

ORDERING RESTRICTIONS IN THE SYNTAX OF RELATIONAL ADJECTIVES IN ITALIAN

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Abstract: *The goal of this paper is to show that in Italian there are ordering restrictions between relational adjectives modifying the same head noun. These ordering restrictions seem to depend on the semantic class relational adjectives belong to. Testing the (un)grammaticality of different orders, a possible hierarchy of semantic relations will be drawn. Both advantages and problems of such a hypothesis will be discussed, showing that an interesting result comes from comparing this hierarchy with other hierarchies proposed to account for ordering restrictions both inside and outside the nominal domain.*

Keywords: *relational adjectives, complex nominals, semantic relations*

1. Introduction

Relational adjectives (hence RelAs) are denominal adjectives that express a relation between the noun from which they are derived and the noun with which they occur, such as *geografiche*, *vinicola* and *notturmo* in *scoperte geografiche* ‘geographical discoveries’, *produzione vinicola* ‘wine production’, and *attacco notturno* ‘nocturnal attack’. Noun phrases containing RelAs have been labelled as Complex Nominals (hence CNs) 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 RelA¹ (e.g. *autumnal rains*).

RelAs are often considered marginal adjectives because they differ from (prototypical) qualifying adjectives (hence QAs) in many respects. RelAs create a relation between two nouns, while QAs assign a property to the noun they modify; RelAs cannot be graded and cannot apparently occur in predicative position, whereas QAs generally can. In Romance languages, RelAs are always postnominal, while most QAs can appear both in the prenominal and postnominal position².

Regarding RelAs as a class, Bosque (1993) and Bosque & Picallo (1996) do not consider them a homogeneous group: in fact, they divide RelAs into thematic adjectives (henceforth ThAs) and classificatory adjectives (CIAs). ThAs and CIAs differ with respect to the lexical relation they have with the head noun. On the one hand, ThAs absorb a theta role lexically licensed by the noun, as in *invasioni barbariche* ‘barbarian invasions’ or

¹ Levi (1978) refers to relational adjectives with the label ‘non-predicating adjectives’.

² Here I will not examine all of the general properties ascribed to RelAs; for a discussion based on cross-linguistic data claiming there is not such a strict dichotomy between RelAs and QAs, see Bisetto (2010).

elezione papale ‘papal election’. On the other hand, CIAs introduce a domain in relation to which the object denoted by the head noun is classified, as in *dibattito culturale* ‘cultural debate’ or *energia solare* ‘solar energy’. Such a distinction is relevant here because it is argued to play a role in the syntax of RelAs by Bosque & Picallo (1996) for Spanish and Ramaglia (2008) for Italian³.

The goal of this paper is to propose an account for the syntax of RelAs in Italian. In section 2 I will show the existence of ordering restrictions when two (or more) RelAs co-occur, and in section 3 semantics will be presented as a possible key to explain them. Pros and cons of this proposal will be briefly discussed in section 4. Section 5 will be devoted to outlining parallel accounts for ordering restrictions of modifiers in other languages and domains, pointing out a potentially suitable syntactic hypothesis inside the cartographic framework. Finally, conclusions will be drawn in section 6.

2. Ordering restrictions

As previously mentioned, RelAs are always postnominal in Italian (and in Romance languages, in general). They are strictly adjacent to the head noun; therefore a QA can precede the sequence formed by the noun plus the RelA (as in (1a)), or follow it, (as in (1b)), but it cannot occur between the noun and the RelA, since (1c) is ungrammatical:

- (1) a. una pericolosa invasione francese ‘a dangerous French invasion’
 a dangerous invasion French
 b. un’invasione francese pericolosa
 an invasion French dangerous
 c. *un’invasione pericolosa francese
 an invasion dangerous French

When two (or more) RelAs co-occur in Italian, there are clearly ordering restrictions in unmarked orders⁴:

³ It should be stressed that an adjective is not *thematic* or *classificatory* (and not even *relational*) *a priori*. Its interpretation can be related to the noun it modifies: the Italian examples below contain an adjective three ways ambiguous, being thematic in (i), classificatory in (ii) and qualifying in (iii):

- (i) circolazione sanguigna (ThA)
 ‘blood circulation’
 (ii) vasi sanguigni (CIA)
 ‘blood vessels’
 (iii) uomo sanguigno (QA)
 ‘hot-tempered man’ (lit. blood man)

⁴ I refer to sequences where RelAs are not used contrastively. Generally speaking, when two RelAs are combined, one of the two possible orders 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, as further specified below (footnote 6). This is why this second, marginal, order is marked with the symbol ‘#’ (instead of ‘*’) referring to its inappropriateness in an unmarked context.

- (2) a. attacco missilistico cubano
 attack missile.ADJ Cuban
 b. #attacco cubano missilistico
 attack Cuban missile.ADJ
 ‘Cuban missile attack’
- (3) a. invasioni barbariche medievali
 invasions barbarian Medieval
 b. #invasioni medievali barbariche
 invasions Medieval barbarian
 ‘Medieval barbarian invasions’

Bosque & Picallo (1996) give an account of similar ordering restrictions of RelAs in Spanish. Concerning the order of ThAs, they claim it depends on the thematic hierarchy, ThAs with a THEME role being closer to the noun than ThAs absorbing an AGENT or POSSESSOR role. This claim is based on examples like (4), where the interpretation of the two RelAs is argued to rely on their position in the sequence:

- (4) a. estudios rodoledianos femeninos (Bosque & Picallo 1996, 360)
 ‘studies of Rodoreda by women’
 b. estudios femeninos rodoledianos
 ‘studies of women by Rodoreda’

This analysis works for ordering restrictions of ThAs in Italian, as well. It explains the contrast in (5), where *automobilistica* can be interpreted only as the THEME and *tedesca* as the AGENT; the strong marginality of (5b) is due to the fact that the ThA expressing THEME has to precede the ThA with the AGENT role (in unmarked contexts):

- (5) a. produzione automobilistica tedesca
 production car.ADJ German
 b. # produzione tedesca automobilistica
 production German car. ADJ
 ‘German car production’

Concerning CIAs, the authors state that their order “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), giving the following example:

- (6) a. coma alcohólico metílico (Bosque & Picallo 1996, 366)
 ‘methilic alcoholic coma’
 b. *coma metílico alcohólico
 ‘alcoholic methilic coma’

In this way, they manage to account even for those cases in which the order of two co-occurring CIAs seems to be free, as in (7). It is dependent on the fact that the pattern of semantic inclusion is reversible; 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:

- (7) a. *literatura medieval francesa* (Bosque & Picallo 1996, 367)
 ‘French medieval literature’
 b. *literatura francesa medieval*
 ‘medieval French literature’

This description seems to account for the distribution of CIAs in Italian, too. The Italian translations of (6) and (7) display the same order. But examples like (8) could be a potential problem, if we try to extend this claim to Italian CIAs:

- (8) a. *attacco missilistico notturno*
 attack missile.ADJ nocturnal
 b. *#attacco notturno missilistico*
 attack nocturnal missile.ADJ
 ‘night missile attack’

(8a) is the unmarked option, while (8b) sounds ungrammatical to me, unless it is used in a context where a night attack carried out using missiles is countered with a night attack performed by other means (i.e. in a context in which *missilistico* ‘missile’ is used in a contrastive way). This order constraint is not expected, since it seems plausible both to classify night attacks according to the means with which they are carried out and to classify missile attacks with respect to the time in which they take place. Hence, a question arises: why (8a) is grammatical and (8b) is not (or is, at least, rather marginal) in an unmarked context?

Lastly, CNs with a ThA and a CIA will be considered. Bosque & Picallo (1996) state that in Spanish a CIA has to be strictly adjacent to the noun, followed by any ThA, as examples in (9) are claimed to show:

- (9) a. *unos residuos atómicos soviéticos*
 CIA ThA
 ‘some Soviet atomic residues’
 b. *una producción manual cestera*
 CIA ThA
 ‘a manual production of baskets’

Ramaglia (2008), adopting Bosque & Picallo’s (1996) distinction between ThAs and CIAs, argues that similar ordering restrictions of RelAs do exist in Italian:

- (10) a. *politica estera italiana* (Ramaglia 2008, 38)
 policy foreign Italian
 CIA ThA
 b. **politica italiana estera*
 policy Italian foreign
 ‘Italian foreign policy’

The author accounts for the ordering restriction in (10) claiming that *estera*, being a CIA, has to precede *italiana*, which is a ThA.

However, this generalization cannot account for Italian sequences in (11):

- (11) a. produzione vinicola italiana annuale
 production wine.ADJ Italian annual
 ThA ThA CIA
 ‘annual Italian wine production’
- b. scoperte geografiche portoghesi cinquecentesche
 discoveries geographical Portuguese 16th-century.ADJ
 CIA ThA CIA
 ‘16th-century Portuguese geographical discoveries’

In (11a) there are two ThAs, *vinicola* and *italiana* (respectively the THEME and AGENT of the deverbal noun *produzione*) and a CIA, *annuale*. Both ThAs precede the CIA, showing a distributional pattern apparently different from that of the Spanish examples above. On the other hand, in (11b) the ThA *portoghesi*, which expresses the AGENT, is between two CIAs, *geografiche* and *cinquecentesche*, which relate the discoveries to the domain of geography and to a certain period of time. I think these examples show that, at least in Italian, if you combine a ThA and a CIA in the same CN, their relative position doesn’t depend on their belonging to the group of ThAs or to the one of CIAs.

In the next section I will suggest that ordering restrictions in Italian between ThAs and CIAs (and between two RelAs, in general) depend on the semantic relationship they establish with the head noun.

3. The semantic basis of ordering restrictions

The starting point of this study is the observation that, when two RelAs modify the same head noun, there appears to be a strict word order (or at least a preferred one). The working hypothesis I have formulated is that these ordering restrictions are due to the semantic relationship existing between the RelAs and the noun.

In this section, RelAs expressing different semantic relations will be combined to see whether their semantic role influences their position in the sequence. Six relations will be considered: AGENT, THEME, INSTRUMENT, TIME, LOCATION and MATTER⁵. The grammaticality judgements regard unmarked contexts where RelAs are not used contrastively⁶.

⁵ The relation MATTER is used by Rae (2010); it corresponds to Levi’s (1978) ABOUT and expresses the topic of something (for example, a *demographic policy* is a policy about demography, and *geographical discoveries* are discoveries about geography).

⁶ Unmarked contexts have to be taken into consideration, since almost all orders seem to be possible in contrastive environments (the contrasted RelA being necessarily the most external one). (ii) does not sound grammatical under unmarked conditions, but it becomes acceptable if *politica* has a contrastive flavour (meaning the television satire regarding politics and not something else). This is why (ii) is marked with ‘#’, whose use has been already motivated in footnote 4.

- (i) la satira politica televisiva
 ‘the television political satire’

Consider firstly the combinations of AGENT with THEME and MATTER. Examples (12) and (13) (as well as (5), above), show that, if we combine a RelA expressing THEME with another RelA expressing AGENT, the former is closer to the head noun than the latter. Examples (14) and (15) test the position of AGENT and MATTER: the RelA expressing MATTER has to precede the RelA which absorbs the AGENT role:

	AGENT	THEME	
(12)	esplorazione americana 'American exploration'	esplorazione lunare 'lunar exploration'	a. esplorazione lunare americana exploration lunar American b. #esplorazione americana lunare exploration American lunar 'American lunar exploration'
(13)	persecuzioni naziste 'Nazi persecutions'	persecuzioni ebraiche 'Jewish persecutions'	a. persecuzioni ebraiche naziste persecutions Jewish Nazi b. #persecuzioni naziste ebraiche persecutions Nazi Jewish 'Nazi Jewish persecutions'
			→ THEME > AGENT
	AGENT	MATTER	
(14)	politica fascista 'Fascist policy'	politica demografica 'demographic policy'	a. politica demografica fascista policy demographic Fascist b. #politica fascista demografica policy Fascist demographic 'Fascist demographic policy'
(15)	scoperte portoghesi 'Portuguese discoveries'	scoperte geografiche 'geographical discoveries'	a. scoperte geografiche portoghesi discoveries geographical Portuguese b. #scoperte portoghesi geografiche discoveries Portuguese geographical 'Portuguese geographical discoveries'
			→ MATTER > AGENT

Therefore both THEME and MATTER precede AGENT. Unfortunately there seems to be no way of combining THEME and MATTER to define their reciprocal position in the sequence. The presence of a RelA expressing one of these two relations appears to exclude the possibility of having a second RelA expressing the other. For this reason, I propose the sequence in (16):

(16) **N° > THEME/MATTER > AGENT**⁷

(ii) #la satira televisiva politica
'the political television satire'

⁷ An example like (i) could be seen as evidence of the possible co-occurrence of THEME and MATTER:

The next relation to be considered is TIME. Look at examples (17) and (18): they show that RelAs expressing TIME follow RelAs expressing AGENT. It would not be necessary to test the position of TIME with respect to the other semantic relations since they all precede AGENT and for the transitivity rule they should precede TIME, as well. Nonetheless, all the possible combinations have been tested, looking for further evidence for the position of TIME. Examples (19)-(22) confirm that TIME appears to follow THEME and MATTER, too; hence, the sequence proposed can be augmented as in (23), where TIME is the most external relation:

	AGENT	TIME	
(17)	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'
(18)	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
	THEME	TIME	
(19)	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'
(20)	abbassamento termico 'temperature drop'	abbassamento notturno 'nocturnal drop'	a. abbassamento termico notturno drop temperature.ADJ nocturnal b. #abbassamento notturno termico drop nocturnal temperature.ADJ 'nocturnal temperature drop' → THEME > TIME
<hr/>			
(i)	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'

Unfortunately such examples are not clear enough. (i) could be seen as evidence for the order MATTER > THEME under the interpretation 'the progress of America regarding technology'. However, the same string could be employed to argue in favour of the order THEME > LOCATION since it could also be paraphrased as 'the progress of technology in America'. Since the order MATTER > THEME would be based on strings whose reading is ambiguous, it is preferable to leave it unspecified.

- | | | | |
|------|--|--|---|
| | MATTER | TIME | |
| (21) | 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' |
| (22) | 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**

- (23) **N° > THEME/MATTER > AGENT > TIME**

LOCATION will be added to the sequence. Let us start by combining a ReLA expressing this relation with another expressing AGENT. In (24) and (25) LOCATION, as with TIME above, appears to follow AGENT. Therefore, it would be unnecessary to test LOCATION's position with respect to THEME and MATTER; it is expected to follow them, since it follows AGENT. But all the possible combinations will be tested for LOCATION, as well. Examples (26)-(29) provide further evidence in support of an external position for a ReLA expressing LOCATION with respect to RelAs expressing THEME or MATTER. But a claim regarding the exact position of LOCATION in the sequence cannot be made without testing its combination with TIME, since both RelAs expressing LOCATION and RelAs expressing TIME follow a ReLA which absorbs the AGENT role. On the basis of examples like (30) and (31), LOCATION is argued to precede TIME. The result of these tests is the sequence in (32):

- | | | | |
|------|--|--|---|
| | AGENT | LOCATION | |
| (24) | 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' |
| (25) | sciopero operaio
'workers strike' | sciopero torinese
'Turin strike' | a. sciopero operaio torinese
strike worker.ADJ Turin.ADJ
b. #sciopero torinese operaio
strike Turin.ADJ worker.ADJ
'Turin workers strike' |
- **AGENT > LOCATION**
- | | | | |
|------|--|---|--|
| | THEME | LOCATION | |
| (26) | circolazione
monetaria
'monetary | circolazione europea
'European
circulation' | a. circolazione monetaria europea
circulation monetary European
b. #circolazione europea monetaria |

- | | | | |
|------|--|---|--|
| | circulation' | | circulation European monetary
'European monetary circulation' |
| (27) | consumo energetico
'energy consumption' | consumo domestico
'home consumption' | a. consumo energetico domestico
consumption energy.ADJ domestic
b. #consumo domestico energetico
consumption domestic energy.ADJ
'home energy consumption'

→ THEME > LOCATION |
| (28) | MATTER
controlli sanitari
'health controls' | LOCATION
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' |
| (29) | 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 |
| (30) | TIME
visite serali
'evening visits' | LOCATION
visite ospedaliere
'hospital visits' | a. visite ospedaliere serali
visits hospital.ADJ evening.ADJ
b. #visite serali ospedaliere
visits evening.ADJ hospital.ADJ
'evening hospital visits' |
| (31) | escursioni estive
'summer hikes' | escursioni montane
'mountain hikes' | a. escursioni montane estive
hikes mountain.ADJ summer.ADJ
b. #escursioni estive montane
hikes summer.ADJ mountain.ADJ
'summer mountain hikes'

→ LOCATION > TIME |
| (32) | N° > THEME/MATTER > AGENT > LOCATION > TIME | | |

Finally, let us add the relation INSTRUMENT to the sequence in (32). Examples (33) and (34) show that a RelA expressing INSTRUMENT precedes a RelA expressing AGENT; thus the position of INSTRUMENT has to be tested with respect to THEME/MATTER, since these relations precede AGENT, as well. Examples (35)-(36) show that INSTRUMENT follows them; consequently, it occupies the position between THEME/MATTER and AGENT. Hence,

INSTRUMENT is expected to precede LOCATION and TIME, which in turn follow AGENT. Examples (37)-(40) confirm such expectation. The final sequence of semantic relations expressed by RelAs in Italian is given in (41):

- | | | | |
|------|--|---|--|
| | AGENT | INSTRUMENT | |
| (33) | attacco coreano
'Korean attack' | attacco missilistico
'missile attack' | a. attacco missilistico coreano
attack missile.ADJ Korean
b. #attacco coreano missilistico
attack Korean missile.ADJ
'Korean missile attack' |
| (34) | esplorazione infantile
'children's exploration' | esplorazione tattile
'tactile exploration' | a. esplorazione tattile infantile
exploration tactile children.ADJ
b. #esplorazione infantile tattile
exploration children.ADJ tactile
'children's tactile exploration' |
| | | | → INSTRUMENT > AGENT |
| | THEME | INSTRUMENT | |
| (35) | stimolazione cardiaca
'hearth stimulation' | stimolazione manuale
'manual stimulation' | a. stimolazione cardiaca manuale
stimulation hearth.ADJ manual
b. #stimolazione manuale cardiaca
stimulation manual hearth.ADJ
'manual hearth stimulation' |
| (36) | 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 |
| | LOCATION | INSTRUMENT | |
| (37) | terapia ospedaliera
'hospital therapy' | terapia antibiotica
'antibiotic therapy' | a. terapia antibiotica ospedaliera
therapy antibiotic hospital.ADJ
b. #terapia ospedaliera antibiotica
therapy hospital.ADJ antibiotic
'hospital antibiotic therapy' |
| (38) | 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 | |
|------|--|--|---|
| (39) | 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' |
| (40) | selezione
primaverile
'spring
selection' | selezione
concorsuale
'examination
selection' | a. selezione concorsuale primaverile
selection examination.ADJ spring.ADJ
b. #selezione primaverile concorsuale
selection spring.ADJ examination.ADJ
'spring examination selection' |
| | | | → INSTRUMENT > TIME |
| (41) | N° > THEME/MATTER > INSTRUMENT > AGENT > LOCATION > TIME | | |

4. Interim discussion

The claim at the root of this proposal is that ordering restrictions between RelAs in Italian depend on the semantic relationship they establish with the head noun. Hence, Bosque & Picallo's (1996) hypotheses on ordering restrictions of RelAs in Spanish can be only partially adapted to Italian syntax.

First, the order of RelAs in Italian has been proved not to be related to their belonging to the group of ThAs or CIAs, despite Ramaglia's (2008) claims in favour of this approach, in line with Bosque & Picallo (1996). Ramaglia (2008) proposes examples like (10), repeated in (42). She accounts for it arguing that *estera*, a CIA, is forced to precede *italiana*, a ThA, being the linear order N > CIA > ThA. It has been shown that such a claim does not hold in Italian (see examples in (11) above). But order (42a) is easily explainable under the present hypothesis, i.e. on the basis of the sequence (41), according to which a RelA expressing MATTER (*estera*) has to precede a RelA expressing AGENT (*italiana*):

- | | | |
|------|------------------------------|---------------------|
| (42) | a. politica estera italiana | (Ramaglia 2008, 38) |
| | policy foreign Italian | |
| | b. *politica italiana estera | |
| | policy Italian foreign | |
| | 'Italian foreign policy' | |

Second, CIAs in Italian are not ordered according to patterns of semantic inclusion in successive subspecification: in fact, if example (8) (repeated as (39)) is considered, it is not clear why a RelA expressing TIME should subspecify a RelA expressing INSTRUMENT, but the reverse is not possible. The solution is to abandon the idea of semantic inclusion, claiming that the linearization of CIAs simply follows the sequence in (41).

Cases of (apparent) free order could represent a problem for the present hypothesis. Consider (43), where both orders of RelAs seem to be equally acceptable:

- (43) a. moda parigina primaverile
 ‘spring Parisian fashion’
 b. moda primaverile parigina
 ‘Parisian spring fashion’

One possible way to account for an example like (43) is to argue that the same RelA could have different interpretations in the two orders; *primaverile* ‘spring’ could express TIME in (43a), meaning ‘fashion in Paris in the springtime’, whereas it could express MATTER in (43b), 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 (43a) and MATTER > LOCATION in (43b), consistent with the hierarchy in (41). Another possible account is related to the possibility for some sequences to be lexicalized; this would obscure the distribution of RelAs. Nevertheless, I do not consider the type of example represented by (43) as a true counterexample to my proposal; I believe the hierarchy in (41) can be assumed for core unmarked cases while the others can be explained by relating them to interfering factors like the one just discussed⁸. Obviously such interfering factors have to be submitted to a subtler analysis in order to strengthen the basis of this hypothesis.

A possible criticism to this analysis could regard semantic relations. In the next section it will be claimed that RelAs are merged in the functional projection they are semantically related to; hence, two important questions should be answered: what and how many are the semantic relations encoded in the functional structure? Semantic relations are themselves a problem, since there is neither agreement on their nature nor on their number. There are different positions on this matter in the literature concerning RelAs: on the one hand, some linguists claim that the number of relations that RelAs can express is potentially unlimited (Mezhevich 2004; Rainer 2013); on the other hand, some authors try to define closed lists of relations available in CNs (Levi 1978; Rae 2010, et al).

I will not analyse semantic relations one by one here since it would imply too long a discussion. Surely the semantic side of the present proposal deserves an in-depth analysis, but it goes beyond the goals of this paper, which aims at showing the plausibility of the hypothesis that RelAs in Italian are ordered according to the semantic relationship they establish with the head noun.

⁸ An example of what is intended by interfering factors is in (i)-(ii), where the numbers in brackets represent the results of a Google search (April 5, 2014). (i) shows that only the sequence expected, as outlined in (41) (with the RelA absorbing THEME preceding the RelA expressing AGENT), is attested; there are no cases of the reverse order. But, if the RelA *francese* ‘French’ is changed with *italiana* ‘Italian’, some occurrences of the reverse order are obtained. Could there be effects based on frequency (since in Italian it is plausible that *Italian productions* are more often spoken of)? I admit this is merely speculation, and the question of how to account for these examples remains open.

- (i) a. produzione vinicola francese (37) ‘French wine production’
 production wine.ADJ French
 b. produzione francese vinicola (0)
 production French wine.ADJ
- (ii) a. produzione vinicola italiana (348) ‘Italian wine production’
 production wine.ADJ Italian
 b. produzione italiana vinicola (12)
 production Italian wine.ADJ

In section 5 I will be exploring further evidence supporting the suggestion of ordering restrictions based on a semantic hierarchy, leading to the discovery of some interesting parallelisms in the distribution of modifiers in other languages and domains.

5. *Parallel distributional patterns*

The idea that adjectives are ordered according to their semantic class is not new. With regard to attributive adjectives, it has a long tradition; Cinque (1994, 2010), Scott (2002) (and references cited there) give a hierarchy of semantic classes of attributive adjectives.

This idea has already been applied to the syntax of RelAs, as well. It was proposed by Rae (2010), who studied ordering restrictions of modifiers in English CNs. The author shows that such modifiers (which can be nouns or RelAs, as mentioned in the introduction) are ordered depending on the semantic relation they express. She combines pairs of CNs with the same head, changing the modifier and the semantic relations involved, as I did in the third section for Italian. From these tests, Rae (2010) obtains a hierarchy of semantic relations, reported in (44):

- (44) MATERIAL > **TIME** > **LOCATION** > **AGENT/SOURCE** > **BENEFICIARY** > **MEASURE** > **INSTRUMENT** > **THEME/MATTER** > N^o

Let us compare Rae's hierarchy for English CNs with the sequence proposed in (41), and repeated below in (45), explaining the distribution of RelAs in Italian:

- (45) N^o > **THEME/MATTER** > **INSTRUMENT** > **AGENT** > **LOCATION** > **TIME**

The order of semantic relations common to both hierarchies (put in bold type) is a mirror image. I find this to be a very interesting discovery, which I will try to account for through the cartographic paradigm also undertaken by Rae (2010).

The aim of Cartography is 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. In particular the cartographic approach assumes that:

the distinct hierarchies of functional projections dominating VP, NP, AP, PP, IP, etc. may be universal in the type of heads and specifiers that they involve, in their number, and in their relative order, even if languages differ in the types of movements that they admit or in the extent to which they overtly realize each head and specifier.

(Cinque & Rizzi 2010, 55)

There are several studies on ordering restrictions of modifiers in the cartographic framework. Cinque (1999) accounts for ordering restrictions of adverbs, postulating that they are base-generated within the specifiers of different functional projections. The heads of such 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. This implies that the order of adverbs strictly depends on the hierarchy of functional projections; while arguably universal, this is possibly obscured by cross-linguistic variation regarding internal Merge options, i.e. verb movement across adverbs.

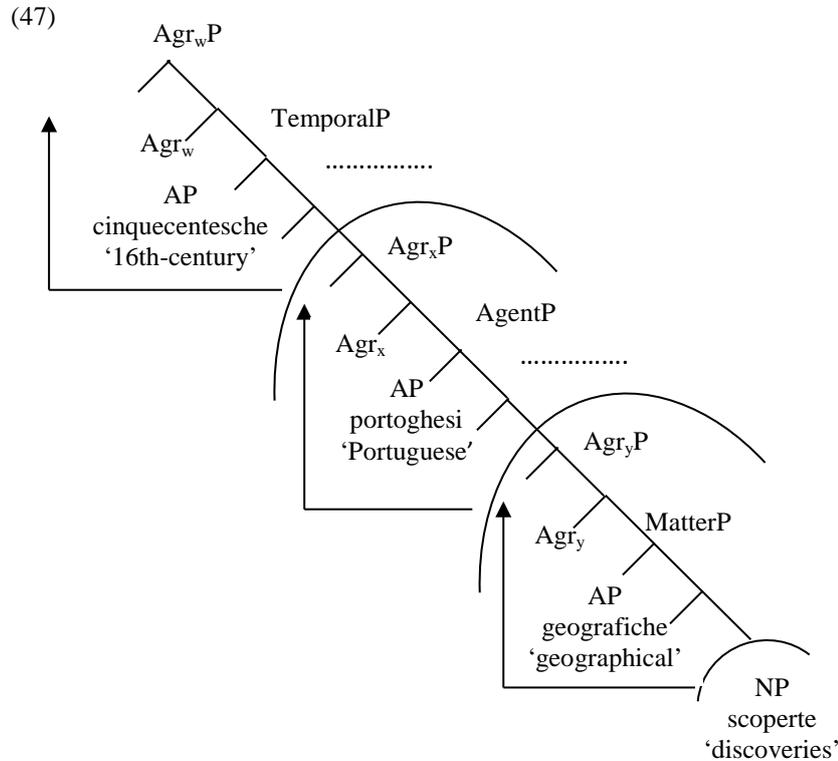
Along the same lines, Scott (2002) has studied ordering restrictions of attributive adjectives in the nominal domain. He argues that, in parallel with adverbs, adjectives occupy the specifier of semantically related functional projections (e.g. ColourP, NationalityP, ShapeP, etc.), with the adjective order deriving directly from the hierarchy of the functional projections itself. In the DP, as in the IP, such universal order can be obscured by instances of internal Merge, i.e. noun movement across adjectives.

In this case the scenario is complicated by the existence of two different types of adjectives, as shown by Cinque (2010): 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 free⁹. As for adjectives in direct modification, Cinque (2010) proves that there is a unique (universal) hierarchy of functional projections hosting them in the specifier position. The author notes that the order of postnominal adjectives in Romance languages is a mirror image of the order regarding prenominal adjectives in Germanic languages. 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.

This hypothesis works for RelAs, as well. What has been noticed so far is that RelAs are ordered according to their semantic relation both in Italian and English and that the order of postnominal RelAs in Italian is the mirror image of that of prenominal RelAs in English. Their distributional patterns resemble those of other direct modification adjectives. Hence, again the idea is that there is a hierarchy of functional projections whose heads could be argued to contain different semantic features (e.g. TimeP, LocativeP, etc.). RelAs are allegedly merged into the projection to which they semantically correspond, i.e. they enter a certain projection on the basis of the semantic relation they express. The functional hierarchy is disclosed by English RelAs in prenominal position, while Italian postnominal RelAs show a mirror image order due to a NP movement of the *roll-up* type. (47) exemplifies the derivation of the adjective order in (46):

- (46) scoperte geografiche portoghesi cinquecentesche
 discoveries geographical Portuguese 16th-century.ADJ
 ‘16th-century Portuguese geographical discoveries’

⁹ Regarding the latter type of adjectives, see Cinque (2010).



In order to show other interesting parallelisms, two important studies of ordering restrictions of modifiers outside the nominal domain are to be considered. Schweikert (2004, 2005) and Takamine (2010) analyse the order of PPs within clauses, in German and Japanese, respectively. Again, the claim is that, despite an apparent free order, these modifiers obey strict ordering restrictions, since they enter a rigid hierarchy. Both Schweikert and Takamine propose a hierarchy of prepositional modifiers ordered according to their semantic relations. I will not discuss here how they obtained such sequences; for information on testing methods and procedures, see Schweikert (2005) and Takamine (2010). I would like to draw attention to the resulting hierarchies themselves, however, reported in (48) and (49). Let us compare them with Rae’s (2010) hierarchy of modifiers for English CNs and with the hierarchy proposed here for RelAs in Italian, repeated in (50) and (51) respectively:

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

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

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

(51) N° > THEME/MATTER > INSTRUMENT > AGENT > LOCATION > TIME

As Rae (2010) notes, the order she outlined for English modifiers in CNs reflects the order of clausal PPs in German and Japanese, the three hierarchies closely overlapping (even if not coinciding)¹⁰. This further parallelism is striking, since it establishes a correlation across different domains (and languages). The distribution of modifiers in the nominal domain appears to resemble the distribution of modifiers in the clause. I think that such strong similarities could be taken by themselves as evidence that the study of the ordering restrictions of modifiers as outlined in this paper is on the right track.

6. Conclusions

It has been shown that there are ordering restrictions in Italian CNs when two or more RelAs co-occur and that such ordering restrictions seem to depend on the semantic relation which ties the RelA to the head noun. Several examples have been supplied to support this claim; on the basis of this evidence, I have attempted to determine a possible hierarchy of semantic relations. The hierarchy sketched here for RelAs in Italian appears to closely parallel to those proposed by Rae (2010) for modifiers in English CNs and by Schweikert (2005) and Takamine (2010) for PPs in clauses, in German and Japanese respectively. A possible account for the data has been attempted inside the cartographic framework.

Some problems concerning semantic relations have been mentioned and left for future research. The semantic approach to RelAs discussed here certainly has its limits (i.e. great number of semantic relations to be assumed, difficulty in classifying all relations), however the ordering restrictions identified on this basis cannot be ignored. Although a deeper (and comparative) analysis is clearly required, the possibility of parallel accounts for word orders of different types of modifiers could represent another intriguing bridge between the nominal and the clausal domain.

¹⁰ There is only one extreme divergence between Rae's (2010) and Takamine's (2010) hierarchies. It regards the position of MATERIAL: it is the highest category in Rae's hierarchy, while it is one of the lowest categories in Takamine's one. But Rae (2010, 149) notices that the relation considered by Takamine under the label MATERIAL is quite different from hers. The data would not be comparable since Rae (2010, 117) provides examples like *steel bridge* and *plastic timer*, whereas Takamine uses this label referring to examples of the type in (i) (that are closer to a MADE UP OF relation or a SOURCE-extracted one, according to Rae 2010, 149):

(i) Taro-ga sake-o kome-kara tsukuru. (Takamine 2010, 53)
 Taro-NOM sake-ACC rice-MAT make
 'Taro makes sake from rice'

As for Rae's (2010) and Schweikert's (2005) hierarchies, they diverge regarding the relative order of BENEFICIARY and SOURCE. But Rae (2010) admits that she 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 semantic relations capturing ordering restrictions of modifiers both in CNs and in the clause.

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