100%). If the case of *persecuzioni ebraiche naziste* is left aside, the gap between the expected order and the unexpected order sharply increases: the percentage of the former rises to 98,4% and that of the latter falls to 0,8%.

This difference was partially predictable since *persecuzioni ebraiche naziste* is different from the other two examples: in this case both RelAs encode a [+Animate] feature and this makes them potentially ambiguous between the THEME interpretation and the AGENT one. Recall that Bosque & Picallo (1996) provide a similar example to claim that the interpretation of an ambiguous RelA as THEME or AGENT depends on its position in the sequence, *estudios rodoredianos femeninos* 'studies of Rodereda made by women' being in contrast with *estudios femeninos rodoredianos* 'studies of women made by Rodoreda'. This double linearization possibility is indeed not expected in our case since history tells us that Jewish people were persecuted by Nazis and not the reverse; hence, the only possible reading is that with Jewish as THEME and Nazi as AGENT. The prediction, according to our working hypothesis, is that the order should be *persecuzioni ebraiche naziste* since THEME is always expected to precede AGENT. The question is if the potential (even if not historically plausible) ambiguity of the two RelAs could interfere with their linearization. At a first glance it seems that there is at least a disturbing factor since people's answers are more varied: the percentage of the expected order is lower (64%) and the level of acceptability of the unexpected order appears to be higher (15.6%) than in the other two cases. However, the lower percentage of the expected order depends more on the rejection of both the strings (20.3%) than on the preference of the unexpected one. And the fact that both the sequences are considered ungrammatical could be linked to the claim, widespread in the literature, that EAs cannot realize the internal argument (Ch.2, §2.5.4).

To conclude, the order THEME > AGENT is confirmed as the unmarked linearization; people's choices are more clear-cut for two strings out of three, but the case of *persecuzioni ebraiche naziste*, despite being more controversial, does not challenge the conclusion that ThAs are ordered according to the thematic hierarchy. Combinations of THEME with LOCATION and TIME confirm the sequence THEME > LOCATION / TIME with a very high percentage (above 95%) of expected orders among people's answers.
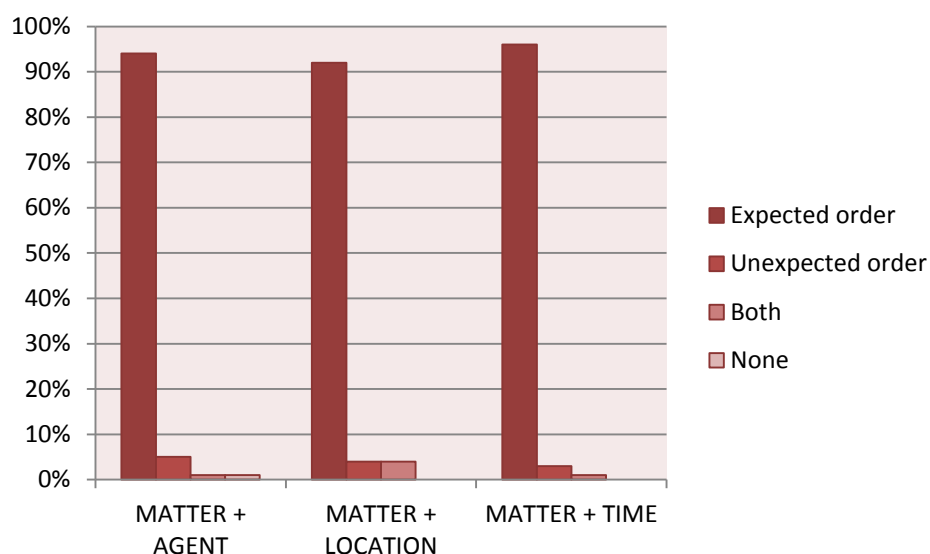
Consider now MATTER in place of THEME:

Fig. 4.2. Combinations with MATTER. Answers

The results of combining MATTER with AGENT, LOCATION and TIME should be very similar to the results of the corresponding combinations with THEME. In fact the relation MATTER resembles THEME so much that Rae (2010) even places them in the same position in her hierarchy of thematic relations. The questionnaire corroborates such a similar distribution: MATTER, like THEME, appears close to the head noun. The order MATTER > AGENT/LOCATION/TIME is confirmed with very high percentages of the expected order for all the three types of combinations.

The claim regarding the adjacency of THEME and MATTER to the head noun can be maintained; the other RelAs occupy an external position with respect to them, independently of the type of relationship they establish with the head noun: THEME and MATTER are placed closer to the noun than any other RelA. Hence, the results discussed so far provide further evidence for the partial sequence proposed in (21), and repeated here, except for the relative position of THEME and MATTER, which has not been tested:

(36)   **N° > MATTER (>) THEME > {AGENT/TIME/LOCATION}**

The relative order of AGENT, TIME and LOCATION remains to be ascertained. Remember that it should be AGENT > LOCATION > TIME, according to our working hypothesis:
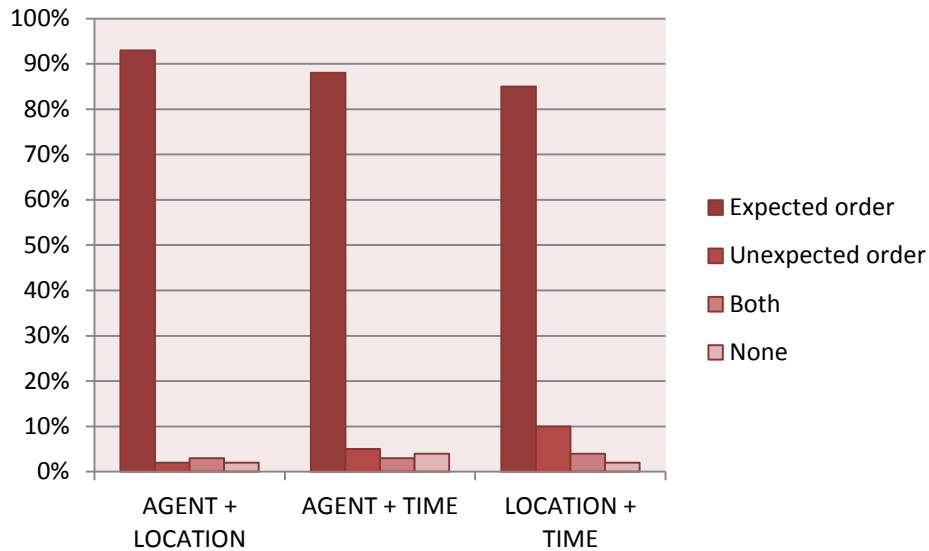

Fig. 4.3. Combinations of AGENT, LOCATION and TIME. Answers

The examples tested widely confirm the order AGENT > LOCATION: it has been chosen in 93% of the cases.

As for the exact position of TIME with respect to AGENT and LOCATION, four examples were employed to test both the combinations. In fact from an informal survey made before creating the questionnaire there appeared to be more variability of judgements when TIME was involved, especially in its combination with LOCATION. But the number of people interviewed at the time was exiguous and no conclusion could be drawn about the significance of these judgements. Since the combination of TIME and LOCATION was potentially problematic, a fourth example was added to have a larger amount of data. The goal was to see if such variability really existed and, in this case, if it could challenge the working hypothesis. Although the problem concerned especially the combination of TIME and LOCATION, a fourth example was added even for the combination of TIME and AGENT.

The combination of AGENT and TIME does not seem to be problematic for the present hypothesis. People's answers are consistent with the sequence in (33) (AGENT > TIME). The percentage of the expected order is lower than those recorded for the

combinations of thematic relations discussed so far. All the same it is high (88% if the four examples are considered together, but, even if they are considered separately, it never falls under 80%).

As for the co-occurrence of LOCATION and TIME, the variability is higher[5] since the percentage of the expected order is 83% grouping the four examples together, but it fluctuates between 98.4% of *spedizioni artiche ottocentesche* '19th-century arctic expeditions' and 73.4% of *navigazione mediterranea medievale* 'medieval Mediterranean navigation' (see Appendix A2). However, the expected order is much more frequent than the unexpected one and only few people accepted both the options. These results tell us that an unmarked order does exist and that it requires LOCATION to precede TIME. An explanation for the unexpected sequences will be looked for in the fifth chapter; for the time being, it is important to notice that the expectations of the working hypothesis appear to have been fulfilled. The sequence in (29), reported here as (37), seems to be confirmed:

(37)   N° > THEME (>) MATTER > AGENT > LOCATION > TIME

But the final sequence of thematic relations given above comprises INSTRUMENT, as well. The last set of examples involves this relation, which is expected to be placed higher than THEME but lower than AGENT. The questionnaire tests the combination of INSTRUMENT with THEME, AGENT, LOCATION and TIME:

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[5] With respect to the other combinations of thematic relations considered so far, except for the combination of THEME and AGENT, but in that case it has been shown that the variability could be attributed to the peculiarity of one of the examples employed in the questionnaire.
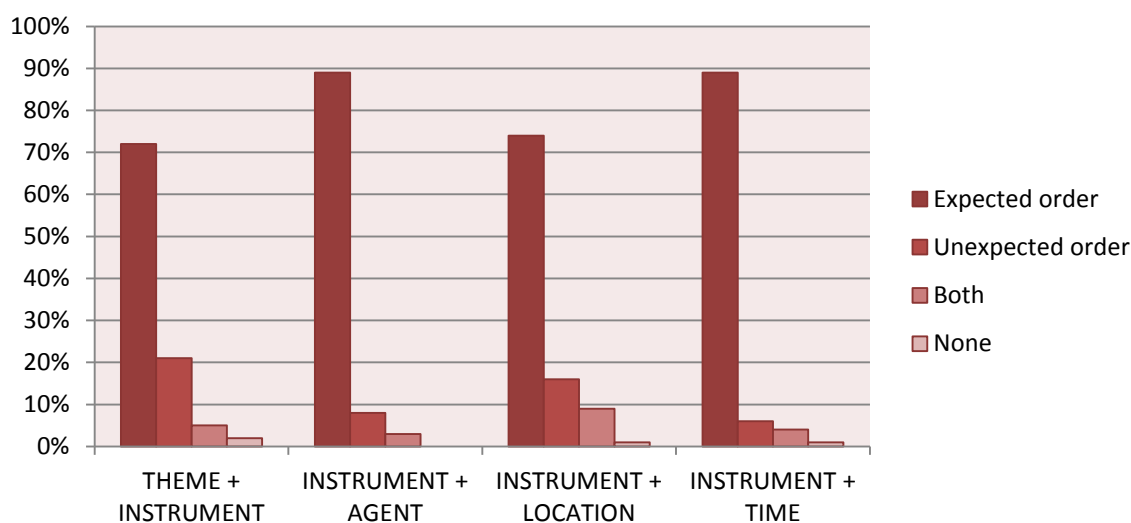
Fig. 4.4. Combinations with Instrument. Answers

Combinations of two RelAs involving the relation Instrument were not so easy to be thought since there are not so many RelAs that can express Instrument in Italian.

Let us start from the combinations of Instrument and Theme, for which four cases have been considered. Among them the only case can be found for which the unexpected order is more frequent than the expected one: *stimolazione elettrica cerebrale* 'cerebral electrical stimulation', with Instrument preceding Theme, has been preferred by 62.5% of people over the expected order *stimolazione cerebrale elettrica* 'electrical cerebral stimulation', which has gained only 25% of the preferences. On the contrary the other three cases (i.e. *stimolazione cardiaca manuale* 'manual heart stimulation', *rilevamento termico satellitare* 'satellite temperature reading', *ricerca batterica microscopica* 'microscopy bacterial search') show the order Theme > Instrument, in line with our expectations. Hence, the percentage of the expected order falls if the four examples are considered together (72%); it rises up to 87.5% if the problematic case is left aside.

One can wonder why the case of *stimolazione elettrica cerebrale* (with the order Instrument > Theme) is different from that of *stimolazione cardiaca manuale* 'manual heart stimulation' (showing the order Theme > Instrument). They were both included in the questionnaire as a sort of minimal pair since the two sequences were felt to be somehow different. Such a difference in the linearization of Theme and Instrument could be due to lexicalization or frequency effects. But it could also be the case that

elettrica 'electrical' does not really express an INSTRUMENT and, hence, it does not occupy its position between THEME and AGENT. In fact a striking parallelism emerges when comparing this string with its translation in English. A search on internet through the Google search engine reveals that the sequence *cerebral electrical stimulation* having INSTRUMENT closer to the noun than THEME (hence parallel to *stimolazione elettrica cerebrale*) is much more used than *electrical cerebral stimulation*, which is the expected sequence according to Rae's (2010) hierarchy of thematic relations (98 vs 37 occurrences[6]). Therefore the unexpected order appears to be more frequent than the expected order in English, too. This parallelism is in line with the claim that the order of postnominal RelAs in Italian is the mirror image of the order of prenominal RelAs in English. Hence, if this claim is right, but both the strings shows a linearization opposite to the expected one, two explanations are possible: a) the position of the relation INSTRUMENT is wrong in both the hierarchies (Rae's and mine) or b) the sequences considered are not examples of the co-occurrence of INSTRUMENT and THEME, but involve other relations. Option a) is difficult to maintain since there are other examples converging both to the order N° > THEME > INSTRUMENT in Italian and to the mirror image order INSTRUMENT > THEME > N° in English. On the contrary option b) seems more plausible since it is sometimes hard to establish unequivocally which relations RelAs express. To conclude, I do not think that this case could challenge the basis of the hypothesis developed here.

As for the combination of INSTRUMENT and AGENT, the expected order (INSTRUMENT > AGENT) corresponds to 89% of the answers. Among the three examples, *attacco missilistico coreano* 'Korean missile attack' and *esplorazione tattile infantile* 'children's tactile exploration' reach really high percentages of the expected order (96.9% and 95.3% respectively), whereas this percentage is a bit lower for *spionaggio satellitare sovietico* 'Soviet satellite espionage' (75%). But even in this latter case the gap between the expected order (75%) and the unexpected order (18.8%) is considerable.

The percentage of the expected order for combinations of INSTRUMENT and LOCATION is around 70% for two cases out of three, i.e. *respirazione branchiale subacquea* 'underwater branchial respiration' and *soccorso aereo alpino* 'alpine air rescue', even if it rises up to 84.4% for *terapia antibiotica ospedaliera* 'hospital antibiotic therapy'. But what counts is that there is a considerable gap with the unexpected order in

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[6] Search made on August, 23, 2015.

all the three cases. Hence, the expected order (Instrument > Location) seems to be confirmed as the unmarked order.

Finally, the combination of Instrument and Time gives once again the results foreseen: the expected order is around 90%, fluctuating between the 85.9% of *selezione concorsule primaverile* 'spring examination selection' and the 92.2% of *inseguimento automobilistico notturno* 'nocturnal car pursuit'. The linearization Instrument > Time appears to be confirmed, as well.

The data discussed in this section further support the final sequence of thematic relations given in (33), and repeated here as (38), leaving the claim about the relative order of Theme and Matter aside:

(38)   N° > Theme / Matter > Instrument > Agent > Location > Time

The ten examples used as fillers were made up of a head noun, a RelA and a QA. The expected order was obviously N > RelA > QA, being impossible for a QA to break the sequence N+RelA, as widely claimed in the literature and along this dissertation. Such a linearization was foreseen to appear in almost all the answers with percentages of the expected order close to 100%. But it has come out that the expected order in these cases fluctuates between 95.3% and 84.4%. However, this result does not constitute counterevidence for the widespread claim regarding the obligatory placement of QAs after RelAs in Romance languages. In fact the percentages of the unexpected order are very low (between 0% and 1.6%; only in one case it reaches 4.7%) and the percentages of the expected order decrease mainly because some people chose the option 'none', refusing both the options. The reason why they rejected both the strings is supposed to be the fact that they would have preferred the order QA > N > RelA, i.e. the linearization with the QA in the prenominal position[7]. This is fully compatible with the former observations concerning the position of QAs with respect to RelAs in Romance languages.

4.3.2 Discussion

The results concerning the expected order are summarized in the following table (again grouping them according to the thematic relations involved):

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[7] Some people left a comment containing this motivation for their choice.

	Absolute frequencies	Confidence intervals
THEME + AGENT	167/192 (126/128)*	0.87±0.05 (0.98±0.02)*
MATTER + AGENT	180/192	0.94±0.03
THEME + TIME	183/192	0.95±0.03
MATTER + TIME	184/192	0.96±0.03
THEME + LOCATION	187/192	0.97±0.02
MATTER + LOCATION	176/192	0.92±0.04
AGENT + LOCATION	179/192	0.93±0.04
AGENT + TIME	225/256	0.88±0.04
LOCATION + TIME	217/256	0.85±0.04
THEME + INSTRUMENT	184/256 (168/192)**	0.72±0.06 (0.87±0.05)**
INSTRUMENT + AGENT	171/192	0.89±0.04
INSTRUMENT + LOCATION	143/192	0.74±0.06
INSTRUMENT + TIME	171/192	0.89±0.04
Total	2367/2688	0.88±0.01

*Calculated on two cases out of three (without *persecuzioni ebraiche naziste*)

**Calculated on three cases out of four (without *stimolazione cerebrale elettrica*)

Table 4.1. Expected order answers (Italian).

The first column of the table shows, for each pair of thematic relations, the absolute frequencies of the expected order on the total number of answers[8]. The second column reports confidence intervals for 'expected order' answers. If there were no ordering restrictions among RelAs, the distribution of people's answers should be governed by chance. However, it can be deduced from Table 4.1 that not only such ordering restrictions do exist, but they are also in favour of the sequence in (33) since confidence intervals of 'expected order' answers are always significatively above 50% ($p < 0.001$). It can be concluded that the results of this questionnaire reinforces the working hypothesis formulated at the beginning of this chapter since (i) an unmarked order of RelAs clearly emerges, (ii) it depends on the thematic relationship they establish with the

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[8] Remember that 64 people answered the questionnaire and that most of the combinations have been tested through three examples, hence the total number of answers for those combinations is 192; where a fourth example has been added the total number is 256.

head noun and (iii) the ordering restrictions turn out to follow the hierarchy in (33) as foreseen.

4.4 Spanish

The questionnaire was completed by 51 people with the mean age of 32.3. People answering the questionnaire were requested to be graduate Spanish native speakers. Education levels are distributed as follows: 46% graduates, 24% postgraduates, 30% with a higher specialization.

Thirteen types of combinations were tested (the same as above) with three examples for each combination of thematic relations, making a total of 39 cases. Results will be presented with the same modalities, i.e. grouping them on the basis of the thematic relations involved. The reader is referred to Appendix B1 for the whole questionnaire and to Appendix B2 for the results of the questionnaire more in detail.

4.4.1 Results

Let us start from the relations which are supposed to be closer to the head noun, i.e. THEME and MATTER. The results of their combinations with AGENT, LOCATION and TIME are in line with our expectations, as the following bar plots show:
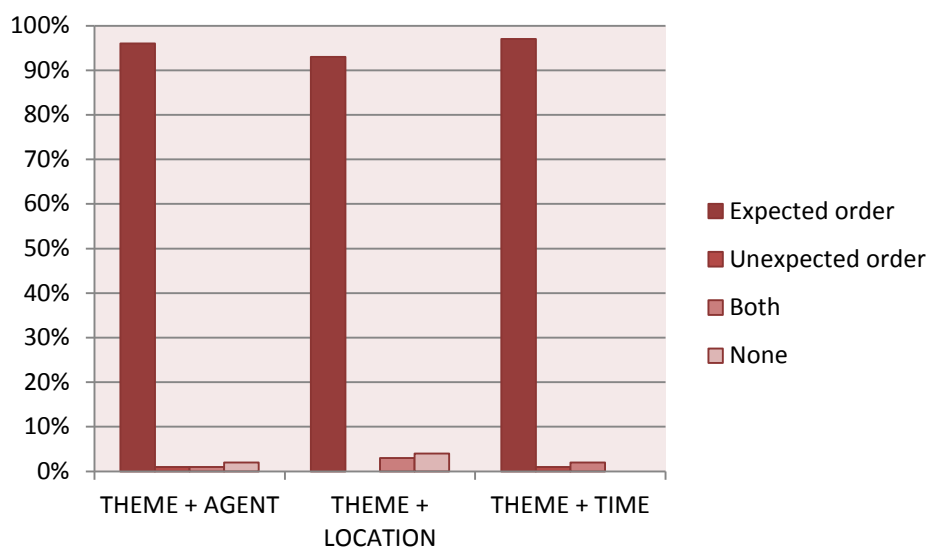

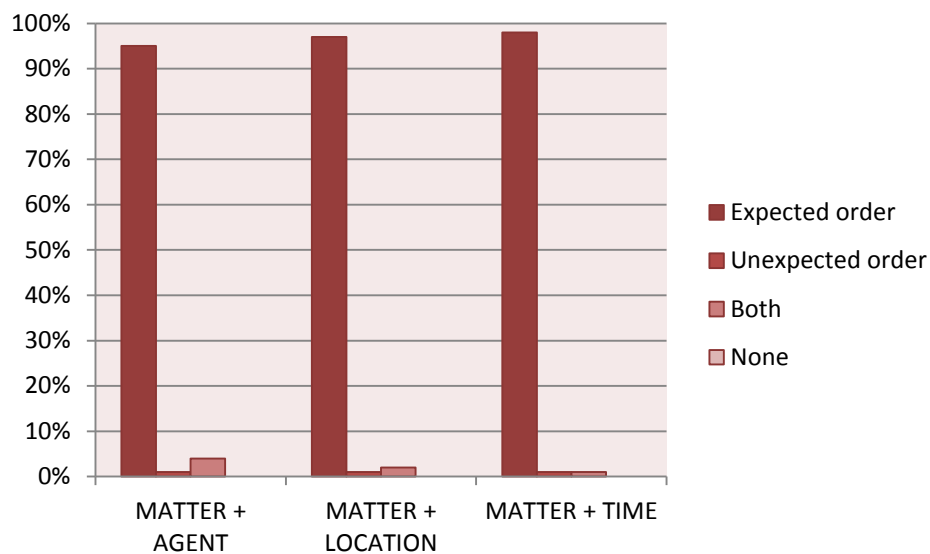Fig. 4.5. Combinations with THEME. Answers

Fig. 4.6. Combinations with MATTER. Answers

The percentages of the expected order are always above 90% (they do not fall below neither if the examples are considered one by one, except for an example of the combination of THEME and LOCATION, whose expected order has been chosen by 88% of people interviewed, anyway; see Appendix B2). Therefore, the unmarked order is confirmed to be THEME/MATTER > AGENT/LOCATION/TIME.

As for the relative position of AGENT, LOCATION and TIME, people's answers are again in favour of the unmarked order suggested by the hierarchy above (AGENT > LOCATION > TIME):
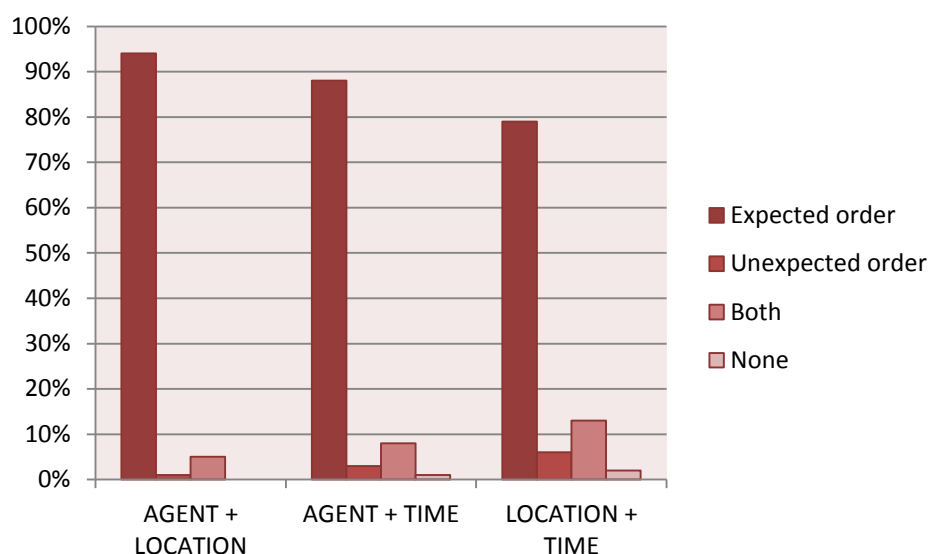
Fig. 4.7. Combinations of AGENT, LOCATION and TIME. Answers

The results are strikingly parallel to those of the Italian questionnaire: the percentage of the expected order is higher for the combination of AGENT and LOCATION (94%), a bit lower when TIME in involved (AGENT > TIME 88%; LOCATION > TIME 79%). The judgements on the combinations of LOCATION and TIME turn out to be more varied, exactly like judgements on the corresponding combinations in the Italian questionnaire: the percentage of the expected order fluctuates between 90.2% of *vida rural dieciochesca* '19th-century country life' and 70.6% of *paseo urbano vespertino* 'evening city walk' (see Appendix B2). Despite this fluctuation, the percentages of the expected order are quite high on the whole and the existence of an unmarked order AGENT > LOCATION > TIME is widely confirmed.

The last set of data, involving the relation INSTRUMENT, has to be analysed:
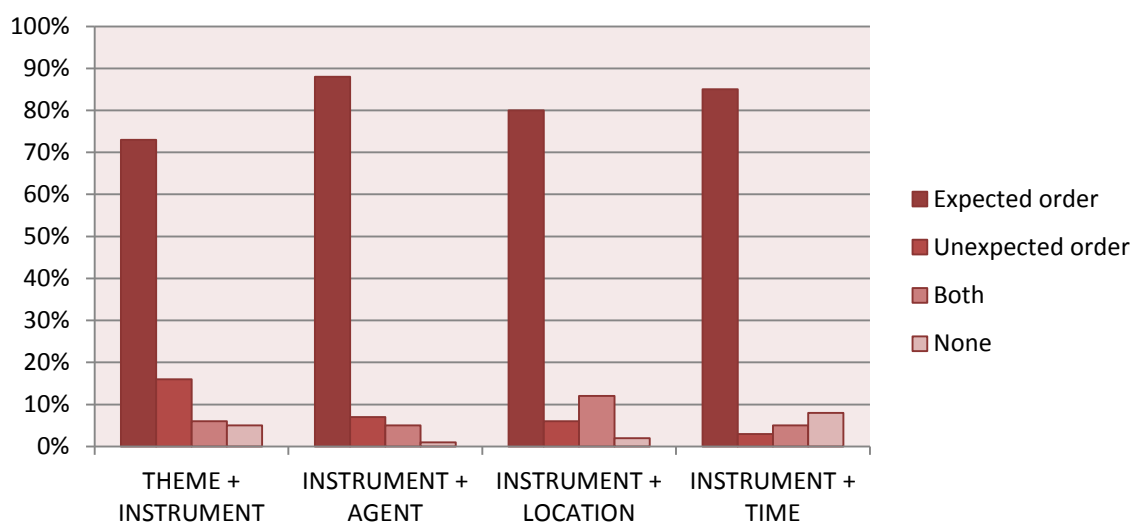
Fig. 4.8. Combinations with INSTRUMENT. Answers

The bar plot shows that the expected order covers at least 80% of the answers in three types of combinations out of four (INSTRUMENT > AGENT 88%; INSTRUMENT > LOCATION 80%; INSTRUMENT > TIME 85%). Less clear results are obtained when combining THEME and INSTRUMENT (73%).

Again this reflects the results of the questionnaire on RelAs in Italian. In that case the low percentage of the expected order THEME > INSTRUMENT was due to the fact that one of the four combinations tested obtained more answers in favour of the reverse order (see the discussion above). Here there are no cases where the unexpected order has been preferred over the expected one. But the answers are surely more varied for these combinations than for those discussed so far, especially for one out of the three combinations of THEME and INSTRUMENT, i.e. *exploración espacial táctil* 'tactile space exploration', whose percentage of the expected order is 58.8% (although the unexpected order is only 21.6% and the remaining answers are divided between the acceptance and the refusal of both the options).

If we consider the other single cases involving the relation INSTRUMENT, there are two examples whose percentage of the expected order is around 70%, i.e. *modificaciones contractuales telefónicas* 'telephone contractual modifications' (again involving THEME and INSTRUMENT) and *operación naval costera* 'coast naval operation' (an instance of the combination of INSTRUMENT and LOCATION). In all the other cases the expected order has been chosen with a higher frequency, as the reader can see from Appendix B2. Hence,

despite a greater variability, also the position of Instrument is confirmed to be the expected one[9].

The questionnaire on RelAs in Spanish, like the questionnaire on RelAs in Italian, provides further evidence in favour of the ordering restrictions previously noted. The sequence of RelAs in Romance languages (or better in Italian and Spanish for the moment) is confirmed as in (39):

(39) N° > Theme / Matter > Instrument > Agent > Location > Time

The same type of fillers have been used, i.e. sequences with a RelA and a QA. The percentages of the expected order (i.e. N > RelA > QA) reach 100% or are very close to it in most cases, the only exception being *política estatal represiva* 'repressive state politics': This order has been chosen by 58.8% of people interviewed, while 25.5% of them preferred the reverse order *política represiva estatal*. Since the order N > QA > RelA is widely banned in the literature, I think that this result could be explained assuming that *represiva* has been reanalysed as a Classifying adjective and *política represiva* has been reinterpreted as a codified kind of politics.

4.4.2 Discussion

For the final discussion, like for Italian, the results are summarized providing the absolute frequency of the expected order and the corresponding confidence interval for each combination:

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[9] The greater variability registered when the relation Instrument is involved could be linked to the fact that it is not as transparent as the other thematic relations analysed and, even if great care has been exercised in the selection of the examples, some RelAs considered to express Instrument might perhaps be analysed differently.

	Absolute frequencies	Confidence intervals
THEME + AGENT	148/153	0.97±0.03
MATTER + AGENT	146/153	0.95±0.03
THEME + TIME	149/153	0.97±0.03
MATTER + TIME	150/153	0.98±0.02
THEME + LOCATION	143/153	0.93±0.04
MATTER + LOCATION	148/153	0.97±0.03
AGENT + LOCATION	144/153	0.94±0.04
AGENT + TIME	134/153	0.88±0.05
LOCATION + TIME	121/153	0.79±0.06
THEME + INSTRUMENT	111/153	0.73±0.07
INSTRUMENT + AGENT	135/153	0.88±0.05
INSTRUMENT + LOCATION	122/153	0.80±0.06
INSTRUMENT + TIME	130/153	0.85±0.06
Total	1781/1989	0.90±0.01

Table 4.2. Expected order answers (Spanish).

Even in this case confidence intervals of 'expected order' answers are always significatively above 50% ($p < 0.001$). Therefore, the results of this second questionnaire further reinforces the working hypothesis. Moreover a comparison between Table 4.1 and Table 4.2 shows that the results of the two questionnaires are parallel: in both questionnaires the most clear cases are those involving THEME or MATTER (with the exception of the combination of THEME and INSTRUMENT), which display the highest percentages of the expected order; combinations with TIME and LOCATION/AGENT give more varied answers, especially when the relative position of TIME and LOCATION is tested, without challenging the working hypothesis; cases involving INSTRUMENT raise some problems, but their results can be said to be in line both with the existence of an unmarked order and with the correspondence of such an unmarked order to the sequence proposed.

Now the question is whether the same account can be extended to RelAs in the other Romance languages.

4.5 French

As for French, the answer will be looked for reanalysing data coming from the literature on RelAs in the light of our hypothesis. The only ordering restriction on which there is agreement in the literature (both for French and other Romance languages), i.e. THEME > AGENT, is reflected in the sequence of thematic relations proposed:

(40)   N° > THEME / MATTER > INSTRUMENT > AGENT > LOCATION > TIME

But it will be shown that data provided in the literature also support the position of the other relations in the sequence.

Two studies on RelAs in French have been discussed, Bartning (1980) and Valassis (2001). Unfortunately Valassis (2001) does not provide data so rich in terms of combinations of RelAs expressing different thematic relations. He only supplies sequences in favour of the order THEME > AGENT. Instead Bartning (1980) gives interesting examples of N+RelA+RelA constructions (see Ch.3, §3.2.3.1). As said in the previous chapter, she does not discuss the relative order of RelAs in those sequences. Now, they will be analysed in the light of the hypothesis formulated here.

Recall that Bartning (1980) divides RelAs into RelAs expressing grammatical relations and RelAs subclassifying the head noun. Only the former will be considered here since they encode the thematic relations according to which RelAs are argued to be ordered. Bartning's (1980) list of grammatical relations realized by RelAs includes subject, object and prepositional phrases expressing LOCATION, TIME, INSTRUMENT, MATTER (*CONCERNANT* in Bartning's terminology), 'ACCORDING TO' (*SELON* in Bartning's terminology) and PURPOSE. Only relations appearing in the sequence assumed above will be considered, i.e. LOCATION, TIME, INSTRUMENT and MATTER, in addition to object and subject which corresponds to our THEME and AGENT[10]. The relations involved and their linearization are reported to the right of each type of combination, first as given by Bartning (1980)[11] and then with the labels used in the present study:

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[10] The equivalence of subject and AGENT is not taken for granted, but it holds for the examples provided by Bartning (1980).

[11] Bartning (1980) also indicates the function of head nouns. The label V refers to the fact that these nouns, mostly nominalizations, represent the predicate; they would correspond to the verb in parallel sentences, so

(41) a. politique monétaire européenne   V, S - PP[CONCERNANT] - PP[LOC]
         policy   monetary European   MATTER > LOCATION
         'European monetary policy'

      b. réglementation pétrolière française
         regulation   oil.ADJ   French
         'French oil regulation'

      c. situation monétaire internationale
         situation monetary international
         'international monetary situation'

      d. spécialités alimentaires regionals
         specialities food.ADJ   regional
         'regional food specialities'

(42) coopération policière   internationale   V - S - PP[LOC]
      cooperation police.ADJ international   AGENT > LOCATION
      'international police cooperation'

(43) contrôles   budgétaires gouvernementaux   V - O – S
      inspections budget.ADJ governmental   THEME > AGENT
      'governmental budget inspections'

(44) production alimentaire départementale   V - O - S, LOC
      production food.ADJ   departmental   THEME > AGENT/LOCATION
      'departmental food production'

(45) aide financière gouvernementale   V - PP[INST] – S
      aids financial   governmental   INSTRUMENT (?) > AGENT
      'governmental financial aids'

(46) production française annuelle   V - S - PP[TEMPS]
      production French   annual   AGENT > TIME
      'annual French production'

All the sequences provided by Bartning (1980, 33) reflects the order of RelAs suggested for Italian and Spanish. Examples (41)-(43) prove LOCATION to be external with

that an example given for the V-O sequence, *élection présidentielle* 'presidential election', is paraphrased as *x élit le president* 'x elects the president' (Bartning 1980, 29).

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respect to MATTER, THEME and AGENT in French, as well. (44) could be claimed to be evidence for the order THEME > AGENT or for the order THEME > LOCATION due the ambiguity of the external RelA between an agentive and a locative interpretation. Provided that Bartning's labelling of *financière* 'financial' as expressing INSTRUMENT is accepted, (45) would be an example of the order INSTRUMENT > AGENT. Finally, (46), following Bartning (1980), can be said to display the order AGENT > TIME, even if *annuelle* 'annual' might be classified as expressing FREQUENCY better than TIME.

To sum up, French examples show that MATTER and THEME precede AGENT which in turn precedes LOCATION and TIME:

(47) **N° > THEME / MATTER > AGENT > {LOCATION , TIME}**

This confirms, although only partially, the hierarchy of thematic relations proposed. The distribution of RelAs in French appears to be in line with that of RelAs in Italian and Spanish: it seems to depend on the same hierarchy of thematic relations.

The hypothesis has been be further tested on Catalan and Romanian. Since there are not enough data in the literature, native speakers have been asked to judge the relative order of RelAs: the results are in favour of the sequence proposed. In both cases the order of five relations, i.e. THEME, MATTER, AGENT, LOCATION and TIME, has been tested.

4.6. Catalan

The following examples confirm that RelAs expressing THEME and MATTER precede all the other RelAs in Catalan, as well:

	THEME	**AGENT**	

(48)	planificació viària 'road planning'	planificació estatal 'state planning'	a. planificació viària estatal
			   planning road.ADJ state.ADJ
			b. #planificació estatal viària
			   planning state.ADJ road.ADJ
			'state road planning'
			→ **THEME > AGENT**

	THEME	LOCATION	

(49)	erupció volcànica 'volcanic eruption'	erupció submarina 'submarine eruption'	a. erupció volcànica submarina
			   eruption volcanic submarine
			b. #erupció submarina volcànica
			   eruption submarine volcanic
			   'submarine volcanic eruption'
			→ THEME > LOCATION

	THEME	TIME	

(50)	emigració espanyola 'Spanish emigration'	emigració contemporània 'contemporary emigration'	a. emigració espanyola contemporània
			   emigration Spanish contemporary
			b. #emigració contemporània espanyola
			    emigration contemporary Spanish
			   'contemporary Spanish emigration'
			→ THEME > TIME

(51)   **N° > THEME > {AGENT/LOCATION/TIME}**

	MATTER	AGENT	

(52)	reivindicacions socials 'social demands'	reivindicacions populars 'popular demands'	a. reivindicacions socials populars
			   demands social popular
			b. #reivindicacions populars socials
			   demands popular social
			   'popular social demands'
			→ MATTER > AGENT

	MATTER	LOCATION	

(53)	crisi demogràfica 'demographic crisis'	crisi europea 'European crisis'	a. crisi demogràfica europea
			   crisis demographic European
			b. #crisi europea demogràfica
			   crisis European demographic
			   'European demographic crisis'
			→ MATTER > LOCATION

	MATTER	TIME	
(54)	descobriments arqueològics 'archaeological	descobriments moderns 'modern	a. descobriments arqueològics moderns discoveries archaeological modern b. #descobriments moderns arqueològics

discoveries'	discoveries'	discoveries modern archaeological

'modern archaeological discoveries'

→ **MATTER > TIME**

(55) **N° > MATTER > {AGENT/LOCATION/TIME}**

The relative order of AGENT, LOCATION and TIME is the expected one, as well:

	AGENT	**LOCATION**	

(56)	vaga estudiantil
	'students strike'
		vaga quebequesa
		'Quebec strike'
			a. vaga estudiantil quebequesa
			   strike student.ADJ Quebec.ADJ
			b. #vaga quebequesa estudiantil
			   strike Quebec.ADJ student.ADJ
			   'Quebec students strike'
			→ **AGENT > LOCATION**

	AGENT	**TIME**	

(57)	lluites populars
	'popular struggles'
		lluites vuitcentistes
		'19th-century
		struggles'
			a. lluites populars vuitcentistes
			   struggles popular 19th-century.ADJ
			b. #lluites vuitcentistes populars
			   struggles 19th-century.ADJ popular
			   '19th-century popular struggles'
			→ **AGENT > TIME**

	LOCATION	**TIME**	

(58)	pelegrinatges
	europeus
	'European
	pilgrimages'
		pelegrinatges
		medievals
		'medieval
		pilgrimages'
			a. pelegrinatges europeus medievals
			   pilgrimages European medieval
			b. ?pelegrinatges medievals europeus
			   pilgrimages medieval European
			   medieval European pilgrimages
			→ **LOCATION > TIME**

(59) **N° > THEME/MATTER > AGENT > LOCATION > TIME**

4.7 Romanian

Starting from THEME and MATTER, Romanian appears to follow the same distributional pattern, with THEME and MATTER preceding all the other relations:

	THEME	AGENT	
(60)	consum energetic 'energetic consumption'	consum uman 'human consumption'	a. consum energetic uman consumption energetic human b. #consum uman energetic consumption human energetic 'human energetic consumption' → THEME > AGENT

	THEME	LOCATION	
(61)	erupție vulcanică 'volcanic eruption'	erupție submarină 'submarine eruption'	a. erupție vulcanică submarină eruption volcanic submarine b. #erupție submarină vulcanică eruption submarine volcanic 'submarine volcanic eruption' → THEME > LOCATION

	THEME	TIME	
(62)	reconstrucție industrială 'industrial reconstruction'	reconstrucție postbelică 'post-war reconstruction'	a. reconstrucție industrială postbelică reconstruction industrial post-war.ADJ b. #reconstrucție postbelică industrială reconstruction post-war.ADJ industrial 'post-war industrial reconstruction' → THEME > TIME

(63)   N° > THEME > {AGENT/LOCATION/TIME}

	MATTER	AGENT	
(64)	propunere financiară 'financial proposal'	propunere guvernativă 'governmental proposal'	a. propunere financiară guvernativă proposal financial governmental b. #propunere guvernativă financiară proposal governmental financial 'governmental financial proposal'

→ MATTER > AGENT

	MATTER	LOCATION	
(65)	urgenţă sanitară 'sanitary emergency'	urgenţă bucureşteană 'Bucharest emergency'	a. urgenţă sanitară bucureşteană emergency sanitary Bucharest.ADJ b. #urgenţă bucureşteană sanitară emergency Bucharest.ADJ sanitary 'Bucharest sanitary emergency' → MATTER > LOCATION

	MATTER	TIME	
(66)	descoperiri geografice 'geographical discoveries'	descoperiri renascentiste 'Renaissance discoveries'	a. descoperiri geografice renascentiste discoveries geographical Renaissance.ADJ b. #descoperiri geografice renascentiste discoveries geographical Renaissance.ADJ 'Renaissance geographical discoveries' → MATTER > TIME

(67)   N° > MATTER > {AGENT/LOCATION/TIME}

Testing the relative order of AGENT, LOCATION and TIME in Romanian, we are led to the same sequence noted in the other Romance languages:

	AGENT	LOCATION	
(68)	manifestări studenţeşti 'students demonstrations'	manifestări bucureştene 'Bucharest demonstrations'	a. manifestări studenţeşti bucureştene demonstrations student.ADJ Bucharest.ADJ b. #manifestări bucureştene studenţeşti demonstrations Bucharest.ADJ student.ADJ 'Bucharest students demonstrations' → AGENT > LOCATION

	AGENT	TIME	
(69)	invazii barbare 'barbarian invasions'	invazii medievale 'medieval invasions'	a. invazii barbare medievale invasions barbarian medieval b. #invazii medievale barbare invasions medieval barbarian 'medieval barbarian invasions'

$\rightarrow$ **AGENT > TIME**

	LOCATION	**TIME**	
(70)	trafic urban	trafic matinal	a. trafic urban matinal
	'urban traffic'	'morning traffic'	traffic urban morning.ADJ
			b. #trafic matinal urban
			traffic morning.ADJ urban
			'morning urban traffic'

$\rightarrow$ **LOCATION > TIME**

(71)   **N° > THEME/MATTER > AGENT > LOCATION > TIME**

4.8 Summary

It has been proved that the order of RelAs in different Romance languages converge on the same sequence of thematic relations. This sequence in turn has been shown to be the mirror image of the hierarchy proposed by Rae (2010) to account for ordering restrictions of modifiers inside CNs in English. Before discussing the theoretical implications of these parallel distributions, let us note that further data provided in the literature support the present claim.

Demonte (1999) argues that sub-classifying RelAs are freely ordered, unless a clear taxonomy exists; but at the same time she recognizes that there are cases in which one order is excluded. She provides (72), discussed in the previous chapter as (20), as an example. It shows the combination of a RelA expressing LOCATION with a RelA expressing TIME and the only linearization accepted is N° > LOCATION > TIME:

(72) a. merienda campestre veraniega   (Spanish)
          picnic country.ADJ summer.ADJ
      b. *merienda veraniega campestre
          picnic summer.ADJ country.ADJ
          'summer country picnic'

Demonte (1999) has to invoke a lexicalization effect to explain this ordering restriction, but the ungrammaticality of (72b) comes for free in the present account. It

simply derives from the hierarchy of thematic relations imposing the order LOCATION > TIME.

McNally & Boleda (2004) suggests, on the basis of (73), that the relative order of RelAs, like the relative order of other intersective adjectives, does not affect the interpretation of the noun phrase:

(73)   a. producció mundial   pesquera   (Catalan)
            production worldwide fishing
        b. producció pesquera mundial
            production fishing   worldwide
            'worldwide fishing production'

But they recognize that some speakers do not accept the ordering in (73a) for reasons unclear to them (McNally & Boleda 2004, fn.6). The refusal of (73a) is exactly what is expected under the present account: it is due to a violation of the hierarchy of thematic relations according to which a RelA expressing THEME (*pesquera* 'fishing') has to be closer to the head noun than a RelA expressing LOCATION (*mundial* 'worldwide').

Finally, an apparent counterexample can be seen in a different perspective. Bosque & Picallo (1996) give the following example, among others, to support their claim that ClAs always precede ThAs:

(74)   una producción manual cestera   (Spanish)
        a   production manual basket.ADJ
        'a manual production of baskets'

It could represent a counterexample for our claim that a RelA expressing THEME has to be closer to the head noun than a RelA expressing INSTRUMENT. However, in our questionnaire on RelAs in Spanish there was a parallel example and people seemed to largely prefer the order N > THEME > INSTRUMENT over the order N > INSTRUMENT > THEME, following our expectations. They were asked to choose between *decoración cerámica manual* and *decoración manual cerámica*: 89.3% of them preferred the former, while only 7.1% chose the latter.

On the basis of the pieces of evidence discussed in this chapter, it is argued that the unmarked order of RelAs in Romance follows the sequence in (33). Next chapter provides an account of these ordering restrictions in a cartographic perspective.

CHAPTER 5

AN ACCOUNT FOR RELATIONAL ADJECTIVE ORDERING

This final chapter aims to give an account for the order of RelAs in line with the picture of adjectives drawn by cartographic studies discussed in chapter 1.

The first section summarizes the striking parallelisms among ordering restrictions of modifiers in different languages and domains. Section 2 provides an explanation for the common unmarked order of RelAs, mainly following Cinque's (2010) hypotheses on the derivation of adjective order in Romance. In section 3 special attention will be given to the relationship between RelAs and other modifiers in the extended NP projection: the structural position of RelAs and derivations of surface orders will be further discussed looking at the relative order of RelAs and QAs (§5.3.1) and RelAs and PPs (§5.3.2). Finally, section 4 will face the problem of how to account for marked orders. Some final remarks conclude the chapter.

5.1 Ordering restrictions of modifiers across languages and domains: a summary

Interesting parallelisms in the distribution of modifiers have been noticed so far, even outside the nominal domain and Romance languages.

One of these parallelisms regards the order of RelAs in Romance and that of modifiers in CNs in English. Rae (2010) notes that such modifiers in English display ordering restrictions which can be argued to depend on the thematic relationships they establish with the head noun. In the previous chapter it has been shown that an unmarked ordering of RelAs does exist in Romance languages, as well, and that the same hypothesis can account for it. Moreover a comparison between Romance and English has shown that the order of postnominal RelAs in Romance is the mirror image of that of prenominal RelAs/nominal modifiers in English. This was indeed expected under Cinque's (2010) hypotheses on the syntax of adjectives and section 2 will show that the two parallel sets of ordering restrictions can be derived from the same underlying structure.

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But following Rae (2010), another interesting, probably unexpected, parallelism in the syntax of modifiers has come out. She discusses works on ordering restrictions of PPs in the clause by Schweikert (2005) for German and Takamine (2010) for Japanese and shows that not only the authors assume that the order of PPs depends on a hierarchy of thematic relations (as she does for modifiers in English CNs), but their hierarchies are almost completely superimposable on hers. Such a parallelism is unexpected since the only common denominator between modifiers studied by Rae (2010) on the one hand and modifiers analysed by Schweikert (2005) and Takamine (2010) on the other hand is the fact that they are modifiers. The former are nouns or adjectives, the latter are prepositional phrases; the former modify the noun, the latter modify the verb; the former have been studied in English, the latter in German and Japanese. The fact that categorially different modifiers in distinct domains of different languages display such parallel ordering restrictions could be taken by itself as evidence that these studies are on the right track.

Further parallelisms might be found at a closer look. The order of PPs in the extended NP projection should be examined to see whether it could be explained on the basis of the same hierarchy of thematic relations. For example Laenzlinger (2011) claims that the unmarked order of postnominal PP complements in French is (1), which seems to be fully compatible with Rae's (2010), Schweikert's (2005) and Takamine's (2010) hierarchies, if we assume that postnominal modifiers in Romance are ordered in a mirror image fashion with respect to prenominal modifiers in English, German and Japanese[1]:

(1) $N° >$ FP$_{de}$ [THEME] $>$ FP$_{de}$ [AGENT] $>$ FP$_{à}$ [GOAL] $>$ FP$_{de}$ [SOURCE] $>$ FP$_{par}$ [AGENT]

(2)-(6) summarize the ordering restrictions of modifiers which can be explained on the basis of a hierarchy of thematic relations. They are strikingly consistent: sequences (2) and (6), drawn for postnominal modifiers in Romance, are the mirror image of hierarchies

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[1] It has to be said that Laenzlinger (2011) proposes a different derivation. He claims that the surface order of postnominal PPs in Romance reflects their prenominal order of merge since the NP is supposed to past over them without pied-piping them, i.e. without changing their relative order. Hence, if the surface order is that in (1), the order of merge is supposed to be that in (i):

(i)   FP$_{de}$ [THEME] $>$ FP$_{de}$ [AGENT] $>$ FP$_{à}$ [GOAL] $>$ FP$_{de}$ [SOURCE] $>$ FP$_{par}$ [AGENT] $> N°$

Under these assumptions Laenzlinger's (2011) hierarchy of PPs would be no more compatible with Rae's (2010), Schweikert's (2005) and Takamine's (2010) hierarchies of PPs. See the discussion in chapter 1, §1.4.3.

(3), (4) and (5), drawn for pre-head modifiers. (2) shows the sequence that accounts for the syntax of RelAs in Romance; the relations contained in (2) are marked in bold in the other hierarchies to make even clearer that their relative order with respect to the head noun is always the same:

(2)   N° > THEME (>) MATTER > INSTRUMENT > AGENT > LOCATION > TIME

(3)   MATERIAL > TIME > LOCATION > AGENT/SOURCE > BENEFICIARY > MEASURE > INSTRUMENT > THEME/MATTER > N°   (Rae 2010, 143)

(4)   EVIDENTIAL > TEMPORAL > LOCATIVE > COMITATIVE > BENEFACTIVE > REASON > SOURCE > GOAL > MALEFACTIVE > INSTRUMENTAL /MEANS/ PATH > MATTER > MANNER > V°   (Schweikert 2005, 132)

(5)   TEMPORAL > LOCATIVE > COMITATIVE > REASON > SOURCE > GOAL > INSTRUMENTAL/MEANS > MATERIAL > MANNER > V°   (Takamine 2010, 94)

(6)   N° > THEME > AGENT > GOAL > SOURCE > AGENT   (Laenzlinger 2011, 204)

The hierarchy of thematic relations at the root of all these ordering restrictions appear to be reinforced by such parallelisms in different languages and domains.

5.2 Derivation of the linear order of Relational adjectives

The existence of ordering restrictions is explained assuming that RelAs are merged in a series of hierarchically ordered FPs determining their relative position. Scott (2002) suggests that attributive adjectives occupy the specifier of semantically related functional projections (e.g. ColourP, NationalityP, ShapeP). The same is proposed for RelAs: they are merged in functional projections whose head contains semantic features corresponding to the semantics of the RelA (e.g. TemporalP, LocativeP, AgentP). English, with its prenominal RelAs, reveals the hierarchy of such FPs. It is represented in Fig.5.1:
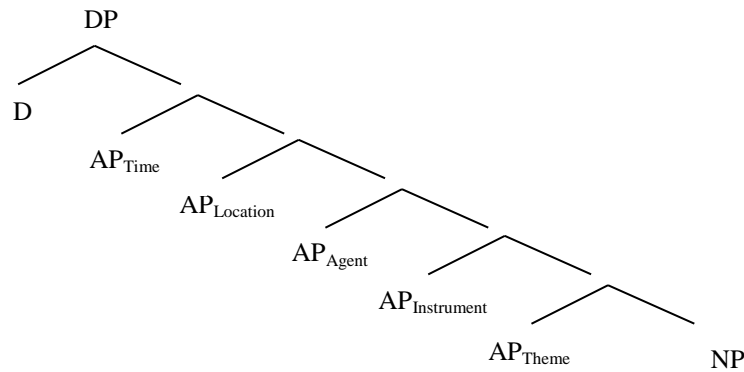
Fig. 5.1. Structural hierarchy of RelAs[2]

Two competing analyses of attributive adjective order, i.e. Cinque (2010) and Laenzlinger (2005, 2011), have been discussed in the first chapter. On the one hand Laenzlinger (2005, 2011) states that the NP in Romance can move alone or pied-piping its modifier. On the other hand Cinque (2010) considers only the pied-piping NP-raising and claims that different linearizations of adjectives have to be related to the existence of a second source for predicative adjectives, a reduced relative clause one, which would obscure the real distribution of direct modification adjectives. At the end of the first chapter it has been argued that the hypotheses on the derivation of adjective order could be tested analysing the syntax of RelAs itself, since RelAs cannot be used as predicates, hence they are not ambiguous between the two syntactic sources. They can only be direct modification APs.

The analysis of empirical data and the comparison between Romance and English brings evidence in favour of Cinque's (2010) position: the unmarked order of postnominal RelAs in Romance is the mirror image of the prenominal order of RelAs in English. Therefore the NP-movement past adjectives in Romance is of the roll-up type:

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[2] MATTER has been left aside for its problematic position with respect to THEME.
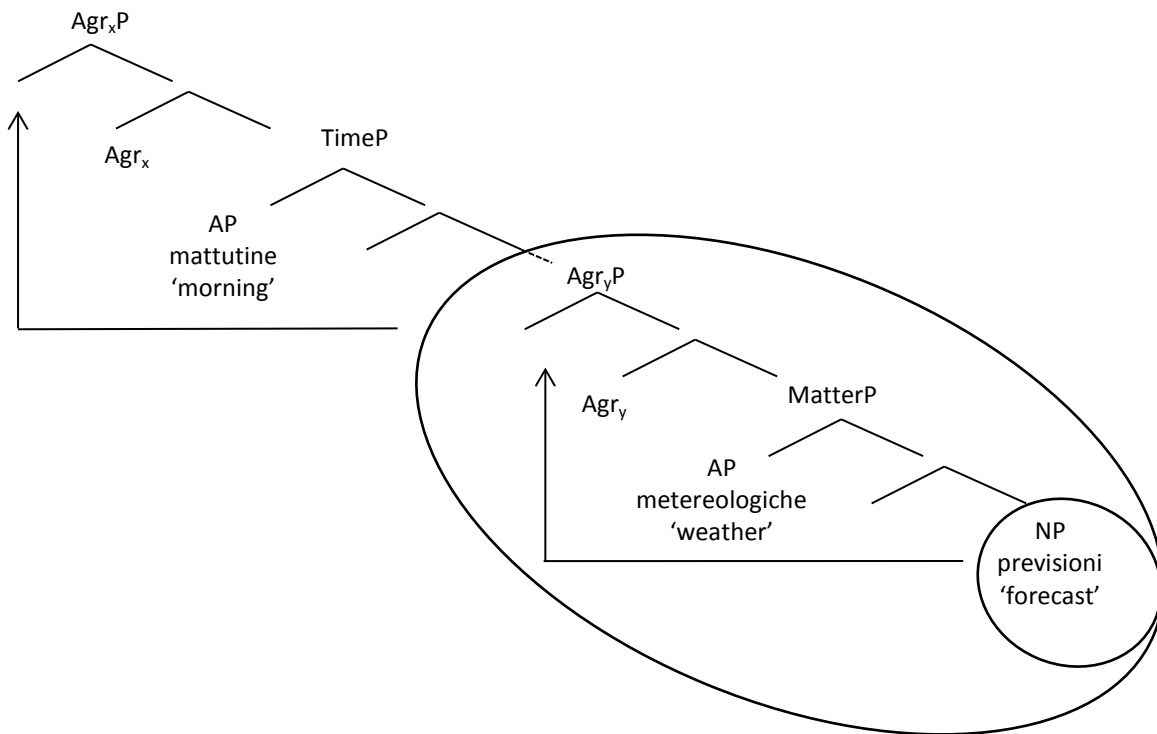
Fig. 5.2. Derivation of RelAs order in Romance.

Laenzlinger (2005, 2011) claims that the snowballing NP-movement in Romance is limited to one step (see ch.1, fn.11), but the sequences in (7) and (8) show that there is not such a constraint on this type of phrasal movement, at least not in all Romance languages:

(7)   scoperte   geografiche portoghesi rinascimentali   (Italian)
        discoveries geographical Portuguese Reinassance.ADJ
        'Renaissance Portuguese geographical discoveries'

(8)   dibattito politico italiano postbellico
        debate   political Italian   post-war.ADJ
        'post-war Italian political debate'

Fig. 5.3 gives the derivation of (7), which implies a two-step snowballing NP-movement with progressive pied-piping of RelAs producing a mirror image order of modifiers in postnominal position in Italian:

AgrₓP...

Agr_wP

$TimeP$

AP
rinascimentali
'Reinassance'

Agr_xP

Agr_x

$AgentP$

AP
portoghesi
'Portuguese'

Agr_yP

Agr_y

$MatterP$

AP
geografiche
'geographical

NP
scoperte
'discoveries'
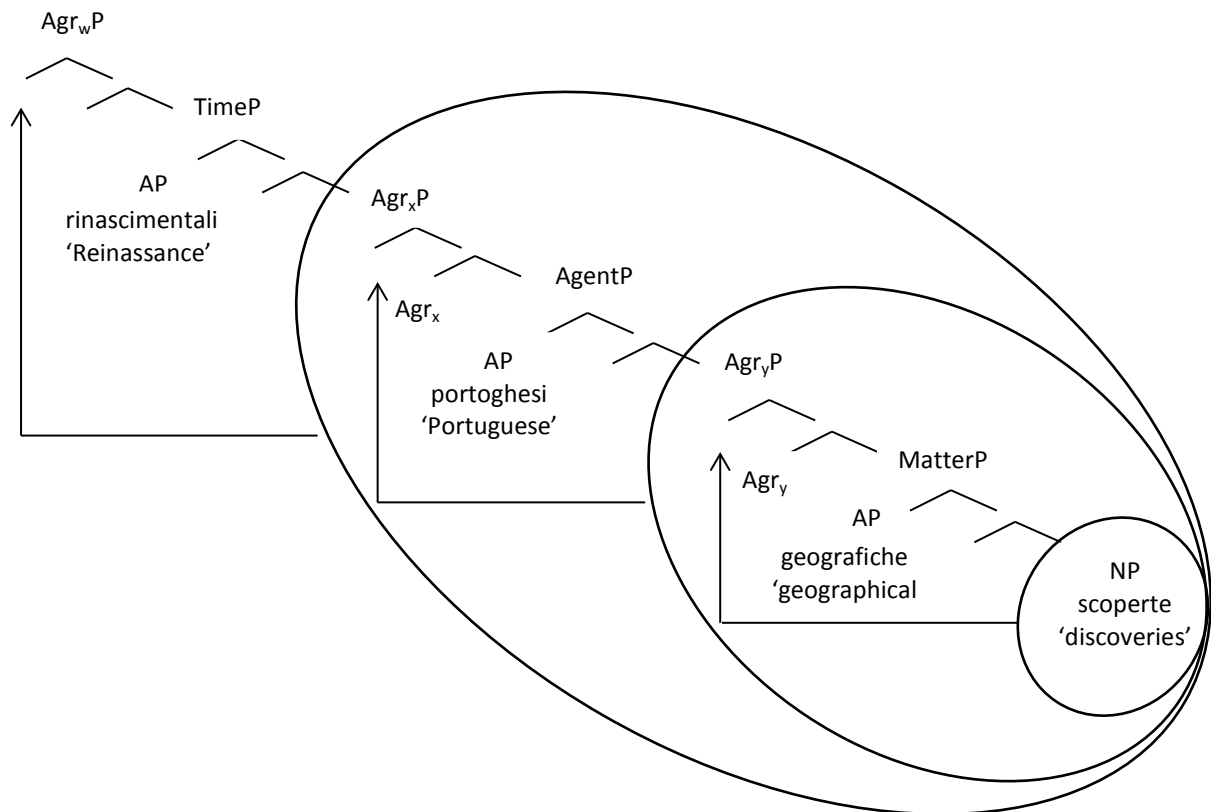
Fig. 5.3. Derivation of RelA order in Romance with a two-step pied-piping NP-movement.

So far the order of RelAs has been discussed with respect to the head noun; from now on the relative order of RelAs and other modifiers will be analysed. Which is the exact position of merge of RelAs in the extended NP projection? How do PPs interact with RelAs? Can the syntax of RelAs reveal something about the structure of the noun phrase? Answers for these questions will be looked for in the following pages.

5.3 Relative order of Relational adjectives and other modifiers

5.3.1 Relational adjectives and Qualifying adjectives

The relative order of RelAs and QAs in Romance has been discussed in chapter 2. Among the properties ascribed to RelAs, in fact, there was the strict adjacency of RelAs to the head noun, so that a QA in Romance can precede or follow the complex made up of the noun plus the RelA, but it cannot be placed between them. The fact that RelAs are

closer to the head noun than QAs is even more evident in English, where QAs precede RelAs in prenominal position:

(9)   English: QA > RelA > N
        Romance: N > RelA > QA
                              QA > N > RelA

This distribution can be easily accounted for in terms of hierarchical structure by claiming that the merging sites of RelAs are lower than those of QAs. If this is uncontroversial, different solutions have been proposed regarding the type of structure in which RelAs are generated. For example, Ramaglia (2008) suggests that they are merged in an NP-shell (see ch.3, §3.2.1.1), whereas Rae (2010) hypothesizes a more articulated structure made up of a *Complex nominal functional domain* and a *Complex nominal checking domain* (see ch. 3, §3.3.1 and below). An alternative proposal will be put forward in the following section, suggesting that RelAs are merged in the Ɵ-domain of the nominal structure, where they absorb the thematic relation they express, and are subsequently raised to the adjective-domain.

5.3.2 Relational adjectives and PPs

Let us recall the basic assumptions on PPs in the noun phrase made by Laenzlinger (2005, 2011) and Cinque (2010), discussed in the first chapter. Both the authors adopt Kayne's (2002, 2004) approach to PPs, according to which Ps are not directly merged with their complements. Laenzlinger (2011) claims that the PP-domain is above the adjective-domain (but below the left periphery of the noun phrase). His main argument in favour of such a position is the fact that PPs precedes adjectives in head-final languages like Japanese and Tatar, whose prenominal modifiers are argued to indicate (with their order) the hierarchy of functional projections. Cinque (2010) places the PP-domain above the area of direct-modification adjectives, as well, but its exact position remains undetermined. The author observes that in Romance an adjective preceding a PP can be in direct or indirect modification, whereas an adjective following a PP has to be of the indirect modification type, i.e. derived from a reduced RC. This is explained assuming that PPs are structurally higher than direct modification adjectives, as already said, but possibly lower than reduced RCs: the order of PPs and reduced RCs would depend on

whether the complementizer of the RC or the preposition of the PP is merged higher (see ch.1, §1.4.4). What is relevant here is that both the authors exclude that the PP-domain is lower than FPs hosting direct modification adjectives.

RelAs cannot be analysed as reduced RCs; this means that the indirect modification source is not available for them: they are unambiguously direct modifiers. Hence, following Cinque (2010), we expect them to occur between the noun and a PP in Romance (since adjectives following PPs are said to be necessarily of the indirect modification type). This seems to be exactly what one finds. Starting from It. *spedizioni artiche ottocentesche* in (10a), if we want to transform one of the two RelAs into a PP, we obtain two possible unmarked orders, (11a) and (11b), showing the sequence N > RelA > PP:

(10) a. spedizioni   artiche ottocentesche   (Italian)
          expeditions arctic   19th-century.ADJ
      b. #spedizioni ottocentesche   artiche
          expeditions 19th-century.ADJ arctic
          '19th-century Arctic expeditions'

(11) a. spedizioni   artiche nell'   Ottocento
          expeditions artic   in.the 19th-century
          'Arctic expeditions in the 19th-century'
      b. spedizioni ottocentesche   nell' Artico
          expeditions 19th-century.ADJ in.the Artic
          '19th-century expeditions in the Arctic'

Note that the order of RelAs in (10) depends on the hierarchy of thematic relations, which places LOCATION closer to the noun than TIME. But, when one of the two modifiers is a PP, their order does not appear to be conditioned by the hierarchy of thematic relations anymore; the only constraint is that the RelA has to precede the PP modifier.

This can be accounted for if we assume that the nominal structure is made up of a low thematic domain, where modifiers are first-merged according to the thematic hierarchy, a (direct modification) adjective-domain, where adjectives absorbing thematic

relations are raised for agreement feature checking, and a higher PP-domain, where PPs are licensed[3].

If both the modifiers are RelAs, their order has to mirror the hierarchy of thematic relations, since they are licensed in the same (adjective) domain. Fig. 5.4 provides the derivation for the order N > RelA$_{Location}$ > RelA$_{Time}$, resulting from It. *spedizioni artiche ottocentesche* '19th-century Arctic expeditions' (ex. (10a)):
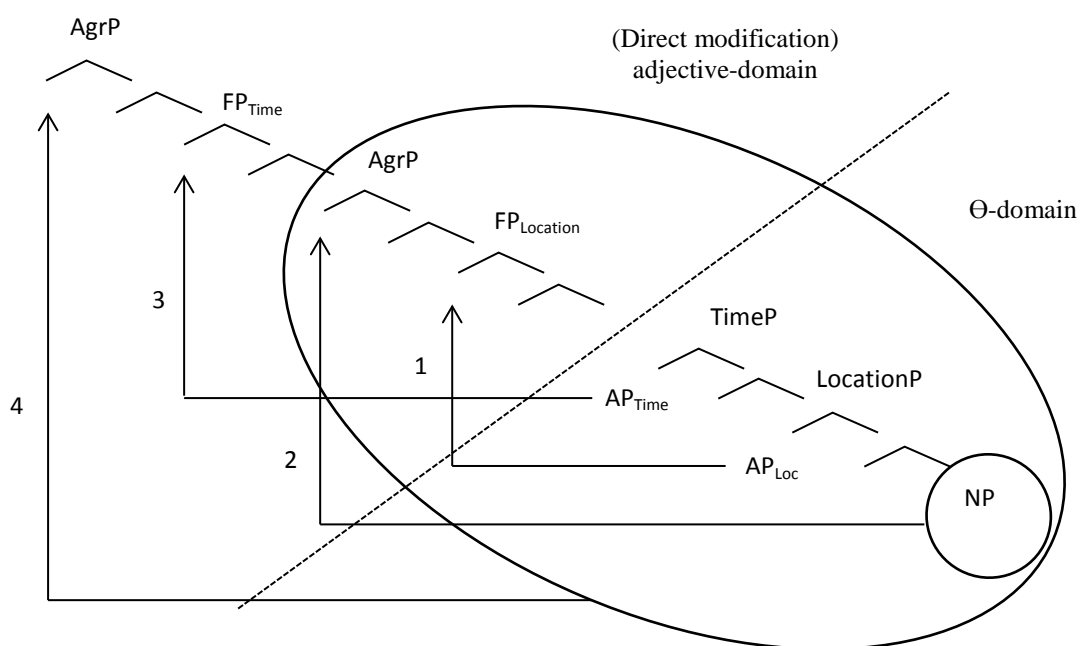
Fig. 5.4. Derivation of RelAs order in Romance (revisited).

The derivation would follow these steps[4]:

- LOCATION and TIME modifiers are merged in the Ɵ-domain according to the thematic hierarchy;
- the locative modifier (AP$_{Loc}$), being an adjective, is raised to the adjective-domain (in Spec,FP$_{Loc}$) (1);
- the NP is moved to the specifier of an AgrP immediately above FP$_{Loc}$ for agreement feature checking (2);

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[3] This structure is parallel to that given by Laenzlinger (2011), who divides the nominal structure into three domains: (i) the Nachfeld, consisting in the thematic domain; (ii) the Mittelfeld, made up of two sub-domains (the domain of adjectives and that of Case and P-related projections); (iii) the left periphery. See Fig. 1.4 in Chapter 1 and the related discussion of Laenzlinger's (2011) proposal.

[4] Note that this derivation is parallel to that proposed above in Fig. 5.2, the only difference being that the distinction of a thematic-domain and an adjective-domain has been added.

- the temporal modifier (AP_{Time}), being an adjective, is raised to the adjective-domain, as well (in Spec,FP_{Time}) (3);
- the noun moves to an AgrP above FP_{Time} (for agreement feature checking) pied-piping the lower AP_{Loc} (4).

If one of the modifiers is a RelA and the other one is a PP, the (unmarked) order will be N > RelA > PP, independently from the thematic hierarchy, since the adjective-domain is structurally closer to the noun than the PP-domain. The derivation of It. *spedizioni artiche nell'Ottocento* 'Arctic expeditions in the 19th-century' (ex. (12a)) is provided below:
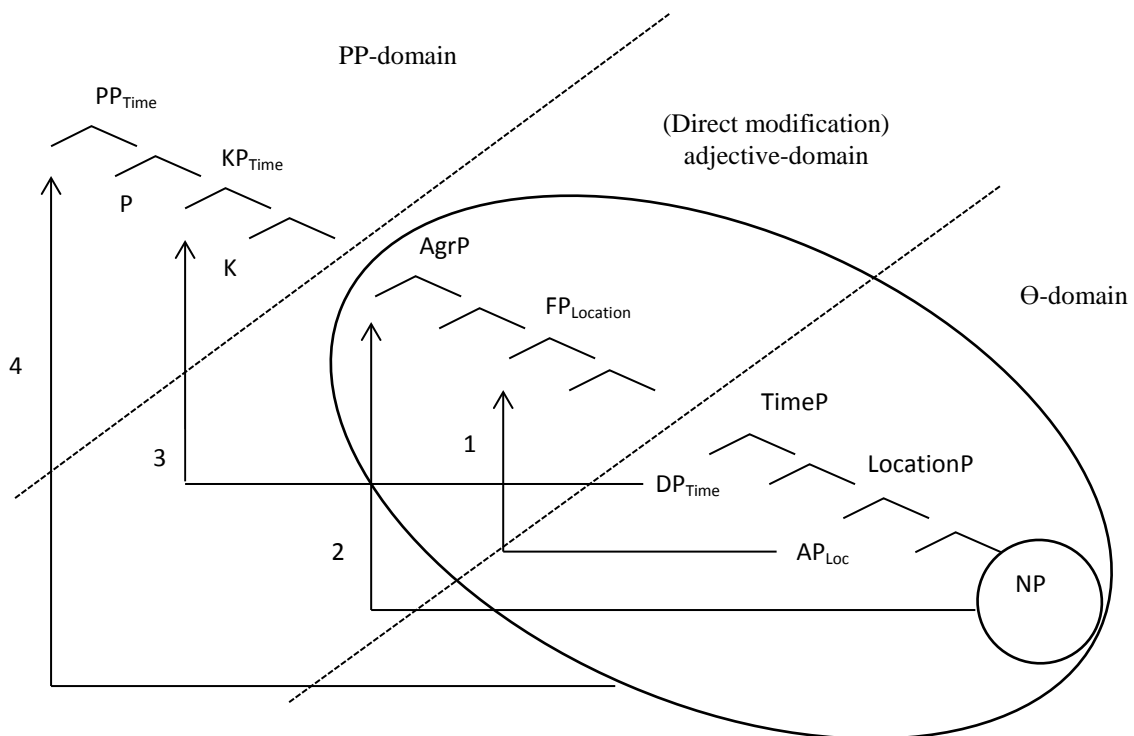
Fig. 5.5. Derivation of the order N > RelA > PP in Italian (Romance) (I).

The relevant steps of the derivation are the following:
- LOCATION and TIME modifiers are merged in the Ө-domain according to the thematic hierarchy;
- the locative modifier (AP_{Loc}), being an adjective, is raised to the adjective-domain (in Spec,FP_{Loc}) (1);

- the NP is moved to the specifier of an AgrP immediately above FP_{Loc} for agreement feature checking (2);
- the temporal modifier (DP_{Time}), being a DP, needs to receive Case: it is attracted to Spec,KP_{Time} in the PP-domain (3) and a preposition is merged to license the modifier;
- there is remnant movement to Spec,PP_{Time} (4), producing the order $N > RelA_{Location} > PP_{Time}$.

The order $N > RelA_{Time} > PP_{Location}$, corresponding to example (12b), is derived as follows:
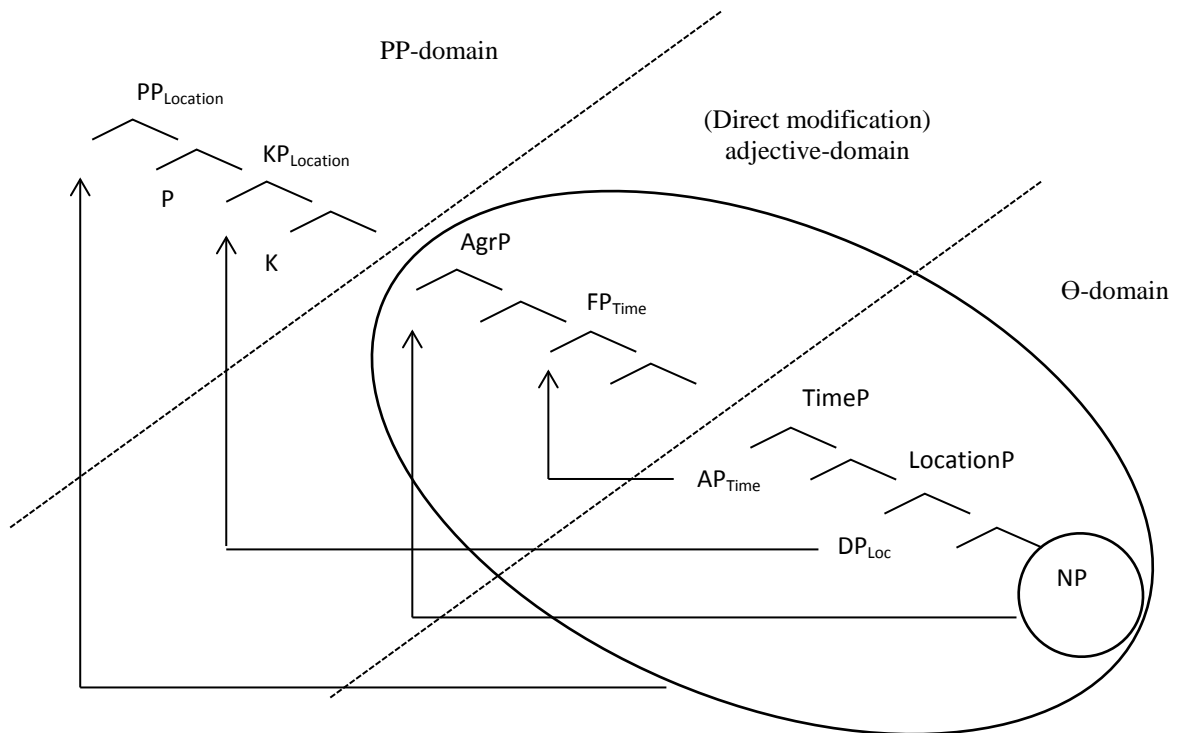
Fig. 5.6. Derivation of the order N > RelA > PP in Italian (Romance) (II).

Now the question is whether the order N > RelA > PP is the only possible linearization in Romance. The answer should be positive on the basis of the nominal structure and derivations proposed here: as illustrated above, it should be a consequence of the higher mapping of the PP-domain with respect to the adjective-domain.

The problem is that the order N > PP > RelA does not seem completely ungrammatical. Look at the Italian examples in (12):

(12) a. $^?$spedizioni nell' Artico ottocentesche
          expeditions in.the Artic   19th-century.ADJ
     b. *spedizioni nell' Ottocento   artiche
          expeditions in.the 19th-century artic

Compare these examples with those in (11). The order N > PP > RelA seems to be acceptable, even if marginal, provided that the hierarchy of thematic relations is maintained: in fact, the order N > PP$_{Location}$ > RelA$_{Time}$, though marked, is not as bad as the order N > PP$_{Time}$ > RelA$_{Location}$.

How can we account for such (unexpected) orderings of PPs and RelAs? Remember that, according to Cinque (2010), the order N > PP > AP is possible in Romance provided that the adjective belongs to the indirect modification type, i.e. it corresponds to a reduced RC. But RelAs have been claimed to belong to the direct modification type only. Therefore, a different motivation for the order N > RelA > PP has to be looked for.

So far it has been assumed that PPs are 'built' in a portion of the nominal structure which is higher than the domain hosting (direct modification) adjectives. This hypothesis is in line with the order PP > AP > N found in head-final languages. As far as RelAs and PPs are concerned, it accounts for the unmarked order N > RelA > PP in Romance, as already shown. However, I will suggest that there is another (marked) option for the formation of PPs and it involves a lower portion of the nominal structure. In order to sketch such a proposal I need to recall briefly Rae's (2010) derivation of ordering restrictions in CNs in English.

Sequences in (13), taken from Rae (2010, 131), show that the relative order of these modifiers in English relies on the hierarchy of thematic relations reported in (3) and is not sensitive to the category of the modifiers, so that in (13) the ordering is TIME > LOCATION > N, no matter if among the modifiers the noun is closer than the adjective to the head noun (13b) or *vice versa* (13a):

(13) a. summer urban 'rain   vs.   *urban summer 'rain
     b. autumnal London 'rain   vs.   *London autumnal 'rain

To capture the fact that ordering restrictions are based uniquely on the hierarchy of thematic relations and not on the categorial status of modifiers, she suggests that these

modifiers are first-merged in the structure as nPs. They are base-generated in the specifiers of hierarchically ordered functional projections within the *Complex nominal functional domain* and subsequently raised to the *Complex nominal checking domain*, where they can be licensed as nouns or adjectives. The nP is attracted to a KP where it checks its thematic features and then further raised to a RelAP where it receives a relational suffix whenever available[5]; otherwise it remains in KP and an empty preposition is inserted to license the modifier:
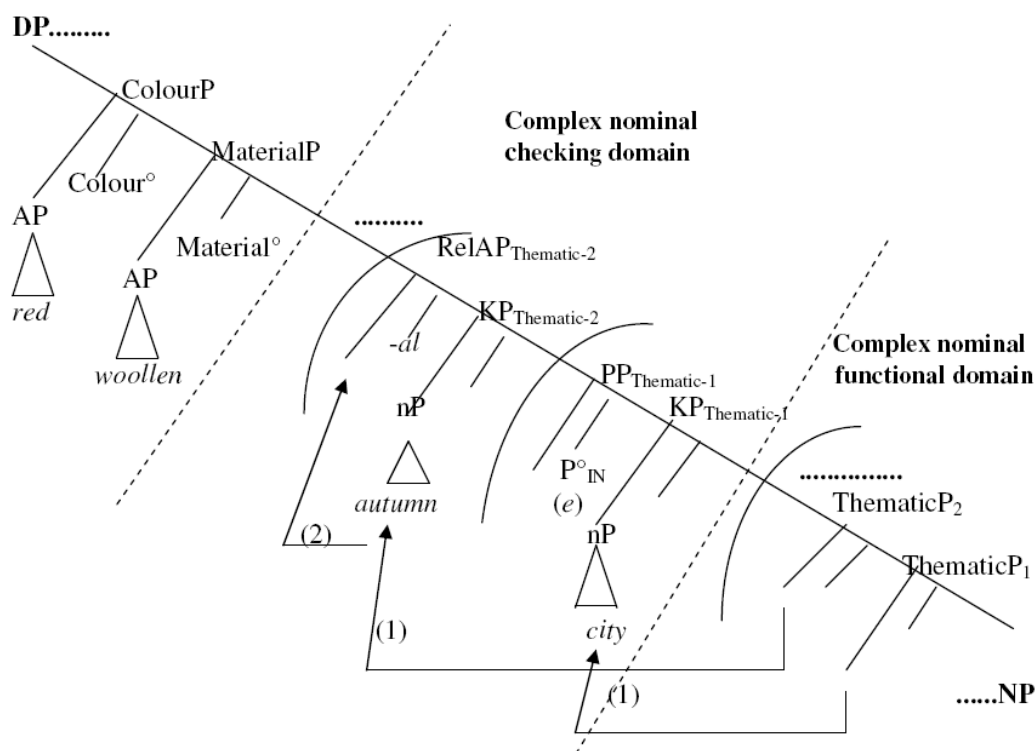
Fig. 5.7. Rae's (2010) derivation of ordering restrictions of RelAs (II)

On the one hand Rae's *Complex nominal functional domain* would correspond to the thematic domain where modifiers have been claimed to be first-merged according to the thematic hierarchy (see Fig. 5.4, 5.5 and 5.6). On the other hand her *Complex nominal checking domain* would be located within the (direct modification) adjective-domain, below the projections hosting QAs.

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[5] This derivation is modelled on that proposed by Schweikert (2005) for PPs in German (see ch.1, §1.5.1); Rae's (2010) would correspond to Schweikert's (2005) PP.

As already mentioned in the third chapter, Rae (2010) states that her analysis has the advantage of being able to account for corresponding structures with PPs in place of nominal/adjectival modifiers in Romance languages. She notes, in fact, that where in English there is a complex nominal, in Romance languages there is often a noun postnominally modified by a prepositional phrase, e.g. in Italian *asciugamano da bagno* 'bathroom towel' (lit. towel for bathroom) or *parchi di città* 'city parks' (lit. parks of city).

PPs in Romance languages would be derived from the same structure as nominal modifiers in English, with the difference that the preposition would be phonologically realized and not empty. As for the postnominal position of PPs in Romance, compared to the prenominal position of modifiers in CNs in English, the author claims that «the difference between the Romance languages and English would be attributed to NP movement followed by remnant movement in the former, analogous to Schweikert's (2005) analysis of circumstantials» (Rae 2010, 104). Unfortunately this analysis is only sketched, but she gives the following derivation as an example:
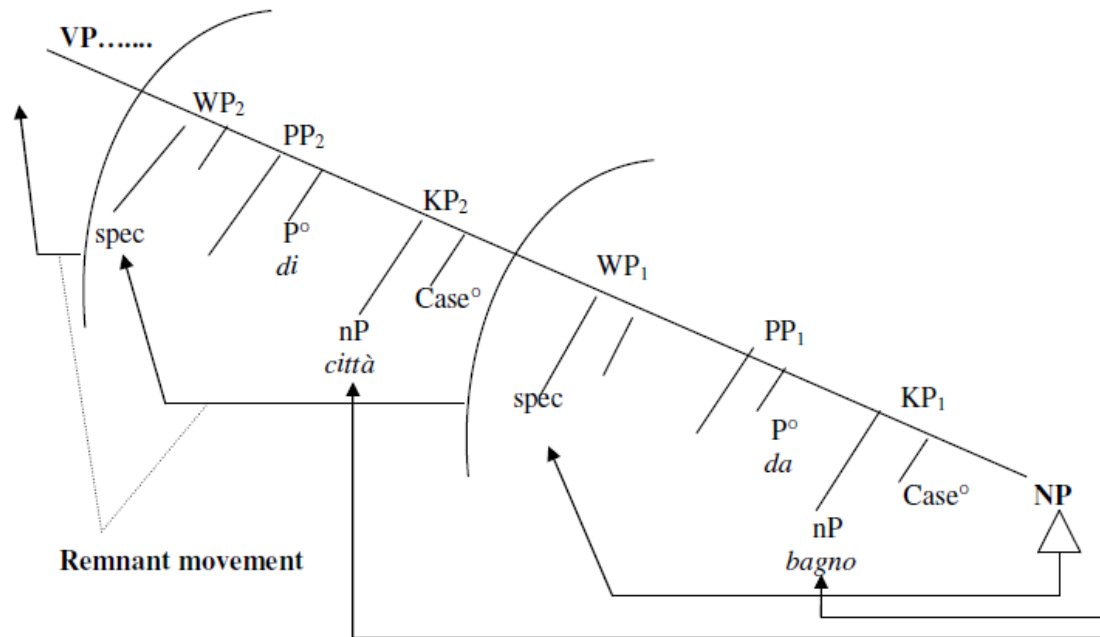
Fig. 5.8. Rae's (2010) derivation of PP order in Romance languages.

This proposal resembles the derivation of PPs suggested above: the complement of the preposition is merged in a low portion of the structure and raised higher after the merge of a Case head which attracts the DP to its specifier; the following step is the merge

of a preposition which triggers remnant movement, so that the PP is expected to surface after the head noun. The crucial difference possibly regards the portion of the nominal structure where PPs are claimed to form. I have to admit that it is not really clear to me if Rae (2010) means that PPs are 'built' in the same *Complex nominal checking domain* where nominal and adjectival modifiers are licensed or in another (higher) part of the nominal structure. The author argues that in this domain modifiers can be licensed either as adjectives, if a relational suffix is available, or as nouns, if a silent preposition is merged. Does she mean that such a preposition can be overtly realized (instead of being empty) when she deals with PP complements in Romance?

Since cases of the order N > PP > RelA, though more marked, do exist, the possibility for PPs to be 'built' in a low area of the nominal structure corresponding to Rae's (2010) *Complex nominal checking domain* will be explored.

Let us suppose that PPs can be licensed in the same domain where RelAs are licensed. A possible derivation of the sequence in (12a) (It. *spedizioni nell'Artico ottocentesche*, lit. expeditions in the Artic 19th-century.ADJ) is given below:
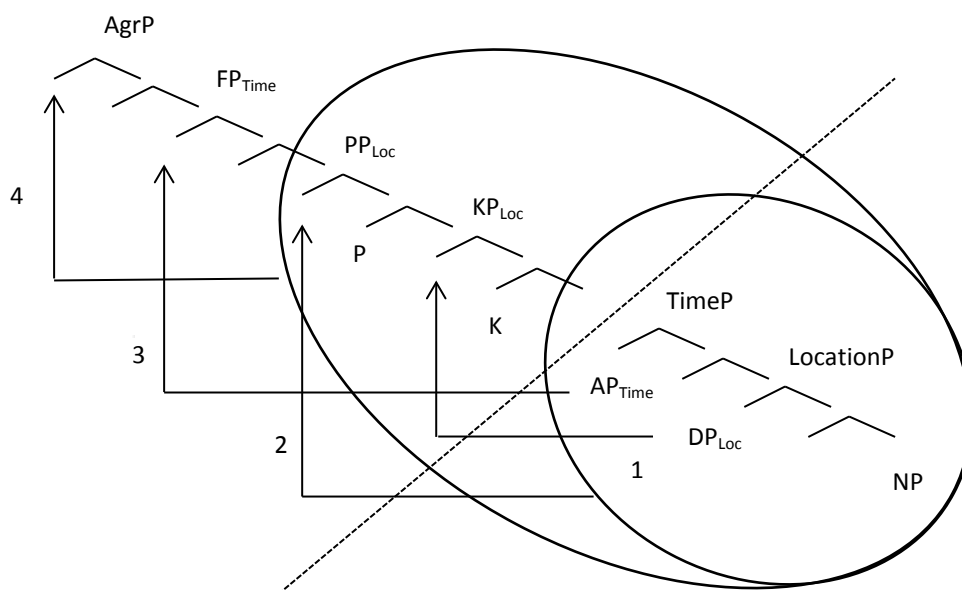
Fig. 5.9. Derivation of the order N > PP > RelA in Italian (Romance).

The steps of the derivation would be the following:
- LOCATION and TIME modifiers are merged in the Ө-domain according to the thematic hierarchy;

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- the locative modifier (DP_{Loc}), being a DP, needs to receive Case: it is attracted by K_{Loc} that is merged immediately above the thematic domain (1);
- a preposition is merged to license the modifier; it causes the movement of the remnant to Spec,PP_{Loc} (2);
- the temporal modifier (AP_{Time}) is raised to Spec,FP_{Time} for agreement feature checking (3);
- the NP moves to the specifier of an AgrP immediately above FP_{Time} (4) pied-piping the locative PP and thus producing the order $N > PP_{Location} > AP_{Time}$.

If PPs can be licensed in the same domain where RelAs are licensed, we would expect that the order $N > PP > RelA$ is forced to follow the thematic hierarchy. This is confirmed by the ungrammaticality of (12b) showing the order $N > PP_{Time} > AP_{Location}$, which violates the hierarchy of thematic relations, compared to the grammaticality of (12a) corresponding to the order $N > PP_{Location} > AP_{Time}$, which is fully compatible with the thematic hierarchy.

This pattern is regular. Lots of examples similar to (10)-(12) can be provided. Look at (14)-(18). They show parallel sequences: in (a-a') both the modifiers are realized as RelAs; in (b-b') the modifier closer to the noun is realized as RelA, the rightmost one as PP; in (c-c') the modifier realized as PP precedes that realized as RelA. As previously noted, there is an asymmetric distribution of modifiers in cases (a-a') and (c-c'): the ungrammaticality of examples (a') and (c') seems to be due to the same reason, i.e. the violation of the expected order of thematic relations, which is reported among brackets. On the contrary in cases (b-b'), where the RelA precedes the PP, there seem to be no constraints on the order of the thematic relations that these modifiers express:

(14)   a.   esplorazione lunare americana   (THEME > AGENT)
           exploration lunar American
       a'. #esplorazione americana lunare
           exploration   American lunar

       b.   esplorazione lunare da parte degli americani
           exploration lunar by   Americans
       b'. esplorazione americana della luna
           exploration American of.the moon

       c.   [?]esplorazione della luna americana

       exploration   of.the moon American

c'. *esplorazione da parte degli americani lunare
       exploration   by   Americans lunar

(15) a.   abbassamento termico   notturno   (THEME > TIME)
          drop   temperature.ADJ nocturnal

      a'. #abbassamento notturno termico
          drop   nocturnal temperature.ADJ

      b.   abbassamento termico   di notte
          drop   temperature.ADJ by night

      b'. abbassamento notturno della   temperatura
          drop   nocturnal of.the temperature

      c.   [?]abbassamento della temperatura notturno
          drop   of.the temperature nocturnal

      c'. *abbassamento di notte termico
          drop   by night temperature.ADJ

(16) a.   circolazione monetaria europea   (THEME > LOCATION)
          circulation   monetary European

      a'. #circolazione europea   monetaria
          circulation   European monetary

      b.   circolazione monetaria in Europa
          circulation   monetary   in Europe

      b'. circolazione europea   della   moneta
          circulation   European of.the money

      c.   [?]circolazione della moneta europea
          circulation   of.the money European

      c'. *circolazione in Europa monetaria
          circulation   in Europe monetary

(17) a.   invasioni barbariche medievali   (AGENT > TIME)
          invasions barbarian Medieval

      a'. #invasioni medievali barbariche
          invasions   Medieval barbarian

      b.   invasioni barbariche nel   medioevo
          invasions barbarian in.the Medio eve

      b'. invasioni medievali dei   barbari

invasions Medieval of.the barbarians

c. $^?$invasioni dei barbari medievali
invasions of.the barbarians Medieval

c'. *invasioni nel medioevo barbariche
invasions in.the Medio eve barbarians

(18) a. sciopero operaio torinese   (AGENT > LOCATION)
strike worker.ADJ Turin.ADJ

a'. #sciopero torinese operaio
strike Turin.ADJ worker.ADJ

b. sciopero operaio a Torino
strike worker.ADJ in Turin

b'. sciopero torinese degli operai
strike Turin.ADJ of.the workers

c. $^?$sciopero degli operai torinese
strike of.the workers Turin.ADJ

c'. *sciopero a Torino operaio
strike in Turin worker.ADJ

Therefore, the idea is that, when the PP precedes the RelA, it would be generated in the same (low) domain of the nominal structure as the RelA. This would explain at the same time why a PP can precede a RelA and why the sequences N > PP > RelA undergo the same order constraints as the sequences N > RelA > RelA depending on the hierarchy of thematic relations. On the contrary, when the PP follows the RelA, it would be generated in a portion of the nominal structure higher than the adjective domain: in this case the PP would be necessarily the rightmost element of the sequence since the merge of the preposition would cause a remnant movement involving the NP plus the RelA. This option seems to be the unmarked one.

5.4 Derivation of unexpected orderings

The order N > THEME/MATTER > INSTRUMENT > AGENT > LOCATION > TIME has been said to be the unmarked serialization of RelAs in Romance. Different orderings do exist, but they appear to be pragmatically marked. Consider (19):

(19) a. attacco missilistico coreano   (Italian)
          attack   missile.ADJ Korean
      b. #attacco coreano missilistico
          attack   Korean missile.ADJ
          'Korean missile attack'

Italian native speakers who answered the questionnaire largely preferred (19a) over (19b). The latter seems to become more appropriate in a context where one is talking of a Korean attack and wants to further specify that it is an attack made using missiles. Hence, *missilistico* would be forced to occur in final position since it vehicles new information respect to another RelA (*coreano*), which would be part of the given information[6].

I think that the frequency of a N+RelA combination could play a role in the linearization of RelAs in a similar way. Look at (20) compared to (21) (the number in brackets represent the number of occurrences resulted from a Google search[7]):

(20) a. produzione vinicola francese   (37)
          production wine.ADJ French
      b. produzione francese vinicola   (0)
          production French wine.ADJ
          'French wine production'

(21) a. produzione vinicola italiana   (348)
          production wine.ADJ Italian
      b. produzione italiana vinicola   (12)
          production Italian wine.ADJ
          'Italian wine production'

(20) and (21) involve RelAs expressing the same thematic relations (THEME and AGENT): the head noun (*produzione*) and the RelA absorbing the THEME role (*vinicola*) are kept as a constant, the only difference being the RelA expressing AGENT (*francese* in (20), *italiana* in (21)). Order variability is expected neither in (20) nor in (21) since RelAs should be ordered according to the sequence N > THEME > AGENT. However, if on the one

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[6] Another example of this type can be found in Ch.4, §4.1.2.

[7] Search made on 5 April, 2014.

hand (20) shows that only the expected sequence (with the RelA absorbing THEME preceding the RelA expressing AGENT) is attested, on the other hand (21) provides some cases of the reverse order. The question is: could there be effects based on frequency, since in Italian it is plausible that *Italian productions* are more often spoken of? In (21b) pragmatics would be at play again: *produzione italiana* 'Italian production', differently from *produzione francese* 'French production', could be a given constituent in the universe of discourse of an Italian speaker. Hence, the external position of the RelA expressing THEME in (21b) would be due to its markedness as a new information Focus.

In order to account for these marked sequences, information structure inside DP would be required.

DP is often analysed as the counterpart of CP and split into a series of functional projections (see Laenzlinger 2005, 2011; Giusti 1996, 2006, 2014, among others): even the noun phrase, like the clause, is assumed to have a left periphery with Topic and Focus positions. Laenzlinger (2005, 2011) hypothesizes the existence of left-peripheral projections to account for the occurrence of adjectives in prenominal position in French (Romance). An analysis of RelAs as informationally marked cannot involve the left periphery of the noun phrase since these adjectives are very low in the nominal structure and never occur prenominally. But an alternative analysis could be possible.

Let us change completely our topic for a while. Belletti (2004) suggests the existence of a clause-internal periphery above vP/VP in order to account for the postverbal subject position in Romance. The postverbal subject is said to be interpretable as new information focus, being second-merged in a low Focus position. Belletti (2004) proposes to derive VOS structures from the movement of the subject to this low Focus position with a subsequent clause-internal remnant topicalization; this latter movement would account for the topic interpretation of the VO sequence, targeting a low Topic position immediately above the Focus one.

Let us assume that this low periphery does exist in the noun phrase, as well. It seems reasonable given the parallelism between the structure of the noun phrase and that of the clause (see Laenzlinger 2011). There would be at least two positions: one of new information focus and one of topic. And the derivation of the pragmatically marked order in (19b) would be that in Fig.5.6[8]:

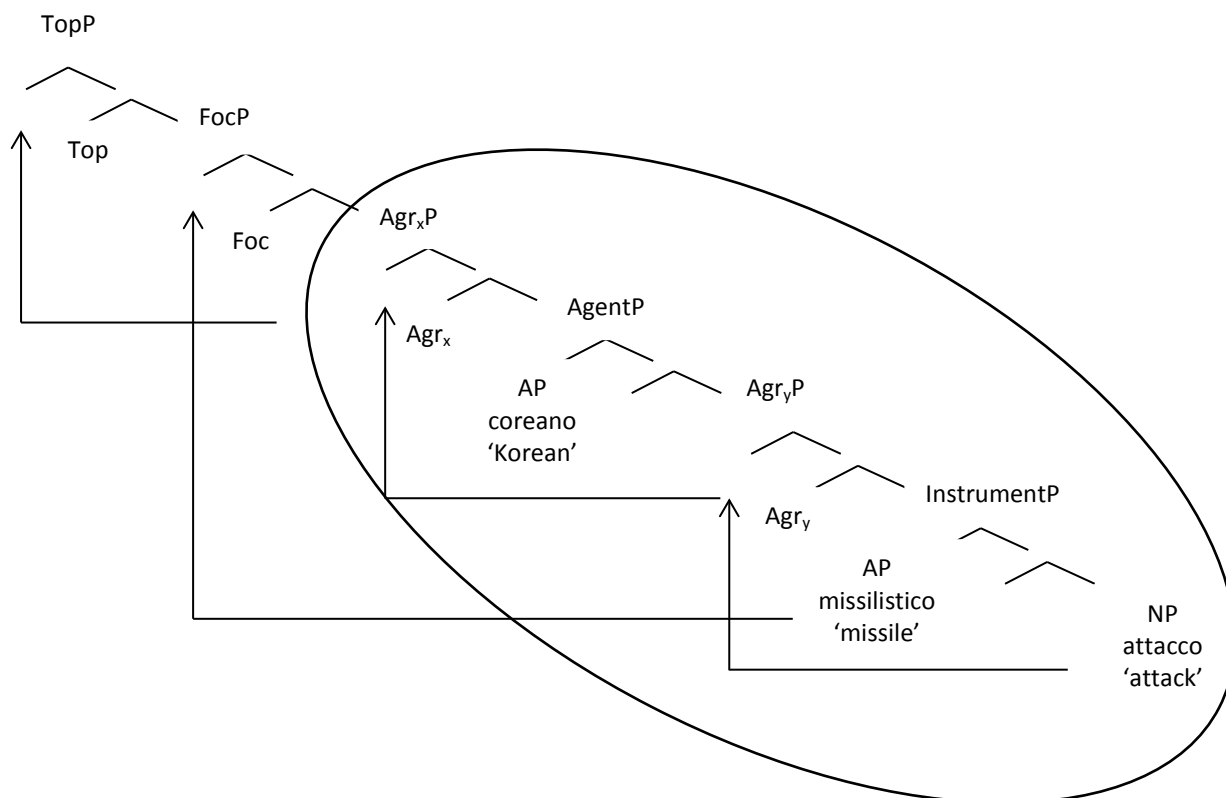[8] For the sake of clearness, the distinction between the thematic domain and the adjective domain will be left underspecified.

Fig. 5.10. Derivation of unexpected orderings.

The order of merge would correspond to the sequence *coreano missilistico attacco* ($RelA_{Agent} > RelA_{Instrument} > N$); then *missilistico* would be raised to Spec,FocusP and the remnant would be moved in a TopicP immediately above FocusP; inside the constituent raising up to the Topic position there would be a further movement of the NP, so that the surface order would be *attacco coreano missilistico* ($N > RelA_{Agent} > RelA_{Instrument}$, and not $N > RelA_{Instrument} > RelA_{Agent}$ as expected in unmarked orders).

This remains a speculation for the moment since independent pieces of evidence in favour of the existence of such a low left periphery in the noun phrase are missing.

Nevertheless, I do not consider the type of example represented by (19b) and (21b) as true counterexamples to my proposal: the order N > THEME/MATTER > INSTRUMENT > AGENT > LOCATION > TIME is assumed for core unmarked cases, while (19b) and (21b) appear to be pragmatically marked. Only the existence of free orderings of RelAs without pragmatic effects could challenge the present hypothesis.

With regard to this topic, consider (22), where both the orders of RelAs seem to be equally acceptable:

(22)　a.　moda parigina primaverile
　　　　　'spring Parisian fashion'
　　　b.　moda primaverile parigina
　　　　　'Parisian spring fashion'

One possible way to account for an example like (22) is to argue that the same RelA could have different interpretations in the two orders; *primaverile* 'spring' could express TIME in (22a), meaning 'fashion in Paris in the springtime', whereas it could express MATTER in (22b), referring to a 'fashion developed in Paris regarding the springtime'. Considering *parigina* 'Parisian' as constant in expressing LOCATION, the order would be LOCATION > TIME in (22a) and MATTER > LOCATION in (22b), consistent with the hierarchy proposed.

Moreover one has to keep in mind the possibility for some sequences (e.g. *moda primaverile* itself) to be lexicalized or to be undergoing a lexicalization process. The existence of idiosyncratic lexical restrictions obviously obscures the distribution of phrasal RelAs. Given the difficulty of finding clear criteria to distinguish lexical constructions from phrasal ones (see chapter 2, §2.5.2), lexical N+RelA combinations can be hardly set apart from phrasal N+RelA ones plainly.

However, the high percentages in favour of the unmarked order registered from the questionnaires on Italian and Spanish suggest that such an unmarked order does exist and the goal of the present chapter was to account for it along the lines of Cartography. Surely, marked orderings cannot be ignored, but they are believed not to undermine the theoretical hypotheses of this study.

CONCLUSIONS

Relational adjectives have been shown to undergo ordering restrictions in Romance and these ordering restrictions have turned out to be the same across Romance languages. I have suggested that the relative order of Relational adjectives depends on the relationship they establish with the head noun and I have proposed a sequence of thematic relations which can account for their ordering restrictions. This sequence has been compared with the hierarchy of thematic relations proposed by Rae (2010) to capture the ordering of modifiers in complex nominals in English and it has resulted to be its mirror image. This parallel distribution has been explained on the basis of Cinque's (2010) assumptions about the syntax of adjectives, according to which postnominal adjectives in Romance are ordered in a mirror image fashion with respect to prenominal adjectives in Germanic due to an NP-movement with a progressive pied-piping of modifiers.

Striking parallelisms have emerged in the syntax of modifiers: Rae's hierarchy and mine, based on the distribution of adjective/noun modifiers in the noun phrase, appear to be superimposable on Schweikert's (2005) and Takamine's (2010) hierarchies accounting for the syntax of circumstantial prepositional phrases in the clause. I have suggested that the syntax of modifiers should be further analysed looking for other possible parallelisms. For example, it has been shown that ordering restrictions of PPs in the noun phrase discussed by Laenzlinger (2011) seem to be in line with the aforementioned accounts of ordering restrictions of Relational adjectives and PPs in the clause. The existence of such parallelisms in the syntax of modifiers between different languages and domains is surely worth investigating, since I believe that they might go beyond our expectations.

Some questions have been left open in the derivation of Relational adjective order. On the one hand, looking at the relative ordering of Relational adjectives and prepositional phrases in Romance (which is generally N > RelA > PP, but under constrained conditions even N > PP > RelA), the existence of two possible PP domains has been suggested. On the other hand, discussing unexpected orders of Relational adjectives, I have hinted to the possible existence of a low internal periphery inside the noun phrase, parallel to that

suggested by Belletti (2004) for the clause. Such interesting topics deserve to be explored by future research.

The hypothesis on Relational adjective order itself can be further refined in the future: other thematic relations might be integrated into the hierarchy proposed and the hypothesis could be tested on non-Romance languages, as well. Certainly, as already pointed out by Scott (2002), some topics, such as the number and nature of the functional projections hosting adjectives, remain open, but this does not represent a problem for the architecture of the present work; on the contrary it could be a stimulus for future research.

QUESTIONNAIRE ON RELATIONAL ADJECTIVES ORDER
IN ITALIAN

ISTRUZIONI

Per ogni frase indica l'opzione che ti sembra più NATURALE.

N.B.: Le due sequenze proposte devono essere lette con un'intonazione piana, senza pause.

SOLO se le due opzioni ti sembrano esattamente equivalenti, scegli "Altro" e scrivi "equivalenti" nella casella di testo.

Se non accetteresti nessuna delle due opzioni proposte, scegli "Altro" e scrivi "nessuna" nella casella di testo.

THEME + AGENT

Con il lancio della capsula Orion è iniziata una nuova fase dell' ....
- esplorazione spaziale americana
- esplorazione americana spaziale

Le lunghe .... inducono molti studenti ad abbandonare la lettura dei Promessi Sposi.
- descrizioni paesaggistiche manzoniane
- descrizioni manzoniane paesaggistiche

La condanna delle .... è unanime.
- persecuzioni ebraiche naziste
- persecuzioni naziste ebraiche

MATTER + AGENT

Il programma proposto rispetta le ....
- indicazioni didattiche ministeriali
- indicazioni ministeriali didattiche

Le recenti .... in Egitto hanno accresciuto il fascino della terra dei faraoni.

- scoperte archeologiche italiane
- scoperte italiane archeologiche

Secondo le ...., l'Italia dovrebbe incrementare il Pil di 0,2 punti percentuali nel prossimo semestre.

- previsioni economiche governative
- previsioni governative economiche

THEME + TIME

Molte persone sono state costrette ad abbandonare le loro case a causa dell' ....

- esondazione fluviale notturna
- esondazione notturna fluviale

I lavoratori attendono con ansia il .... promesso dall'azienda.

- rinnovo contrattuale primaverile
- rinnovo primaverile contrattuale

La .... ha permesso di recuperare numerose terre per l'attività agricola.

- bonifica lagunare ottocentesca
- bonifica ottocentesca lagunare

MATTER + TIME

I protagonisti della Resistenza chiedevano di poter partecipare al ....

- dibattito politico postbellico
- dibattito postbellico politico

Le .... hanno provocato uno spostamento dei traffici commerciali dal Mediterraneo all'Atlantico.

- scoperte geografiche rinascimentali
- scoperte rinascimentali geografiche

Nessuna buona notizia arriva dalle ....

- previsioni metereologiche mattutine
- previsioni mattutine metereologiche

AGENT + TIME

La .... si è svolta pacificamente, senza scontri con la polizia.
- manifestazione studentesca mattutina
- manifestazione mattutina studentesca

I .... furono decisivi per le sorti della guerra.
- bombardamenti alleati autunnali
- bombardamenti autunnali alleati

Le pari opportunità di cui possiamo godere oggi sono il risultato delle ....
- rivendicazioni femminili novecentesche
- rivendicazioni novecentesche femminili

Le .... erano animate dal desiderio di cambiare il mondo.
- proteste giovanili sessantottine
- proteste sessantottine giovanili

THEME + LOCATION

Un' .... ha dato origine a una nuova isola al largo delle coste del Giappone.
- eruzione vulcanica sottomarina
- eruzione sottomarina vulcanica

Il .... preoccupa l'Unione Europea.
- calo occupazionale italiano
- calo italiano occupazionale

Gran parte del metallo prezioso che alimentava la .... proveniva dalle Americhe.
- circolazione monetaria europea
- circolazione europea monetaria

MATTER + LOCATION

Sono stati rafforzati i .... per prevenire la diffusione del virus ebola.
- controlli sanitari aeroportuali
- controlli aeroportuali sanitari

I capi di stato riuniti a Parigi hanno negato l'esistenza di un' ....
- ▪ emergenza energetica mondiale
- ▪ emergenza mondiale energetica

Si tratta del più grande .... della storia.
- ▪ scandalo farmaceutico francese
- ▪ scandalo francese farmaceutico

AGENT + LOCATION

Il grande .... ha bloccato le fabbriche per tre giorni.
- ▪ sciopero operaio torinese
- ▪ sciopero torinese operaio

La .... ha riscosso un grande successo.
- ▪ manifestazione studentesca romana
- ▪ manifestazione romana studentesca

Le .... hanno dato un grande contributo alla Resistenza.
- ▪ azioni partigiane piemontesi
- ▪ azioni piemontesi partigiane

TIME + LOCATION

Sir John Franklin fu uno dei protagonisti delle ....
- ▪ spedizioni artiche ottocentesche
- ▪ spedizioni ottocentesche artiche

La richiesta di .... è in aumento.
- ▪ visite ospedaliere serali
- ▪ visite serali ospedaliere

Molti italiani hanno preferito rimanere a casa per evitare la classica ....
- ▪ coda autostradale domenicale
- ▪ coda domenicale autostradale

Burrasche e pirati rappresentavano un pericolo per la ....
- ▪ navigazione mediterranea medievale
- ▪ navigazione medievale mediterranea

THEME + INSTRUMENT

Il .... è utile nel monitoraggio dell'attività vulcanica.
- rilevamento termico satellitare
- rilevamento satellitare termico

La .... potrebbe ritardare lo sviluppo di alcune malattie degenerative.
- stimolazione elettrica cerebrale
- stimolazione cerebrale elettrica

Al corso di primo soccorso ci hanno insegnato come praticare una ....
- stimolazione cardiaca manuale
- stimolazione manuale cardiaca

Il medico ha richiesto una ....
- ricerca batterica microscopica
- ricerca microscopica batterica

INSTRUMENT + AGENT

Una fonte interna ha rivelato che le autorità statunitensi temono lo ....
- spionaggio satellitare sovietico
- spionaggio sovietico satellitare

Gli Stati Uniti hanno adottato le misure necessarie per difendersi da un possibile ....
- attacco missilistico coreano
- attacco coreano missilistico

Giochi di materiali e forme diverse stimolano l' ....
- esplorazione tattile infantile
- esplorazione infantile tattile

INSTRUMENT + LOCATION

Si stima che in Italia nell'ultimo anno circa 3 milioni di pazienti abbiano ricevuto una ....
- terapia antibiotica ospedaliera
- terapia ospedaliera antibiotica

Questo documentario svela i segreti della .... dei pesci.
- respirazione branchiale subacquea
- respirazione subacquea branchiale

L'aeroporto di Aosta è particolarmente importante per il ....
- soccorso aereo alpino
- soccorso alpino aereo

INSTRUMENT + TIME

Gli aspiranti insegnanti devono attendere la ....
- selezione concorsuale primaverile
- selezione primaverile concorsuale

Il medico mi ha consigliato un cerotto che migliora la ....
- respirazione nasale notturna
- respirazione notturna nasale

Stanno girando la scena di un ....
- inseguimento automobilistico notturno
- inseguimento notturno automobilistico

FILLERS

C'è un .... alla base dell'ennesima vicenda di malasanità.
- errore medico imperdonabile
- errore imperdonabile medico

Si attendono .... prima di procedere.
- indicazioni ministeriali precise
- indicazioni precise ministeriali

La prima fase della raccolta lascia presagire che quest'anno ci sarà una ....
- produzione vinicola abbondante
- produzione abbondante vinicola

Ormai siamo abituati ai ....
- cambiamenti climatici improvvisi
- cambiamenti improvvisi climatici

Un' .... ha fatto salire l'atleta sul gradino più alto del podio.

- esibizione olimpica brillante
- esibizione brillante olimpica

L'aggressività del bambino può essere dovuta a un ....

- inserimento scolastico difficile
- inserimento difficile scolastico

L'ansia può essere associata a insonnia o a ....

- risvegli notturni frequenti
- risvegli frequenti notturni

Oggi è lunedì e, come al solito, a Milano è previsto un ....

- traffico mattutino intenso
- traffico intenso mattutino

La disoccupazione dilagante spinge i giovani laureati ad accettare anche ....

- lavori manuali faticosi
- lavori faticosi manuali

I passeggeri hanno applaudito il comandante per averli fatti atterrare sani e salvi dopo un
....

- viaggio aereo turbolento
- viaggio turbolento aereo

QUESTIONNAIRE ON RELATIONAL ADJECTIVES ORDER IN ITALIAN - RESULTS

THEME + AGENT

Expected order: THEME > AGENT

Head noun	THEME	AGENT
esplorazione 'exploration'	spaziale 'space'	americana 'American'
descrizioni 'descriptions'	paesaggistiche 'landscape'	manzoniane '(by) Manzoni'
persecuzioni 'persecutions'	ebraiche 'Jewish'	naziste 'Nazi'

Table 1. Theme + Agent. Set of examples
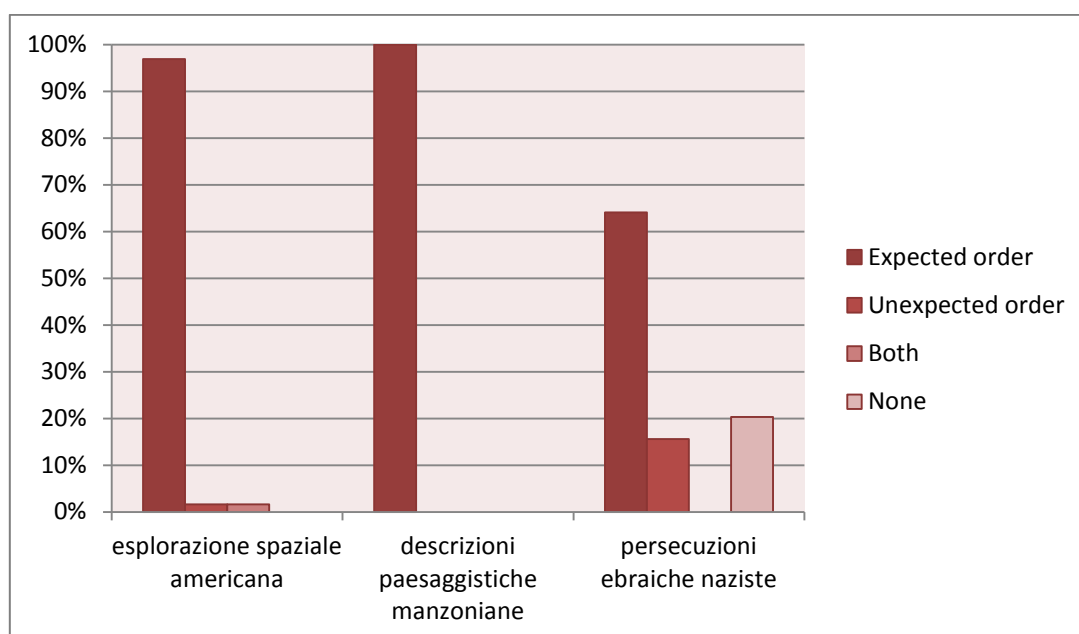
Fig. 1. Theme + Agent. Answers

MATTER + AGENT

Expected order: MATTER > AGENT

Head noun	MATTER	AGENT
indicazioni 'directions'	didattiche 'educational'	ministeriali 'departmental'
scoperte 'discoveries'	archeologiche 'archaelogical'	italiane 'Italian'
previsioni 'forecast'	economiche 'economic'	governative 'governmental'

Table 2. Matter + Agent. Set of examples
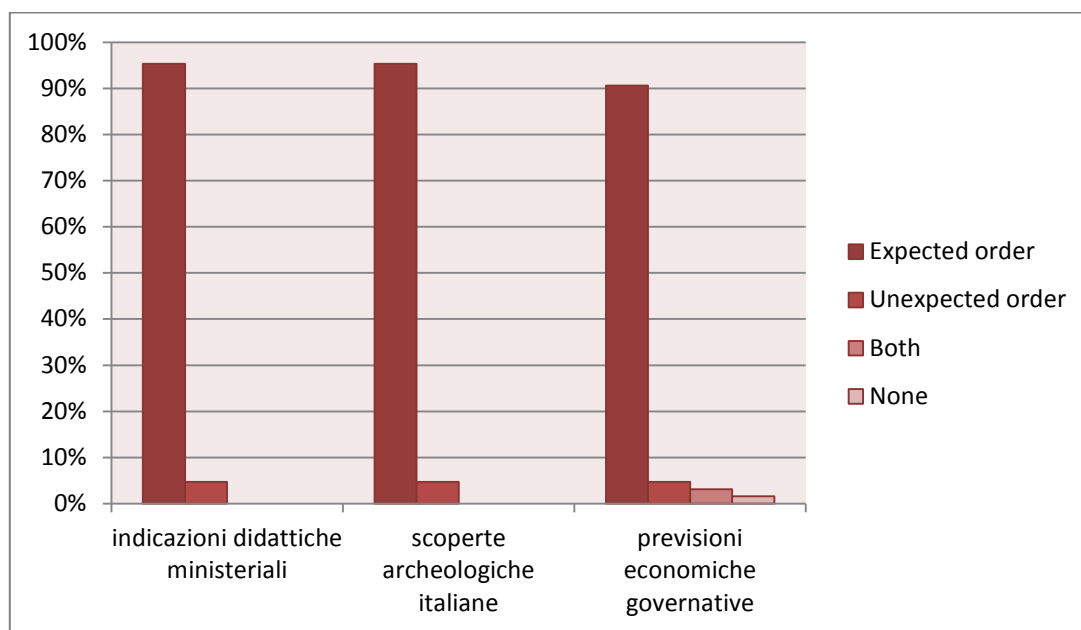
Fig. 2. Matter + Agent. Answers

THEME + TIME

Expected order: THEME > TIME

Head noun	THEME	TIME
esondazione 'flooding'	fluviale 'river'	notturna 'nocturnal'
rinnovo 'renewal'	contrattuale 'contract(ual)'	primaverile 'spring'
bonifica 'drainage'	lagunare 'lagoon'	ottocentesca '19th-century'

Table 3. Theme + Time. Set of examples
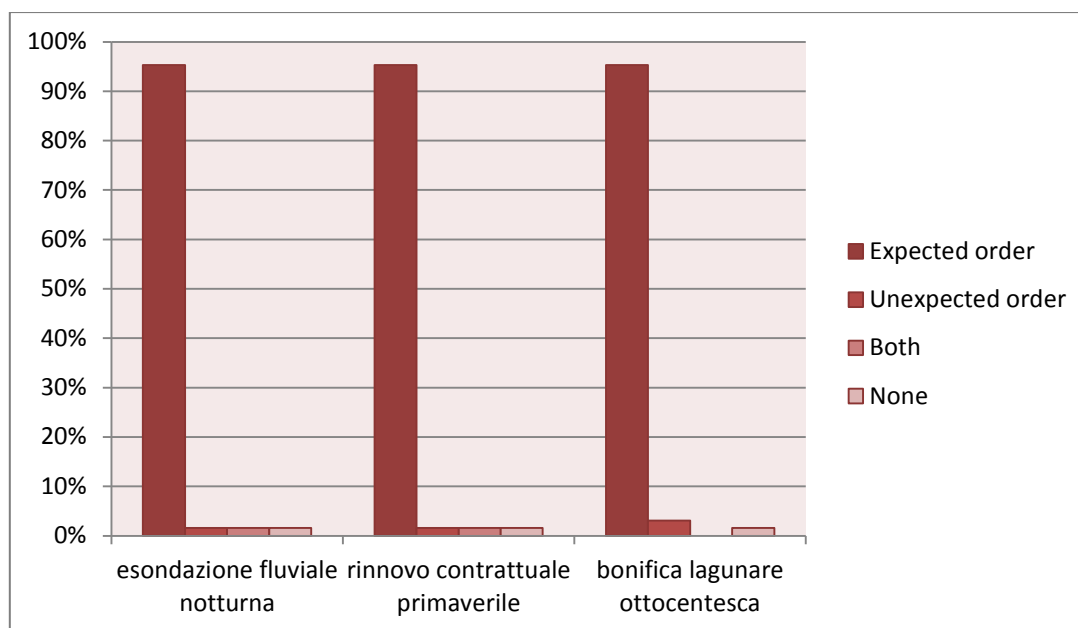
Fig. 3. Theme + Time. Answers

MATTER + TIME

Expected order: MATTER > TIME

Head noun	MATTER	TIME
dibattito 'debate'	politico 'political'	postbellico 'post-war'
scoperte 'discoveries'	geografiche 'geographical'	rinascimentali 'Renaissance'
previsioni 'forecast'	metereologiche 'weather'	mattutine 'morning'

Table 4. Matter + Time. Set of examples
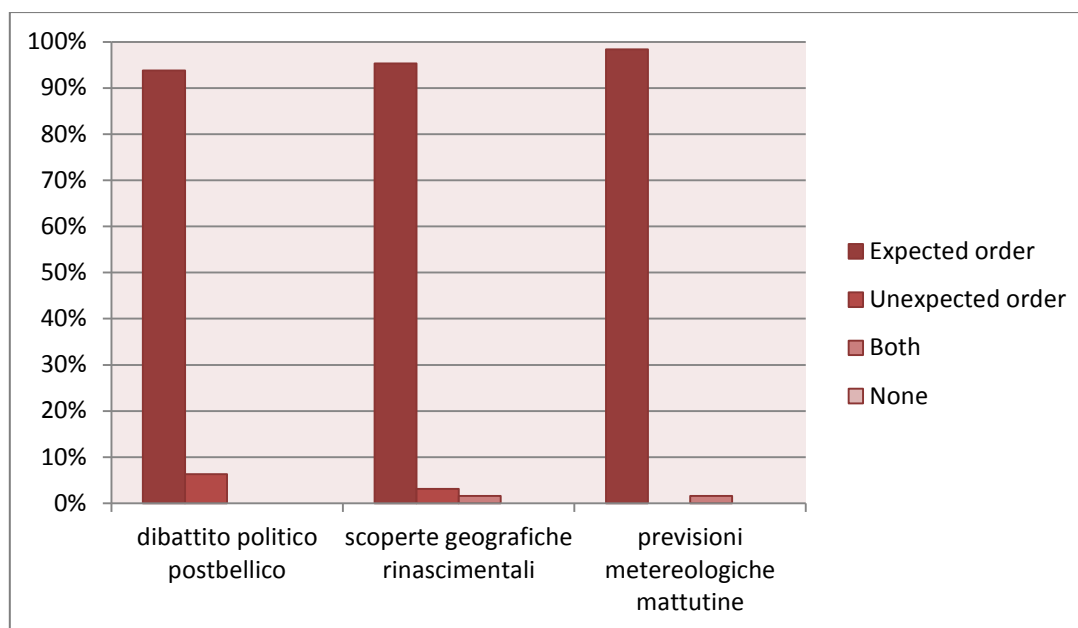
Fig. 4. Matter + Time. Answers

THEME + LOCATION

Expected order: THEME > LOCATION

Head noun	THEME	LOCATION
eruzione 'eruption'	vulcanica 'volcanic'	sottomarina 'submarine'
calo 'decrease'	occupazionale 'employment'	italiano 'Italian'
circolazione 'circulation'	monetaria 'monetary'	europea 'European'

Table 5. Theme + Location. Set of examples
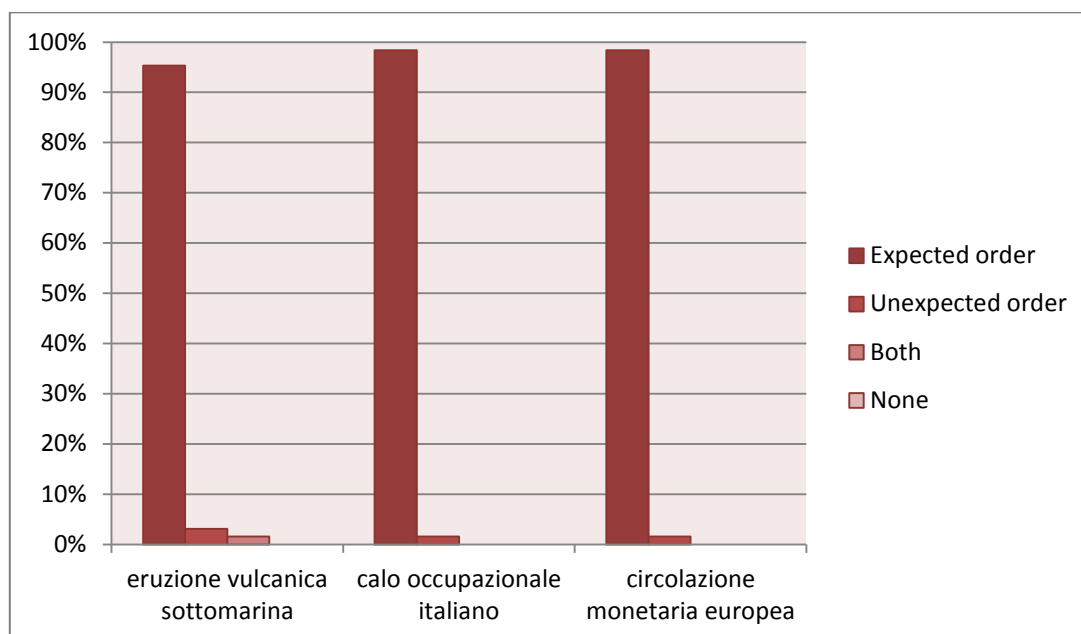
Fig. 5. Theme + Location. Answers

MATTER + LOCATION

Expected order: MATTER > LOCATION

Head noun	MATTER	LOCATION
controlli 'controls'	sanitari 'sanitary/health'	aeroportuali 'airport'
emergenza 'emergency'	energetica 'energetic'	mondiale 'world'
scandalo 'scandal'	farmaceutico 'pharmaceutical'	francese 'French'

Table 6. Matter + Location. Set of examples
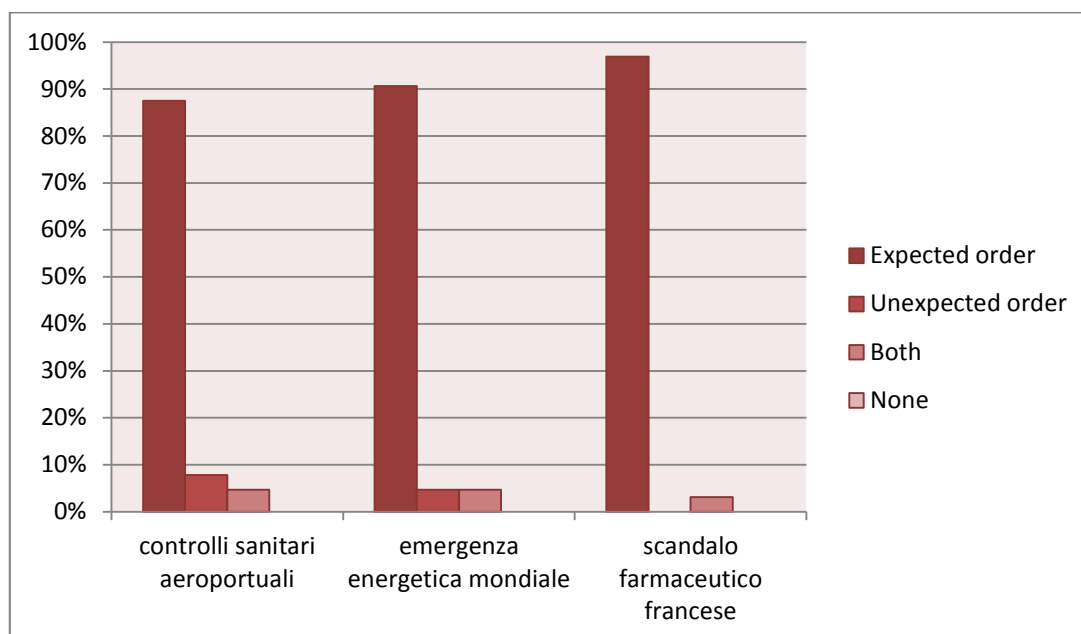
Fig. 6. Matter + Location. Answers

AGENT + LOCATION

Expected order: AGENT > LOCATION

Head noun	AGENT	LOCATION
sciopero 'strike'	operaio '(by) workers'	torinese 'Turin'
manifestazione 'dimostration'	studentesca '(by) students'	romana 'Roman/Rome'
azioni 'actions'	partigiane '(by) partisans'	piemontesi 'Piedmont(ese)'

Table 7. Agent + Location. Set of examples
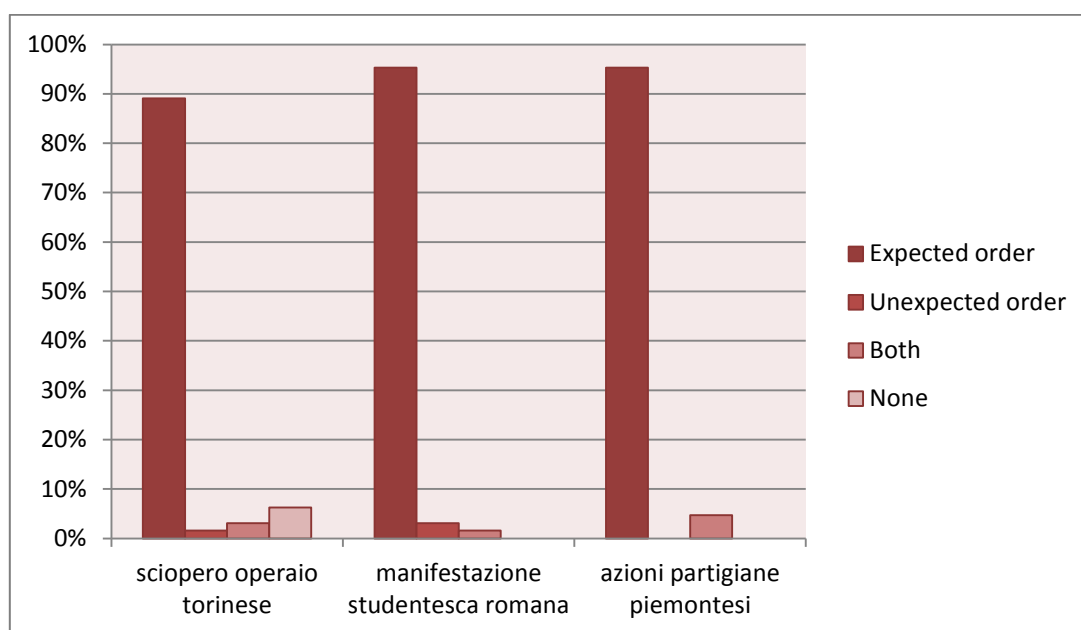
Fig. 7. Agent + Location. Answers

AGENT + TIME

Expected order: AGENT > TIME

Head noun	AGENT	TIME
manifestazione 'dimostration'	studentesca '(by) students'	mattutina 'morning'
bombardamenti 'bombardments'	alleati 'allied'	autunnali 'autumnal'
rivendicazioni 'demands'	femminili '(by) women'	novecentesche '20th-century'
proteste 'protests'	giovanili '(by) youth'	sessantottine '1968'

Table 8. Agent + Time. Set of examples
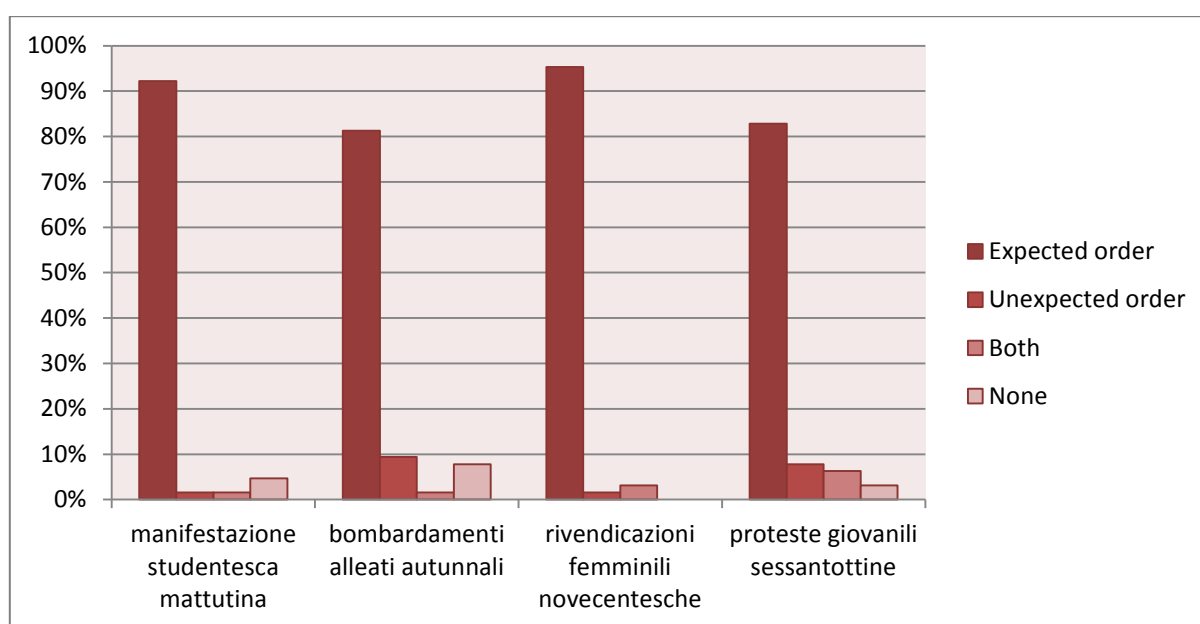
Fig. 8. Agent + Time. Answers

LOCATION + TIME

Expected order: LOCATION > TIME

Head noun	LOCATION	TIME
spedizioni 'expeditions'	artiche 'arctic'	ottocentesche '19th-century'
visite 'visits'	ospedaliere 'hospital'	serali 'evening'
coda 'tailback'	autostradale 'motorway'	domenicale 'Sunday'
navigazione 'navigation'	mediterranea 'Mediterrean'	medievale 'medieval'

Table 9. Location + Time. Set of examples
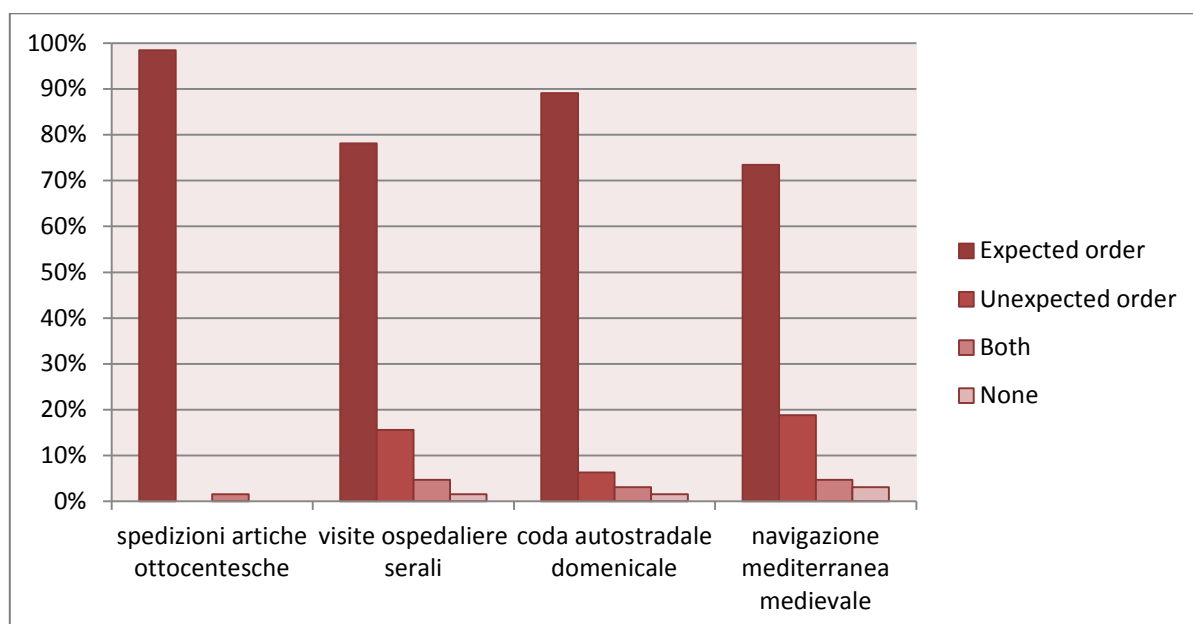
Fig. 9. Location + Time. Answers

THEME + INSTRUMENT

Expected order: THEME > INSTRUMENT

Head noun	THEME	INSTRUMENT
rilevamento 'reading'	termico 'temperature'	satellitare 'satellite'
ricerca 'search'	batterica 'bacterial'	microscopica 'microscopic'
stimolazione 'stimulation'	cardiaca 'cardiac/heart'	manual 'manual'
stimolazione 'stimulation'	cerebrale 'cerebral'	elettrica 'electrical'

Table 10. Theme + Instrument. Set of examples
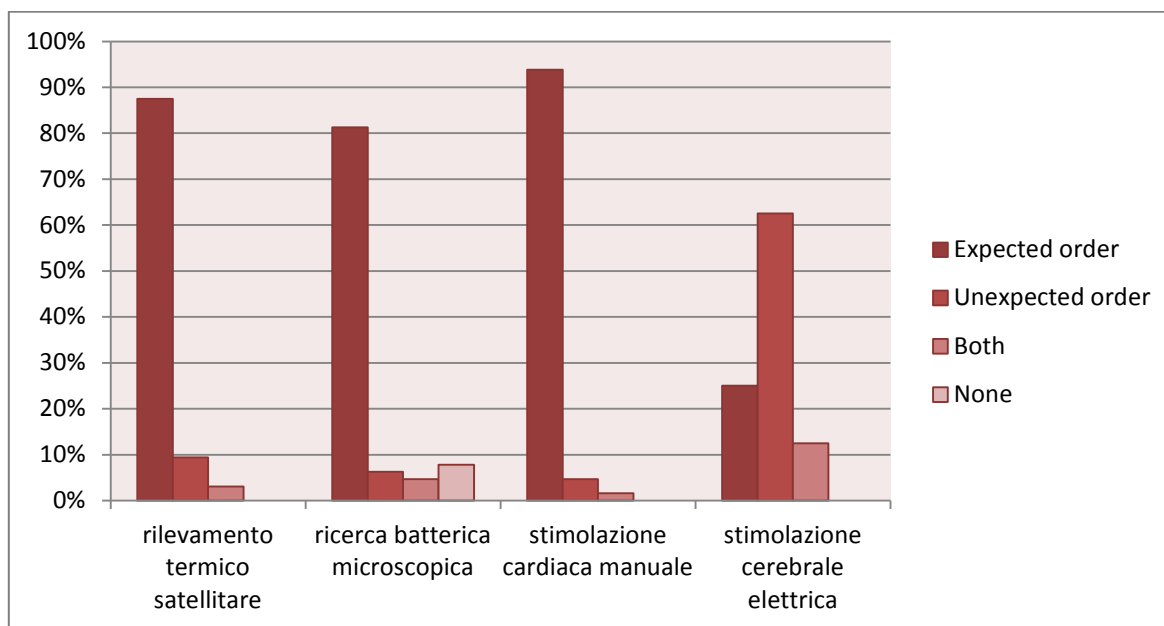
Fig. 10. Theme + Instrument. Answers

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AGENT + INSTRUMENT

Expected order: INSTRUMENT > AGENT

Head noun	INSTRUMENT	AGENT
spionaggio 'espionage'	satellitare 'satellite'	sovietico 'Soviet'
attacco 'attack'	missilistico 'missile'	coreano 'Korean'
esplorazione 'exploration'	tattile 'tactile'	infantile 'children's'

Table 11. Instrument + Agent. Set of examples
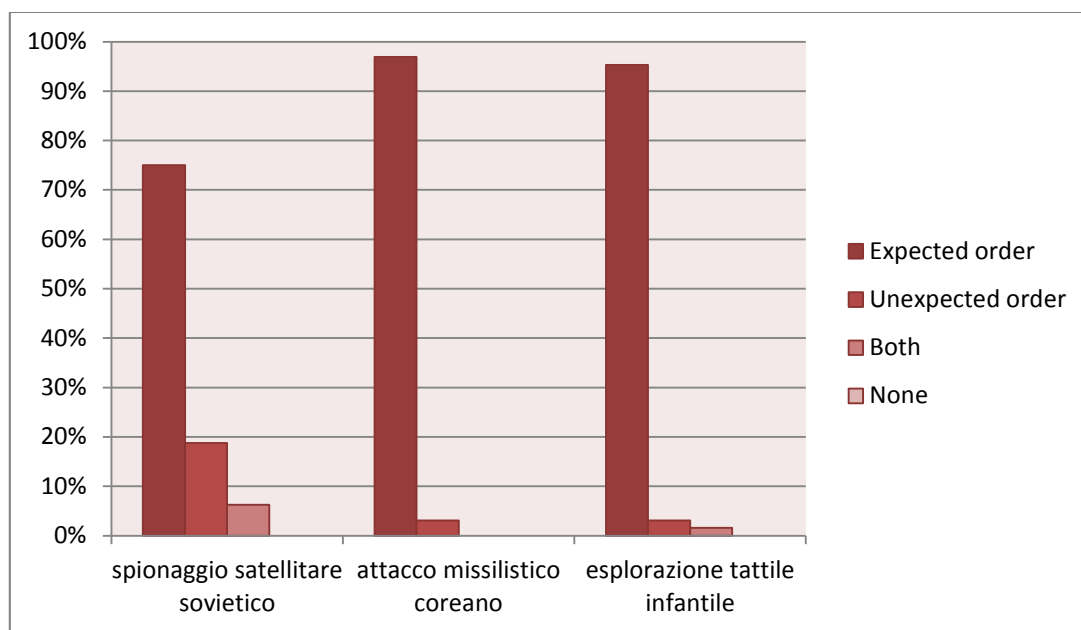
Fig. 11. Instrument + Agent. Answers

LOCATION + INSTRUMENT

Expected order: INSTRUMENT > LOCATION

Head noun	INSTRUMENT	LOCATION
terapia 'therapy'	antibiotica 'antibiotic'	ospedaliera 'hospital'
respirazione 'respiration'	branchiale 'branchial'	subacquea 'underwater'
soccorso 'rescue'	aereo 'air'	alpino 'alpine'

Table 12. Instrument + Location. Set of examples
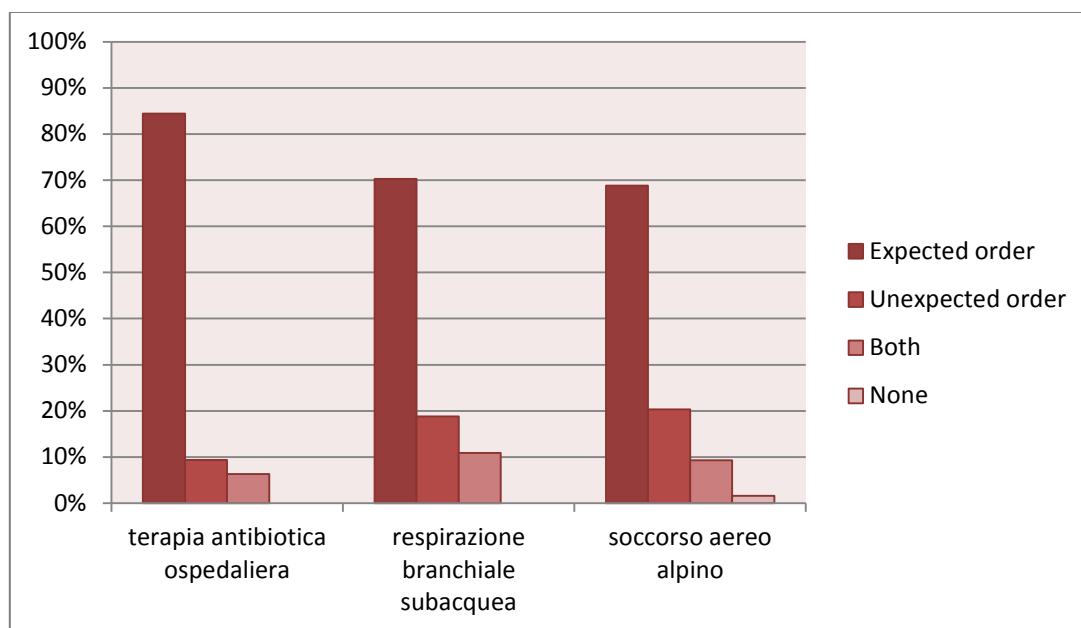
Fig. 12. Instrument + Location. Answers

TIME + INSTRUMENT

Expected order: INSTRUMENT > TIME

Head noun	INSTRUMENT	TIME
selezione 'selection'	concorsuale 'examination'	primaverile 'spring'
respirazione 'breathing'	nasale 'nasal'	notturna 'nocturnal'
inseguimento 'pursuit'	automobilistico 'car'	notturno 'nocturnal'

Table 13. Instrument + Time. Set of examples
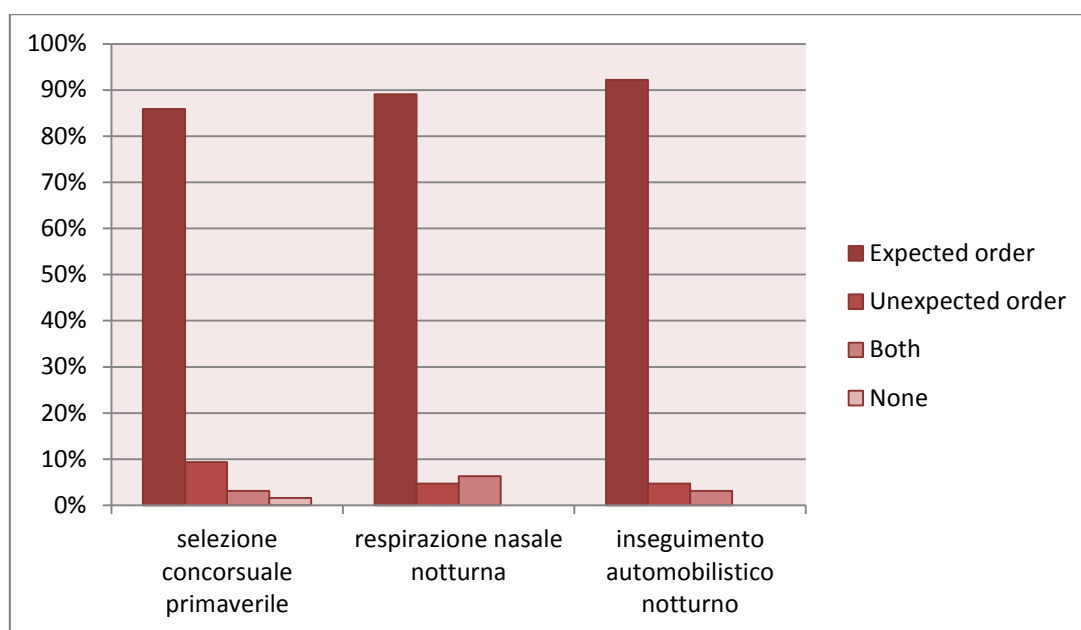
Fig. 13. Instrument + Time. Answers

FILLERS

Expected order: Relational adjective > Qualifying adjective

Head noun	Relational adjective	Qualifying adjective
errore 'error'	medico 'medical'	imperdonabile 'unforgivable'
indicazioni 'directions'	ministeriali 'departmental'	precise 'precise'
produzione 'production'	vinicola 'wine'	abbondante 'abundant'
cambiamenti 'changes'	climatici 'climatic/weather'	improvvisi 'sudden'
esibizione 'performance'	olimpica 'olympic'	brillante 'brilliant'
inserimento 'insertion'	scolastico 'school'	difficile 'difficult'
risvegli 'awakenings'	notturni 'nocturnal'	frequenti 'frequent'
traffic 'traffic'	mattutino 'morning'	intense 'heavy'
lavori 'works'	manuali 'manual'	faticosi 'exhausting'
viaggio 'trip'	aereo 'plane'	turbolento 'turbulent'

Table 14. RelA + QA fillers. Set of examples
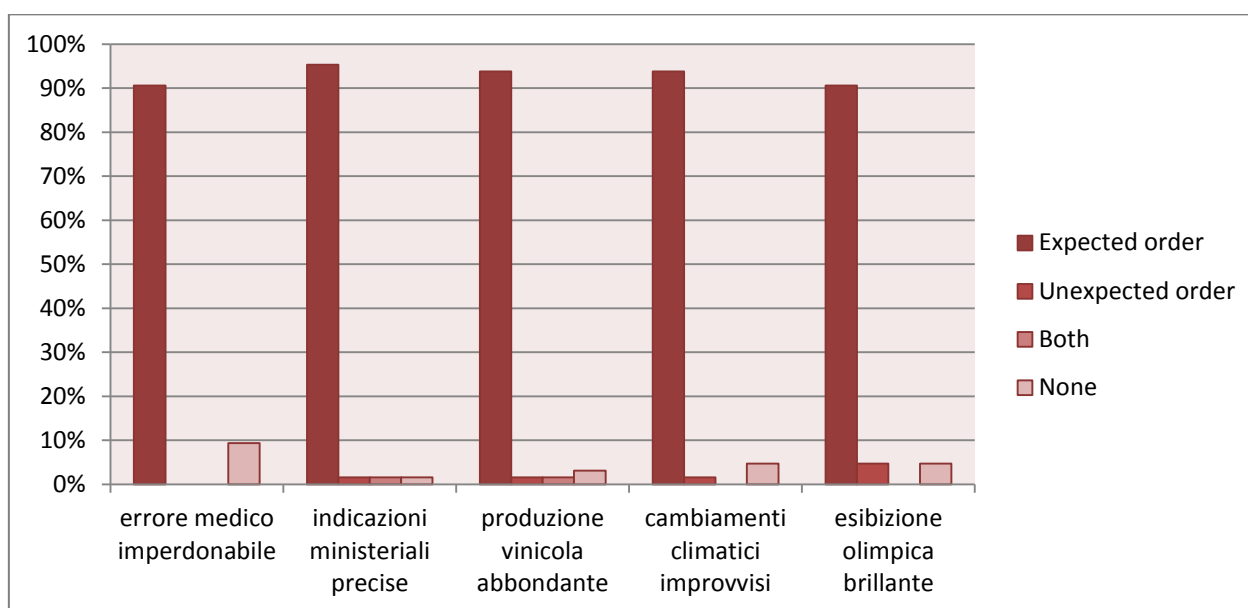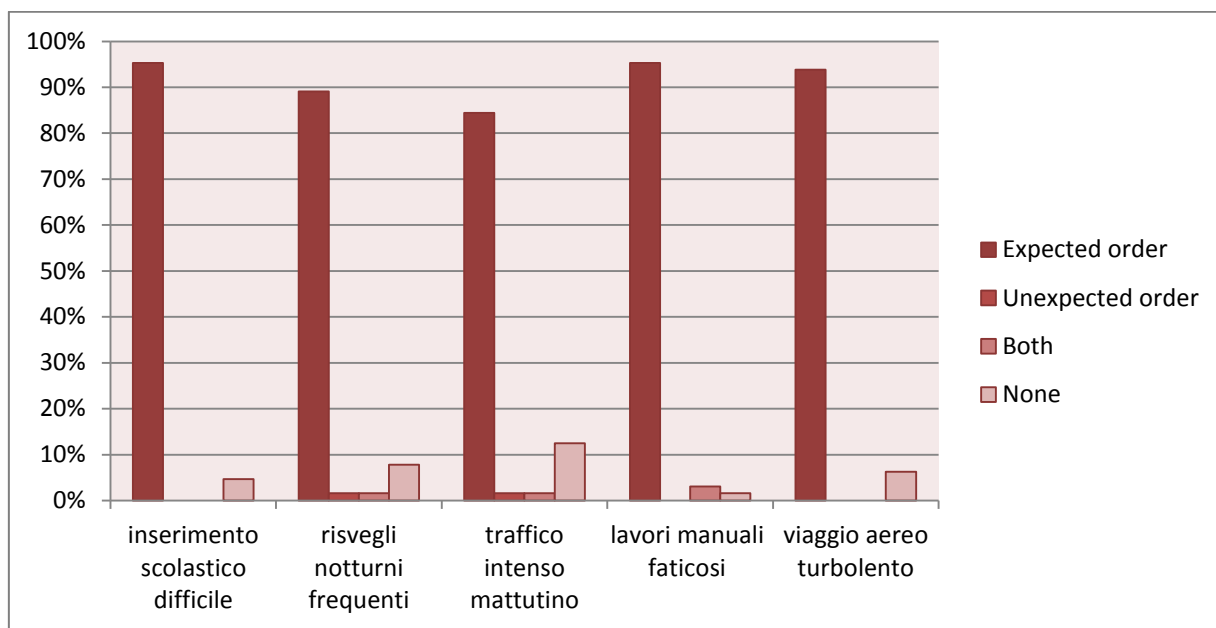
Fig. 14. RelA + QA fillers 1. Answers

Fig. 15. RelA + QA fillers 2. Answers

QUESTIONNAIRE ON RELATIONAL ADJECTIVES ORDER IN SPANISH

INSTRUCCIONES

Escoge la opción que te parece más NATURAL para cada oración.

¡Atención! Las dos secuencias tienen que ser leídas sin pausas.

SOLAMENTE si las dos opciones te parecen exactamente iguales, escoge "equivalentes".

Si no aceptas ninguna de las dos opciones propuestas, escoge "ninguna de las dos".

THEME + AGENT

El siguiente paso en el desarrollo de la .... fue la creación de la nave "Vosjod".

- exploración espacial rusa
- exploración rusa espacial

La vegetación y la fauna irían degradándose en relación directa con la ....

- explotación energética humana
- explotación humana energética

La .... creció un 15% en el año pasado.

- exportación cafetera colombiana
- exportación colombiana cafetera

MATTER + AGENT

Los factores impulsores de los .... del s. XV fueron múltiples.

- descubrimientos geográficos portugueses
- descubrimientos portugueses geográficos

El ministro negó que la Comisión Europea y la UE mantuvieran dudas sobre las
....

- previsiones económicas gubernamentales
- previsiones gubernamentales económicas

La base electoral del país fue ampliada gracias a las ....

- reivindicaciones políticas femeninas
- reivindicaciones femeninas políticas

THEME + TIME

Vientos y lluvias producirán el primer ....

- descenso térmico otoñal
- descenso otoñal térmico

La .... fue lenta y difícil.

- reconstrucción industrial posbélica
- reconstrucción posbélica industrial

La .... quedará finalizada antes de las 8:00 horas.

- limpieza viaria nocturna
- limpieza nocturna viaria

MATTER + TIME

El fin de semana será soleado según las ....

- previsiones meteorológicas matinales
- previsiones matinales meteorológicas

San Agustín fue muy citado en las ....

- disputas teológicas medievales
- disputas medievales teológicas

Se sabe que los .... condujeron a una primera visión global del planeta.

- descubrimientos geográficos renacentistas
- descubrimientos renacentistas geográficos

AGENT + TIME

Las .... marcaron la historia de Europa.
- invasiones bárbaras medievales
- invasiones medievales bárbaras

La .... se realizó bajo el control de la policía.
- manifestación estudiantil matinal
- manifestación matinal estudiantil

Las .... son principalmente sobre el trabajo.
- reivindicaciones femeninas contemporáneas
- reivindicaciones contemporáneas femeninas

THEME + LOCATION

Durante el reinado de Carlos V, la .... aumentó significativamente.
- circulación monetaria europea
- circulación europea monetaria

"La noche de Tlatelolco" describe la .... de 1968.
- masacre estudiantil mexicana
- masacre mexicana estudiantil

Unos vuelos fueron cancelados por la ....
- erupción volcánica chilena
- erupción chilena volcánica

MATTER + LOCATION

Estados Unidos refuerzan los ....
- controles sanitarios fronterizos
- controles fronterizos sanitarios

El 80% de las .... son ilegales.
- apuestas deportivas mundiales
- apuestas mundiales deportivas

Berlusconi es el centro del creciente ....
- escándalo político italiano
- escándalo italiano político

AGENT + LOCATION

Las .... fueron pacíficas.
- manifestaciones estudiantiles madrileñas
- manifestaciones madrileñas estudiantiles

La gran .... duró mas de sesenta días.
- huelga obrera hondureña
- huelga hondureña obrera

La historia de las .... registra muchos enfrentamientos contra la policía.
- protestas populares argentinas
- protestas argentinas populares

TIME + LOCATION

En el Día Europeo Sin Coche tendrá lugar un ....
- paseo urbano vespertino
- paseo vespertino urbano

La difícultad de la .... se demuestra en la dureza de algunas ordenanzas municipales.
- vida rural dieciochesca
- vida dieciochesca rural

La policia ha intervenido por un ....
- altercado callejero nocturno
- altercado nocturno callejero

THEME + INSTRUMENT

La .... pide precisión.
- decoración cerámica manual

- decoración manual cerámica

Debemos regular las .... , ya que suelen ser engañosas para los usuarios.
- modificaciones contractuales telefónicas
- modificaciones telefónicas contractuales

La .... es importante para los niños.
- exploración espacial táctil
- exploración táctil espacial

INSTRUMENT + AGENT

Un sistema de radares de alta potencia permitiría detectar un posible ....
- ataque misilístico iraní
- ataque iraní misilístico

El .... fue muy largo.
- viaje aéreo presidencial
- viaje presidencial aéreo

La .... fue estudiada por muchos psicólogos.
- comunicación gestual infantil
- comunicación gestual infantil

INSTRUMENT + LOCATION

Un tetrápodo no puede adaptarse a la ....
- respiración pulmonar subacuática
- respiración subacuática pulmonar

Se recomienda dar un .... a pacientes con síntomas graves.
- tratamiento antibiótico hospitalario
- tratamiento hospitalario antibiótico

Los soldados participaron en una ....
- operación naval costera
- operación costera naval

INSTRUMENT + TIME

Hace pocos días tuvo lugar un ……………………… por parte del ejército de Colombia.
- ▪ ataque misilístico nocturno
- ▪ ataque nocturno misilístico

Debemos esperar la ....
- ▪ selección concursal invernal
- ▪ selección invernal concursal

El ladrón fue capturado después de una ....
- ▪ persecución automovilística nocturna
- ▪ persecución nocturna automovilística

FILLERS

Debemos contribuir a la realización de una ....
- ▪ gestión ambiental eficaz
- ▪ gestión eficaz ambiental

Tu horóscopo para hoy dice que tienes la posibilidad de recibir una ....
- ▪ propuesta laboral interesante
- ▪ propuesta interesante laboral

El gobierno hace ....
- ▪ previsiones económicas optimistas
- ▪ previsiones optimistas económicas

Es necesario un .... para cada una de las zonas con riesgo de inundación.
- ▪ estudio hidrológico detallado
- ▪ estudio detallado hidrológico

Las protestas son la consecuencia de una ....
- ▪ política estatal represiva
- ▪ política represiva estatal

Esta máquina permite evitar un ....

- trabajo manual difícil
- trabajo difícil manual

Una .... debe ser separada del texto normal del documento.
- cita textual larga
- cita larga textual

El 45% de las personas sobre 20 años no tiene ....
- educación escolar completa
- educación completa escolar

Hay .... en la Franja de Gaza.
- bombardeos nocturnos frecuentes
- bombardeos frecuentes nocturnos

Organizamos .... para niños.
- actividades veraniegas divertidas
- actividades divertidas veraniegas

QUESTIONNAIRE ON RELATIONAL ADJECTIVES ORDER IN SPANISH - RESULTS

THEME + AGENT

Expected order: THEME > AGENT

Head noun	THEME	AGENT
exploración 'exploration'	espacial 'space'	rusa 'Russian'
explotación 'exploitation'	energética 'energetic'	humana 'human'
exportación 'exportation'	cafetera 'coffee'	colombiana 'Columbian'

Table 1. Theme + Agent. Set of examples
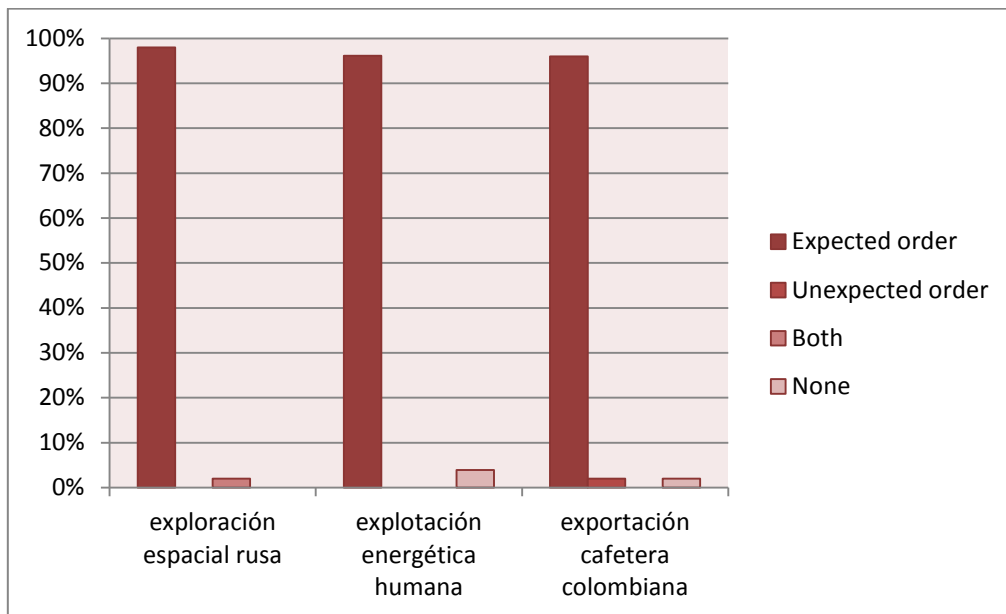
Fig. 1. Theme + Agent. Answers

MATTER + AGENT

Expected order: MATTER > AGENT

Head noun	MATTER	AGENT
descubrimientos 'discoveries'	geográficos 'geographical'	portugueses 'Portuguese'
previsiones 'forecasts'	económicas 'economic'	gubernamentales 'governmental'
reivindicaciones 'demands'	políticas 'political'	femeninas '(by) women'

Table 2. Matter + Agent. Set of examples
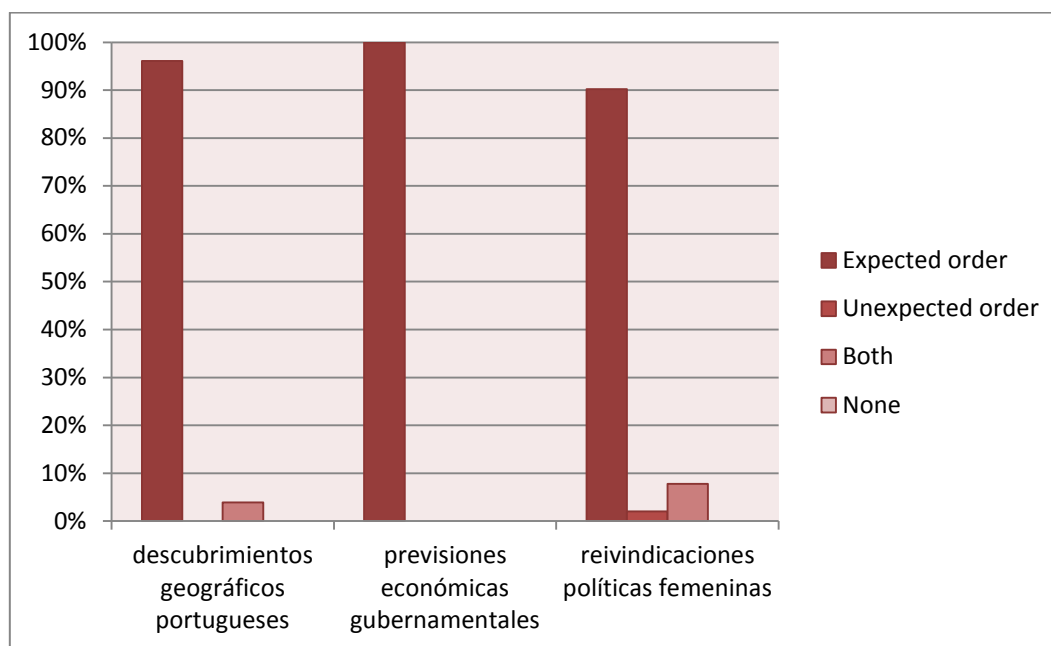
Fig. 2. Matter + Agent. Answers

THEME + TIME

Expected order: THEME > TIME

Head noun	THEME	TIME
descenso 'drop'	térmico 'temperature'	otoñal 'autumnal'
reconstrucción 'reconstruction'	industrial 'industrial'	posbélica 'post-war'
limpieza 'cleaning'	viaria 'street'	nocturna 'nocturnal'

Table 3. Theme + Time. Set of examples
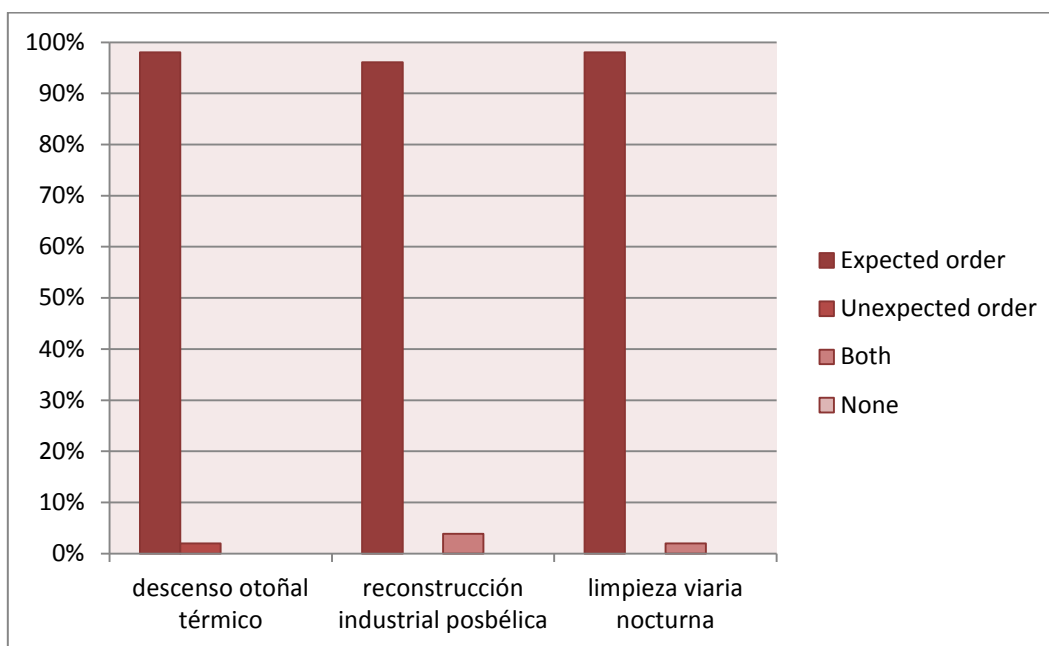
Fig. 3. Theme + Time. Answers

MATTER + TIME

Expected order: MATTER > TIME

Head noun	MATTER	TIME
previsiones 'forecasts'	meteorológicas 'weather'	matinales 'morning'
disputas 'disputations'	teológicas 'theological'	medievales 'medieval'
descubrimientos 'discoveries'	geográficos 'geographical'	renacentistas 'Renaissance'

Table 4. Matter + Time. Set of examples
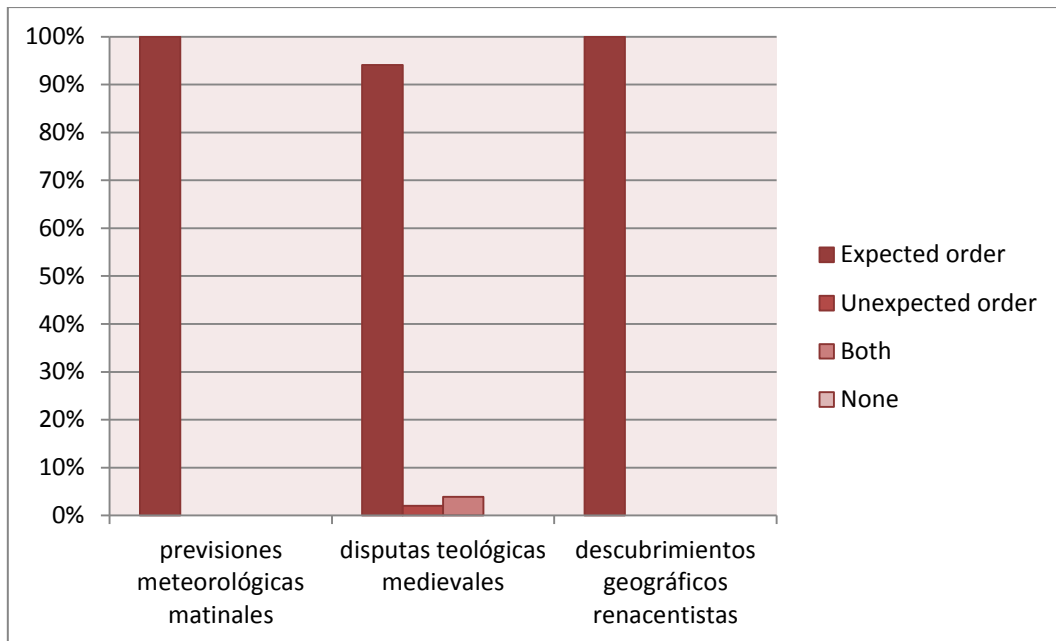
Fig 4. Matter + Time. Answers

THEME + LOCATION

Expected order: THEME > LOCATION

Head noun	THEME	LOCATION
circulación 'circulation'	monetaria 'monetary'	europea 'European'
masacre 'massacre'	estudiantil '(of) students'	mexicana 'Mexican'
erupción 'eruption'	volcánica 'volcanic'	chilena 'Chilean'

Table 5. Theme + Location. Set of examples
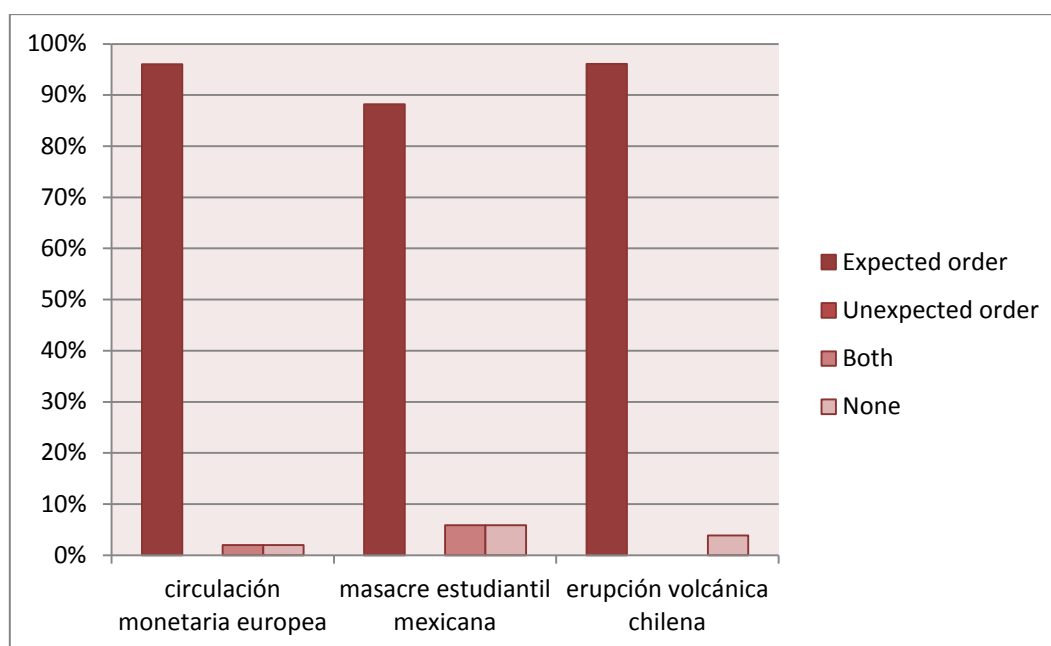
Fig. 5. Theme + Location. Answers

MATTER + LOCATION

Expected order: MATTER > LOCATION

Head noun	MATTER	LOCATION
controles 'inspections'	sanitarios 'sanitary'	fronterizos 'cross-border'
apuestas 'bets'	deportivas 'sports'	mundiales 'worldwide'
escándalo 'scandal'	político 'political'	italiano 'Italian'

Table 6. Matter + Location. Set of examples
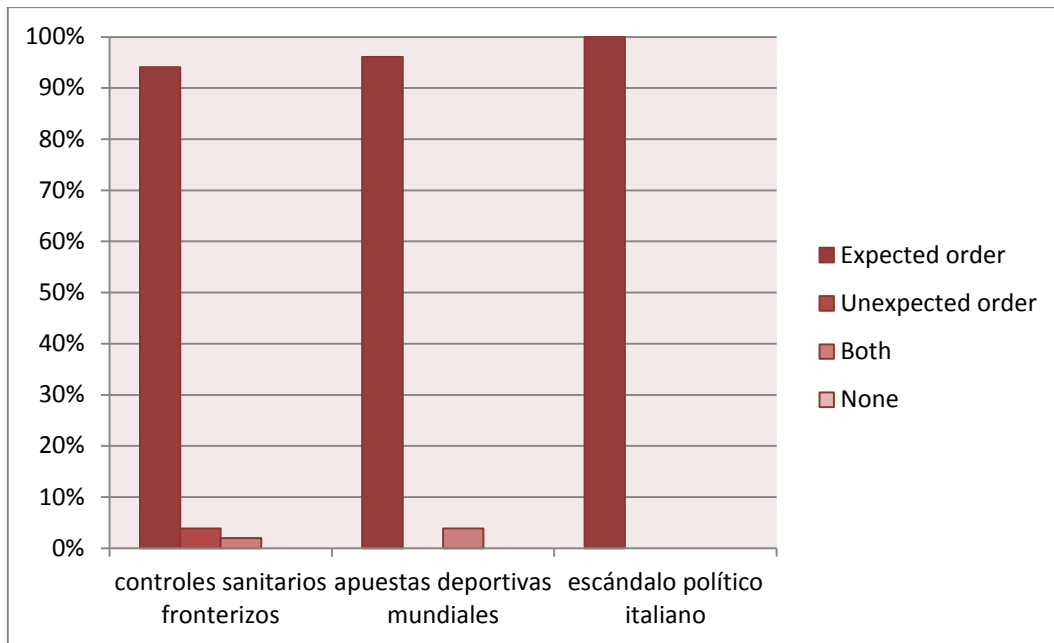
Fig. 6. Matter + Location. Answers

AGENT + TIME

Expected order: AGENT > TIME

Head noun	AGENT	TIME
invasiones 'invasions'	bárbaras 'barbarian'	medievales 'medieval'
manifestación 'demonstration'	estudiantil '(by) students'	matinal 'morning'
reivindicaciones 'demands'	femeninas '(by) women'	contemporáneas 'contemporary'

Table 7. Agent + Time. Set of examples
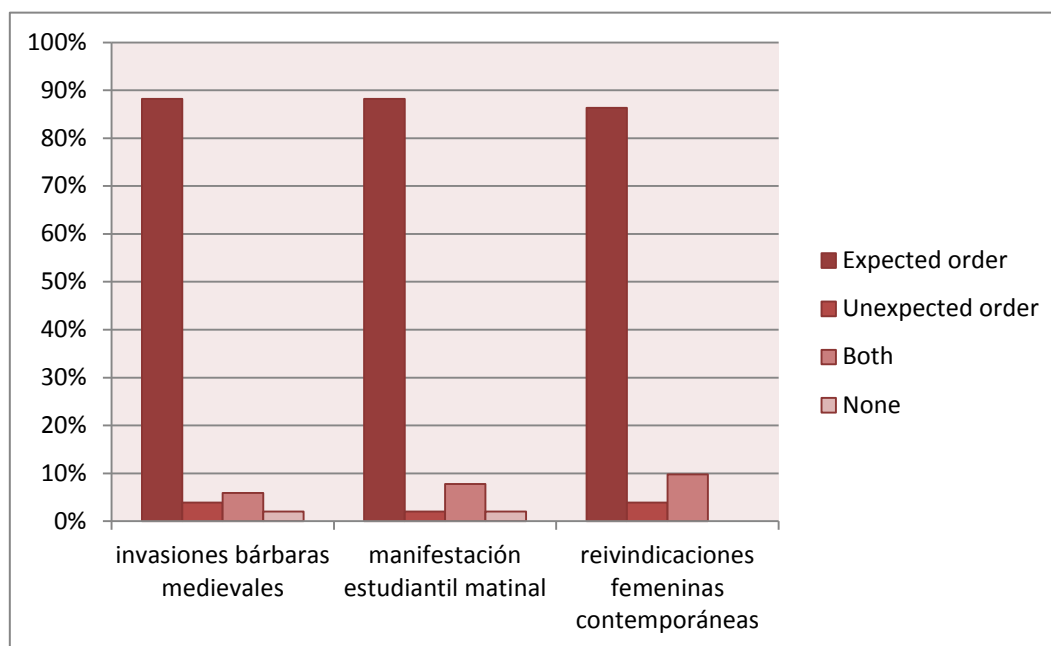
Fig. 7. Agent + Time. Answers

AGENT + LOCATION

Expected order: AGENT > LOCATION

Head noun	AGENT	LOCATION
manifestaciones 'demonstrations'	estudiantiles '(by) students'	madrileñas 'Madrid'
huelga 'strike'	obrera '(by) workers'	hondureña 'Honduran'
protestas 'protests'	populares 'popular'	argentinas 'Argentinian'

Table 8. Agent + Location. Set of examples
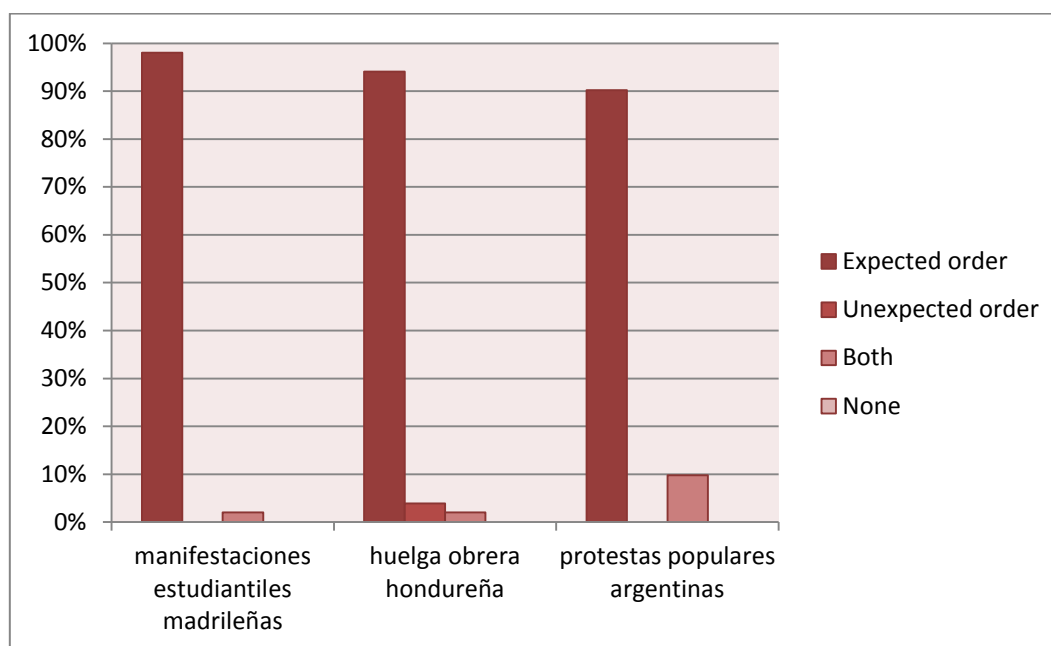
Fig. 8. Agent + Location. Answers

LOCATION + TIME

Expected order: LOCATION > TIME

Head noun	LOCATION	TIME
paseo 'walk'	urbano 'city'	vespertino 'evening'
vida 'life'	rural 'rural'	dieciochesca '19th-century'
altercado 'quarrel'	callejero 'street'	nocturno 'nocturnal'

Table 9. Location + Time. Set of examples
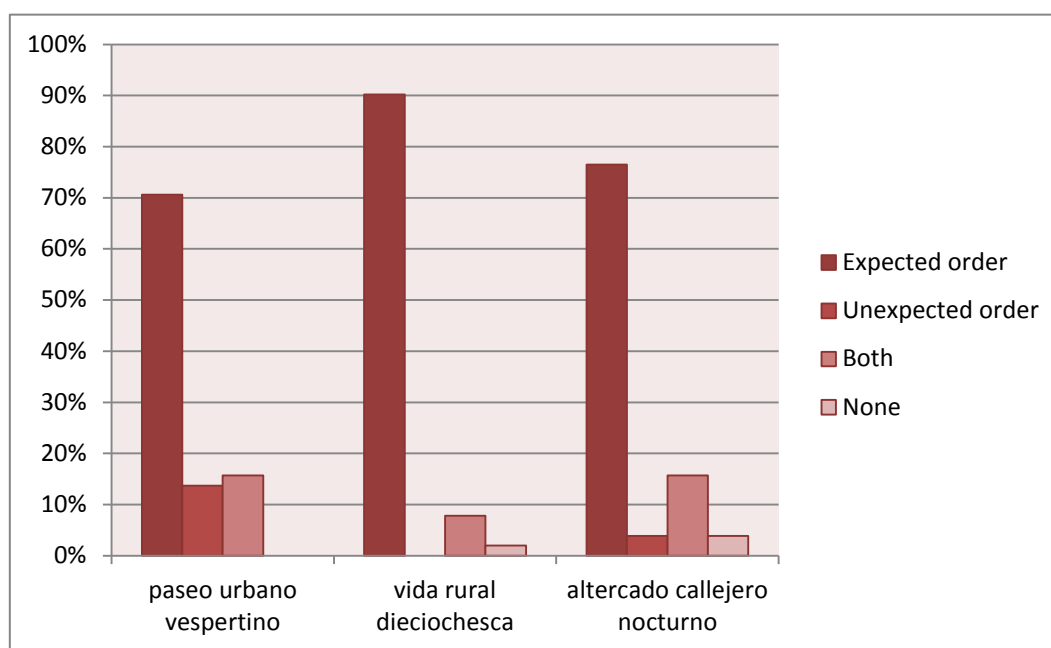
Fig. 9. Location + Time. Answers

THEME + INSTRUMENT

Expected order: THEME > INSTRUMENT

Head noun	THEME	INSTRUMENT
decoración 'decoration'	cerámica 'ceramic'	manual 'manual'
modificaciones 'modifications'	contractuales 'contractual'	telefónicas 'telephone'
exploración 'exploration'	espacial 'space'	táctil 'tactile'

Table 10. Theme + Instrument. Set of examples
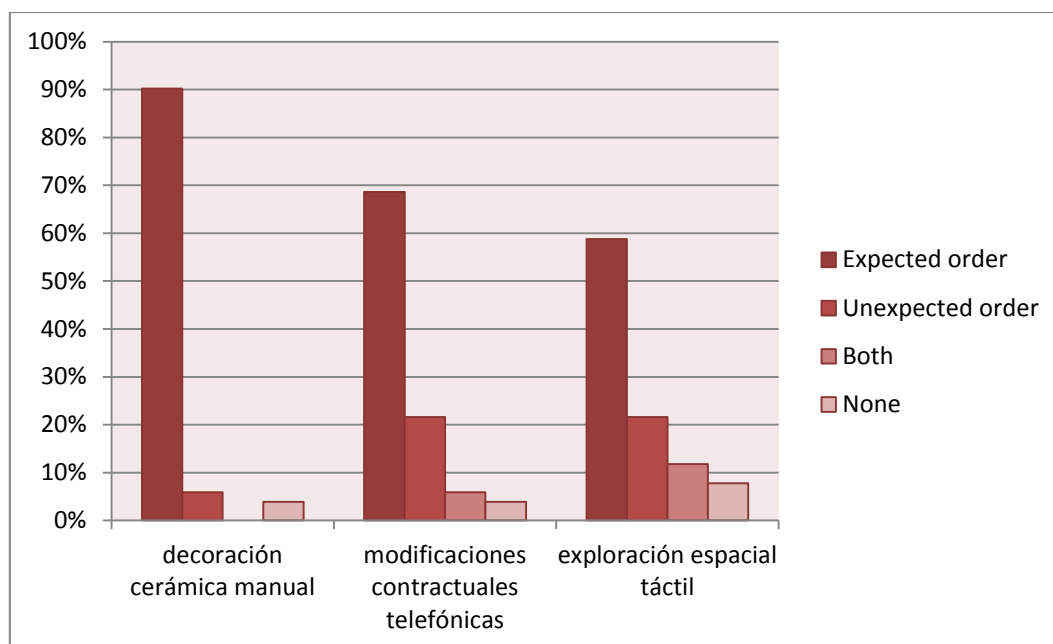
Fig. 10. Theme + Instrument. Answers

AGENT + INSTRUMENT

Expected order: INSTRUMENT > AGENT

Head noun	INSTRUMENT	AGENT
ataque 'attack'	misilístico 'missile'	iraní 'Iranian'
viaje 'trip'	aéreo 'plane'	presidencial 'presidential'
comunicación 'communication'	gestual 'gestural'	infantil 'children's'

Table 11. Instrument + Agent. Set of examples
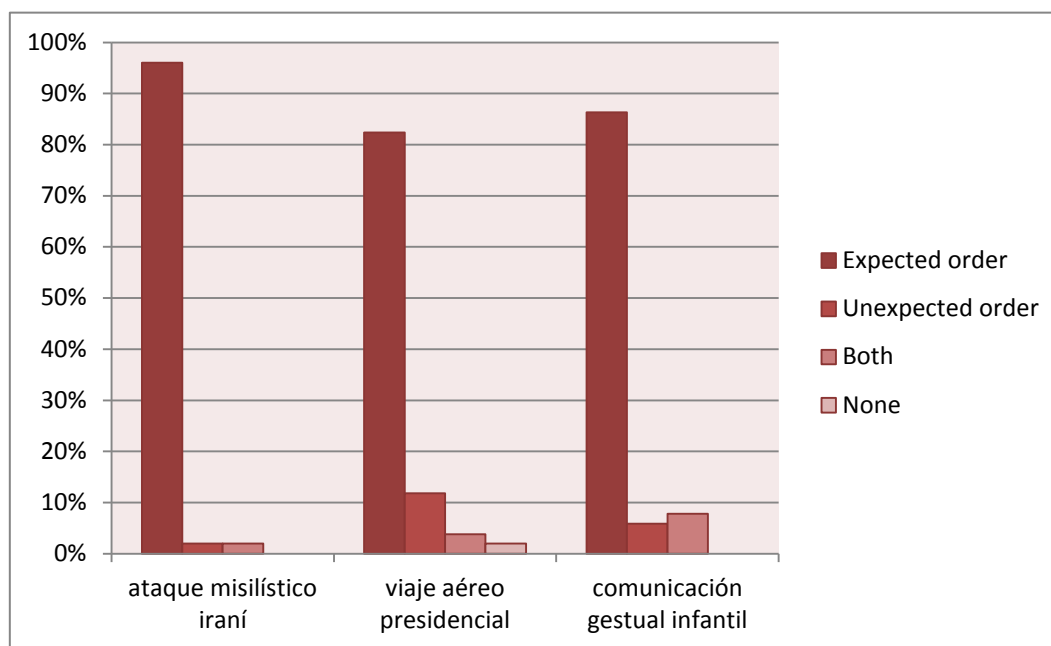
Fig. 11. Instrument + Agent. Answers

LOCATION + INSTRUMENT

Expected order: INSTRUMENT > LOCATION

Head noun	INSTRUMENT	LOCATION
respiración 'respiration'	pulmonar 'pulmonary'	subacuática 'underwater'
tratamiento 'treatment'	antibiótico 'antibiotic'	hospitalario 'hospital'
operación 'operation'	naval 'naval'	costera 'coast'

Table 12. Instrument + Location. Set of examples
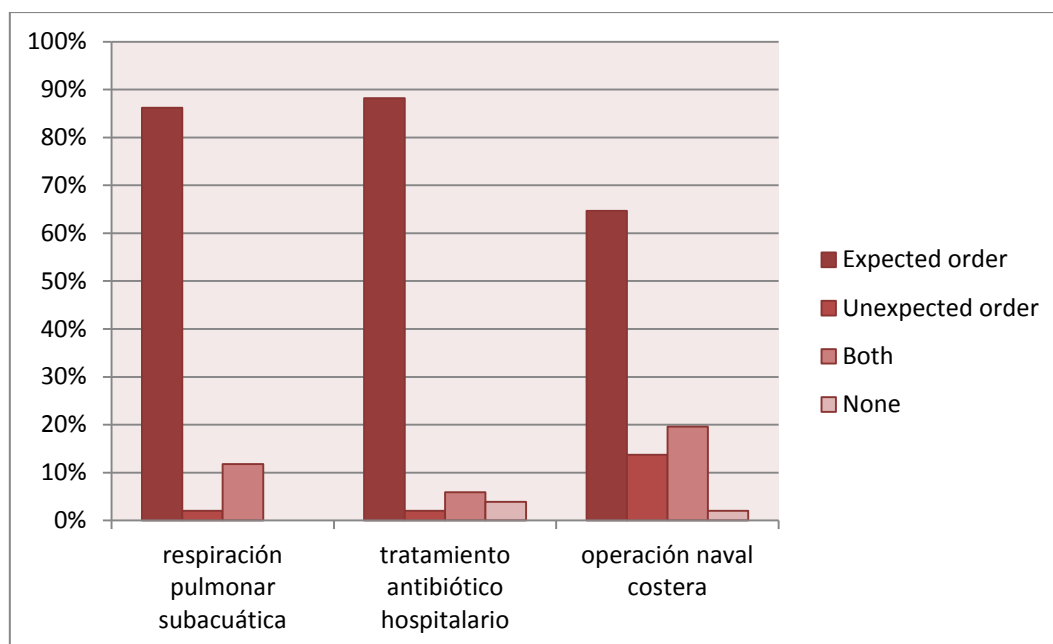
Fig. 12. Instrument + Location. Answers

TIME + INSTRUMENT

Expected order: INSTRUMENT > TIME

Head noun	INSTRUMENT	TIME
ataque 'attack'	misilístico 'missile'	nocturno 'nocturnal'
selección 'selection'	concursal 'examination'	invernal 'winter'
persecución 'pursuit'	automovilística 'car'	nocturna 'nocturnal'

Table 13. Instrument + Time. Set of examples
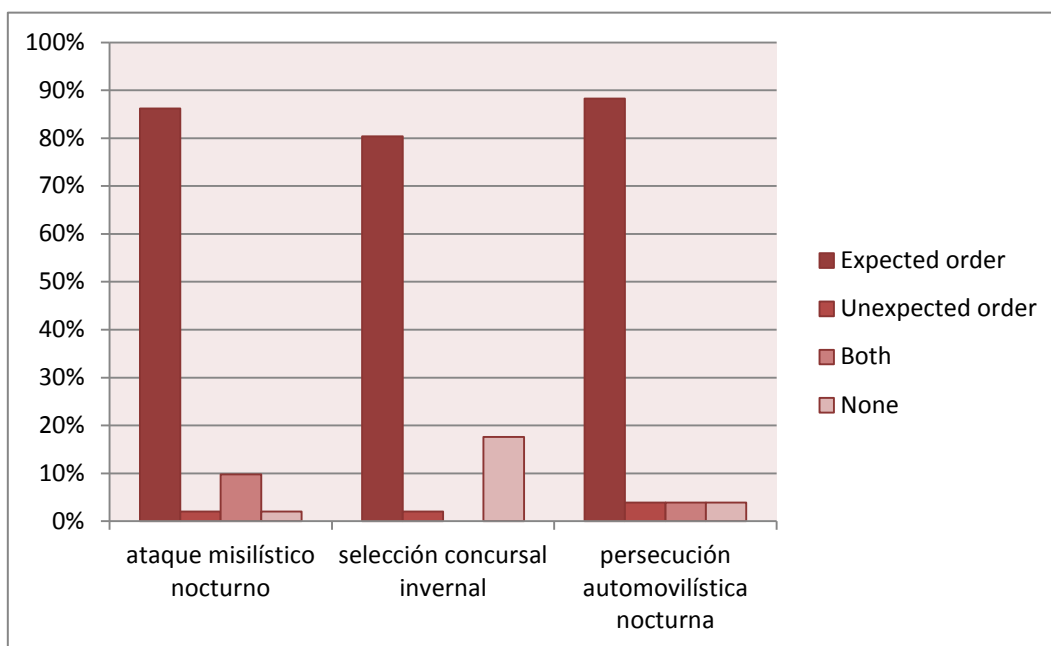
Fig. 13. Instrument + Time. Answers

FILLERS

Expected order: Relational adjective > Qualifying adjective

Head noun	Relational adjective	Qualifying adjective
gestión 'management'	ambiental 'environmental'	eficaz 'effective'
propuesta 'proposal'	laboral 'job'	interesante 'interesting'
previsiones 'forecasts'	económicas 'economic'	optimistas 'optimistic'
estudio 'study'	hidrológico 'hydrologic'	detallado 'detailed'
política 'politics'	estatal 'state'	represiva 'repressive'
trabajo 'work'	manual 'manual'	difícil 'difficult'
cita 'quotation'	textual 'text'	larga 'long'
educación 'education'	escolar 'school'	completa 'complete'
bombardeos 'bombardments'	nocturnos 'nocturnal'	frecuentes 'frequent'
actividades 'activities'	veraniegas 'summer'	divertidas 'funny'

Table 14. RelA + QA fillers. Set of examples
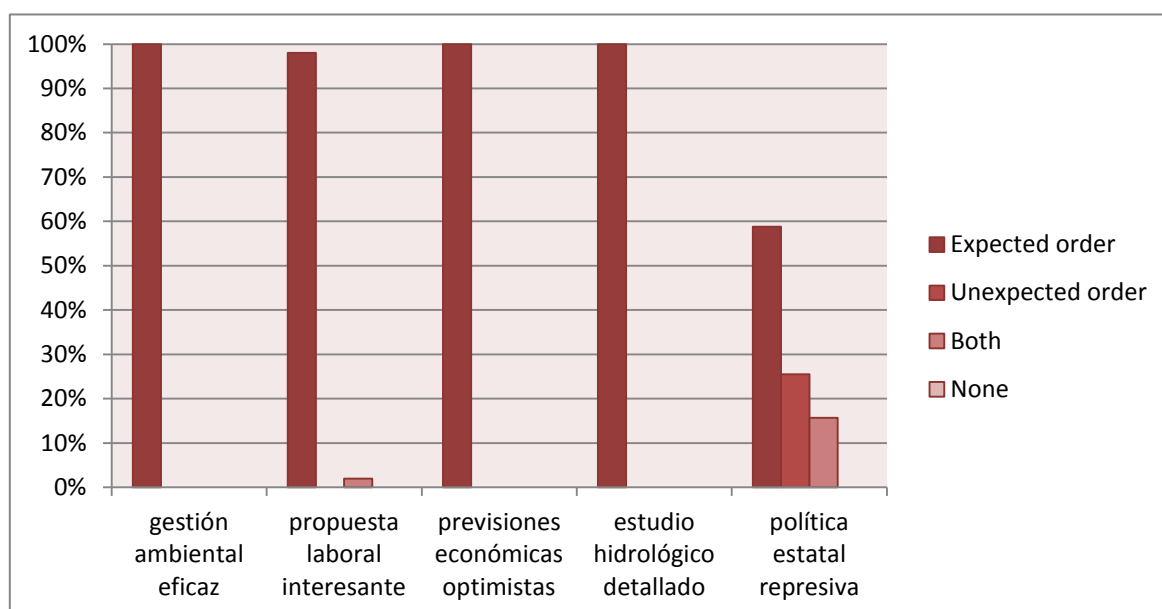
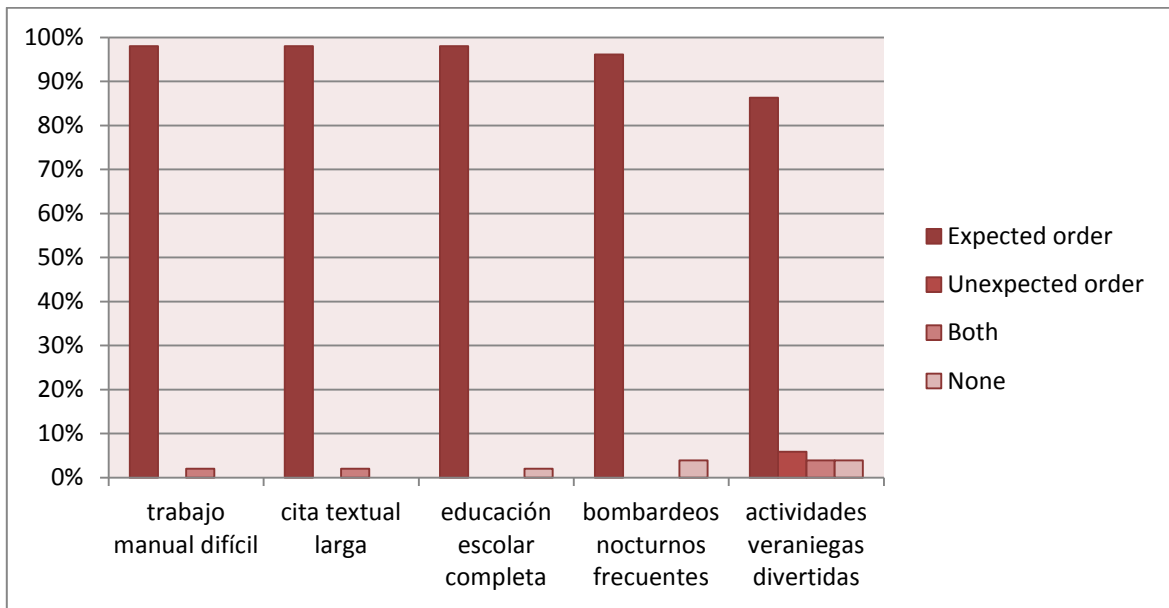Fig. 14. RelA + QA fillers 1. Answers

Fig. 15. RelA + QA fillers 2. Answers

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Estratto per riassunto della tesi di dottorato

Studente: Laura Bortolotto   matricola: 955976

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Title of the thesis : The Syntax of Relational Adjectives in Romance: a Cartographic Approach

Abstract: The goal of this dissertation is to account for ordering restrictions of Relational adjectives across Romance languages. Relational adjectives are argued to be ordered according to the relationship they establish with the head noun. A hierarchy of thematic relations is hypothesized to explain ordering restrictions of Relational adjectives in Romance. Then it is compared with other hierarchies of thematic relations proposed in the literature to account for ordering restrictions of modifiers in complex nominals (Rae 2010) and of prepositional phrases both in the clause (Schweikert 2005; Takamine 2010) and in the nominal domain (Laenzlinger 2011). Striking parallelisms emerge from the comparison. In particular the order of postnominal Relational adjectives in Romance turns out to be the mirror image of the order of prenominal modifiers in English: this distribution further confirms Cinque's (2010) hypotheses on the syntax of adjectives.

Titolo della tesi: La sintassi degli aggettivi di relazione nelle lingue romanze: un approccio cartografico

Estratto: L'obiettivo di questa tesi è quello di spiegare le restrizioni d'ordine tra due (o più) aggettivi di relazione nelle lingue romanze. Si dimostra che l'ordine di tali aggettivi dipende dalla relazione che essi instaurano con la testa nominale. Viene quindi proposta una gerarchia di relazioni tematiche che renda conto delle restrizioni d'ordine. Tale gerarchia viene successivamente confrontata con altre gerarchie di relazioni tematiche proposte in letteratura per spiegare l'ordine dei modificatori nei nominali complessi (Rae 2010) e dei sintagmi preposizionali nella frase (Schweikert 2005; Takamine 2010) e nel dominio nominale (Laenzlinger 2011). Dal confronto emergono sorprendenti parallelismi. In particolare l'ordine degli aggettivi di relazione postnominali delle lingue romanze risulta speculare rispetto all'ordine dei modificatori prenominali dell'inglese: tale distribuzione conferma ulteriormente le ipotesi di Cinque (2010) sulla sintassi degli aggettivi.

Firma dello studente

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