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A case study in linguistic variation: the semantics of existential sentences[1]

1. Introduction: on the absence of the definiteness effect in Italian

Modern grammar has succeeded in sheding light on the fundamental problem of linguistic variation. Within the generative framework the differences among languages are traced back to a minimal language specific variation (a *parameter*) on a much more pervasive universal biologically determined schema (the *principles*) instantiated by all languages. Even if the topic is still under debate it is generally assumed that for a parameter to be set some sort of "external" evidence[2] is required; in other words, if the range of values of a certain parameter is genetically determined, the specific value set by the learner is a function of the environment, i.e. of the language spoken in the speaker's community

The aim of this paper is twofold: as a first step, we will briefly introduce a particular case of language variation and show how the current theory cannot be consistently maintained; as a second step, we will propose a way to account for the variation under discussion in a new fashion. Let's introduce the empirical domain first.

In all languages there is a specific construction which is called "existential sentence". For example, we have the following constructions in English and Italian (the Italian being the exact gloss of the English example):

(1)a there are [$_{DP}$ many solutions] [$_{PP}$ in this book]
b ci sono [$_{DP}$ molte soluzioni] [$_{PP}$ in questo libro]

Keeping the discussion at an informal level for now, we can capture their meaning by saying (as Quine put it) that they "herald the existence" of a certain entity (denoted by the postcopular DP) in a certain domain (denoted by the PP). At least since Jespersen (1924):154 the important factual generalization as been explicitly noticed that in a language like English the noun phrase involved in this type of construction must be "indefinite"; this phenomenon is now usually called the *Definiteness Effect*.[3]

Whatever the term "indefinite" means two observations suggest themselves here: first, this restriction is a semantic one, for it relies on the notion of "definiteness" which is not formulated in terms of syntactic properties of the constituents involved but rather on the referential capacities of a DP; second, it is clear that the same restriction does not hold in Italian. The following pair shows in fact a sharp cross linguistic variation (again the Italian is the exact gloss of the English example):

(2)a * there is John in this garden
b c'è Gianni in questo giardino

Given that no independent parameters seem to be able to account for this contrast, as far as I know, we are forced to face the following paradoxical situation: on the one hand, we must assume a specific parameter accounting for this difference; on the other, since the restriction ruling out the English case is a semantic one we should expect to consider semantic evidence as a possible trigger for parameter setting. Clearly, the issue at stake here is not minimal: if the child must be able to assign a value to a certain parameter on the sole basis of the external evidence, like for example the morphological properties of inflectional heads, how could he or she know that a certain parameter has been chosen? Although we are not in a position to exclude this possibility on empirical grounds, it seems to me that the price that the present framework would pay for assuming a "semantic parameter" would be too high. In what follows we will try to reduce this

specific contrast to an independently assumed syntactic parameter differentiating the two languages: to do so, we must preliminarly rethink the role and status of elements like English *there* and Italian *ci*.

2. A new perspective: existential sentences as inverse copular sentences

First of all, we must assign a structure to existential sentences. Since existential sentences are in fact copular sentences[4] this first step is to assign them to the proper type of copular sentence. To simplify the framework, let's concentrate on a subset of copular sentences, i.e. nominal copular sentences, specifically those where the predicate is a noun phrase (now more perspicuously indicated as a "DP").

2.1. Inverse copular sentences

Following the framework and terminology of Moro (1988), updated as in Moro (1991b), we can essentially identify two types of nominal copular sentences (henceforth, copular sentences *tout court*), respectively the "canonical" and the "inverse" type, exemplified here by the following pair:

(3)a this picture of the wall was the cause of the riot (canonical)
b the cause of the riot was this picture of the wall (inverse)

In both cases we will assume that the underlying structure includes a small clause (SC) as first proposed by Stowell in (1978), where the order of the element building the predicative relation is fixed and indicated by numbers: "1" for the subject and "2" for the predicate:[5]

(4) $[_{IP}\ [_{DP}\ e]$ copula $[_{SC}\ DP^1\ DP^2]]$

The empty DP position which is basically generated indicates the only position where case is assigned. As usually assumed, this forces the embedded subject to raise to this position to acquire case. But along with the case where the raised DP plays the role of subject of predication, as commonly assumed, I proposed that in certain cases also the predicative DPs can be raised to the same position yielding the following paradigm:

(5)a $[_{IP}\ DP_i{}^1$ copula $[_{SC}\ t_i\ DP^2]]$ (canonical)
b $[_{IP}\ DP_i{}^2$ copula $[_{SC}\ DP^1\ t_i\ ]]$ (inverse)

The second structure, called "inverse copular sentence", departs substantially from the current theory of clausal structure which has been adopted for example by Chomsky (1986)a:116 following Rothstein (1983) in that spec-IP can host a predicate contrary to the assumption that the element in this position saturates in the Fregean sense the function expressed by the predicate.[6]

The asymmetric structural positions that the two DPs end up occuping in the two different sentences enable us to explain a wide cluster of syntactic asymmetries first studied in the seminal work of Ruwet (1968) and supported in Longobardi (1986) by analysing Italian syntax. We can say that theory of copular sentences proposed here provides a unified syntactic theory along with the unified semantic theory which traditional grammar already assumed by considering the copula as the mere spell out of inflectional morphemens (of course, if the latter were not already realised by affixation on the verbal predicate).

We can now concentrate on two main properties of inverse copular sentences. In both cases we will focus on the subject embedded in the small clause. The first property is revealed whenever one tries to move this subject out. Let's distinguish two different subcases, namely interrogatives (wh-movement) and quantifier reading (Q-raising).

If we extract the subject from this position in a canonical sentence, the result is perfectly grammatical, but if the sentence is an inverse one, the result is sharply ungrammatical:

(6)a [which picture of the wall] do you think t was [t the cause of the riot]
b * [which picture of the wall] do you think the cause of the riot was [t t]

Although a detailed explanation would take us too far (see Moro (1991b) and Moro (forthcoming) for a much broader account), we can at least indicate the main lines of reasoning as follows.

The first question is what properly governs the trace within the small clause in the first sentence, i.e. how ECP is satisfied. As long as antecedent government is concerned, we can easily assume that this trace is licensed by the antecedent in spec-IP; however, the question is more delicate in the case of head government. In the cited papers I proposed that this type of government is performed by the agreement features contained in the copula. This is essentially parallel to the strategy for the preverbal subject extraction in English as proposed by Rizzi (1990) (via *agreement in Comp*) or the analysis of the raising process offered in Chomsky (1986b) (via *Extended Chain*). In both cases, for the trace to be licensed it must pass through the spec of the governing head activating a spec-head agreement.

This hypothesis can be overtly supported by the following pair:

(7)a these pictures$_i$ are$_i$ [t$_i$ the cause of the riot]
b the cause of the riot$_i$ is$_i$ [these pictures t$_i$]

This pair shows that when the predicative nominal and the subject mismatch in number, the copula always agrees with the raised one, as a reflex of proper government relation performed through the spec-head agreement relation.[7]

What has to be highlighted here is that since a head has only one spec, then it can at most properly govern one single trace, that is to say a biunique mapping holds between the traces and their proper governors.[8]

We can now turn to the ungrammatical case. The explanation should be now immediate: ECP explains why the subject cannot be moved out of an inverse copular sentence. On the one hand, antecedent government fails because the relevant position (spec-IP) is occupied by the chain of the predicate; on the other, it is not even properly head governed since the only potential candidate is already employed to license the trace of the predicate.

It is interesting to notice that the impossibility of moving the subject out of an inverse copular sentence is also detectable at the level where quantifier reading is disambiguated, in short at LF. Take for example the following pair:

(8)a [every book] is [t some student's purchase]
b some student's purchase is [[every book] t]

Here, clearly, the first sentence is ambiguous: it can either mean that every book is such that some student purchases it or that some student is such that he purchases every book. In the second sentence, on the contrary, only the first reading is still accessible. To interpret this asymmetry we will follow the current framework stemming from May (1980) and assume that a quantifier can have scope over the other only if the former has at least the same c-domain as the latter. This amounts to saying that the universally quantified DP in the second sentence cannot be raised to reach the same c-domain of the first quantifier. Given what we just said for the case of wh-movement, the explanation should be immediate: the wide scope reading is ruled out because there would be no proper governor to license the corresponding trace.[9]

So far, we have provided evidence for a major property of inverse copular sentences, namely that the subject cannot undergo both wh-movement and Q-raising (i.e. A'-movement).

We can consider a second type of property involving the subject of inverse copular sentences. If we try to extract from postverbal DP by wh-movement only in one case we do obtain a grammatical sentence and again it is extraction from the subject position which gives the bad result:

(9)a [which riot]$_i$ do you think [a picture of the wall]$_j$ was [t_j [the cause of t_i]]
b * [which wall]$_i$ do you think that [the cause of the riot]$_j$ was [[a picture of t_i] t_j]

Potentially, we could rely on two different types of explanations, namely ECP or Subjacency. Let's see how far we can go with ECP. Notice first that the structure of the DP itself does not create any problem: in fact, if the same element were the object of a transitive verb, say *see*, then it would not block extraction. By anticipating one of the results of the next subsection we can exclude the hypothesis that the failure of proper government is a sufficient reason to explain the case in (9)b; in fact, we will offer a context where although the subject is not properly governed it is nevertheless possible to extract from it.

The remaining option here is to consider (9)b as a Subjacency violation, that is to say to suppose that this violation is not due to the lack of proper government on a trace but to the crossing of two bounding nodes in one single step, prototypically two cyclic nodes. Since Chomsky (1986b), the original formulation of the Subjacency principle has been substantially refined: instead of giving a list of bounding nodes, this notion has been formulated intensionally. Simplifying the framework somehow, we can assume that a bounding node is a maximal projection which fails to be governed by a head selecting it (in the sense of the c-selection of Chomsky (1986a)), in short, a maximal projection which fails to be l-marked. A typical case of Subjacency violation like extraction from preverbal subject can be immediately derived now. Consider the following case: although a C° does govern the trace of a preverbal subject (and in fact a null C° properly governs it) it does not select it, thus the extraction from the DP subject would yield a Subjacency violation. The parallel suggests itself here that the impossibility of extracting from the subject of inverse copular sentences is due to the same type of principle ruling out extraction from preverbal subject. Schematically we can focus on the following segments:

(10)a ... that [$_{IP}$ [$_{DP}$ a picture of t] ...
b ... was [$_{SC}$ [$_{DP}$ a picture of t] ...

In both cases the chain crosses in a single step two bounding nodes, the first being a non l-marked DP and the second inheriting the same property by the former.

The residual fact to be explained, namely why extraction out of the predicative DP is grammatical, can be solved by recalling that Subjacency is in fact a restriction on arguments and that it does not inherently apply to any other element.[10] Technically, we can simply extend the process of adjunction to VP proposed by Chomsky (1986b) to cover also this datum.

As in the previous case, it is important to notice that the same restiction banning extraction from the subject of inverse sentences, can be detected also at the level where quantifier reading is fully disambiguated. For example, we can consider the following pair:

(11)a a picture of the wall wasn't the cause of [many riots]
b the cause of the riot wasn't a picture of [many walls]

The first sentence can be paraphrased by saying that a picture of the wall was the cause of not many riots or by saying that many riots are such that a picture of the wall was not the cause of them. Again this amounts to saying that the quantifier contained in the postcopular DP can be extracted at LF, yielding the wide scope reading, or it can be left in situ. For our purpose here, it is sufficient to notice that the wide scope reading of the quantifier contained in the postcopular DP cannot be obtained. In fact, the second sentence cannot be paraphrased by saying that many walls are such that the cause of the riot wasn't a picture of them.[11]

Summarising, we can say that the subject of inverse copular sentences behaves exactly as the preverbal subject of tensed sentences in that it cannot be moved unless it goes through the spec of its governing head (activating its agreement) and extraction from it is ungrammatical because it would trigger a Subjacency violation.

2.2. *there* as a raised predicate

We can now turn to existential sentences. Since they are copular sentences now the question is what type of copular sentences they are. The traditional framework stemming from the classic work of Milsark (1977) considers them as a variant of what we call here canonical sentences. The basic type of pair upon which this assumption is grounded is the following:

(12)a a picture of the wall is [t on the shelf]
b there is [[a picture of the wall] [on the shelf]]

The idea is that as an alternative to subject raising one can simply insert in the course of derivation a semantically null element, i.e. *there*, as roughly a place holder of the subject of predication, technically called an "expletive". Although I will not develop this topic here, it is important to notice that since Chomsky (1986a) it has been proposed that this element is wiped out at the level of Logical Form by replacing it with its associate element.[12]

The theory of copular sentences proposed here offers a new possibility, namely that existential sentences are inverse copular sentences. If this will prove tenable, copular sentences will always be expansions of small clauses and the process of insertion-replacement could be entirely dispensed with. From a technical point of view, this amounts to saying that we have to shift from the representation in (13)a to the one in (13)b where *there* is moving from the position where predicates are generated and the PP is to be considered as an adjunct:[13]

(13)a $[_{IP}$ there$_i$ is $[_{SC}[_{DP}$a picture of the wall$]_i$ $[_{PP}$ on the shelf]]
b $[_{IP}$ there$_i$ is $[_{SC}[_{DP}$a picture of the wall] t_i]] ...$[_{PP}$ on the shelf]]

Of course, apart from the theoretical possibility offered by the theory of copular sentences presented here, one should look for some independent empirical advantage that this shift offers. This would be the aim of the rest of this subsection.

Let's consider first the following pair:

(14)a a picture of the wall is *(on the shelf)
b there is a picture of the wall (on the shelf)

Clearly, the predicate of the small clause can be deleted only if the sentence is a *there*-sentence, otherwise no meaning could be assigned to it.[14] If we think of *there* as the element basically occupying the predicative position, then the explanation suggests itself here. The PP can be omitted only in this case because it is not playing the role of the predicate as in the other case but only the role of the adjunct.

A second case is the following:

(15)a a picture of the wall is *(the cause of the riot)
b there is a picture of the wall (*the cause of the riot)

In a *there*-sentence the predicative cannot be a nominal, which is fairly possible when the sentence is a canonical one. Again, what follows the first DP in a *there*-sentence should not be considered as the predicate of the sentence like in the current framework but rather as the adjunct. Under this assumption things are rather trivial: since we independently know that DPs cannot be adjuncts, then the corresponding case is straightforwardly ruled out. Had we maintained the current theory, one could hardly see any explanation, apart from the ad hoc ones.

Let's shift for a moment to Italian now. It is a well known fact that in Italian predicates can be cliticized by means of the invariant element *lo*. If we adopt the idea that the structure of a *there*-sentence is not different from the structure of a "subject-(aux)-predicate" sentence as it has been proposed for example by Williams (1984), then one would expect that the material following the copula, considered as an aux, could be cliticized by *lo*. The following examples show that this is not the case:

(16)a una foto del muro lo era t
(a picture of the wall *lo* was)
b * ce lo era t
(there *lo* was)

Again, the current theory fails to obtain the correct result whereas the new formula proposed here would simply derive it as a general consequence that the subject of an inverse sentence cannot be cliticized onto the verb.

We can also provide independent empirical evidence for the proposal of analysing the PP as an adjunct. Consider the following cases/

(17)a why does it seem that many Italians are on strike t
b * why does it seem that there are many Italians on strike t
c to whom does it seem that many Italians are [indebted t]
d * to whom does it seem that there are many Italians [indebted t]

In the first pair, the question phrase *why* can hardly be referred to the reason why many Italians are on strike; it rather asks why the Italians on strike are many. If the position of the two PPs were exactly the same then it would be hard to explain this difference. Similarly, if the adjunct is an AP containing an argument, like *indebted to someone*, if we extract that argument a decrease in the grammaticality level in the case where *there* is present could be easily checked.

We can conclude that not only the hypothesis that *there* is not the expletive of the subject of predication is no longer logically compelling, since we have independently assumed that precopular position can be occupied by the predicative element, but also that it would force us to face some important empirical exceptions which could hardly be explained a part from ad hoc solutions.

Assuming that the hypothesis that *there*-sentences are inverse copular sentences is correct, an immediate question arise: does the subject of this sentences behave like the subject of all other inverse copular sentences? This is equivalent to asking whether the subject of an inverse copular sentence can be moved and whether extraction of part of it is possible. Let's consider these two issues separately. The next examples are clear:

(18)a * which wall do you think there was t (in the garden)
b there aren't many walls (in the garden)

We cannot extract across *there*, both by wh-movement and by Q-raising. The second case is in fact well known since Williams (1984), i.e. the sentence cannot mean that many walls are such that they aren't.[15] In fact this very phenomenon led to the hypothesis that *there* plays the role of a scope marker. Within our theory of copular sentences, we can now entirely dispense with this hypothesis, because the same phenomenon occurs when other types of predicates are raised to the same position. Moreover, we can explain it as a case of ECP violation, without any further assumption.

The case of wh-movement is to be explained in the same fashion, although some care must be put due to the grammaticality of cases like:

(19) what do you think there was t (in the room)

I will come back to this case in a moment. Let's consider first cases of extraction from the DP subject. Here, we can notice a sharp and consistent departure w.r.t. all other types of inverse copular sentences. Whether we try to wh-move or Q-raise a subpart of the postcopular subject, the result is perfectly grammatical:

(20)a which wall do you think there was [a picture of t]
b there aren't pictures of [many walls]

Notice that in the second sentence the quantifier can have scope over the negation and the sentence can be paraphrased by saying that many walls are such that there aren't pictures of them.[16]

How can we explain this? Remember first that the principle that blocks extraction of a subpart of the subject of inverse copular sentences is different from the one which blocks the movement of it as a whole. The latter is due to ECP, the former to Subjacency. Thus, the reasonable conclusion is that it is the structural conditions activating a Subjacency violation which have changed. If we consider the nature of the element *there* in more deep detail a plausible explanation would naturally emerge supporting this conclusion. The intuitive idea to be implemented is that when *there* is raised as opposed to all other DP predicates the copula inherits the selectional properties of this element and becomes able to select the lower subject inactivating Subjacency via l-marking. Why should it be so? The notion of selection plays a central role here. Take the following abstract representations as a guideline:

(21)a ... [$_{DP}$ the [$_{NP}$ [$_{N°}$ cause] of the riot]]$_i$ is$_i$ ...
b ... [$_{DP}$ [$_{D'}$[$_{D°}$ there]]]$_i$ is$_i$ ...

The predicate in the first case is the maximal projection (i.e. the DP) *the cause of the riot*, nevertheless, from a structural and thematic point of view, it is the head (i.e. the N°) *cause* which has the selectional capacities (see Chomsky (1986a): 86). The spec-head agreement relation is one between the copula and the DP.

When the raised element is *there* the situation is rather different. In this case, there is no clear empirical distinction between the element with selectional capacities and its maximal projection: in fact, *there* has a twofold nature since it can occupy spec positions, like maximal projections, but it doesn't have X' attaches, like heads. All in all, we can plausibly assume that when it enters into a spec-head agreement relation with the copula it is as if it were a case of head-to-head chain. We can then assume that the observed phenomena concerning extraction from the DP subject do not undermine the Subjacency principle but in fact confirm it, to the extent that we assume that the copula acquires the selectional capacities of *there* via a spec-head relation. Technically, we can assume that the copula can be turned into an l-marker.

Languages like Italian support this explanation since in this case the element which is equivalent to *there*, namely *ci*, is in fact a head cliticizing into the copula as represented in the following case:

(22) [$_{IP}$ pro [c$_i$'è] [$_{SC}$ [$_{DP}$ un uomo] [$_{DP}$ t$_i$]]

Summarising, a more articulated theory of copular sentences enables us to rethink the nature of the element *there*: it turned out that *there*-sentences are inverse copular sentences in the sense that the precopular position is occupied by the predicative element. Two properties characterise the DP subject contained in this type structure: the DP is blocked as a whole (for ECP reasons), nevertheless extraction of subparts of it are perfectly legitimate (Subjacency being inactivated by *there* raising).

The reason why we get an asymmetry between *which* and *what* (see Heim (1987) for a detailed discussion about this topic), can now be derived insofar as we assume that the latter can be reduced to a case of extraction from a DP as opposed to former. A first indicative piece of evidence supporting this hypothesis can be offered by analysing cases like:

(23)a what a girl!
b * which a girl!
c [$_{DP}$ a [$_{NP}$ [$_{AP}$ very nice] girl]]
d [$_{DP}$ [how nice]$_i$ a t$_i$ girl] !

The essential idea here, would be to say that in contrast with *which* which is related to the whole DP*what* is only linked to a subpart of the whole DP and crucially one that does not contain D°, paralleling the analysis given for *how nice* in (23)c-d. If this proves tenable, then the possibility of wh-movement by *what* as opposed to *which* can be traced back to the independent fact that while the whole DP cannot be moved (otherwise an ECP violation would be triggerd) extraction from it is entirely possible since the same element is in fact l-marked.[17]

3. What is existential meaning: the semantics of an existential sentence

We have now assigned existential sentences to the proper kind of copular sentences, namely inverse copular sentences and explore their peculiar properties. Nevertheless, it is clear that it is not sufficient to be an inverse copular sentence to be an existential sentence. In fact, if we extend the notion of "existential sentence" to the interpretation of a sentence like (24)a on a par with (24)b, we will entirely deprive this notion of any empirical force:

(24)a the cause of the riot is a picture of the wall
b there is a picture of the wall

There must be something in a *there*-sentence that makes the difference w.r.t. all other types of inverse copular sentences. We will soon see that the overt empirical differences we detected with respect to extraction from the subject will play a crucial role.

Notice also that within the proposal made here, a further question arises which was not posed by previous theories. If a *there*-sentence is an inverse sentence, one should ask why the canonical associate has such a different meaning, that is why the interpretation of (25)a is so different w.r.t. the one in (25)b:

(25)a there is a picture of the wall
b a picture of the wall is there

To answer these two questions we need to refine the syntactic notion of predicative linking.

3.1. A principle of Logical Form

The intuitive idea to be implemented here is that at a certain level of abstraction predicative linking does not directly apply a predicate to its subject, but rather to a variable picked up within the range determined by the set of individuals denoted by the subject. Let's call it "principle π" and formulate it explicitly as follows:

(26) principle π: predicates apply only to variables at LF

The formal implementation of such a principle can be obtained as follows. In natural language syntax a variable is created by an operation of A'-movement: a certain trace *t* is a variable if and only if it is bound by a maximal projection in an A'-position. So, along with wh-movement and Quantifier Raising, we will assume that subjects are raised to an A'-position at LF as in the following simplified representation:

(27)a $[_{IP}$ DP XP]
b $[_{IP}$ DP_i $[_{IP}$ t_i XP]]

This is directly reminiscent of the so called λ-abstraction, a representation of formal semantics which is used to denote predicates starting from well-formed formulae.[18] But, apart from its resemblance with formal logic, are there any empirical reasons to adopt this principle? In what follows I will try to show that principle π cuts a sharp partition within empirical data which otherwise would go uncaptured.

If this principle is applied to canonical sentences (and in general to sentences where the subject is in spec-IP) this principle is rather innocuous. If one considers spec-IP as an A'-position and the subject as generated in VP, the required variable-operator link is already instantiated; on the other hand, if one will not commit himself to such an assumption, the adjunction of the subject DP to IP will perfectly do the job.

A much less trivial case and the one which motivates our approach is given by inverse copular sentences. Let's consider the following paradigm:

(28)a $[_{IP}\ DP^2$ copula $[_{SC}\ DP^1\ t\ ]]$
b $[_{IP}\ DP^1\ [_{IP}\ DP^2$ copula $[_{SC}\ DP^1\ t\ ]]$
c $[_{IP}\ DP^2$ copula $[_{SC}\ DP^1\ [_{SC}\ t\ \ t\ ]]$

What we need here is a variable to satisfy principle π, i.e. we must move the subject DP^1 to an A'-position. Now, there are two potential landing sites here indicated in (28)b-c: either we adjoin DP^1 to IP or to SC. In general we will follow Chomsky (1986b) by assuming that A'-movement at LF can adjoin a DP only to maximal projections which are not complements of lexical heads. By leaving this notion unspecified for the moment, it is sufficient to recall that the copula is considered here as the support/spell out of I°, by definition a non lexical head like C°.

We already know that movement to IP is not possible because this would trigger an ECP violation, both in the sense of antecedent government and head government. The second option seems much more promising. The subject DP^1 can be adjoined to the SC (see (8)b). This generates a variable within the SC and predicative linking can take place by fulfilling the requirement imposed by the principle under discussion.

What happens now if we apply principle π to *there*-sentences? Again, we can exclude adjunction to IP for the same reason as in the previous case. In fact, we have explicitly proved the scope marking properties of *there* to be common to all inverse copular sentences. The other option, namely adjunction to the SC turns out to be not consistent with a previous result. We independently know that when *there* is raised to spec-IP, then the copula behaves exactly as a lexical head, witness the capability to neutralise the barrierhood status of the lower subject via l-marking. Since adjunction can only be to the complement of non-lexical heads this excludes this possibility.

An independent support to the assumption that a SC is not a possible landing site for A'-movement at LF when it is governed by a lexical head is given by the following case of Q-raising involving a negative quantifier:

(29)a $[_{IP}$ I consider $[_{SC}$ nobody a spy$]]$
b $[_{IP}\ nobody_i\ [_{IP}$ I consider $[_{SC}\ t_i$ a spy$]]]$
c * $[_{IP}$ I consider $[_{SC}\ nobody_i\ [_{SC}\ t_i$ a spy$]]]$

The element *nobody* can only have wide scope reading, i.e. the sentence can only mean "nobody is such that I consider him a spy" and not "I consider that nobody is a spy". The selection of the only possible reading can be obtained if one assumes that adjunction to the lower SC is prohibited.

But if this line of reasoning is correct how can a *there*-sentence be interpreted? Principle π is apparently leading us to a paradox: the DP subject of a *there*-sentence can neither be raised nor stay in situ. I claim that a solution to this paradoxical situation will be equivalent to offer an explicit account of the vague notion of "existential meaning".

3.2. Existential meaning as DP splitting at LF

The aim of this section is that of analysing a single and simple case in detail; of course, many other cases will remain to be considered, however, at least the essential lines of reasoning for a comprehensive approach will be explicitly indicated.

As a first step we will rely on the pretheoretical intuition of the speaker concerning a well known fact and see how we can implement it within the formal framework proposed here. It is a well known fact, that an element like *many*, as in (30)a is ambiguous between two readings corresponding to the paraphrases given in (30)b and (30)c:

(30)a I haven't met many girls
b many girls are such that I haven't met them
c girls are such that I haven't met many

In the first case, I am referring to many individuals of the set of girls and saying that each of them has a certain property (that of not having being met by me). In the second case, instead, I am rather referring to a set of girls in the domain of discourse (possibly the set of all girls, i.e. the generic set) and saying that it has a certain complex property (that of having been met by me and being not numerous).

Following Higginbotham (1987) we can say that *many* has a quantificational reading in the first paraphrase as opposed to an adjectival reading in (30)b. Let's put aside for the moment the problem of implementing these two readings and concentrate on a potential parallel situation, namely the case of a *there*-sentence having *many girls* as a subject. Can we still have the same ambiguity? The answer is rather clear:

(31)a there aren't many girls
b * many girls are such that there aren't them
c girls are such that they aren't many

For a *there*-sentence only the second sentence is a suitable paraphrase: (31)a can only mean that a set denoted by *girls* has the property of containing not many elements or, equivalently, that only the adjectival reading is allowed. In this case, the set denoted by *girls* could be extended to cover the domain of all girls (i.e. the generic set), if a PP were adjoined, say *in the room*, then this would specify a restriction for this domain.

This paraphrase can be used to build the correct LF structure for a *there*-sentence. Even at first glance, a sharp fact can be noticed: the DP subject has been split in two parts in the paraphrase. The NP is interpreted as a subject while the D° acts like a predicate and stands within the scope of negation. One thing can be highlighted here: *there* doesn't take part in the predicative linking which is in fact a relation between *girls* and *many*. The idea to be implemented here is that the meaning of this existential sentence can be entirely captured by means of the following explicit observation:

(32) "existential meaning is a function that maps DPs into a predicative structure where D° is the predicate of a set denoted by the NP"

This intuition immediately suggests a way to represent the logical form of a *there*-sentence. We can extract the NP from the DP and adjoin it to IP. No principle is violated here: Subjacency is respected because *there* raising affects the copula in such a way that it neutralizes the barrierhood of the lower DP (via l-marking); ECP is respected because the trace of the NP is properly head governed by D° (and perhaps also antecedent governed if it goes through spec-DP). All in all we can represent the *there*-sentence as follows:

(33)a $[_{IP}[_{IP}\ NP_g\ [_{IP}\ there^2\ copula\ [_{SC}\ [_{DP}\ (t_g)\ D°\ t_g\ ]^1\ t^2\ ]]]\ ...\ (PP)]$

This representation also solves the potential paradox due to principle π: it is the trace of the NP that counts as a variable to which the predicate can apply. The impossibility of interpreting the DP as a subject is not a paradox, it is in fact the major property of this construction which we can assume to be designed for forcing the adjectival interpretation of the D°. The mechanism of *there*-raising is essentially designed for this aim, it has no other role than that of permitting the DP splitting at the proper level. In fact, this is also the minimal way to obtain the adjectival reading of the D°. In general this is not available per se, i.e. independently from the structural condition where the DP occurs. This is in a sense rather obvious. Take the following minimal pair:

(34)a * I think that [$_{DP}$ many girls]
b I think that there are [$_{DP}$ many girls]

In the first case, the structural condition prevent *many* to be interpreted as the predicate of *girls*, and the sentence is ruled out because no other predicate is available.[19] In the second case the proper minimal environment is provided to allow, and in fact force, the adjectival meaning of the D°.

Notice also that this account solves the potential problem posed by the canonical counterpart of a *there*-sentence. Now the different interpretation between the two asymmetric types should be rather obvious:

(35)a there are [[many girls] t]
b many girls are [t [there]]

If in the first case, the DP-splitting is the only possible mechanism to obtain an interpretation, in the second case there is no need nor possibility for such a strategy. The trace left by the subject counts as a variable (perhaps after adjunction of the DP to IP) and the predicate *there* applies to it. The common assumption that in English there are two different *there*s, the locative one and the existential one, also phonologically distinct, can be totally dispensed with. The locative reading as opposed to the existential one is a mere function of the syntactic structure. In fact, the assumption of two different lexical entries for the word *there* turns out to be at best a redundant one since in Italian the same ambiguity between the locative and existential meaning is in fact yielded by one single element, namely the clitic *ci*. Thus, the phonological distinction between the two *there*s is not relevant here.

As we already said in the premise, this single case involving *many*, does not exhaust all possible cases. Some other types of D°s seem to fit into this framework rather easily, like for example, *few*, *some*, *three*: here one could simply extend the same analysis we gave for *many*. For example, a sentence like *there aren't three girls* would be interpreted at the proper level as "girls aren't three" and so on.

However, there are at least three residual cases which cannot be immediately explained:

(36)a there are [$_{DP}$ [$_{D°}$e] [$_{NP}$ girls]]
b there is [$_{DP}$ [$_{D°}$a] [$_{NP}$ girl]]
c there are [$_{DP}$ no girls]

Let's consider them separately. In the first case there is no overt D°: how can this type of *there*-sentence be interpreted? Although I will not develop this matter in full detail here, I would like to suggest that if one adopts a current working hypothesis concerning the distribution and meaning of empty determiners (see Longobardi (1992) and references cited there) then the situation is clear. These elements are interpreted by default with an existential meaning and can occur only if they are lexically governed. Their existential meaning fits in with our theory quite perfectly: the mechanism of DP-splitting at LF causes a sentence like (36)a to be interpreted as "girls are existent" without any further assumption. As for the structural conditions for the licensing of empty D°s there is no problem here: in fact, this very fact supports the idea that the process of *there*-raising makes the copula behave as an l-marker, as opposed to the case of the raising of a full DP.[20]

The second case can be solved if one adopts the analysis of the indefinite singular article as a semantically null element which simply spells out the D° (see Higginbotham (1987)). In this case, the corresponding sentence could be treated like the previous case, modulo the plural features which for some reasons still unclear make the difference at the phonological level.

The third case is more problematic. We cannot rely on a paraphrase like "girls are no" because it makes no sense. One possibility which I will simply indicate here without exploring in detail would be that of analysing *no* as a contraction for *not any*. In this case, the real predicate would be an existential one, specifically *any*, and the negation would affect it as in the case of *few* being decomposed in *not many*. However, since it is not clear what kind of process is involved here, I will leave this case aside for further research, assuming that it does not undermine the entire approach.

3.3. Definiteness as a condition on extraction

We can now turn to the major goal of this paper. Remember that the issue at stake here is a cross linguistic variation concerning the subject of *there*-sentences and the way it is acquired by the speaker.

More specifically, we can now see that one of the immediate advantages that this theory of *there*-sentences offers, is that the Definiteness Effect can be derived from syntactic conditions. The relatively complicated apparatus we independently motivated to account for the syntactic properties of *there*-sentences now makes it very simple to explain why only certain DPs can occur as subjects of *there*-sentences. The reason is that only certain D°s can be interpreted as predicates by forcing the adjectival reading. In fact, certain D°s cannot be interpreted but as quantifiers. We can illustrate it by means of the following two groups:

(37)a there are many/few/three... girls
b girls are many/few/three...

c * there are these/every ... girls
d * girls are these/every/...

Since *there*-sentences are syntactic mechanisms designed to split DPs at a certain level of interpretation and make a sentential structure out of them, if the D° doesn't allow an adjectival reading the sentence is ruled out or, at best, it is rescued by the so called "list reading", for which all properties we attributed to *there*-sentences do not hold, as for example extraction from the subject position and so forth.

Notice that to explain the definiteness effect in English we did not rely on any language specific evidence. In fact, although we did not explain why only certain D°s can have an adjectival reading, the same partition represented in (37) seems to hold across languages.[21]

4. How to escape the Definiteness Effect

We can now approach the second part of the main problem. What creates the cross linguistic variation? Since the explanation for the reason why in English certain types of DPs are banned in *there*-sentences has been freed from any language specific semantic constraint, it is now reasonable to expect that the reason why in Italian the same sentences are good is due to some syntactic parameter distinguishing the two languages.

4.1. Clitic properties of Italian *ci*:embedded vs. inverted subject

We have so far assumed that the translation of the English sentence in Italian is its exact gloss. This assumption is correct but there is one minimal difference to which we can appeal in order to offer a solution:

(38)a Maria dice che c'è una soluzione
(Mary says that there is a solution)
b Maria dice che una soluzione c'è
(Mary says that a solution there is)

This pair shows that in Italian the subject can be raised to spec-IP while in English this movement is impossible. This is due to the fact that the Italian counterpart of English *there*, namely *ci*, is a clitic, i.e. it doesn't occupy an XP position of its own. In this case, the element *ci* is incorporated on the verbal head, the copula, leaving spec-IP free. When the subject is not moved this position is normally occupied by *pro* playing the role of a pro-predicate.[22]

This fact can be used to explain why Italian apparently escapes the Definiteness Effect. Recall that the problem is to explain the following contrast (for the sake of simplicity we will disregard the adjunct PP):

(39)a c'è Gianni (in questo giardino)
b * there is John (in this garden)

Given what we said about the semantics of a *there*-sentence, i.e. the existential meaning is nothing but a process creating a sentence out of a DP, it is clear that proper names cannot feed this mechanism. There is no D° around which can be plausibly predicated of the proper name *Gianni*. Now, on the one hand in English this is sufficient to rule the sentence out, on the other in Italian there is one possibility left to rescue the structure, namely raise the proper name to spec-IP.[23] In this position the sentence can be interpreted: the predicate *ci*, inherently locative, can apply to the trace left by the movement of the proper name to spec-IP.[24]

(40) $[_{IP}$ Gianni$_i$ $[_{I°}$ c$_j$'è$]$ $[_{SC}$ t$_i$ t$_j]]$

The meaning of this sentence is not existential although apart from the DP the lexical elements involved are exactly the same ones used to build an existential sentence. What is radically incompatible here with the existential interpretation is the DP itself. In fact, the linear order displaying the proper name after the copula is just misleading; it is due to a phenomenon common in Italian, namely rightward movement of the subject:[25]

(41)a $[_{IP}[_{IP}$ pro$_i$ $[_{I°}$ c$_j$'è$]$ $[_{SC}$ t$_i$ t$_j]]$ Gianni$_i$]

Of course, this process does not generates the syntactic conditions allowing DP-splitting at LF, it rather preserve the properties of the preverbal position.[26]

The main goal of this paper is fulfilled now. We have reduced the lack of any Definiteness Effect in Italian to a syntactic parameter, i.e. the pro-drop parameter. This result has been obtained by offering a theory for the semantics of *there*-sentences which does only appeal to syntactic properties, apart from a semantic distinction across D°s which anyway holds across languages (see 37). Since the cross linguistic variation under discussion can be entirely explained without any appeal to extrasyntactic conditions, the underlying problem of language acquisition is solved. Crucially, within the analysis presentend here, there is no necessity to appeal to the vague notion of definiteness nor is there need to assume such a thing as semantic evidence. The child only needs to set the *pro*-drop parameter; this is the only kind of evidence needed to know whether a "definite DP" can follow the copula in a *there*-sentence. Moreover, there is no need to assume different lexical entries for a single word (like *ci*); the different meaning can be entirely traced back to the syntactic configuration where the elements end up being in the construction.

The argument developed so far suggest a more general and perhaps more ambitious question which we will address in the following section.

4.2. An overview across languages: toward the definition of existential senteces

The theory of natural languages tells us that there are no *language specific rules*; the cross linguistic variation is just the effect of a minimal variation on a much more pervasive and intricate skeleton which is universally valid for all languages. Nevertheless, there is a second sense in which modern syntax aims to be universal; that is there are no *structure specific rules*. Entities which were previously considered as primitives have been decomposed at a more abstract level into the interaction of the same set of principles. So, for example, the notion of passive or interrogative sentence is not given independently, but rather they turn out to be epiphenomena due to the interaction of independent factors.[27]

Even a cursory survey on traditional grammar texts will immediately reveal that the very notion of "existential sentence" is also included within the set of possible constructions on a par with passive or interrogatives. The natural step to take is to show that also in this case there are no specific instructions but rather that an existential sentence has certain "defining properties", i.e. a set of independent properties interacting with one another and giving the exact output as the only possible result. In this specific case, we already know what these properties are. The analysis of English and Italian we developed so far has shown that two independent conditions must be minimally fulfilled in order to yield an existential sentence:

(42) The defining properties of existential sentences:
(i) absence of a proper governor for the DP subject
(ii) l-marking of the DP subject

The interaction of these two properties yields the specific effect of splitting the DP at LF forcing the D° to be interpreted as the predicate of the set denoted by the NP: the first property excludes that the DP is interpreted as the subject (via ECP and principle π); the second allows the extraction of the NP from the DP, which is in fact the only residual way to satisfy predication. It is the effect of this conspiracy what we in fact call an "existential sentence".

Of course, each of these properties has an independent life: for example, it is a very well know fact that preverbal subject cannot be A'-moved across an overt complementizer as required by (i) or that the DP can be split also when it is the direct object of a transitive verb. Nevertheless, in order to yield an existential sentence these properties must be simultaneously realised: in fact, it turns out that it is sufficient that these three properties are embodied by a certain structure in order for that structure to be existential. We can synthesize this result by the following proposition:

(43) A sentence S is existential if and only if it forces the D° contained in the subject to be interpreted as the predicate of a set denoted by the NP

A parallel with a well-known case might clarify the theoretical point here. Consider two typical constructions like raising and passive:

(44)a the man was killed t
b the man seemed t to kill John

In both cases the embedded DP must be raised to preverbal position to acquire case: so in both cases we will include among the defining properties of the corresponding constructs the presence of only one case assignment position, i.e. spec-IP. Although the set of the defining properties of these two structures would slightly overlap, nevertheless the final result is obviously very different and we will not discuss it here.

Now, both the set of the defining properties of the existential sentences and their product are clear, but a residual problem is still raised by the fact that both in English and in Italian existential sentences are build by means of an element which can play the role of a locative predicate. Should we conclude that "location" is inherently part of the defining properties of existential sentences? A rapid survey across languages immediately tells us that this cannot be the case. In fact, this conclusion has already been achieved by Otto Jespersen in the *Philosophy of Grammar* reported here:

(45) *Jespersen's generalization*: "whether or not a word like *there* is used to introduce [existential sentences] the verb precedes the subject and the latter is hardly treated as a real subject" (Jespersen (1924): 155)

As we see, Jespersen's generalization is quite explicit: the presence of a locative element is not necessarily required,[28] what is required is a particular construction that in the approximative terms of Jespersen's framework just refers to the linear order of words.

The following minimal list should be sufficiently representative of the type of constructs:

(46)a there is, c'è, Il-y-a
b hay, es gibt

In the first group (English, French and Italian), the existential sentence is build by involving a locative predicate but in the second list (Spanish and German) there is no location. Bearing in mind what we said in this paper the role played by *there/ci/y* should be clear: these elements are involved only to allow l-marking of the lower subject by the copula ((ii) defining property). They do not play a direct role in predicative linking, apart from allowing principle π to be satisfied. Thus, the fact that in the second group there are no locative expressions is not surprising: the same effect is easily produced by *hay* or *gibt*.[29] The case of French seems to be particularly interesting here because it is in a certain sense intermediate w.r.t. Italian and English: on the one hand there is a lexical lexical element incorporating into the copula to allow l-marking, like Italian *ci*, namely *y*; on the other since spec-IP cannot be occupied by *pro*, this position must be filled by a lexical material (i.e. *il*) like in English.

This also shows that the presence of the copula in an existential sentence is by no means necessary. This conclusion is perfectly consistent with our analysis of the copula as support of inflectional morphemes and strongly undermines all theories regarding existence as something embodied in the "meaning" of the copula itself.

5. Conclusion

In this paper, we have shown that if one maintains the current semantically driven explanation for the Definiteness Effect in English existential sentences, then it follows that a cross linguistic contrast with Italian will imply that some semantic evidence must be available to the child.

To avoid this problematic assumption we have shown that the semantics of existential sentences can be entirely and solely derived by their structure, like other types of well known constructs like passive or existential sentences. In particular we have shown that this type of sentence can be regarded as a case of inverse copular sentence (in the sense proposed since Moro (1988)) by abandoning the hypothesis that the preverbal element is the expletive realization of the subject.

This proposal has enabled us to trace back the cross linguistic variation to an independent parametric difference distinguishing Italian from English (the *pro*-drop) and solve the paradoxical assumption that current theory would lead us to take.

Footnotes

1. This paper was presented at the *XVII Incontro di Grammatica Generativa* held at the *Università di Trieste* in February 1991 and at the *Séminaire de Récherche* of the *Université de Genève* in 1991. I am very indebted to the audience of these conferences for their generous and helpful comments especially to Adriana Belletti, Nunzio La Fauci and Luigi Rizzi. A first version of this paper was presented at XIII GLOW Conference at "St. John's College", Cambridge (UK). A special thank to Gennaro Chierchia for the patience and the insightful suggestions he gave me during the final stages of this work.

2. We will not discuss here the important conceptual distinction between different types of evidence, as for example the distinction between direct and negative evidence.

[3] See Reluand Meulen (1987) for a detailed analysis of the Definiteness Effect and Moro (in press)b for an alternative proposal developing some of the issues discussed here.

[4] Of course, existential sentences are not copular sentences in all languages. For example, in German we have cases like *es gibt* (it gives) and also in Italian we have the less frequent *si dà* (si gives): although by no means they contain a copula, nevertheless they do have the same interpretation as an existential copu-

lar sentence. We will go back to this issue in section 4.2. after an explicit semantics for *there*-sentences is given.

[5] That the order is fixed can be easily derived by considering cases like the following:

(i)a I consider [[1]this picture of the wall] [[2]the cause of the riot]
b * I consider [[2]the cause of the riot] [[1]this picture of the wall]

In general, we will assume (some version of) Williams (1980) theory of predication requiring predicative linking to fulfil two formal conditions: a mutual command relation (essentially m-command) and coindexing; however, within the work which is presented here we will never essentially rely on this theory.

[6] This also implies that the current version of case theory based on the notion of visibility (see Chomsky (1986a)) is not tenable. See Moro (1991b) for a discussion about this issue.

[7] A sharp asymmetry is yielded here when this pair is contrasted with Italian data, since in this case, the copula unselectively agrees in gender and number with the subject. For an explanation of this fact see Moro (1991).

[8] This forces a reformulation of Rizzi's version of proper head government which we will not discuss it here, see Moro (forthcoming) for a detailed analysis.

[9] Since nevertheless universal quantifiers must by definition have a scope, then a potential problem arises here. In Moro (forthcoming) I observed that this case is in fact analogous to the following:

(i) John said that everyone left

Unless one wants to say that the overt complementiser is deleted at the level where quantifier reading is disambiguated, the only option here is to assume that *everyone* can be adjoined to IP and that this type of "short movement", i.e. one that does not cross an X' projection, is not visible to head government.
If this proves tenable than we could extend it to the case of the subject within the small clause.

[10] Formally, one could avoid this distinction by assuming that the predicative DP is in fact selected (and of course governed) by a head. However, since there seems to be a good piece of evidence that neither the copula nor AGR° can be considered as plausible candidates (see Moro (1991a)) the only residual option would be to assume an empty abstract head of predication. In absence of any independent empirical evidence, we will not adopt this possibility which is at best entirely isomorphical to the idea that Subjacency doesn't apply to predicates.

[11] It is interesting, however, to notice that the second sentence cannot be paraphrased by substituting the sequence *n't many* by the potentially semantically equivalent *few*. This correlates with another fact I noticed in a previous paper (Moro (1991b)):

(i)a John hadn't many books
b hadn't John many books

Also in this case the mere fact that many is in the scope of negation is not sufficient to allow this process. An explanation of this fact will take us too far and would not help to make the central point of this paper.

[12] The idea is that the insertion of this element is entirely free and that the actual distribution is derived by applying the conditions which allow the process of replacement, namely the conditions on chain formation. Chomsky (1988) himself noticed that this hypothesis faces some major exceptions as in the following case

(i) * there seems a man to be in the room

since the position where *a man* is would normally allow movement where *there* is. Within the framework proposed here this fact would not be exceptional; see Moro (1991a) and Moro (in press)b for a detailed account.

[13] We will leave aside the important question whether PPs (and APs) are adjoined "directly", or whether their relation with the clause is mediated by a more complex structure, namely by a small clause with a PRO subject, as first proposed by Chomsky (1981).

[14] Perhaps this example is a little bit misleading, because it suggests that a PP is always selected even if it is not present in the case of a *there*-sentence. However, this is in fact false. Cases like:

(i)a there aren't problems
b there is a god
c there is necessarily an explanation

clearly show that the PP can be omitted without any loss of grammaticality in each sentence.

[15] But still misunderstood in May (1980).

[16] Notice that this undermines for independent reasons the very idea of expletive replacement (or affixation, the difference is not pertinent here). At LF the subject would move from this position carrying the trace of the moved element. This should yield a violation since extraction from preverbal subject is not expected to be grammatical. Take for example the following case of *ne*-extraction in Italian:

(i) ce ne$_i$ sono [molte t$_i$]
(there-of them-are many)

If at LF the DP would move, who is going to govern the trace of *ne*?

[17] This type of analysis could be potentially extended to other cases to the extent that one reduces the wh-phrases to cases of extraction from the DP. So, for example in:

(i)a how many books do you think that there are t in the room

One should analyse the sentence as if the whole DP is reconstructed in the subject position within the small clause and only the *how many* part is in fact moved out.

[18] For a discussion of the λ-calculus see Chierchia -McConell Ginet (1990): chapter VII. For the sake of clarity we report here the definition of λ-abstraction:

(i) if ψ is a well-formed formula and x a variable, λx[ψ] is a Pred.

We will see, however, that the analogy with λ-calculus is only partial. In particular, it is important to notice that the inverse process of λ-abstraction, i.e. λ-contraction (see Chierchia - McConnell Ginet (1990)), is not possible here. In other words, there is no way to "undo" A'-bar movement on a par with the case of wh-movement.

[19] Of course, we follow traditional grammar in requiring that all sentences contain at least a predicate and a subject. Perhaps, this requirement could be seen as the effect of a much general principle of "full interpretation" distinguishing natural languages from the formal ones (see Chomsky (1986)a): thus, vacuous subjects and vacuous predicates would be ruled out by the same principles ruling out cases of vacuous quantification like * *who does John eats a pizza.*

[20] Inverse copular sentences imply that it is not sufficient to be within a VP in order to license an empty D° as commonly assumed (see Diesing (1990) and Benincà (1980) for Italian). In Italian this is rather clear because if a D° cannot be licensed, then no other process can rescue the structure as opposed to English (as observed in a theory proposed by Longobardi (1992)). So we have cases like:

(i)a * la causa erano ragazze
(the cause were girls)
b c'erano ragazze
(there-were girls)

The only way to make (i)a grammatical is to insert an "expletive" article (*le*), as Longobardi suggests.

[21] Of course, proper names do not allow DP splitting. The following rather surprising contrast can be noticed:

(i)a * there is Satan in my soul
b there is only Satan in my soul

Were we to adopt the semantic restriction prohibiting the occurrence of individuals as subjects of *there*-sentences this contrast would go unexplained since "only x" could hardly be considered as less indefinite that just "x". But, since the element *only* can have a predicational reading the interpretability of the corresponding sentence becomes clear: the sentence can be interpreted as "Satan is the only one in my soul".

[22] Generally, *pro* is called "null subject" since it has been assumed that spec-IP is inherently related to this grammatical function. However, whithin our theory of copular sentences it is clear that this terminology is not correct or, at best, only partial. In fact we can have clear cases where this element along with the role of a subject can also play that of a predicate as in:

(i) pro sono [io t]
(it is I)

In Moro (1991)b I have shown that in Italian all inverse copular sentences involve a propredicative *pro* to explain the observed agreement pattern.

[23] Adriana Belletti (see Belletti (1989)) has independently developed an argument to explain why Italian escapes the Definiteness Effect which apparently look very similar to this. Also in her theory the *pro*-drop parameter plays a fundamental role but the module involved there is case theory rather than predication theory, as we proposed here. The central idea is that unaccusatives cannot assign nominative to the internal position and that when we see a nominative in postverbal position in Italian, this is due to the fact that the element has moved through spec-IP. Although we are very sympathetic here with the underlying reason that moves this theory, we cannot straightforwardly adopt it because there are arguments showing that two key assumptions concerning case theory cannot be entirely maintained.
First, it is clear that in Italian nominative case can show up on a DP which is VP internal:

(i)a [la causa [$_{VP}$ sono [io t]]]
(the cause am I-nom)

Second, if we use a typical partitive construction like *molte delle soluzioni* (many of-the solutions) we can easily detect that it had to be rightward moved as opposed to *molte soluzioni* (many solutions) witness the fact that the quantifier cannot be within the scope of a negation:

(i)a [$_{IP}$ pro$_i$ non [$_{I°}$ ci$_j$ sono] [$_{SC}$ molte soluzioni$_i$ t$_j$]]
b [$_{IP}$[$_{IP}$ pro$_i$ non [$_{I°}$ ci$_j$ sono] [$_{SC}$ t$_i$ t$_j$]] molte delle soluzioni$_i$]

The first sentence means "there are not-many solutions" while the second one can only mean "many solutions are not there". This fact collides with the idea that a partitive construction is only compatible with a VP internal position.

[24] Again, if one has independent reasons to consider spec-IP as an A'-position, then the trace counts as a variable. If not, we can simply require one more step, i.e. adjunction of the DP to IP.

[25] I am indicating the adjunction site for the proper name as IP. I will leave aside the possibility of using the so called split INLF hypothesis which is irrelevant here.

[26] A residual problem should be addressed briefly here. We have so far disregarded the role of PP adjunct. However, when such an element comes into the arena the following fact has been noticed:

(i)a Gianni (*?c')è in questo giardino
(Gianni there-is in this garden)
b *(c')è Gianni in questo giardino
(there-is Gianni in this garden)

This has been very misleadingly interpreted as evidence in favour of the hypothesis that *ci* is a subject expletive. Without abandoning the idea that *ci* is rather a (pro-)predicate we can explain this fact as follows. Since the sentence in (i)a has a locative interpretation, due to the fact that *ci* is applied to the variable left by the subject, the addition of a PP creates a clitic doubling construction which is generally avoided in Italian:

(ii) Gianni (*? lo) legge il libro
(Gianni lo reads the book)

In the case of (i)b the rightward moved position of the subject "pushes" the PP forcing it to be interpreted as an adjunct and the clitic doubling effect disappears. In fact, if one inserts a pause (or elements like negative adverbs) between the copula and the PP the sentences neatly improves:

(iii) Gianni non c'è mai in questo giardino
(Gianni not there-is never in this garden)
"Gianni never is in the garden"

Thus, as far as this problem is concerned, there is no need to go back to the idea that *ci* is the expletive realization of the subject of predication.

[27] It is interesting to notice that the efforts to avoid both language specific and construction specific rules are not independent. Even if in principle one can imagine the absence of language specific rules without commit oneself to the existence of construction specific rules and viceversa, it is clear that historically, the former has been made possible by the accomplishment of the latter.

[28] However, one should not disregard the very fact that in many languages an element expressing location is used. In fact it is also interesting to notice that the very term *existence* is etymologically related to two elements originally used to denote location, namely, the particle *ek-* (out of) and the verb *sisto* (be in a place). It is not inconceivable to think of it as the reflex of our cognitive capacities which need to express a very abstract notion like that of "existence" in a rather metaphorical way..

[29] It is interesting to notice that in Italian a second less frequent way of producing an existential sentence is possible which does not involve *ci* nor any other locative expression:

(i) non si danno molte possibilità
(not *si* give-pl. many possibilities)
"there aren't many possibilities"

In this case, Italian seems to be close to German involving a verb of giving rather than location to produce the wanted effect, supporting our point of view.

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THE PSEUDO-RELATIVE AND ACC-*ING* CONSTRUCTIONS AFTER VERBS OF PERCEPTION*

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1. *Introduction* In many of the Romance languages perception verbs can take a special complement structure known as the "Pseudo-relative" for its prima facie resemblance to a relative clause. See (1)a-d, which correspond to the ACC-*ing* English form in (2):[1]

(1) a. Ho visto Mario che correva a tutta velocità (Italian)
b. J'ai vu Mario qui courait à toute vitesse (French)
(2) I saw Mario running at full speed

That the structures in (1) should not be identified with ordinary relative clauses is amply motivated in the literature. So I will not dwell on this point here.[2] Rather, I will consider the main syntactic analyses which have been proposed, suggesting that each has some merit, even though none can provide a complete analysis of the construction.

The reason is that (1)a-b (and (2), for that matter) turn out to be structurally three times ambiguous, in ways which bear on certain aspects of the logical form of the construction.

It will also be seen that, this notwithstanding, the construction can be given a unitary analysis at a more abstract level.

Beginning with Romance, we may, for convenience, distinguish the analyses proposed in the literature in three main families.

1.1 The first attributes to (1) the structure [VP[V'V NP] CP] (see (3)), where NP is the direct object of the perception V, and CP another complement, much as in the case of verbs like *convincere* 'convince' (see (4)):[3]

(3) Ho [VP[V'visto [NPGianni]] [CPche correva a tutta velocità]]
I saw Gianni running at full speed
(4) Ho [VP[V'convinto [NPGianni]] [CPche doveva andarsene]]
I have convinced Gianni that he had better leave

Under this analysis, the two complements do not form a constituent. This, as noted in Radford (1977), runs against the evidence that the NP and the following CP are treated as a constituent under fronting. Compare (5)a-b with (6)a-b, in which, as expected, the two complements cannot be fronted together :

(5) a. MARIO CHE PIANGEVA, ho visto!
Mario that was weeping (focus), I saw
b. *GIANNI CHE DOVEVA ANDARSENE, ho convinto!
Gianni that he had better leave (focus), I convinced

The same evidence also rules out a variant of this analysis which takes the CP in (3) always to be an adjunct: [VP[V' V NP] (adv.)CP]. Here too, the NP and the adverbial CP do not form a constituent.[4] 1.2 A second influential analysis of pseudo-relatives is a sophisticated version of the pseudo-relative as ordinary relative analysis. Cf. Kayne (1981), Burzio (1981,1986), Taraldsen (1981), Graffi (1983) for slightly different variants of this analysis.

This analysis attributes to the pseudo-relative the structure of an ordinary relative ([NP NP CP]), except that no wh-movement is involved to the SPEC of CP, but rather control of a PRO by *qui/che*, ultimately by the head NP coindexed with *qui/che* (for simplicity, we ignore here the DP hypothesis):

(6) a. J'ai vu [NP Gianni [CP qui [IP e courait]]
b. Ho visto [NP Gianni [CP che [IP e correva]]
I saw Gianni that was running

This analysis has certain clear advantages over the previous one. First, it treats the sequence NP CP as a constituent, as required by such cases as (5)a above.

Secondly, it reduces the ungrammaticality of (7)

(7) *Je l'ai rencontré que tu sortais du cinéma (Kayne 1981)
I met her that you were going out of the cinema

to the fact that in any [NPNP CP] "structure, the [CP] must contain a position bound by the head NP" (p.98). Cf. **The man that Mary went to Paris was named Ashby.*[5]

Thirdly, it reduces the island sensitivity of the pseudo-relative (cf. (8)a, again from Kayne (1981)) to the complex NP Constraint (cf. (8)b):

(8) a. *Quelle fille l'as-tu rencontré qui embrassait t ?
Which girl have you met him that was kissing ?
b. *Quelle fille as-tu frappé le garÇon qui avait insulté t ?
Which girl have you beaten up the boy who had insulted ?

Also, it avoids the problems encountered by a pseudo-relative as ordinary relative analysis. The fact that the construction is sensitive to the type of verb (*voir/rencontrer* 'see/meet', but not *connaître* 'know' - cf. the possible (1)b, and (9)a below vs. the impossible **Je le connais qui est intelligent* 'I know him that is intelligent') follows if the control structure [NPNP CP] is lexically selected . Second,

the fact that the construction displays a clear subject/object asymmetry ((9)a-b), absent from genuine relatives, also follows from its control nature:

(9) a. Je l'ai vu qui t sortait du cinéma
I saw him that was leaving the cinema
b. *Je l'ai vu que Marie embrassait t
I saw him that Marie was kissing

Furthermore, the fact that *qui/che*/etc. do not alternate freely with relative pronouns (compare e.g. (9)a with **Je l'ai rencontré laquelle sortait du cinéma*), is no more surprising, at least if the CP does not involve wh-movement.

Despite such clear advantages, this analysis too faces certain problems.

One conceptual problem is the question why wh-movement to the Spec of CP should be forbidden in the structure [NPNP CP] of pseudo-relatives.

An empirical problem is the fact that the head of the pseudo- relative, but not the head of an ordinary relative, can be a trace of wh-movement in relatives - cf.(10). In this case, the contrast does not seem to follow from the control nature of [NPNP CP] in pseudo-relatives:[6]

(10) a. Quello che vedi [t [che sta partendo]] è Gianni
The one who you see that is leaving is Gianni
b. *Quello che conosci [t [che sta partendo]] è Gianni
The one who you know that is leaving is Gianni
(cf. Vedi/conosci quello che sta partendo?
'Do you see/know the one who is leaving')

A third problem is represented by the fact that the constituent formed by the NP and the CP refers to a proposition rather than to an individual, even when its head NP refers to an individual. The propositional nature of the constituent is apparent in contexts such as the a. cases in (11)-(13) vs. the b. cases (cf. Radford 1977, 155ff):

(11) a. Ciò che ho visto è Mario che scriveva nel sonno
That which I have seen is M. that was writing while asleep
b. *Ciò che ho invitato è Mario che scriveva nel sonno
That which I invited is M. that was writing while asleep
(12) a. Ho visto un fatto molto curioso: Mario che scriveva nel sonno
b. *Ho visto un tipo molto curioso:
I saw a very curious thing/*guy: M. that was writing while asleep
(13) a. Ho visto Mario che scriveva nel sonno, *il che* non mi pareva poi così strano
I saw M. that was writing while asleep, which did not seem that strange after all

b. *Ho visto Mario, *il che* mi ha detto di salutarti
I saw M., which told me to say hello to you

In each case, *Mario che scriveva nel sonno* is resumed by a pro-form (*ciò, un fatto molto curioso, il che*) which can only resume propositions, not individuals.

An additional problem for the [NPNP CP] analysis of pseudo-relatives is discussed in the next section.

1.3. The final analysis to be discussed is that proposed in Guasti (1988, 1990) (also see Rizzi 1991), which takes the pseudo-relative to be a constituent of type CP, with the initial NP in the SPEC of such CP:

(14) a. [V' V [CP NP [IP]]]
b. Ho [VP visto [CP Gianni [C'che [IPcorreva a tutta velocità]]]]

This analysis does not encounter the problems mentioned in connection with the previous analyses, but, as such, is still in- sufficient to account for all types of pseudo-relatives (e.g. those following such verbs as *incontrare* 'meet', *cogliere/ sorprendere* 'catch',etc.):[7]

(15) a. Se incontri Mario che scappa, non meravigliarti
If you meet M. that runs away, don't be surprised
b. Hanno colto Mario che rubava negli spogliatoi
They caught M. that was stealing in the dressing-room

If the analysis makes the correct constituency predictions for the pseudo-relative following perception verbs, which are indeed propositional constituents, it does not make the right prediction for the pseudo-relative following the non perception verbs of the *incontrare* class, in which the NP and the following tensed clause do not even form a constituent. See (16):

(16) a. *Quello che vorrei incontrare è Mario che corre
What I would like to meet is M. that is running
b. *MARIO CHE FUMA, vorrei cogliere!
M. that is smoking, I would like to catch
c. *E' Mario che corre ciò che vorrei incontrare
It's Mario that runs away what I would like to meet
d. *E' Mario che rubava negli spogliatoi che hanno colto
It's M. that was stealing in the dressing-room that they caught

Clearly, the difference in constituency of the 'NP *che* IP' sequence following a verb of perception and a verb of the *incontrare* class correlates with a selectional difference between the two classes. Only verbs of perception may select a

propositional argument (CP), in addition to a referring expression (NP):

(17) a. Ho visto/sentito che Gianni suonava
I saw/heard that G. was playing
b. Ho visto/sentito Gianni
I saw/heard G.
(18) a. *Ho incontrato/sorpreso che Gianni suonava
I met/caught that G. was playing
b. Ho incontrato/sorpreso Gianni
I met/caught G.

This however means that the analysis in (14) is insufficient for the second class of cases. What is needed is an analysis that may capture the unitary nature of the pseudo-relative at a more abstract level while deriving the observed differences between the two classes.

2. *The Small Clause Analysis of Pseudo-relatives* One such analysis seems to be available if only we pay attention to a further difference between the two classes of verbs; one which correlates with the observed differences in their selectional properties.

Perception predicates can take a small clause *complement*. The *incontrare* class of predicates cannot. The latter can only take an *adjunct* small clause, if any:[8]

(18) Ho visto [$_{SC}$ Gianni arrabbiato/in difficoltà]
I saw G. angry/in trouble
(19) Ho [$_{VP}$ [$_{V'}$ incontrato Gianni] [$_{SC}$ PRO arrabbiato/in difficoltà]]
I met G. angry/in trouble

The complement vs. adjunct status of the small clauses in (18) and (19), respectively, can be seen both from the constituency tests utilized above (cf. (20)), and from the wh-extraction of the small clause predicate, in general possible from a complement, but not from an adjunct, small clause - cf. Chomsky 1986,81ff. See (21):

(20) a. Ciò che vedrai è *Gianni arrabbiato/in difficoltà*
What you will see is G. angry/in trouble
b *Ciò che incontrerai è *Gianni arrabbiato/in difficoltà*
What you will meet is G. angry/in trouble
(21) a. Quanto stanco lo avete visto, Gianni?
How tired have you seen Gianni?
b. *Quanto ubriaco lo avete sorpreso,Gianni?
How drunk have you caught Gianni?

Now, if we assume that a tensed CP is but another manifestation, with particular

aspectual properties (for which, see Declerck 1981, Guasti, 1991), of the predicate of a small clause, then we can provide a unitary analysis of the pseudo-relative which is also capable of explaning the observed differences between the perception predicates and the predicates of the *incontrare* type:

(22) a. Ho visto [$_{SC}$ Gianni [$_{CP}$che correva verso casa]]
I saw Gianni that was running home
b. Ho incontrato Gianni [$_{SC}$ PRO [$_{CP}$che correva verso casa]]
I met Gianni that was running home

Of course, nothing prevents perception verbs from entering the adjunct structure (22)b too. This is, then, the first source of structural ambiguity of (1).

Note that this analysis is consistent with the selection properties of the two classes of verbs and with the constituency tests seen above. Moreover, it reduces the observed constituency difference between the two classes to an independent difference between them in the domain of small clauses. The only crucial assumption that is needed is that a tensed CP can (under certain conditions, met in the case of pseudo-relatives) be the predicate of a small clause.[9]

This assumption, unusual as it may appear, is supported by at least two considerations.

The first is that pseudo-relatives are not only found after perception predicates and predicates of the *incontrare* type (which indeed admit adjunct small clauses), but they are possible in all and only those contexts in which a small clause is possible (modulo aspectual compatibilities). Also see Raposo (1989, 283). (23) to (30) list 8 different contexts in which small clauses can be found. As the b. case of each shows, a pseudo-relative variant is indeed possible in each such context.

(a) Complement small clauses

(23) a. Non sopporto [$_{SC}$ Gianni e Mario [vestiti da boy scout]][10]
I can't stand G. and M. dressed as boy scouts
b. Non sopporto [$_{SC}$ Gianni e Mario [che fumano in casa mia]]
I can't stand G. and M. that smoke in my house

(b) Adjunct small clauses predicated of an object[11]

(24) a. Mangiò la pizza [$_{SC}$ PRO [calda]]
He ate the pizza hot
b. Mangiò la pizza [$_{SC}$PRO [che stava ancora fumando]]
He ate the pizza that it was still smoking

(c) Adjunct small clauses predicated of a subject[12]

(25) a. Gianni lasciò la stanza [$_{sc}$PRO [ubriaco]]
G. left the room drunk
b. Gianni lasciò la stanza [$_{sc}$PRO [che era ancora sotto gli effetti dell'alcohol]]
G. left the room that he was still under the effects of alcohol

(d) Small clauses in the 'absolute' *with* construction[13]

(26) a. Con [$_{sc}$Gianni [malato]], non possiamo partire
With G. ill, we can't leave
b. Con [$_{sc}$ Gianni [che continua a lamentarsi]], non possiamo partire
With G. that keeps complaining, we can't leave

(e) Small clauses in locative contexts[14]

(27) a. Maria è là [$_{sc}$PRO [arrabbiata più di prima]]
M. is there angry more than ever
b. Maria è là [$_{sc}$PRO [che piange più di prima]]
M. is there that cries more than ever

(f) Small clauses in existential contexts[15]

(28) a. C'è qualcuno [$_{sc}$PRO [disposto ad aiutarci]]
There is someone willing to help us
b. C'è qualcuno [$_{sc}$PRO [che sta salendo le scale]]
There is someone that is climbing the stairs

(g) 'Root' small clauses in incredulity contexts[16]

(29) a. [$_{sc}$Mario [ubriaco]] ? E' impossibile!
M. drunk? It's impossible!
b. [$_{sc}$Carlo [che si è offerto di aiutarci]]? Non mi sembra vero!
C. that offered to help us? It doesn't seem true to me!

(h) Small clauses subject of copulative verbs[17]

(30) a. [$_{sc}$ Gli studenti [così, alla mercè dei minatori]] è uno spettacolo che mi auguro di
non rivedere più
The students at the mercy of the miners is a sight that I hope not to see again
b. [$_{sc}$I minatori [che picchiano degli studenti inermi]] è uno spettacolo che fa star

male
The miners that beat up defenceless students is a sight that makes one feel bad

A second consideration in favor of a small clause analysis of pseudo-relatives is the fact that they can be coordinated with other types of small clauses (cf. (31)a-b), and, significantly, cannot be coordinated with full CP complements (cf. (32a)), just as ordinary small clauses cannot (cf. (32b)):

(31) a. Ho visto [Gianni depresso] e [Piero che cercava di risollevarlo]
I saw G. depressed and P. that was trying to cheer him up
b. Ho visto [Gianni in bicicletta] e [Piero che gli correva dietro]
I saw G. on a bike and P. that was running after him
(32) a. *?Ho visto [Piero che correva] e [che Mario cercava di raggiungerlo]
I saw P. that was running and that M. that was trying to reach him
b. *?Ho visto [Gianni depresso] e [che Piero cercava di risollevarlo]
I saw G. depressed and that P. was trying to cheer him up

It thus seems that pseudo-relatives, both for their external distribution (which overlaps completely with the distribution of ordinary small clauses) and their coordinability with run-of-the-mill small clauses, can reasonably be analysed themselves as small clauses.

Before turning to the question of what is the precise internal structure of the pseudo-relative, we should consider yet another context where small clauses and pseudo-relatives freely alternate. This context was kept separate as it introduces the third possible analysis of the pseudo-relative following a perception verb:

(i) Small clauses as adverbial modifiers of NPs

(33) a. [$_{NP}$Carlo e Paolo [$_{sc}$PRO [vestiti da boy scout]]] *sono* un vero spettacolo
C. and P. dressed as boy scouts are a real sight
b. [$_{NP}$Gianni e Maria [$_{sc}$PRO [che ballano il tango]] *sono* uno spettacolo da non perdere
G. and M. that dance the tango are a sight not to be missed
(34) a. [$_{NP}$Carlo e Paolo [$_{sc}$PRO [vestiti da boy scout]]], non *li* sopporto
C. and P. dressed as boy scouts, them I can't stand
b. [$_{NP}$Carlo e Paolo [$_{sc}$PRO [che mi fumano in faccia]]], non *li* sopporto
C. and P. that smoke into my face, them I can't stand
(35) a. Non voglio perdermi la vista di [$_{NP}$Carlo [$_{sc}$PRO [vestito da boy scout]]

I don't want to miss the sight of C. dressed as a boy scout
b. La vista di [$_{NP}$Carlo [$_{sc}$PRO [che balla il tango]]] è da non perdere
The sight of C. that dances the tango is not to be missed

In the three different contexts under (i), the small clause cannot but be internal to the NP. This is shown, in (33), by the fact that, contrary to (30) above, here the verb agreement is plural, which implies that the head of the larger NP is the plural NP *Carlo e Paolo*. In (34), it is shown by the fact that they are part of the dislocated NP resumed by the plural clitic pronoun *li* 'them'. Finally, in (35), it is shown by the fact that (subcategorized) prepositions in Italian can only take a NP, but no clausal, complement (cf. Cinque 1990b,34ff, Kayne (1991,668ff).

That such small clauses are (NP-internal) adverbial modifiers rather than reduced relative clauses is indicated by their interpretation, which is not that of an apposition to the NP, but rather that of a temporal modification of the NP. So, for example, (33a) does not mean "C. and P., who are dressed as boy scouts, are a real sight", but rather "C. and P., *when they are dressed as boy scouts*, are a real sight", and the same holds for the other cases.

Now, as the following examples show, even perception verbs may be followed by such 'complex NPs' containing a small clause adverbial:

(36) a. [[$_{NP}$Gianni e Paolo] [$_{sc}$PRO [vestiti da boy scout]]], non li ho mai visti
G. and P. dressed as boy scouts, them I never saw
b. [[$_{NP}$Gianni e Maria] [$_{sc}$PRO [che ballano il tango]]], non li ho mai visti
G. and P. that danse the tango, them I never saw

This means that even abstracting from (37), which is a pure adverbial parallel to (i) of fn.4 above, absent from French, a pseudo-relative complement to a perception verb is three way ambiguous. Specifically, it can receive one or the other of the analyses shown in (38)a-c:

(37) Ho [$_{VP}$visto Mario] [$_{CP}$che correva a tutta velocità][18]
I saw M. that was running at full speed
(38) a. small clause complement:
Ho [$_{V'}$visto [$_{sc}$Mario [che correva a tutta velocità]]]
b. small clause adjunct within NP:
Ho [$_{V'}$visto [$_{NP}$[$_{NP}$Mario] [$_{sc}$PRO [che correva a tutta velocità]]]]
c. small clause adjunct within VP:
Ho [$_{VP}$[$_{V'}$visto Mario] [$_{sc}$PRO [che correva a tutta velocità]]]

We have already seen evidence to attribute the analyses (38)a and b to (1). Structure (38a) is justified by such cases as (39), discussed above, where the pseudo-relative

behaves as a constituent of a propositional kind:

(39) a. Ho visto *Mario che correva a tutta velocità*, il che mi ha sorpreso
(Relativization via the propositional pro-form *il che*)
I saw M. that was running at full speed, which surprised me
b. C'è una cosa che non sopporto: [$_{sc}$[Gianni e Paolo] [che mi fumano in faccia]] ("Equative Deletion")
There is one thing that I can't stand:G. and P. that smoke into my face
c. [$_{sc}$[Gianni e Paolo] [che mi fumano in faccia]], proprio non *lo* sopporto
(Dislocation of the sequence resumed by the propositional pro-form *lo*)
G. and P. that smoke into my face, really it I can't stand

Structure (38b) is justified by such examples as (36)b, just seen. What about (38c)? Is there any more direct evidence that this analysis must be open to (1) with perception predicates, besides the observation that it must be available for the pseudo- relative following the *incontrare* class of predicates, hence more generally? There is indeed some such evidence if we compare the properties of the perception predicates, the *incontrare* class of predicates, and a further class of predicates taking pseudo-relatives as complements: the *sopportare* class of (23) above.

For the *incontrare* class of predicates we have seen that the complement structure (38a) is unavailable. For this class, the VP adjunct structure (38c) is in fact the only structure available, since these predicates do not admit instantiations of the adjunct within NP structure (38b), as shown by such cases as the following:

(40) a. *Carlo che esce, spesso lo incontro
C. that goes out, I often meet him
(cf. *Spesso incontro Carlo che esce* 'Often I meet C. that goes out')
b. *Carlo che rubava negli spogliatoi, non l'hanno colto
C. that was stealing in the dressing-room, him they haven't caught
(cf. *Hanno colto Carlo che rubava negli spogliatoi*
'They caught C. that was stealing in the dressing-room')
c. *Carlo che beve, lo sorprendono sempre
C. that drinks, they always catch him
(cf. *Sorprendono sempre Carlo che beve*
'They always catch C. that drinks')

Concerning the *sopportare* class of predicates, there is positive evidence that at least the analyses (38)a and b are available. See (41)a-b, respectively:

(41) a. C'è una cosa che non sopporto: [[Gianni e Mario] [che mi fumano in faccia]]
There is one thing that I can't stand: G. and M. that smoke into my face
b. [[$_{NP}$Gianni e Paolo] [$_{sc}$che mi fumano in faccia]], proprio non *li*

sopporto
G. and P. that smoke into my face, really them I can't stand

On the other hand, we have no evidence that they can enter structure (38)c.

Now, the *sopportare* class of predicates differ from the *incontrare* class for another interesting property. The *incontrare* class, though not the *sopportare* class, admits clitic movement and NP-movement (in Passive contexts) of the NP head of the pseudo-relative construction. See:

(42) a. Lo$_i$ hanno colto t$_i$ che rubava negli spogliatoi
Him they caught that was stealing in the dressing-room
b. Carlo$_i$ è stato colto t$_i$ che rubava negli spogliatoi
C. was caught that was stealing in the dressing-room
(43) a. *Non lo$_i$ sopporto t$_i$ che mi fuma in faccia
Him I can't stand that smokes in my face
b. *Lui$_i$ non è sopportato t$_i$ (da nessuno) che fuma in quel modo
He is not tolerated (by anybody) that smokes that way

It thus seems plausible to attribute the possibility of Clitic- movement and NP-movement to the structure (38)c only. If these processes were possible in (38)a-b as well, then, we should expect the predicates of the *sopportare* class to allow for them too. But they do not, as noted.

From this, it is tempting to conclude that Clitic- or NP-movement of the NP head of the pseudo-relative is only possible in the configuration (38c),i.e. when the NP is the real object of the verb.

If this conclusion is correct, the fact that both Clitic- and NP-movement of the pseudo-relative following perception verbs is possible is direct evidence that they can also enter structure (38c):[19]

(44) a. L'ho visto che correva a tutta velocità
Him I saw that was running at full speed
b. Gianni è stato visto che correva a tutta velocità
G. was seen that was running at full speed

Why should clitic- and NP-movement of the NP be impossible in structures (38)a and b? In the case of (38)b the answer is obvious: for the same reason that excludes clitic- and NP- movement of the head of a relative clause (cf. **L'ho invitato che avevamo conosciuto* 'I him invited who we had met'.Cf. *Ho invitato l'uomo che avevamo conosciuto* 'I invited the man who we had met'). In both cases, the NP is a subconstituent of the category that should undergo the rule. What about structure (38a)? The property in question would follow if the category of what we have called a 'small clause' were in fact a regular CP:

(45) Mario è stato visto [CP [AGRPt AGR [CPche correva a tutta velocità]]]

In (45), the trace left in subject position of the CP fails to be properly head-governed, C being itself inert for proper head- government (Koopman-Sportiche 1988, Rizzi 1990). This conclusion is still compatible with the well-formedness of (46), since in the case of wh-movement (but not clitic- or NP-movement) passage is possible through the Spec of CP (which turns C into a proper head-governor):[20]

(46) Chi$_i$ non sopporti [CPt$_i$C$_i$[AGRPt AGR [CPche fuma in quel modo]]]?
Who can't you stand that smokes in that manner?

How, then, does the NP in (38)a get its Case, if it is not governed by the verb? I would like to suggest that, much as in the parallel English Acc-*ing* complements to perception verbs, Case is assigned by the verb to the CP, from where it percolates down to AGR, which then assigns it to its Spec (cf. Reuland 1983).

This implies a principled difference with genuine small clause complements and complements of ECM verbs like *believe* in English, whose subjects are governed by, and receive Case from, the matrix verb directly.

Under this analysis, direct government of the subject NP from the matrix verb correlates with the possibility for the same NP to undergo Clitic- and NP-movement. Compare (43)a-b with (47a-b) and (48):

(47) a. Lo$_i$ ritengo [AGRPt$_i$ intelligente]
Him I consider intelligent
b. Lui$_i$ era ritenuto [AGRP t$_i$ intelligente]
He was considered intelligent
(48) He$_i$ was believed [t$_i$ to be intelligent]

There is indeed independent evidence that Case is not assigned by the matrix verb under direct government to the NP subject of the pseudo-relative.

We know that, when Case is assigned this way, a strict adjacency requirement is imposed on Case assignment. So, for example, no material can intervene between the Case assigner and the Case assignee (cf. (49)a-b), nor can the Case assignee be moved, within a larger phrase, away from the Case assigner (cf. (50)a- b):[21]

(49) a. *?Ritenevo in Francia [Gianni onesto]
I believed in France G. honest
(Cf. *Ritenevo in Francia [che Gianni fosse onesto]*
I believed in France that G was honest)
b. *?I believe with some reason [him to be intelligent]
(50) a. *[GIANNI ONESTO], credo che ritengano
G. honest, I think they believe
b. *?[Him to be intelligent], I can't believe

(Cf. That he is intelligent, I can't believe)

The fact that pseudo-relatives behave systematically in the opposite way (and analogously to Acc-*ing* complements) supports the conclusion reached earlier that their subject is not directly governed and Case marked by the matrix verb.See (51)a-b:

(51) a. Non sopportavo in Francia [Gianni e Mario che fumavano in quel modo], il che poi dava fastidio anche ad altri
I couldn't stand in France G. and M. that smoked that way, which bothered others too
b. [GIANNI E MARIO CHE MI FUMANO IN FACCIA], non sopporto!
G. and M. that smoke in my face, I can't stand

To reconcile this conclusion with the generalization concerning their distribution (non distinct from that of small clauses), I will assume that small clauses (i.e. clauses with null inflection) can be either AGRPs or CPs (whenever the CP projection is required for independent reasons). In the case at hand, one may assume that while AP,NP and PP small clause predicates do not require the presence of Tense (hence TP), a CP predicate does (perhaps due to its 'progressive' interpretation). If T in turn must match the tense features of a higher C (cf. finite T matching *that* in English), then the complete small clause must be of category CP, whence the observed impossibility of Clitic- and NP-movement of its subject):[22]

(52) a. Non sopporto [CP[AGRP[NPG. e M.] AGR [TP [CPche [fumano in quel modo]]]]]
'I can't stand G. and M that are smoking in that manner'
b. Ho incontrato [NPG. e M.] [CPche [AGRP uscivano]]
I met G. and M. that were going out

Since in other analyses (Guasti 1988, 1991, Rizzi 1991) the pseudo-relative is taken to be a 'bare' CP, some motivation must be given to assume the more complex (52)a-b in place of the simpler (53)a-b:

(53) a. Non sopporto [CPG. e M. [C'che [AGRPfumano in quel modo]]]
b. Ho incontrato G. e M. [CPPRO [C'che [AGRP uscivano]]]

First, under the 'bare' CP analysis, the simple account of the impossibility of Clitic- and NP-movement of the complement subject is lost, as the Spec of CP presumably counts as a position governed by the matrix V.

Secondly, if only categorially identical constituents can be coordinated, as seems plausible, sentences like (54)a-b below constitute a problem:[23]

(54) a. Ho visto [Gianni [[AGR'/A' agitato] e [C' che fumava come un turco]]
I saw G. nervous and that was smoking like a Turk
b. Con [Gianni [[AGR'/A' agitato] e [C' che fuma come un turco]]
With G. nervous and that is smoking like a Turk,....

Thirdly, it turns out that the head of the pseudo-relative can be separated from its (*che*+IP) predicate by (a limited class of) adverbials, as in ordinary small clauses. See (55):

(55) Con la casa ancora che fuma, non possiamo certo sistemarci qui
With the house that still smokes, we certainly can't be accomodated here
(Cf. *Con Gianni ancora incerto riguardo alla partenza,..*
'With G. still uncertain about the departure,..')

Having argued for the more articulate structure (52), here repeated as (56), over the simpler (53), I will now consider a number of questions that this structure raises, in particular those listed in (57):

(56) Non sopporto [CP[AGRP NP AGR [TP T [CP e che [AGRP e V]]]]]
(57) a. What kind of empty categories are in the Spec's of the embedded AGRP and CP, and are they in a chain?
b. How does the NP in the Spec of the higher AGRP receive its theta-role?
c. How can a lexical NP alternate with a controlled PRO in the Spec of the higher
CP?
d. What is its domain of binding?
e. What does the island sensitivity of the construction follow from?
f. Is the "direct perception" interpretation grounded on structure, and if yes how?

Beginning with (57)a, the predicate CP is an open sentence predicated of the subject of the 'small clause', its index percolating from C, which acquires it via Spec/head agreement with an XP in Spec. It is neither a null operator/primary variable open sentence, nor a null operator/derivative variable (bound clitic) open sentence. Otherwise, such sentences as **Je l'ai rencontré que Marie embrassait* or **Je l'ai rencontré que Marie l'embrassait* should be well-formed.[24]

To capture the fundamental subject/object asymmetry of the construction, I will assume, following Taraldsen (1986), that the Spec of the predicate CP is an A-position, hence that movement to it creates an A-chain. From this, it follows, as Taraldsen notes, that the only movement allowed is from the subject (of AGRP). If the object (or another complement) moved to the Spec of CP, its trace, an anaphor, would be free in its binding domain, the AGRP:

(58) a. ... [CP NPi [C' che [AGRP ti V...
b. ... [CP NPi [C' che [AGRP NPj V ti ...

The A(rgument) status of the Spec of CP can be seen to result from the generation of an bstract agreement morpheme in C alongside the complementizer (or of an agreeing form of the complementizer, which in Italian happens to be the same as the non-agreeing form: *che*). Cf. Rizzi (1991). Also see Rizzi (1990, sect.2.5). This is, in fact, visible in French, where C indeed takes the (agreeing) *qui* form, as seen.

Besides rendering the Spec of CP an A-position, this has the effect of making the trace in Spec of AGRP a properly bound anaphor, and a properly head-governed ec (by *che* + AGR), and of making CP, which inherits the index of the NP in its Spec via C, an appropriate open sentence predicated of the 'subject of predication' in the Spec of the higher AGRP.[25]

(59) a. Vedo [CP[AGRPMariai AGR [TP T [CPi NPi [C'che-AGRi [AGRP ti AGR corre]]]]]

The nature remains to be determined of NPi in the Spec of the lower CP in (59).

We have already excluded that it is a null operator. We can likewise exclude that it is a variable, there being no plausible higher operator to which it is bound. The possibilities left are NP-trace, PRO and pro.

Could it be NP-trace? A simple consideration makes this option dubious. The Spec of CP is governed by (finite) AGR in C (which is generally incompatible with anaphors) and is presumably assigned nominative Case by it, which is again in contrast with the Case-less nature of NP-traces.[26]

The same considerations (government and Case assignment) also rule out the option in which NPi is PRO.

So, the only plausible candidate remains *pro*. Indeed, I assume that it is licensed and identified in its phi-features by finite AGR in C, in Italian, under ordinary Spec/head agreement. In French, it is licensed and identified by the agreeing form of the complementizer (*qui*).

Some evidence may come from an observation of Guasti's (1988,45ff), according to which, when the head of the construction is other than 3rd person, the result is judged either downright ill-formed or marginal (*?*Pierre me/te/nous/vous voit qui parle/parles/parlons,parlez à Jean*), in striking contrast with what happens with the participial variant (*Pierre me/te/nous/vous/voit parlant à Jean*).[27]

As she notes the contrast can be attributed to the fact that pro needs to be identified in its phi-features and that *qui* has only (or has characteristically) 3rd person features.

The next question to consider is how the NP in the subject position of the higher AGR receives a theta-role. Observationally, it appears that such NP bears the theta-role which the predicate of the lower CP assigns externally, an agent theta-role in (60)a, a theme theta-role in (60)b, a goal theta- role in (60)c:

(60) a. Ciò che ho visto è Gianni che picchiava suo figlio
What I saw was G. that was beating his son
b Ciò che ho visto è Gianni che veniva picchiato da sua moglie
'What I saw was G. that was beaten by his wife'
c. Ciò che vorremmo vedere è Gianni che riceve il primo premio
'What we would like to see is G. that gets the first prize'

The fact is problematic since we have noted that the subject NP of the higher AGRP cannot have originated in the subject position of the lower AGRP, which contains an argument (pro) raising to the Spec of the lower CP.

The main reason for that was that no idiom chunk belonging to the lower CP can appear there.

This state of affairs recalls the *easy-to-please* case. There, as Chomsky (1981, sect. 5.4) notes, the NP in subject position bears the theta-role assigned by the complement predicate to its object, and yet it cannot be an idiom chunk:

(61) a. *Good care is hard to take t of the orphans
b. *Too much is hard to make t of that suggestion

It thus seems plausible to try and extend Chomsky's solution for this problem to the present puzzle too.

The subject NP position of the higher AGRP is not a theta- position, so it cannot contain a lexical NP at D-structure. The external theta-role of the lower predicate is assigned to the Spec of the lower AGRP containing pro. At S-structure, a lexical NP is "base-generated" in the Spec of the higher AGRP, which is reanalysed into a chain with the Spec of the lower CP, itself in a chain with the lower AGRP subject. The single chain which is formed thus contains one argument (the lexical NP), one Case (the one assigned to the Spec of the higher AGRP), and one theta-role (the one assigned to the Spec of the lower AGRP). Nevertheless, as the lexical NP is "base-generated" directly in the Spec of the higher AGRP at S-structure, it cannot be an idiom chunk related to the lower CP.

How can a lexical NP, as in (62)a, alternate with a controlled PRO, as in (62)b?

(62) a. Non sopporto [CP [AGRP Gianni AGR [CPche..
I can't stand G. that..
b. Ho incontrato Gianni [CP [AGRP PRO AGR [CPche..
I met G. that..

This is related to the mechanism of Case assignment to the Spec of the higher AGRP. As already noted above, there is reason not to take such a position to be directly governed and Case marked by the matrix V. Rather, it was suggested, essentially after Reuland's (1983) analysis of the corresponding Acc-*ing*

construction, that Case is assigned to the higher CP, from which it percolates to AGR, which ultimately assigns it to the subject NP (under Spec/head agreement). We further assume that such AGR in Italian, differently from the *-ing* AGR of the English construction, necessarily becomes a governor and must assign its Case when it receives one. This abstract difference with English *-ing* should capture the following difference between Italian and English concerning the alternation between lexical NP and PRO:

(63) a. Odio [[Gianni [che canta per strada]]]
I hate G. that sings in the street
b. *Odio [[PRO [che faccio tardi]]]
I hate that I am late
(64) a. I hate [[him singing in the street]]
b I hate [[PRO singing in the street]]

This implies that whenever the matrix CP is found in a Case position the PRO option is excluded in Italian. When the CP is instead found in a non Case position, such as the adjunct position of (62)b, a lexical NP is disallowed and only PRO is possible.

Interestingly, there is evidence that whatever Case is assigned to the CP (and percolates to AGR) is realized as Nominative in the Spec of AGRP. Of course, (65) is well-formed with Accusative Case, but given the structural ambiguity seen above we cannot really tell from (65) whether the pronominal is the object of the matrix V or the subject of a complement small clause:

(65) Ha visto me che fumavo per strada
He/she saw me that was smoking in the street

However, if the former option is structurally excluded, the only Case that can be realized is indeed the Nominative. See (66)- (68):

(66) [Io/*me che fumo per strada] è uno spettacolo che non raccomando a nessuno
I/*me that smoke in the street is a sight that I can't recommend
(67) Ciò che lei non sopporta è io/*me che fumo per strada
What she can't stand is I/*me that smoke in the street
(68) Se vedi Maria che scappa e io/*me che la inseguo, non farci caso
'If you see M. that is running away and I that am chasing her, don't bother'

Consider, now, the question of the binding domain of the NP in the Spec of the higher AGRP. From such cases as (69), it would seem that the relevant domain is the matrix clause:

(69) Nel filmato rivide se stesso che giocava con Mario

In the film, he saw himself that was playing with M.

But, once again, this particular context is not informative. *Se stesso* could well be the direct object of the matrix V.

If we force the postverbal NP to be in a subject position of a small clause complement of the matrix V, it turns out that no anaphor (bound from the matrix clause) can fill that position:

(70) a. Nel filmato, Maria vide Gianni che scappava e lei/*se stessa che lo rincorreva
'In the film, M. saw G. that was running away and that she/herself was chasing him
b. Ciò che Gianni rivedrebbe volentieri è ?lui/*se stesso che suona la batteria
What G. would like to see again is him/himself that is playing the drums

This pattern is in fact expected on the assumption, motivated above in relation to Case assignment and the distribution of PRO, that the null AGR of the small clause governs its Spec if it receives Case. For, under such an assumption the complete functional complex of the NP in the Spec of AGRP is the AGRP itself.[28]

Finally, a few words on the island character of the construction, for which we will suggest a tentative answer. Above, we noted how the bare CP analysis could not provide a non-stipulative account for it. A similar situation perhaps holds in the present analysis. If anything, one should expect the construction to show quasi-*wh*-island effects, thus blocking the etraction of adjuncts but not that of arguments. Both, however, appear to be blocked:

(71)a *La persona con cui ho visto tua sorella che stava parlando è questa
'The person with whom I saw your sister that she was talking is this'
b. *Il modo in cui ho visto tua sorella che lo stava trattando mi ha dato fastidio
'The way in which I saw your sister that she was treating him bothered me'

This means that (71)a has at least one barrier (more), when compared with a standard *wh*-island such as (72):

(72) (?)La persona con cui mi chiedevo di che cosa stessi parlando è questa
'The person with whom I was wondering about what you were talking is this'

A difference between (71)a and (72) is in the P selected by T, a CP in the former

case (cf. (56)) and a VP in the latter. This has as a consequence that only in the ordiary case of (72) does T become leical after raising of the V. If (slightly modifying the system of Cinque 1990) we take coindexing (either through raising or lowering) between the selecting head and the head of the selected XP to be a condition to void the barrierhood of the XP, then the CP headed by *che* is a barrier, since it is selected by T, to which C does not raise nor is coindexed. Presence of a single such barrier must then be sufficient to block extraction of both arguments and adjuncts (cf. Cinque 1990).

3. *The Acc-ing construction* As already noted, essentially the same threefold structural ambiguity has been proposed by Declerck (1982) for the corresponding English Acc-*ing* construction. As he points out, the apparently contradictory nature of the evidence discussed in the literature can find a solution if the tacit assumption that "there is only one correct analysis of [participial perception verb complements]" (p.2) is abandoned.

As in Romance, (73) can enter anyone of the three structures shown in (74)a-c, which correspond, with certain differences to which we return directly, to (38)a-c above:

(73) I saw the moon and Venus rising over the mountain

(74) a. I saw [CP[AGRP[NPthe moon and Venus] AGR rising over the mountain]]

b.I saw [NP[NPthe moon and Venus] [CP[AGRPPRO rising over the mountain]]]

c. I [V'saw [NPthe moon and Venus]] [CP[AGRPPRO rising over the mountain]]]

Evidence for structure (74)b is provided by Akmajian (1977). Akmajian observes that the Accusative NP of the Acc-*ing* construction can determine number agreement on the matrix verb, as we indeed expect if it is the head of a larger nominal constituent comprising the participial modifier:

(75) [[The moon and Venus] rising in conjunction] *have* often been observed by the astronomers at Kitt Peak

Equally telling is the fact, also noted in Akmajian (1977), that the participial modifier can extrapose to the end of the matrix clause, thus behaving like other complements and modifiers of a head N (PP and *that* complements, relative clauses, etc.):

(76) a. The moon rising over the mountain looks spectacular

b. The moon looks spectacular rising over the mountain

Furthermore, the Acc-*ing* complement of perception verbs is found to occur in

other typical NP positions (subject and object of P positions):[29]

(77) a. [The moon rising over the mountain] was a breathtaking sight
b. The sight of [the moon rising over the mountain] was breathtaking

What about Gee's (1977,462f) observation, in his comments to Akmajian's paper, that verb agreement can also be singular?

(78) Them trying to play Brahms together *was* quite a sight

This follows, as Declerck (1982,13) notes, if the Acc-*ing* constituent of (78) receives a different analysis. Namely, that of a CP functioning as subject of the matrix predicate (whence the 3rd person singular agreement of the latter).

As the predicate of a subject CP cannot extrapose, it is correctly predicted that no extraposition of the participial constituent will be available with singular agreement on the matrix verb:

(79) *Them was quite a sight trying to play Brahms together

Indeed, only plural agreement is compatible with extraposition, as Gee (1977,463) notes:

(80) They *were* quite a sight trying to play Brahms together[30]

Further evidence that the analysis (74)a must be available to (73) is provided by such cases as (81), which were pointed out by Akmajian himself (1977,456) and whose relevance in this connection was stressed in Declerck (1982) and Higginbotham (1983):

(81) I saw it raining

Here, weather *it* can plausibly only fill the subject position of a complement clause, not the (head position of an) object NP.[31]

The same point is strenghthened by the following sentences, from Declerck (1982,12), where the NP is an idiom chunk related to the embedded predicate or 'expletive' *there*:

(82) a. We noticed allowances being made for the very young
b. I saw there being a riot

The fact that Acc-*ing* constituents can be resumed (or anticipated) by propositional pro-forms such as *it* or *what* is additional evidence for the availability of (74)a. See (83)a-b, from Gee (1977,465) and Declerck (1982,6), respectively:

(83) a. It/*she is quite a sight, Mary trying to play the tuba
b. What/*who I saw was John kissing a girl

(83)b expectedly contrasts with the following (from Gee 1977, 465), since *catch* selects individuals (NPs) and not propositions (CPs):

(84) *What we caught was John stealing the car

This means that (85)a, just like its Romance analogue, can only be analysed as having the third structure (74c), with the NP filling the object position, followed by a control adjunct CP as shown in (85)b:

(85) a. We caught John stealing the car
b. We [V'caught [NPJohn] [CP[AGRPPRO AGR [VPstealing the car]]]]

By full generality, the structure with a control adjunct CP predicated of the object (namely,(74)c) should be available to perception verbs as well. Indeed, as was the case in Romance, we have positive evidence that it must.

As the ungrammaticality of (86) and (87) shows, NP-movement of the subject of the Acc-*ing* complement to a perception verb is excluded, for familiar reasons if the complement is a full CP:

(86) *It was seen raining
(It_i was seen [CPC [AGRPt_i AGR raining]])
(87) a. *There was seen being a riot
b.*Allowances were noticed (by us) being made for the very young

(88)a is of course possible because it can have the structure (88)b, precluded to (86) and (87). NP-movement of objects is unproblematic.

(88) a. John was caught stealing the car
b. $John_i$ was caught t_i [CPC [AGRPPRO AGR stealing the car]]

(89), then, must be possible as a case of the same type - namely of structure (74)c, given that NP-movement is excluded in both (74)a and b (cf. (86) and (87)):

(89) John was seen stealing the car

Further evidence for this analysis comes from the observation that, while extraction of an adjunct from an Acc-*ing* complement of an active perception verb is possible (cf. (90)), extraction becomes impossible if the perception verb is passivized (cf. (91)):[33]

(90) a. How did you see John behaving on such an occasion?
b. Where did you see John going?
(91) a. *How was John seen behaving on such an occasion?
b. *Where was John seen going?

This follows if NP-movement is only possible in the structure (74)c, in which the participial clause is an adjunct island.

4. *Some Remarks on Direct vs. Indirect Perception.* The conclusion that the Romance pseudo-relative and the English Acc-*ing* constructions following verbs of perception are structurally ambiguous allows us to take a new look at the structural conditions under which a direct perception interpretation is possible (or necessary). In the literature, the relevant facts are not interpreted univocally. It is sometimes claimed, for example, that the Acc-*ing* and pseudo-relative constructions differ from ordinary tensed complements of perception verbs in that the subjects of the former (though not that of the latter) are necessarily directly perceived:[34]

(92) a. Ho visto Gianni che dormiva
b. I saw Gianni sleeping
(93) a. Ho visto che Gianni dormiva
b. I saw that Gianni was sleeping

Others have pointed out that, although possibly typical, this is not necessary. Gee (1975,1977), for example, notes that there is no requirement that the accusative of the Acc-*ing* construction be directly perceived, as long as some aspect of the event denoted by the NP and VP is. Similar remarks are made in Declerck (1982, 12ff) and Barss (1985,156f). So, for example, it is possible for me to say (94)a and b even if I don't actually see John, who is behind a curtain, or in the other room. Similarly, (94)c and d are appropriate even if what I heard was just the pig, and what I smelled was just the wax, not Mary:

(94) a. I can see John moving the little figures
b. I saw John sawing through the wall
c. I heard the farmer killing the pig
d. I smelled Mary beeswaxing the floor

Similar remarks hold for the pseudo-relative construction, whose head can be a NP referring to something which cannot be directly perceived in any obvious sense:

(95) a. Vedere le proprie idee che si impongono con facilità non è sempre una bella sensazione
To see one's ideas that have success easily is not always a nice feeling

b. Vide il vento che muoveva le foglie[35]
He/she saw the wind that was moving the leaves

Also, as with the English Acc-*ing* cases (94), the following sentences are appropriate even if no direct perception of the NP head of the pseudo-relative obtains; i.e., if the little brother's cries are the only thing heard in the context of (96)a, and if Gianni's changing of mind is merely reported in the context of (96)b:

(96) a. Se senti Gianni che fa piangere il fratellino, chiamami
If you hear G. that has his little brother cry, call me
b. Vedere Gianni che cambia opinione così spesso non ci fà meraviglia[36]
To see G. that changes his mind so often does not surprise us

This state of affairs is expected under the threefold analysis proposed above. Both for the Romance pseudo-relative and for the English Acc-*ing* constructions, there is at least one configuration in which the subject is not even governed, or directly Case-assigned, by the verb of perception, from which it is separated by AGRP and CP (cf. (59) and (74)a, respectively):

(59) Vedo [CP [AGRPMaria AGR [TPT [CPche [AGRP corre]]]]]
(74) a. I saw [CP [AGRPthe moon and Venus AGR rising over the mountain]]

This is compatible with restricting the direct perception interpretation just to the cases where the head NP is the real object, or the head of the real object, of the verb of perception (cf. (38)b-c, (74)b-c). In that case, nothing special would have to be said. For, real objects of verbs of perception are necessarily interpreted as directly perceived.[37]

Notice that the hypothesis defended above that NP-movement (under Passive) and Clitic-movement (in the Romance construction) are only possible when the target is the real object of the verb of perception (and impossible in (59), (74)a) affords a straightforward prediction: namely that, when the NP is passivized or cliticized, the direct perception interpretation becomes obligatory even in those cases as (94)-(96), where it was not. The prediction appears to be correct, thus strenghtening that hypothesis. See (97) through (101), which are the Clitic- movement and NP-movement counterpart of (94)-(96) ('%' marks the semantic oddity of those cases where direct perception is not available owing to the inherent nature of the passivized or cliticized object):[38]

(97) a. John was seen (by us) moving the little figures (cf. (94)a)
b. John was seen (by everybody) sawing through the wall (cf. (94)b)
c. The farmer was heard (by everybody) killing the pig (cf. (94)c)
d. Mary was smelled (by us) beeswaxing the floor (cf. (94)d)
(98) a.. %Vederle che si impongono,le proprie idee, non è sempre piacevole

(cf. (95)a)
'To see them that have success, one's ideas is not always a nice feeling'

b. %Le sue idee sono state viste che si imponevano
His ideas were seen that had success

(99) a. %Il vento, lo abbiamo visto che muoveva le foglie
The wind, we saw it that was moving the leaves (cf. (95)b)

b. %Il vento fu visto che muoveva le foglie
The wind was seem that was moving the leaves

(100)a Gianni, l'ho sentito che faceva piangere il fratellino
G., I heard him that was having his little brother cry (cf. (96)a)

b. Gianni è stato sentito (da tutti) che faceva piangere il fratellino
'G., was heard (by everybody) that was having his little brother cry'

(101)a. Vederlo che cambia opinione così spesso non ci fà meraviglia (cf. (96)b
'To see him that changes his mind so often does not surprise us')

b. Esser visti che cambiamo opinione così spesso è brutto
To be seen that we change our mind so often is bad

Footnotes

* This article is a revised version of the paper presented at the Conference on "Perceptual Reports" held in Gargnano in September 1990, under the title "Pseudo-relatives as Small Clauses", and at the Seminario di Linguistica of the University of Venice. I am indebted to those audiences, and especially to A. Bonomi, P.Casalegno, G.Giusti, M.T.Guasti, G.Longobardi, A. Moro and L.Rizzi, for helpful comments. The analysis of the Romance construction argued for there an developed here reaches conclusions similar to those of Declerck (1982) for the corresponding English Acc-*ing* construction, at least as far as the three way ambiguity of the construction is concerned. See sect. 3 here for some comparative remarks. Gee (1977), Reuland (1983), and Raposo (1989), also argue for a two way ambiguity of the English Acc-*ing* construction and the Portuguese 'prepositional infinitive' construction, respectively, thus partially converging with the analysis proposed here.

1. For other Romance varieties in which they are attested, see Guasti (1991). Rumanian lacks the pseudo-relative construction, and resorts instead to a gerund construction (like English): Am vàzut Ion fugind 'I saw Ion running away'. Other Romance varieties have the gerund construction alongside the pseudo-relative (French, Spanish, Brasilian Portuguese,etc.).
2. See, among others, Schwarze (1974), Kayne (1975,1981), Radford (1975,1977), Graffi (1980), Guasti (1988), and Akmajian (1977) for the corresponding English Acc-*ing* construction.
3. Cf. Kayne (1975).
4. That the CP can optionally be adverbial (in Italian) is shown by the well-formedness of the following sentences, in which the *che* clause cannot qualify as a pseudo-relative, either because it lacks an open position which can be predicated of the head ((i)a), or because this is in a non subject position ((i)b):

   (i) a. Paolo la vide che stava piovendo a dirotto (Radford 1977)
   Paolo her saw that (it) was raining heavily
   b. Paolo la vide che la stavano rincorrendo
   Paolo her saw that they were chasing her

   This implies that a sentence like (ii) will be ambiguous between a pseudo-relative reading and a purely adverbial reading, although that may not be immediately obvious:

   (ii) Ho visto Gianni [che se ne stava già andando]
   I saw Gianni that (he) was aleady leaving

   The adverbial reading is the only one available if the subject of the *che* clause is lexical ((iii)a), while the pseudo-relative reading is the only one available if the NP and the CP are fronted together ((iii)b):

   (iii) a. Ho visto Gianni [che lui se ne stava già andando] (adv.)
   I saw Gianni that he was already leaving
   b. GIANNI CHE SE NE STAVA GIA' ANDANDO, ho visto (pseudo-rel)

   This predicts that it will no longer be possible to front the NP and the *che* clause together when a lexical subject is present. A correct prediction:

   (iv) *GIANNI CHE LUI SE NE STAVA GIA' ANDANDO, ho visto!

   Note that this additional ambiguity is absent from French, where this construction is for some reason unavailable:

   (v) a. *Je l'ai rencontré qu'il pleuvait
   I met her that it was raining
   b. *Je l'ai rencontré qu'elle sortait du cinéma (Kayne 1984, (102))
   I met her that was going out of the cinema

   The possibility of fronting the NP and the CP together also argues against a raising analysis which generates the NP in the subject position of the CP and then moves it to the object position of the perception verb (Schwarze 1974, Radford 1975,1977). Additional difficulties for this analysis are the French *en*-avant facts mentioned in Burzio (1986,318), and the impossibility of subject idiom chunks in the object position of the perception verb :

(vi) a. **Se vedi i conti che tornano, puoi considerarti fortunato,*
'If you see the calculations square, you can call yourself lucky'
b. **Se vedi giustizia che viene fatta solo per pochi, non meravigliarti*
'If you see justice being done only for few people, don't be surprised'

5. Note that the analogue of (7) in Italian is well-formed (*L'ho incontrata che tu stavi uscendo dal cinema*). However, not as a pseudo-relative, but as an adverbial structure of the type discussed in the previous footnote.

6. Kayne (1981,fn.26) suggests reducing the difference between *Je le voit qui rit* 'I see him that is laughing' and **Je le connais qui est intelligent* 'I know him that is intelligent' (as well as that between *Le garc,on a été vu qui courait* 'The boy was seen that was running' and **Le garÇon a été critiqué qui courait* 'The boy was criticized that was running') to the independent property of relative clauses whereby they cannot modify an anaphor: **John believed himself, who I find intolerable, to be quite pleasant.* Sentences comparable to this are not so bad in Italian, however:
(i) ?Se Gianni finirà per proporre se stesso, che pure non ha una grande esperienza,..'
If G. ends up proposing himself, who has no great experience,
An alternative for the ill-formed cases above may be provided by the observation that the target of Clitic- and NP-movement there is only a proper subpart (NP) of the maximal projection (DP) which should undergo the rule.

7. See Guasti (1991) for an extension of her analysis which may account for the pseudo-relative following the *incontrare* class of verbs. Nonetheless, problems remain for the 'bare' CP analysis. See below for discussion.

8. For the time being, I assume, after Kayne (1985, 1989), Hornstein and Lightfoot (1987), that "small clauses" are (at least) projections of an abstract AGR taking a lexical XP as its complement. For evidence that they can even be CPs, see the quoted works by Kayne, Mouchaweh (1984), and Cinque (1990a, fn.25). I come back later on what 'sc' in (18)/(19) stands for.

9. Taraldsen (1986), while assuming a complex NP structure for pseudo-relatives, as noted, suggests (p.169) that they receive a small clause interpretation. In his analysis of the European Portuguese prepositional infinitive construction (PIC), Raposo (1989) also assumes a small clause analysis: Eu vi [IPOS meninos [I'a [VPlerem esse livro]]] 'I saw the boys reading this book'. In the analysis developed here, we would be led to assign the PIC the triple structure shown in (38) below, with *a* in the head position of the lower CP, to undeline the similar role that *che* and *a* have in the aspectual value of the construction. Determining the actual viability of this analysis for the European Portuguese PIC is, however, beyond the scope of this article. For comparable suggestions, see Guasti (1991).

10. Besides being complements to perception verbs, and 'mental attitude' verbs like *(non) sopportare* '(not) tolerate', *detestare* 'detest', *ricordare* 'remember',etc., small clauses can also be found as complements to various other classes of verbs: causative (*rendere,fare* 'make',etc.), epistemic (*considerare,ritenere*, 'consider',etc.), dicendi (*definire* 'define, *dichiarare* 'declare', etc.), volitional (*volere* 'want', *desiderare* 'desire',etc.). Differently from the case of mental attitude verbs, however, pseudo-relatives are not permitted as complements of these other classes of verbs. This should not be taken as problematic. Pseudo-relatives have a special aspectual value (often termed 'progressive' - cf. Declerck (1981), Guasti, 1990), which appears to be incompatible with the stative value characterizing the complement of the latter classes of verbs. See (i) vs. (ii):
(i) a. Ho visto Gianni soprapensiero/in partenza/che partiva

I saw G. lost in thought/on the move/that was leaving

b. Non sopporto Gianni soprapensiero/in partenza/che parte
I can't stand G. lost in thought/on the move/that is leaving

c. Ricordo Gianni soprapensiero/in partenza/che partiva
I remember G. lost in thought/on the move/that was leaving

(ii) a. *Ho reso Gianni soprapensiero/in partenza/che parte
I rendered G. lost in thought/on the move/that is leaving

b. *Ritengo Gianni soprapensiero/in partenza/che parte
I believed G. lost in thought/on the move/that is leaving

c. *Definirei Gianni soprapensiero/in partenza/che parte
I would define G. lost in thought/on the move/that is leaving

d. *Voglio Gianni soprapensiero/in partenza/che parte
I want G. lost in thought/on the move/that is leaving

11. Cf. Chomsky (1986b,81ff), Roberts (1988)

12. Cf., again, the references of the previous footnote.

13. Cf. Riemsdijk (1978), Ruwet (1978), Hoekstra-Beukema (1984), McCawley (1983), among others.

14. Cf. Ruwet (1978), Kayne (1975)

15. Cf. Moro (1989)

16. Cf. Akmajian (1984)17. Cf. Safir (1983).

18. Whether this adverbial CP is dominated by VP (or a segment of VP,i.e. it is adjoined to it) depends on the results of VP constituency tests as VP-preposing. Although the judgements are not always very sharp, they seem to suggest that the adverbial CP is in fact outside the VP. See:
(i) Vista, non l'ho, che stava piovendo a dirotto
Seen, I haven't her that it was raining cats and dogs
(ii) ?*Vista che stava piovendo a dirotto, non l'ho
This is confirmed by an observation of Giusti (1991,735); namely that such adverbial CPs cannot in general be focalized, which possibly suggests that they are not properly governed (cf. *?CHE STAVA PIOVENDO A DIROTTO, sono uscito/l'ho vista 'That it was raining cats and dogs (focus), I went out/I saw her'). Since the VP-adjoined position is a properly governed position, this suggests that the CP is higher.

19. Given the existence, in Italian, of the additional option (37), the argument should, in fact, be constructed on the the basis of the corresponding French facts.

20. (43)b and (46) should be compared to the following Acc-*ing* cases in English (also see sect. 3 below):
(i) *John$_i$ was hated [$_{CP}$C [$_{AGRP}$ t$_i$ behaving like that]]
(ii) *I hate [$_{CP}$C [t behaving like that] [all the people I helped]]
(iii) Who do they hate [$_{CP}$t$_i$C$_i$ [$_{AGRP}$t$_i$ behaving like that]]
Some speakers find (46) marginal or impossible.

21. Of course, the Case assignee can move away from the Case assigner when it moves alone, as Case can still be assigned by the Case assigner to its trace, under adjacency:
(i) GIANNI$_i$, ritenevo [t$_i$ onesto]
G. (focus), I believed honest

(ii) Him, I can't believe to be intelligent

22. In the adjunct within VP and in the adjunct within NP cases, the small clause subject is PRO. For the alternation lexical NP/PRO see below.

23. From this point of view, it is interesting that the only well-formed cases where the categorial identity requirement seems to be violated are coordinations of predicate Ps, which can be interpreted as coordinations of identical higher level constituents (AGR' or AGRP):

(i) a. Gianni$_i$ sembrava [$_{AGR'}$[$_{AGR'}$ AGR [$_{AP}$ t$_i$ irritato] e [$_{AGR'}$ AGR [$_{PP}$t$_i$ sul punto di piangere]]

b. Gianni$_i$ sembrava [$_{AGRP}$[$_{AGRP}$ t$_i$ [$_{AGR'}$AGR [$_{AP}$ ti irritato]]] e [$_{AGRP}$ t$_i$ [$_{AGR'}$ AGR [[$_{PP}$t sul punto di piangere]]]

G. seemed irritated and on the verge of crying

24. Perhaps, the unavailability of an operator/variable config-uration is due to the fact that this is neither a relative clause configuration nor a reanalysis configuration of the *easy-to- please* type, which in Romance requires an infinitival construction.

25. If generation of AGR in C is lexically selected in general (cf. Rizzi 1990, sect.2.5), here it must be selected by the particular aspectual T head which takes the small clause as its complement.

26. We have to assume that the AGR head of the lower AGRP does not govern or assign Case to its Spec in the context of AGR in C, at least optionally. The ungrammaticality of idiom chunks in the Spec of the higher AGRP, noted above, excludes the subcase in which the NP-trace is created by movement to the Spec of the higher AGRP.

27. The derivation **Je crois [proi quii [ti est malade]]* (instead of *Je crois qu'il est malade*) must be excluded. It is if the derivation creates a predicate (which here fails for lack of an appropriate subject of predication).

28. Here, the Italian construction differs again from the English Acc-*ing* construction in a consistent way. Cf. Reuland (1983,118).
Another area of inquiry, which we will not pursue here, concerns the LF properties of a quantified head of a pseudo-relative. What one would expect is that a narrow scope interpretation should be possible in the subject position of a complement pseudo-relative. This appears to be true (*Vedere nessuno che cede il proprio posto quando entra una vecchia dà fastidio* 'To see nobody giving his seat when an old lady comes in is bothering') although the judgements tend to be not very sharp and variable across speakers. For general discussion, see Higginbotham (1983) and Reuland (1983).

29. As in the corresponding Romance case, the participial modifier of (75)-(76) is not a reduced relative clause (pace Barss 1985), but an adjunct-like modifier (cf. Declerck 1982, 7ff).

30. Note that the head of the larger nominal 'stranded' by extraposition is in the Nominative, as one would expect given the context in which the NP occurs, while the pronominal subject of the subject CP in (78) is in the Accusative. Cf. Reuland's (1983) above mentioned analysis of Case assignment in such clauses.
Interestingly, Gee (1977,463) observes that singular agreement on the verb is much better for him than plural agreement when the head of the construction is an [Accusative] plural pronoun.

31. (81) also shows that the English Acc-*ing* construction differs from the Romance pseudo-relative construction in internal structure. While the latter must be a 'small clause' CP structure with the subject NP base-generated in situ, as noted, the English Acc-*ing* construction is (can be) a plain CP structure with the subject NP filling the Spec of the AGRP headed by *ing*. Several differences stem from this more abstract difference.
Among them, the fact that the subject of the English Acc-*ing* construction can be an idiom chunk (cf. (i)a, from Gee (1977), vs. (i)b = (vi)a of fn.4), and the fact that extraction, possible from Acc-*ing* complement clauses, is impossible from complement pseudo-relatives (cf. (ii)a, from Gee (1977), vs. (ii)b:

(i) a I saw the shit hitting the fan
b *Se vedi i conti che tornano, puoi considerarti fortunato
If you see the calculations square, you can call yourself lucky

(ii) a What did the policeman see John crossing?
b *Che strada hai visto Gianni che stava attraversando?
Which street Have you seen G. that was crossing?

32. (86)-(87)a are noted by Reuland (1983,fn7), who credits them to David Pesetsky. (87)a is also noted by Declerck (1982,13), who reports (87)b too.

33. Reuland (1983,fn7) cites (i) as wellformed. Indeed, if there is a detectable difference between it and (91)b, then it must be due to the familiar NP/non-NP asymmetry under extraction (cf. Cinque 1990):
(i) What$_i$ was everyone$_j$ seen t_j doing t_i

34. Cf. Akmajian (1977,452ff) and Rizzi (1991) for discussion.

35. This sentence was suggested at Gargnano by Paolo Casalegno

36. This sentence is an adaptation of a sentence suggested by Andrea Bonomi.

37. This was, in fact, Akmajian's (1977) idea, though cast in a different analysis.

38. The actual viability of restricting the direct perception interpretation to real objects rather than to governed NPs (hence of dispensing with the notion of thematic sharing proposed in Rizzi (1991)) depends on the precise analysis of such cliticization cases as (i) below, which appear to be relatively acceptable in opposition to the corresponding cases of passive (cf. (ii)):

(i) Le sue idee, le ho viste imporsi con facilità
His ideas, I saw them have success easily

(ii) %Le sue idee sono state viste (da tutti) imporsi con facilità
'His ideas have been seen (by everybody) have success easily'

But I will not pursue this question here which touches on the analysis of infinitival complements to perception verbs.

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Heads and Modifiers among Determiners
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Heads and Modifiers among Determiners
Evidence from Romanian and German[1]

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1. *Introduction.* Recent trends of syntactic research on noun phrases have drawn attention on those elements that have usually been grouped under the generic label "Determiners", namely quantifiers, articles, demonstrative, and possessives, opening up various possibilities for structural analyses.

In this paper I would like to question the assumption, to be often found in the literature, that all so-called determiners have the same categorial status. This assumption is mainly based on the observation that these elements are in complementary distribution with each other in some languages. But the fact that in other languages some of them can co-occur, should immediately cast doubts on such a simple way of looking at the matter. I will claim that the unification operated under the term "determiner" obscures the crucial distinctions regarding both the structural position and the categorial status of these elements.

The evidence to be discussed in this paper is mainly syntactic. In section 2., we will see that a quantifier can either be the head of a quantified expression or a modifier of the noun. In the first case it embeds a "full nominal"; in the second case it is in some specifier position inside the "full nominal". In none of the two cases they can be assumed to be in D°. In section 3., I will focus on demonstratives that will turn out to be modifiers in a high Spec, and not in D. The same will be claimed of possessives in section 4. In section 5., we will follow recent studies assuming that articles are in D. From what will have been argued in 2. through 4., it will turn out that articles are the only elements that can function as head of DP.

2. *Quantifiers.* Abney (1987), following Szabolcsi (1987), claims that quantifiers are adjectives. With this, he tries to unify two different strings such as those in (1):

(1) a. the many children
    b. many children

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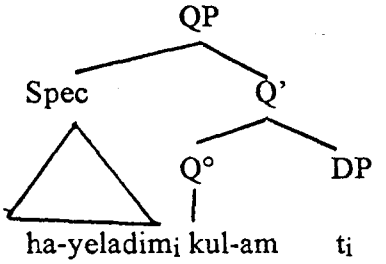
1 This paper is a revised section of my doctoral dissertation, quoted in the references as Giusti (1992). I wish to thank A. Cardinaletti, G. Cinque, R. Kayne, G. Longobardi, and the audience of the Venice section of the conference "Linguistica Romena Oggi", July 6, 1992, for discussion and helpfull criticism.

Abney assumes an empty determiner in (1b) that would be identical to the lexical determiner in (1a). Such a unification obscures rather than explains the syntactic behaviour of the two constructions, which appears to be different in many respects and should therefore be kept separate, as will be briefly sketched in 2.3 below.

Differently from Abeny, Shlonsky (1991), reformulating Sportiche's (1988) proposal on floating quantifiers, claims that universal quantifiers are the head of the quantified nominal construction. Shlonsky analyses the postnominal position of the Q in (2b) in Hebrew as derived by movement of the DP embedded under Q' into SpecQP. From SpecQP the DP can move further, giving rise to the floating construction as in (2c), or the entire QP can move to Spec IP, giving (2a-b):

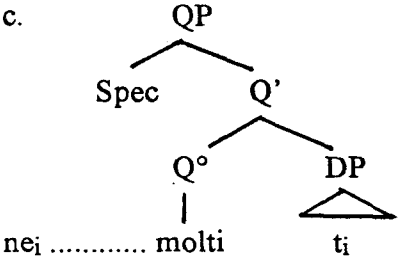
(2) a. kol ha-yeladim ohavim le-saxek
all the-boys like to play
b. ha-yeladim kulam ohavim le-saxek
the-boys all-them like to play
c. ha-yeladim axlu kulam lexem
the-boys ate all-them bread
d.



Shlonsky does not consider existential quantifiers, since they do not generally appear in the floating construction.

The headedness of Q in partitive constructions has also been proposed by Cardinaletti and Giusti (1989, 1991), who attribute to the position linked to the Italian partitive clitic *ne* the status of a maximal projection, which is the complement of Q:

(3) a. vengono molti ragazzi
come many boys
b. ne vengono molti
NE come many
c.



Cardinaletti and Giusti, however, limit their treatment to partitive constructions and do not consider other quantified expressions.

Giusti (1991) shows that the two proposals that view quantifiers either as heads or as modifiers are not incompatible with each other, on the contrary, each of them reveals only half of the truth. There, it is proposed that a quantifier in the first nominal position is the highest head of the nominal construction, in the case of both universal and existential quantifiers, and that a quantifier preceded by a determiner functions as a modifier of the noun, parallel to adjectives. Since not all quantifiers can appear in configuration (1a), it is necessary that those which can are specifically marked for that in the lexicon.

Recourse to lexical specification predicts that the list of the quantifiers that can function as adjectives is open to quite a lot of cross-linguistic variation. This prediction may appear problematic if the investigation is limited to English, German, or Italian, since in those languages the quantifiers that can occur in configuration (1a) appear to be a subset of existential quantifiers, including almost only *many/ few/* and numerals. But if we consider other languages, we see that this generalization does not hold at all. On the contrary, we find that there are universal quantificational adjectives and, furthermore, that the class of quantificational adjectives intersects the class of quantifiers rather than being a subset of it. This observation reinforces the apparently problematic proposal that for each quantifier the speaker must learn whether it can have the function of the head of the quantified construction, or that of a modifier, or both. The lexicon is therefore the only place where this can be done.

We will go on to review suggestive evidence from Romanian and German.

2.1. Romanian. Romanian has two different lexical entries for the dual universal quantifier: *amîndoi* and *ambii*. The former clearly behaves like the universal quantifier *toți*, while the latter is parallel to a prenominal adjective such as *bieții* ("poor"). We will now see some tests that show this Q-vs.-AP distinction.

Universal quantifiers in Romanian are followed by an articulated element, as in (4) while prenominal adjectives are articulated themselves, as in (5):

(4) a. au venit toți băieții frumoși
have come all boys-the nice
b. *au venit toții băieți frumoși
have come all-the boys nice

(5) a. *au venit bieți băieții
have come poor boys-the
b. au venit bieții băieți
have come poor-the boys

Amîndoi in (6) patterns with the quantifier *toți* in (4) while *ambii* in (7) patterns with the prenominal adjective *biet* in (5):

(6) a. au venit amîndoi bàieții frumoși
have come both boys-the nice
b. *au venit amîndoii bàieți frumoși
have come both-the boys nice
(7) a. *au venit ambi(i) bàieții frumoși
have come both-(the) boys-the nice
b. au venit ambii bàieți frumoși
have come both-the boys nice

In Romanian, as well as in Hebrew, quantifiers can appear in postnominal position. This can be analysed, following Shlonsky's (1991) proposal on Hebrew, as movement of the complement of Q to Spec QP. Again, *amîndoi* behaves as a quantifier, allowing movement of its complement to SpecQP in (8a), parallel to *toti* in (8b), while *ambii*, does not in (9a), neither does an adjective like *biet* in (9b):

(8) a. au venit vecinii amîndoi
have come neighbours-the both
b. au venit vecinii toți
have come neighbours-the all
(9) a. *au venit vecini(i) ambi(i)
have come neighbours-(the) both-(the)
b. *au venit vecini(i) bieți(i)
have come neighbours-(the) nice-(the)

With respect to the discontinuous position of the quantifier, the two items again display the same Q vs. A asymmetry. Universal Qs can appear in discontinuous position (as in (10)), adjectives cannot (as in (11)):

(10) a. vecinii au venit amîndoi
neighbours-(the) have come both
b. vecinii au venit toți
neighbours-(the) have come all
(11) a. *vecini(i) au venit ambi(i)
neighbours-(the) have come both-(the)
b. *vecini(i) au venit bieți(i)
neighbours-(the) have come poor-(the)

The same happens for quantifiers linked to clitics:

(12) a. i-am vàzut pe amîndoi
[I] them-have seen both

b. i-am vàzut pe toți
[I] them-have seen all

(13) a. *i-am vàzut pe ambi(i)
[I] them-have seen both-(the)
b. *i-am vàzut pe bieți(i)
[I] them-have seen poor-(the)

Romanian therefore provides us with evidence that universal quantifiers can have the function of modifiers of the noun, and furthermore that there are some quantificational adjectives that are not homonimous to a quantifier.

2.2. German. Romanian is not the only language with lexical items specialized to function as quantificational adjectives. German, has two of them: *ganzen* and *meisten.* In (14a) they clearly display the adjectival weak ending *-en* and in (14b) they appear to be unable to be the head of a quantified nominal, in the first nominal position, nor can they appear in discontinuous position in (14c):

(14) a. ich kenne die ganzen/ meisten Kinder in dieser Schule
I know the all/ most children in this school
b. *ich kenne ganze/ meiste/ Kinder (in dieser Schule)
I know all/ most children in this school
c. die Kinder kenne ich alle/ *ganze(n)/ *meisten
the children know I all/ all/ most

German also displays a universal quantifier which can have both functions, namely the dual *beide. Beide* can appear either in the first nominal position or after a determiner:

(15) a. beide Gäste sind weg
b. die beiden Gäste sind weg
"both guests have gone"

Adjectival *beide* in (15b) crucially has the weak adjectival ending *-en* which is missing in (15a), and may even be preceded by an adjective such as *erst* ('first') in (16a), on a par with other numeral adjectives, as in (16b):

(16) a. die ersten beiden/ die beiden ersten Bücher
the first both/ the both first books
b. die ersten zehn Bücher/ die zehn ersten Bücher
the first ten books/ the ten first books

The evidence from Romanian and German clearly shows that the observation which seemed true for Italian and English that quantificational adjectives are a subset

of existential quantifiers is spurious.

Notice, in passing, that comparing English *most* with the German *meisten*, we can assume that *most* in English is actually preceded by the empty determiner that Abney (1987) assumes for all quantified expressions. The impossibility in English vs. the necessity in German for a definite article to appear will be due to independent properties of the two languages. The generic null article in German, as a matter of fact, has a much more restricted application than its counterpart in English. This can solve a longstanding problem, mentioned in De Jong (1987) of classification of most, which appears to behave as a "weak" quantifier (in the sense of Barwise and Cooper (1981)), namely as a quantifier preceded by a definite article.

2.3. *The structural position of quantifiers.* The data briefly discussed so far neatly distinguish two classes of quantifiers. None of them can be unified with other so-called determiners. This is trivial for quantificational adjectives, given that they can co-occur with determiners; but it appears to be correct for quantifier heads as well, according to the following tests.[2]

Quantifiers have selectional properties over the nominal projection, while determiners do not:

(17) a. many/ three/ some of the boys
b. *the/ these of the boys

As Cardinaletti and Giusti (1989, and subsequent wairk) argue, existential quantifiers can select an indefinite partitive nominal (*boys*, in *many boys*) or a definite partitive PP (*of the boys* in (17a)). Determiners, as other functional projections, on the contrary, do not have selectional properties on the lexical entry they embed.

Quantifiers can embed personal pronouns, which are possibly DPs, while determiners cannot:

(18) a. you all/ you three
b. **you the/ you these

This follows if the DP does not include the quantifier phrase.

No determiners other than quantifiers can appear in discontinous position. This last property is expected if we assume Shlonsky's reformulation of Sportiche's (1988) proposal that the discontinous position of the Q is the effect of movement of its complement, complemented by a rather reasonable restriction of movement to "perfect projections" in the sense of Grimshaw (1991):

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2 For a more detailed description cf. Giusti (1991).

(19) a. children are all noisy
b. *children are many noisy
c. *children are these noisy
(20) a. li ho visti tutti
[I] them saw all
b. ne ho visti molti
[I] of-them saw many
c. **li/ne ho visti i/ questi

In (19a) and (20a), we see movement of a full projection (a lexical noun such as *children* in (19a) and a clitic pronoun such as *li* in (20a). The unacceptability of (19b) can be accounted for by Cardinaletti and Giusti's proposal that existential quantifiers assign partitive case to their complement DP, complemented by the assumption that a partitive DP cannot land in the prenominal subject position. This is supported by comparison with (20b) where a partitive clitic is allowed, because the clitic is not moved to a case assigning position. The unacceptability of (19c) and (20c) is due to the fact that the determiner is included in the nominal projection and cannot be left in place after this has moved.

The structure we obtain from the discussion above is the one in (21):

(21) [QP [Q' Q° [DP [D' D° [AgrP QP [Agr' ecc. N°]]]]]]

In (21), the categorial status of a quantified nominal is QP; Q embeds a perfect nominal projection (DP); while quantifiers preceded by D are internal to DP like adjectives. I shall remain vague with respect to the position of other classes of adjectives. For the rest of the paper I will rely on Cinque's (1990) and Crisma's (1991) analysis of the position of the adjectives inside the noun phrase. I will therefore assume intermediate AgrPs between DP and NP without discussion.

3. *Demonstratives*. In English and other well-studied languages, demonstratives appear to be in complementary distribution with articles. This is not true in a whole series of other languages, not necessarily related to each other, a sample of which includes Greek, Hungarian, Gothic, Romanian, Macedonian, Indonesian, according to Lundeby (1965) and Heinrichs (1954):

(22) a. Greek: autòs o aner ("this the man")
Javanese: ika n anak ("this the boy);
Hungarian: ez a haz ("this the house")
b. Macedonian: toj covek-ot ("this man-the)
c. Gothic: pan wig jainan ("the way this")
d. Romanian: omul acesta ("man-the this")

Notice that it is very difficult to find another property of the determiner system of these languages that can correlate with this. In (22a) we see the order Dem - Art - N; in (22b) Dem - N+Art; in (22c) Art - N - Dem; in (22d) N+Art - Dem. In other words, demonstratives appear to be pre- or post-nominal regardless of the nature of the article.

This variation in word order reminds us of the variation found in the position of the adjectives which can also appear pre- or post-nominally in various languages. The minimal assumption is therefore that demonstratives are adjectives (namely modifiers inside DP, and not in the head D) at least in those languages in which they co-occur with determiners. A further step will be to extend this analysis to languages in which they do not co-occur with the article.

Romanian is particularly interesting in this respect because it displays a construction with no article (23a) parallel to the one we find in English, together with a construction with an article, as in (23b). It thus allows us to compare the two constructions abstracting away from other language specific properties:

(23) a. acest/ acel bàiat
this/ that boy
b. bàiat*ul* acest*a*/ acel*a*
boy-il thisA/ thatA

Notice that in (23b) the demonstrative is postnominal and carries the invariable morpheme *-a* which also appears when the demonstrative is pronominalized.

Following Grosu (1988), I will assume that the articulated noun is the result of movement of the head N to D in which the article is inserted. This movement is strongly supported by the fact that the articulated noun is always in the first nominal position:

(24) a. un frumos bàiat
a nice boy
b. bàiatul frumos
boy-the nice

Prenominal adjectives are possible, but in that case they must host the enclitic article:

(25) a. frumosul bàiat
nice-the boy
b. *frumos bàiatul
nice boy-the

Notice that in all cases there is only one occurrence of the enclitic article. Reduplication of category DP to treat cases like (22d)/ (23b) is therefore not justified

in Romanian. In what follows I will claim that it is not justified in other languages as well, and possibly in all languages.

Movement of the noun across the position of *acest* is supported by the observation that the position of *acest* remains invariable with respect to the other elements of the nominal phrase:

(26) a. aceste două frumoase fete
these two nice girls
b. fetele acestea două frumoase
girls-the these two nice
c. *fetele două acestea frumoase
girls-the two these nice
d. *fetele două frumoase acestea
girls-the two nice these

(26) clearly shows that the demonstrative does not move from its basic position and that the postnominal position is an effect of N movement to D, which is independently needed in Romanian. Interestingly the demonstrative cannot be crossed over by an ordinary adjective (27a), even if this adjective can appear in prenominal position when the demonstrative is not present, regardless of the presence of another adjective (27b):

(27) a. *importantele acestea (recente) màsuri
b. importantele recente màsuri
important-the (*these) (recent) measures

It is rather straightforward to treat the contrast between (26a) and (27a) as a minimality effect. This amounts to saying that the demonstrative is in a Spec position in all cases in Romanian and can be crossed over only by a head (N), and not by a maximal projection such as an AP. The *-a* morpheme that we find in the postnominal demonstrative is therefore to be taken as a Spec-head agreement marker that signals the presence of a trace in the intermediate head modified by the demonstrative.

If this is correct we expect that, if there are modifiers of the noun generated in a position higher than the demonstrative, these elements will be able to appear at the left side of the demonstrative and, furthermore, without triggering Spec-head agreement. This prediction is born out. The examples in (28) are attested in the descriptive work by Lombard (1974): [3]

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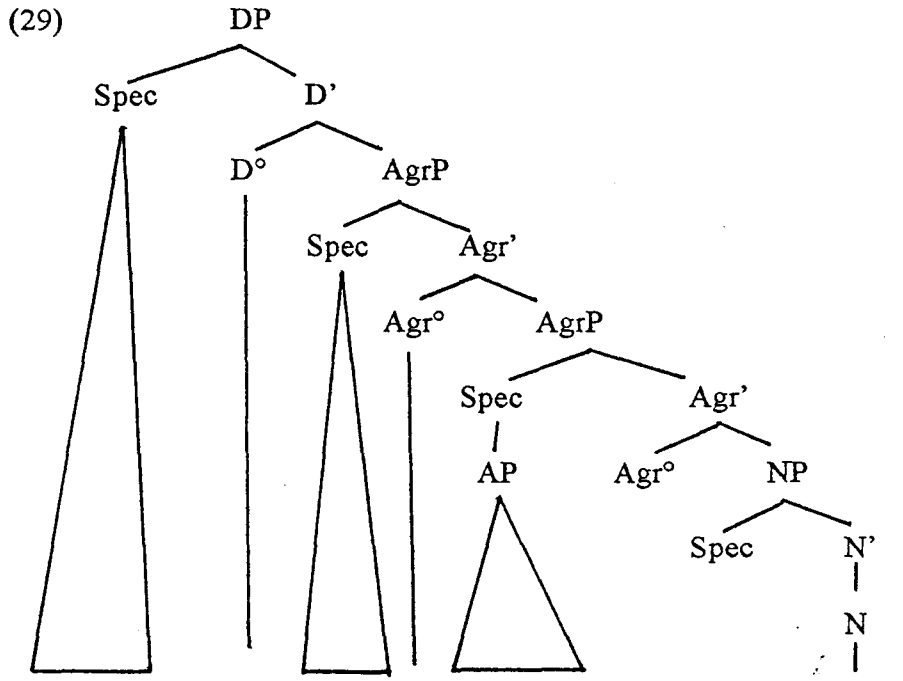
3 My informants have judged the phrases in (28) as marginal, however they made a significative distinction with respect to the inacceptability of (27a) above)).

(28) a. ?ambii acești vecini/ *acești ambi(i) vecini
both these neighbours/ these both neighbours
b. ?ultimii acești ani de studiu/ acești utimi ani de studiu
last-the these years of study/ these last years of study

As was noted above, the quantificational adjective *ambii* is always articulated. This can be taken as evidence to assume that *ambii* is directly generated in Spec DP. This is supported by the fact that *ambii* is one of the very few adjectives that can precede a demonstrative in Romanian, and is the only one that cannot follow it, as shown in (28a). Something very similar can be claimed for *ultim* in the first part of (28b). The only difference between *ambii* and *ultim* is that the latter does not have to be generated in SpecDP; on the contrary, as most other adjectives is preferably inserted in a lower Spec, as is apparent in the second part of (28b). Crucially in all cases of (28) Spec-head agreement with the demonstrative is not triggered, given that in any case nothing moves.

The basic position of a demonstrative in Romanian can therefore be taken to be lower than DP, and in an intermediate functional projection, whose head hosts the trace of the moved noun:

(29)



What remains to be explained is why prenominal *acest* may not co-occur with a

definite article. I propose that *acest* can move to Spec DP if DP is not filled by a lexical element. A sort of doubly-filled DP Filter can account for the non existence of *acest bàiatul* with *acest* in SpecDP and *bàiat* moved to D to incorporate the enclitic article *-ul*.

In (29c) I am not assuming that the head D incorporates into the head of the AP in its Spec, but - more in line with current assumptions on the relation within a head and its Spec - I assume that the adjective has a marker of Spec-head agreement. This richness in the morphology of the Spec allows, therefore forces, the head to be empty. The impossibility of *acestul* follows from the same assumption: *acest* is already marked for non-oblique case and does not need any further morpheme to allow Spec-head agreement with the head D. When the DP is assigned oblique case, the demonstrative is inflected for it: *acestui* (*cf. *acestului*). If we take D to be a marker of case, and not of definiteness or referentiality, we expect that elements of different lexical classes can minimally differ with respect to inflectional morphology. What is always important is that the case features are shared by the head and the Spec in the appropriate way.

If this is true in Romanian, we have no reason to think that it should not be true in other languages. The only difference between Romanian and English can therefore be the possibility in Romanian to have a demonstrative in SpecAgrP, while we can think that in English the demonstrative must always be in Spec DP.

4. *Possessives*. The same reasoning can hold of possessives. We need not to go as far as Romania to encounter adjectival possessives! Italian provides us with a clear example:

(30) a. la mia penna
b. *mia penna
my pen

And yet, even in Italian, there are cases in which a possessive cannot co-occur with an article. With kinship terms, the Italian possessive apparently behaves like a determiner, as its English cognate, as in (31). However, if a modifier is added to the construction, the article shows up again, as in (32). This happens also when the head noun is modified by a diminutive, as in (33), or even when the number is plural, as in (34):

(31) a. (*il) mio padre/ fratello/ nonno/ cugino/ zio
b. my father/ brother/ granfather/ cousin
(32) a. (?)?mio fratello minore/ (?)?(il) mio cugino di Venezia
b. il mio fratello minore/ il mio cugino di Venezia
(33) a. *mio fratellino/ cuginetto
b. il mio fratellino/ cuginetto
my little-brother/ little-cousin

(34) a. *miei fratelli/ cugini/ zii/ nonni
b. i miei fratelli/ cugini/ zii/ nonni

I shall not discuss why this is so. I will just take the contrasts between (31) and (33)-(34) as an argument to claim that the lack of the definite article in (31) cannot be taken as evidence for the D status of the possessive, since this sharply contrasts with minimally different cases.

Parallel to what has been said above for demonstratives, I propose that the possessive, in all languages discussed here and hopefully much more in general, is in SpecAgrP when it co-occurs with the article and in SpecDP when it is in complementary distribution with it. Due to a "doubly-filled DP Filter", the possessive cannot precede the article in the languages we have observed. The different distribution of the possessive in various languages is therefore to be reduced to the movement or the base generation of the possessive in SPec DP or in SpecAgrP. Further research is needed to motivate this difference in each case.

For example, in German the possessive must move when Spec DP is empty, but it can appear in SpecAgrP if SpecDP is filled by a demonstrative. This is shown by the contrast in (35), which would be quite mysterious if possessives, demonstratives and articles in German were all to be inserted in the same position:

(35) a. *die meine Frage
b. diese meine Frage

Notice that the unacceptability of (35a) cannot be reduced to a trivial structural complementarity between the possessive and the article specific to German, since in this language we find cases like (35c) in which the possessive can co-occur with an article when the noun is null:

(35) c. deine Fragen wurden beantwortet, meine/ die meinen jedoch nicht
your question was answered, mine-[strong]/ the my-[weak] however not

Even if, once again, I am not yet in the position of explaining why this is so, the possibility of the co-occurrence of the possessive with the definite article, and the fact that in this case the possessive displays weak adjectival morphology can be taken as supporting evidence for the independently proposed hypothesis that possessives are not determiners, even in those languages where they do not co-occur with an article in most cases.

5. *Articles.* What is left for the head of DP is the article. This is not so surprising if one considers that functional categories build closed classes. And DP is considered by all studies as a functional projection. Let us now review some properties attributed to DP in recent literature.

According to Grimshaw (1991) DP is the perfect projection of N in a fashion

parallel to that in which CP is a perfect projection of V. This is in agreement with Szabolcsi's (1992) claim that both DP and CP have the function of saturating a predicate, namely of turning a predicate (VP or NP) into an argument.

We can go further in the parallelisms between the two projections with the observation made above that in certain languages, both DP and CP appear to undergo the restriction expressed by the doubly-filled COMP Filter of Chomsky and Lasnik (1977). In other words, even if it can be assumed that they have two positions, a Spec and a head, on a par with other maximal projections, in certain languages they can only be filled by one element, either a maximal projection in Spec, or a head.

One can conjecture that this common property is to be derived from their status of "perfect projections", or "saturators". It could be thought that in all languages saturators need to be instantiated by one element and that in some language the condition turns into one and only one element. Why this should be so has been the topic of much literature, but no much consensus has ever been reached on this problem.[4]

The analysis that has been presented so far implies that D is instantiated for syntactic reasons. It therefore predicts that in at least some cases the element filling D is not inserted for semantic purposes.

I will now present some evidence From German, Romanian and Mainland Scandinavian that appears to support this claim.

5.1. *German.* In German, mass nouns generally lack a lexical article, on a par with English:

(36) a. Ich liebe Kaffee
b. I like coffee

If, however, the mass noun is in an oblique case, the article must appear:

(37) a. Ich ziehe Kaffee *(dem) Tee vor
b. I prefer coffee to tee

Vater (1991) claims that the dative article *dem* in (37a) is inserted to mark the indirect object in order to disambiguate the two complements of the predicate *vorziehen* ("prefer"). As a matter of fact, the generalization to be made is stronger than that: Even if the sentence is unambiguous, a mass noun assigned oblique case (genitive or dative) must be articulated:

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4 Cf. among others Taraldsen (1986), Giusti (1988), Rizzi (1991).

(38) a. die Zubereitung *(des) Kaffees
b. the preparation of coffee

In (38a), *Kaffee* is the only possible complement of *Zubereitung*, since no other argument is present. Notice also that genitive is the only case that could be assigned in that context and, furthermore, that it is recoverable from the *-s* ending on *Kaffees*. Nevertheless, all this is not sufficient to allow in (38a) the null determiner that appears in accusative contexts like (36a). In a framework in which an article is the syntactic realization of Case, as the one developed in Giusti (1992), the contrast between (36a) on the one hand and (37a) and (38a) on the other can be derived by just stating that oblique case in German cannot be null.

5.2. *Romanian*. In several respects, the (non)-occurrence of the definite article in Romanian is not related to the (in)definite meaning of the noun phrase and only dependent on the syntactic requirements of, possibly, case assignment, as shown by the contrast between (39)-(40) and (39)-(40):

(39) a. profesorul a mers la Paris
b. *profesor a mers la Paris
professor-the went to Paris
(40) a. am citit cartea
b. *am citit carte
[I] read book-the
(41) a. l-am vàzut pe profesor
b. *l-am vàzut pe profesorul
[I] saw PE professor(*the)
(42) a. îti multumesc pentru scrisoare
b. *îti multumesc pentru scrisoarea
[I] thank you for letter(*the)

In (39)-(40) we see noun phrases in subject and object position. In these positions we cannot find a singular bare noun. The article is obbligatory. In (41)-(42) we see noun phrases in the position of object of preposition. The interpretation of these noun phrases is definite, but the article cannot appear. It is not difficult to reduce this phenomenon to some case marking property of the preposition. In (39)-(40) the article is present not (only) to allow the definite interpretation, but to signal nominative/ accusative Case. In (41)-(42) this is not necessary since the preposition can accomplish the same function. Because it is not necessary, the article is not allowed, as is often the case in syntax and differently from what happens with semantically relevant elements.

Interestingly the article is obbligatory again when the complement of the preposition is modified in some way, as shown in (43)-(44):

(43) a. l-am vàzut pe profesorul tàu
b. *l-am vàzut pe profesor tàu
[I] saw PE professor-the your
(44) a. îti multumesc pentru scrisoarea interesantà
b. *îti multumesc pentru scrisoare interesantà ecc.
[I] thank you for letter-the interesting

Given that D may (and therefore must) be lexically empty when a preposition properly governs DP in (41)-(42), and given that in the framework assume so far the adjectives in (43)-(44) cannot interfere in any way in the relation between the preposition and D, the licencing of D cannot be different in the two cases. The contrast between them must therefore be due to something else.

A possible reason for the necessity of the article in (43)-(44) could be a requirement that the specifier where the adjective is inserted be properly governed by a lexical D. This analysis is not only plausible; it also captures an independent phenomenon that is found in Scandinavian and that will be discussed in 5.3. below.

Romanian presents further evidence to claim that at least in some cases the article cannot be related to semantic interpretation. Consider (45):

(45) a. am cumpàrat un ziar
I bought a newspaper
b. am cumpàrat un*ul*
I bought one
(46) a. n-am cumpàrat niciun ziar
I didn't buy any newspaper
b. n-am cumpàrat niciun*ul*
I didn't buy anyone

The b.-sentences in (45)-(46) are the pronominalized versions of the a.-sentences. In (45), we see that the existential indefinite quantifier *un(ul)* (a/ one) is pronominalized by the morpheme *-ul* that is exactly identical to the definite article and can hardly be claimed to be something else. The same happens to the negative existential *niciun(ul)* ("none") which for sure cannot be claimed to be referential or even definite in any sense.

This data would be mysterious if we took *-ul* to be a semantic element that signals definiteness or referentialiality. However, if we take the article as a marker for case, we can explain its presence in (45b) and (46b) by claiming that the empty complement of the quantifier must be identified by some features in D, such as gender, number and case, which are realized on the noun in (45a) and (46a).

5.3. *Mainland Scandinavian*. Danish, Swedish and Norwegian display an enclitic definite article on a par with Romanian:

(47) a. un om/ omul
b. en man/ mannen
a man/ man-the

Taraldsen (1988) for Norwegian, Delsing (1988) for Swedish proposed, in a DP framework, that the head N moves to D to incorporate the article, parallel to Grosu's proposal for Romanian. However, if we consider a more complex noun phrase, we immediately notice some crucial difference between Mainland Scandinavian and Romanian that cannot be captured by such analysis:

(48) a. un bàtrîn om/ omul bàtrîn
an old man/ the old man
b. en gammal man/ den gamle mannen (Swedish/Norwegian)
an old man/ the old man-the

As was noted above, Grosu's N-movement analysis in Romanian is strenghthned by the different word order of the two parts of (48a), where it is apparent that the head N is diplaced from its basic position to the position of the article. But in (48b) we find that the articulated noun has not been displaced with respect to other elements of the phrase. Furthermore, in (48b) an extra definite article is inserted before the adjective.

Delsing (1988) analyses the second phrase in (48b) as an instance of double definiteness, parallel to the co-occurrence of a demonstrative with an article, which is also possible in Scandinavian. However, there are some problems with this analysis. As a matter of fact, the second phrase in (48b) must be distinguished from its counterpart (49) with a demonstrative for two reasons:

(49) a. denna (gamle) mannen (spoken Swedish and Norwegian)
b. denna (gamle) man (Standard Swedish)

According to what is said in Delsing (1988), Holmberg (1986), the demonstrative *denna* contrary to the definite article *den* may co-occur with an article only in spoken Swedish and in Norwegian, however not in Standard Swedish. Furthermore, the co-occurrence of the demonstrative *denna* with an articulated noun is not dependent on the presence of an article, contrary to what is observed for the unbound article *den*:

(50) a. *den mannen
b. denna mannen (Spoken Swedish and Norwegian vs. *Standard Swedish)

It seems worthwile trying to give an alternative analysis. Let us consider the Danish counterpart of (47b) and (48b):

(50) a. en man/ mannen (cf. (47b))
b. den gamle man(*nen) (cf. (48b))

From (50a) we can safely claim that Danish can be paired with the other Scandinavian languages in that it has an enclitic definite article. A crucial difference arises in (47b), however, where the presence of the adjective forces the article to be an unbound morpheme.

The comparison between Romanian and Danish suggests that the adjective somehow blocks the incorporation of the noun into the article in Danish but not in Romanian.

At first sight, this would force us to assume that adjectives are intervening heads between D and N, contrary to what has been assumed all along in this paper. However, this is not necessary if we make an independently needed distinction.

Germanic languages, contrary to Romance languages, do not display postnominal adjectives. This difference in word order is analysed by Cinque (1990) starting from the same basic structure for both types of languages, and assuming N-movement to intermediate functional heads only in Romance:

(51) a. un vecchio uomo/ un uomoi vecchio ti
b. an old man/ *a mani old ti

The fact that the order A N is basic for Italian as well as for English is shown in the first part of (51a). In (51b) the noun has moved skipping over the adjective. In English this movement is not possible.

Romanian and Danish are not exceptional in this respect: In (52) they display the same contrast that we just found between Italian and English in (51):

(52) a. un bàtrîn om/ un omi bàtrîn ti
b. en gammal man/ *en mani gammal ti

In definite noun phrases movement of the noun goes further in Romanian, and appears to be blocked in Danish:

(53) a. omul bàtrîn
b. *cel bàtrîn om[5]
c. *bàtrîn omul
(54) a. *mannen gamle
b. den gamle man
c. *gamle/gammal mannen

---

5 In Romanian *cel* is very near Mainland Scandinavia *den* in that it appears as a nominal article in a few cases (cf. *cei trei bàieți*, "the three children"), and is used to nominalize adjectives (cf. *cel bàtrîn, den gamle*, "the old one"). I will not go into this comparative question here.

We have now some reasons to assume that N does not move in Danish, contrary to what happens in Romanian.

If we dispense with N-movement *tout court* in Danish, the incorporation of the enclitic article with the noun in the simple case (47b) can alternatively be analysed as lowering of D to N. Lowering of the article leaves a trace in D that will be governed by its antecedent at LF in the usual way (cf. Chomsky (1988)). The sequence in (47b) is therefore permitted by the principles of the grammar. What appears to be unallowed is an adjective in the complement of a non lexical D, as in (54b). This is the case in Romanian as well, as was pointed out in (43)-(44) above.

The insertion of *den* in all Mainland Scandinavian languages is required to licence the Spec where the adjective is inserted. This requirement forces insertion of the enclitic article plu movement of the noun in Romanian object of prepositions seen in (43)-(44) above.

Let us now go back to the Swedish example (48b). Given that Mainland Scandinavian languages are so similar to each other in so many respects, it would be very peculiar to assume that Swedish and Norwegian are so different from Danish to display an extra projection of DP to be inserted at some point in the structure. Furthermore, such an assumption would miss important general properties of the structure of noun phrases across languages. I propose to analyse the apparent enclitic article in (48b) as an Agr morpheme on the noun, parallel to the *-s* morpheme we found in German on the noun *Kaffes* in (38a). A structure with intermediate AgrP projections such as the one I have implicitly assumed along the paper and is motivated in various pieces of literature (cf. among others Picallo (1990), Ritter (1991)) will provide the position for such a morpheme wihtout any additional assumption.

5.4. *Some conclusions.* In this section we have seen clear cases in which an article is necessary or impossible for syntactic reasons, regardless of the referential/ definite status of the nominal in question. In particular we have seen that the article must be inserted to instantiate DP, when nothing else is inserted in this projection. But when the head of DP is allowed to be null for some other reason (as is the case of PPs in Romanian) the article cannot be inserted. We have also seen that the article must be inserted, if nothing else is in DP, to allow the Spec of the lower projection to be filled (possibly to be generated at all).

In so doing, I have provided a simple and principled analysis for the different word orders to be found in the noun phrase in Romanian and Scandinavian, and for some minimal morphological variation among the Mainland Scandinavian languages.

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Translating with ROSIE

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TRANSLATING WITH ROSIE

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1. Abstract

We present a system for machine translation which is based on *Rosie* a system for reference retrieval in texts(see Delmonte & Bianchi 1991a/1991b) which in turn works on LFG. In this sense, the system is neither an interlingua nor a transfer system because it must allow for modularity which is an inherent feature of LFG-based systems(see Kaplan et al., 1989). *Rosie* is a very powerful analyzer which computes anaphora resolution at discourse level: it is crucial for Romance languages which possess typologically the option of pro-drop. One of the main reasons for using a system with anaphora resolution at text level, is that pro-drop causes **gender** to be available only by means of anaphoric binding. More examples are provided in the text below.

2. Introduction

In our opinion, the implementation of any natural language processor and/or generator, should follow consistently a linguistic theory. Linguistic theory makes available to the computer scientist the tools to implement elegant and and simple systems, which in turn may also attempt at explaining why a given psychological process "performs" that way. The foundation of a theory of performance is stated in Bresnan's (1982,xxii-xxiii) introduction, which we endorse entirely. When building up a translation system, choice of the theoretical framework in which the system will be embedded is of paramount importance. As well be shown in the paper, a completely different set of procedures may have to be set up and these are strictly dictated by choices made at a theoretical level. Thus, in principle, it will be possible to reach an explanatory theory of translation only in as far as the underlying linguistic theory is capable to support it.
In compliance with that, we take performance theory to be the founding criterion of translation systems; implementations that comply with this criterion will not only

be elegant and simple but also show a high level of integration in their internal organization.
As in Kaplan et al.(1989) we use LFG as a theoretical backbone; however, differently from their approach, our system is not a hybrid approach in that we only use LFG representations enriched by a number of submodules for the computation of temporal-aspectual relations, as well as a module for logical form, and a system for the resolution of anaphora in discourse which all bear on a final f-structure output. This output is then used as the source and a number of transfer rules are used to map it onto a target f-structure which is feeded on to the target grammar.
No use is made of a semantic representation, nor can we define our system as been both transfer-based and interlingua-based.

3. Modularity within the Theory

We follow strictly LFG theory in that we make use of a highly modular system made up of these levels of linguistic representation:
- c-structure
- f-structure

Onto f-structure the following modules are made to interact:
- a binding module, for pronominal binding within the sentence(see Delmonte & Bianchi, 1991a);
- a module for temporal aspectual computation based on tense and aspect feature values, which in turn is cast on Reichenbach's tripartite system of relation and Allen's system of temporal inferences;
- a module for scope assignment to quantifiers based on Shieber and Hobb's algorithm with a number of additions and modifications (see Delmonte, 1990);
- a module for the resolution of anaphora in discourse(see Delmonte & Bianchi, 1991b);

Finally, there is a module for generation,
- the generation algorithm, GraFo.

4. The pronominal argument

In particular, Italian possesses a set of free pronouns made up of three types of lexical elements: clitics, i.e. unstressed pronouns; independent pronouns, i.e. stressed personal pronouns which may also be used for contrast and emphasis;

and empty subject and object pronouns. Clitics and empty pronouns may be used as variables at c-structure levels when required. In addition, Italian also possesses a set of reflexive pronouns which are made up of two different types of lexical elements: short anaphors, i.e. Nuclear reflexives not Subjective, however; and long anaphors, i.e. not Nuclear and Subjective.

As to the set of possessive pronouns, Italian has the same variety as English but with internal differences: as opposed to what happens in English, free pronouns in Italian cannot be bound to a quantifier, but anaphoric pronouns can. Also, arbitrary or generic reading is only allowed with anaphoric pronouns which however could be bound to a local antecedent, in case there is one. This must also be computed differently from what happens in English, where the pronoun "one's" is unambiguously arbitrary in reading.

Possessive pronouns must be assigned an antecedent in Italian in order to be assigned gender adequately: whereas in Italian Gender is the result of syntactic agreement with the local Noun head, in English it is the result of a binding rule which assign Gender on the basis of the possessor's. The Possessor might as well be located in a separate sentence, hence the need to proceed to anaphora resolution at discourse level. Besides, quantifier bound possessive anaphors must be translated as normal possessive pronouns in English, and this will ensue from the computation of the binding module at sentence level.

As to empty pronominals, i.e. little pro's, Gender features must be recovered from the antecedent given that it may or it may not be made available according to the Verb structure. In case a compound verb has been used in Italian, past participle may assign gender to the subject pro whenever auxiliary "be" has been used, be it with a reflexive use of a transitive verb, be it with a passive or middle use. Also auxiliary "be" is always used with unaccusatives and a subset of intransitive unergatives like "correre"/run which may assume either "be" or "have" as auxiliary according to its aspectual value. Some examples follow,

These examples are all taken from Cardin(1982):

1. Backward pronouns bound by a quantifiers or generic, however in Italian only little pro is allowed,

a. each victim expects that he will survive (ciascuna vittima si aspetta che pro sopravviverà)
b. each victim expects that they will survive ≠
the variable reading is available: ("x ∈ the victims) (x expects that x will survive)
* the set reading is not available in Italian: ("x ∈ the victims) (x expects that the victims will survive)
2. Singular pronouns bound by singular quantifiers require a possessive anaphor in Italian,
c. there are six legally operated and licensed poker cardrooms... As its(propria/*sua) major source of income, each club collects a playing fee from the players every half hour...
d. Al Bowling and Tom Rentschler... In his(propria/*sua) own way, however, each man is petitioning for the same kind of Administration.
e. Scrimshawing took time. And, once his(propria/*sua) ship had reached the whaling grounds, time was something every whaleman had a great plenty of.
3. Plural pronouns with the variable reading are allowed also in Italian,
a. When their(loro/proprio) government tenure ends, many officials simply move to new offices...
b. Did you know that when their(loro/proprie) wives leaves them, two men in five go bananas?
4. Bound by a quantifier: variable reading also requires the anaphoric pronoun in Italian,
The students noted that before PRO entering his(propria/*sua) plea, each defendant was advised by Judge Doyle of his(propri/*suoi) rights.
5. Little pro can be bound by a definite NP which has generic reading,
- By the time he(pro/*egli) reaches the age of 70, the average American consumes 13 tons of beef...
As can be seen, possessive pronouns may be bound by a quantifier in Italian only when plural is used; otherwise, "proprio" must be used in place of "suo". As to subject pronouns, they can never be bound to quantifiers if lexical: only little pro's can.

5. Thematic Divergencies in LFG

We shall now proceed by comparing our system to the one presented by Dorr(1990). The UNITRAN system solves the thematic divergencies (hence TDs) problem by mapping an underlying lexical-conceptual structure to a syntactic structure (and vice-versa), on the basis of a set of general linking routines and their associated mechanisms(see Dorr,128). According to her analysis, there are two types of TDs that show up in the translation of a source language to a target language: the first type consists of a reordering of arguments for a given predicate, and the second type consists of a reordering of predicates with respect to their arguments or modifiers.

In her system predicate-argument structures are deep structures constituted by the base phrase marker representing a set of maximal projections produced by the X-bar system. The nuclear information used by the system is constituted by a different set of uninstantiated lexical conceptual structures, called RLCS, associated to each verbal predicate, for each language which include language specific information. In turn this RLCS is instantiated in order to represent the input string from the source language and this is called CLSC, which is used as an interlingua or language independent form. Once the lexical mapping has been successfully carried out, the CLCS must be mapped onto the syntactic structure of the target grammar and then the final sentence form will be generated. The mapping is achieved by a set of General Linking Routines which must cover both the mapping from source syntactic structure to CLCS positions, and the mapping from the CLCS to target syntactic structure. As appears, in Dorr's system three steps are crucial in order to achieve the final result: from RLCS to CLCS, from CLCS to target syntactic representation, from source syntactic representation to target syntactic representation. In particular, in her "like-gustar" example (ibid,132), she has to allow the syntactic realization of the logical subject "w" and the syntactic realization of a non-subject argument (say z_k) to switch places between the source and the target language. This is achieved in the phrase marker by an argument reversal.

In our system only two steps are required: from source f-structure onto the General Mapping Routine(hence GMR),

and from the GMR onto the target grammar to generate the output translated sentence form.
The problem of thematic divergencies or translational equivalents in LFG has a different status from what happens in GB framework as discussed by Dorr. The range of variation may affect the order in which s-roles and GFs are associated, or the type of GF associated to a given s-role. Differences in GFs are automatically encoded into differences of constituency at c-structure level. Consider the case of the English counterpart of the verb "piacere", i.e. "like",
c)pred_v(like,psych,state,emotive,np/subj/experiencer, np/object/theme_emot).
The two lexical forms in a) and b) differ only in the association of s-roles to GFs: in particular, in the Italian lexical form the experiencer is associated to an OBL, whereas in the English one it is associated to an OBJ. This fact is simply accounted for by the GMR internal rationale which gives priority to s-roles in the transfer process and disregards GFs.
Consider now a constituency divergency as represented by the case of "be hungry" as opposed to the Italian (but also French and German) corresponding predicate "avere fame", where the verb BE has been turned to HAVE. The two lexical forms are listed below,
d)pred_v(be,copul,state,evaluative,np/subj/theme_bound/[_], acomp/prop/[_]).
e)pred_v(avere,copul,state,evaluative,np/subj/theme_bound/[_], ncomp/prop/[_]).
As can be seen from a comparison of the two lexical forms, the purported thematic divergency simply amounts to a difference in the association of a GF to the same s-role, the PROP role. The theoretical framework then provides a natural and simple way to adjust this difference in terms of change of constituency. In particular, a difference in a GF which is an open function will certainly carry over to a difference in the lexical realization of a given s-role, because open functions are encoded in terms of their lexical head: i.e. an XCOMP varies in the lexical head according to the value of X which ranges over lexical categories, P,V,A,N. Differently then from what happens with a closed function, an OBL which is turned into an OBJ by the GMR, a propositional argument will require the substitution of the

GF associated to it and this in turn will cause the instantiation of a different lexical head.To find the adjective corresponding to the noun 'fear' the GMR checks every functional change triggering categorial mapping if necessary. Notice that the mapping between different lexical categories is supposed to be an intralingual one.

1. OBJ2:experiencer, VERB, SUBJ:theme_emot
   ==>
   SUBJ:experiencer, VERB, OBJ:theme_emot

italian: al lupo piace marta
english: the wolf likes marta

```
_____source FS_____
prop:main
modo:ind
pred:piacere
tempo:pres
cat:emotivo
funcs:
  obj2:
    role:experiencer
    pred:lupo
    cat:or([animate, human])
    num:sing
    gen:mas
    pers:3
    spec:
      def: +
    indice:'_1'
    tab_ref:
      + ref - pro - ana + class
  subj:
    role:theme_emot
    pred:marta
    cat:or([animate, human])
    gen:fem
    pers:3
    num:sing
    indice:'_2'
    tab_ref:
      + ref - pro - ana - class
idiom:
  funcs:[]
adjs:[]


_____target FS_____
prop:main
pred:like
```

```
tempo:pres
funcs:
  subj:
    role:experiencer
    num:sing
    pred:wolf
    cat:or([animate, human])
    pers:3
    spec:
     def: +
    indice:'_1'
    tab_ref:
      + ref - pro - ana + class
  obj:
    role:theme_emot
    pred:marta
    pers:3
    cat:or([animate, human])
    num:sing
    indice:'_2'
    tab_ref:
      + ref - pro - ana - class
idiom:
  funcs:[]
adjs:[]
```

2. SUBJ:experiencer, VERB, NCOMP:state
==>
SUBJ:theme_bound, VERB, ACOMP:state

italian: tommy aveva paura
english: tommy was afraid

```
_____source FS_____
prop:main
modo:ind
pred:avere
tempo:imp
cat:state
funcs:
  subj:
    role:theme_bound
    pred:tommy
    cat:or([animato, umano])
    gen:mas
    pers:3
    num:sing
    indice:'_1'
    tab_ref:
      + ref - pro - ana - class
  ncomp:
    role:state
```

```
    pred:paura
    num:sing
    gen:fem
    pers:3
    cat:or([emotive])
idiom:
  funcs:[]
adjs:[]

_____target FS_____
prop:main
tempo:past
pred:be
funcs:
  subj:
    role:theme_bound
    pred:tommy
    pers:3
    num:sing
    indice:'_1'
    tab_ref:
      + ref - pro - ana - class
  acomp:
    role:state
    pred:afraid
    num:sing
    pers:3
    cat:or([emotive])
idiom:
  funcs:[]
adjs:[]
```

The same would apply to the couple of predicates, "volere" and "want" which have a PROP argument realized as a closed function, an SCOMP, in the Italian lexical form and as an open function, a VCOMP, in the English one. As Eckert and Heid(1988) also remark in their paper, equivalence conditions in the lexical transfer within LFG may involve control structures, (see, ibid.,181), and this is what will happen when the divergence regards a transfer between a closed PROP function and an open one. The theory has a default lexical rule for functional control which applies to open functions like VCOMP, but no such rule will be called for SCOMPs. In this case, however, the GMR will have the additional task to suppress one argument from the lexical form where the OBJ is the lexically assigned controller of the open function, and this will be computed as the SUBJ of the closed function argument . Here below we list the two lexical forms,

f)pred_v(volere,trans,state,subjective,np/subj/actor/
[+human],scomp/prop/[_]/[subj=x]).
g)pred_v(want,trans,state,subjective,np/subj/actor/
[+human],np/obj/theme_unaff/[+human],vcomp/prop/to/
[subj=obj/theme_unaff]).

There are two more interesting cases which are naturally dealt with in the theoretical framework we propose: the first is the inchoativized or intransitivized form of an otherwise transitive verb like "muovere"/move or "nutrire"/feed. Lexical forms may undergo restructuring in case a lexical redundancy rule has applied and has turned a transitive predicate which has two arguments into an intransitive one, with only one argument. In the sentences,
h) La casa non si mosse/The house did not move
i) Il lupo si nutriva di porcellini/The wolf fed on little pigs
the predicates MUOVERE and NUTRIRE may be computed as intransitive predicates in both languages because the GMR takes as input the information available in f-structure: in turn, the f-structure realization of a lexical form may be the same or be different from the underlying one. The English equivalent naturally treated as intransitives because they are ambiguously classified. The choice of one or the other form depends in our case on the requirements imposed by the source f-structure representation.
The other grammatically interesting case to be discussed regards the case in which two preds subcategorize for a different number of roles/functions, following systematic differences between the two languages.
This is a case of systematic divergence between Italian and English. Italian can freely add a reflexive BENEFactive role to the lexical form of transitive verbs in a systematic way, as shown by the following example,
l) I porcellini si costruirono una casa/The little pigs built a house
Notice that the original lexical form of COSTRUIRE does not contain a benefactive role. This is added by a lexical redundancy rule in the grammar that modifies dynamically the lexical form of certain classes of verbs. As this do not apply to English, the GMR systematically drops the added role from the target FS.

3. SUBJ:agente, OBJ2:benef, VERB, OBJ:tema_aff
==>
SUBJ:agente, VERB, OBJ:tema_aff

Italian: i porcellini si costruirono una casa
English: the little_pigs built a house

```
_____source FS_____
prop:main
mood:ind
pred:costruire
tense:past
cat:accomplishment
subj:
    role:agente
    pred:porcellino
    cat:or([animato, umano])
    gen:mas
    pers:3
    num:plur
    ind:'_1'
    spec:
      def: +
    tab_ref:[+ ref - pro - ana + class]
obj2:
    role:benef
    pred:si
    case:dat
    pers:3
    ind:'_2'
    gen:mas
    num:plur
    spec:
      def: +
    tab_ref:[ - ref - pro + ana + me - subj]
    antecedent:'_1'
     interpretation:specific
obj:
    role:tema_aff
    pred:casa
    cat:or([obj, place)
    num:sing
    gen:fem
    pers:3
    spec:
      def: -
    ind:'_3'
    tab_ref:[+ ref - pro - ana + class]
idiom:
  funcs:[]
adjs:[]

_____target FS_____
prop:main
```

```
pred:build
mood:ind
tense:past
subj:
    role:agente
     pred:little_pig
    pers:3
    num:plur
    ind:'_1'
    spec:
      def: +
    tab_ref:[+ ref - pro - ana + class]
obj:
    role:tema_aff
    pred:house
    pers:3
    num:sing
    spec:
      def: -
    ind:'_3'
    tab_ref:[+ ref - pro - ana + class]
idiom:
  funcs:[]
adjs:[]
```

6. Transferring Idiomatic Chunks

In her paper "The passive in Lexical Theory"(1982,chapter 1, pp.45-50), Bresnan discusses the problem of idiom chunks in terms of nonsemantic selection of idiomatic objects. An idiomatic object is a grammatical object that is not an argument of a predicate. In our framework, a nonargumental function is encoded as "Theme_Bound", whereas in the theory it is simply not associated to a predicate argument, given the fact that a-structure is a separate lexical representation from lexical form, where grammatical functions are assigned. However, the final net result is the same: i.e. the OBJect is grammatically inherited by the corresponding passive lexical form via a lexical redundancy rule but is assigned no semantic interpretation. In particular, then, in the case of idiomatic objects, this will be detectable by the additional information that the lexical head associated to the OBJ is a FORM and that it must be a particular word, this one recorded in a special lexical equation. The lexical entry for "keep tabs on" is as follow,(her number)

(86) a. keep: V,'KEEP-TABS-ON((SUBJ),(ON OBJ))' (OBJ FORM) $=_c$ TABS

This case is represented by the first example we will discuss from our text, which is constituted by an idiomatic verbal pred corresponding to a non idiomatic one.

To explain this example, we should explain first how parser and generator handle idiomatic chunks.An idiomatic sentence is supposed to exibit grammatical functions that do not correspond to actual semantic roles. These functions are characterized by the fact that they contain 'form' attributes instead of preds. Idiomatic sentences need also a reinterpretation of the literal roles, i.e. roles that would be subcategorized by a literal use of the verb. The information needed to detect an idiomatic pattern is containd in the 'idiom:funcs' attribute associated to verbs in the lexicon. Idiomatic information will tipically contain instructions not to associate semantic roles to grammatical function that would be interpreted in the literal use (for ex. 'role:to_nil(locative)' and 'form:calcagna') and instructions to associate to a function a role different from the literal one (for example to(theme_bound,agent)).

If an Italian idiomatic verb correspond to a non idiomatic one in the target language, the GMR will drop the non semantically interpreted functions from the f-structure and try a match between the source reinterpreted roles (that are actually present in the f-structure) and the target literal roles. If this match will succeed, all we need to do is to handle possible functional divergences between the corresponding roles.

4. SUBJ:to(actor,theme_aff),VERB,
   NCOMP:to(theme_bound,agent), OBL:to_nil(locative)
   ==>
   SUBJ:agent,VERB,OBJ:theme_aff

Italian: i porcellini avevano il lupo alle calcagna
English: the wolf was chasing the little_pigs

_____source FS_____

```
prop:main
mood:ind
pred:avere
tense:imp
cat:state
obl:
    form:calcagna
     cat:or([luogo, oggetto])
    num:plur
    gen:fem
    pers:3
    spec:
      def: +
    ind:'_1'
    tab_ref:[+ ref - pro - ana + class]
ncomp:
    role:theme_bound
    pred:lupo
    cat:or([animate])
    num:sing
    gen:mas
    spec:
      def: +
    ind:'_2'
    tab_ref:[+ ref - pro - ana + class]
    pers:3
subj:
    role:actor
     pred:porcellino
    cat:or([animate])
    gen:mas
    pers:3
    num:plur
```

```
    ind:'_3'
    spec:
      def: +
    tab_ref:[+ ref - pro - ana + class]
idiom:
  funcs:
    obl:
       role:to_nil(locative)
      form:calcagna
      spec:
        def: +
      num:plur
    ncomp:
       role:to(theme_bound, agent)
    subj:
       role:to(actor, theme_aff)
adjs:[]

_____target FS_____
prop:main
pred:chase
mood:ind
tense:past_prog
subj:
    role:agent
    pred:wolf
    pers:3
    num:sing
    spec:
      def: +
    ind:'_2'
    tab_ref:[+ ref - pro - ana + class]
obj:
    role:theme_aff
     pred:little_pig
    pers:3
    num:plur
    ind:'_3'
    spec:
      def: +
    tab_ref:[+ ref - pro - ana + class]
idiom:
  funcs:[]
adjs:[]
```

Another interesting example is constituted by the idiom chunk "to pull someone's legs" which has the idiomatic meaning "to play a joke on, or tease someone' as discussed in Bresnan (ibid,48). As she notes, the idiomatic reading does not arise with verbs other than "pull", or with objects other than "[possessor's] leg". What is interesting in this predicate is the fact that both the literal and the idiomatic meaning

must be preserved and allowed to be assigned simply from the same underlying lexical form. This case is also present in our text and is an example with an idiomatic verbal pred corresponding to a pred with a different idiomatic pattern.
This example is similar to the previous one but now the correspondence is between two idiomatic verbs. A reinterpreted role can now correspond to another reinterpreted role. In this case the latter is included in the target FS. Furthermore, if the idiomatic information of the target pred contains non interpretable functions these too are added to the target FS. Notice that two systematic difference show up in this example as well. First the addition of the reflexive benef role, that is in fact eliminated by the GMR. Second, the necessity to express in English the owner of a body part which in order to preserve the idiomatic meaning must be bound to the SUBJect. This is handled as an intralingua constraint by the generator, that would automatically generate a possessive in such cases. However, the literal meaning would be automatically generated whenever the benefactive is associated to a clitic other than the reflexive one and consequently the OBJect's possessor would be computed as a different individual from the SUBJect of the main predicate.

5. SUBJ:to(actor,experiencer),OBJ2:to_nil(benef),
   VERB,OBJ:to_nil(theme_unaff)
  ==>
SUBJ:to(actor,experiencer),VERB,OBJ:to_nil(theme_unaff)

Italian: il lupo si leccava i baffi
English: the wolf was licking his lips

_____source FS_____

```
prop:main
mood:ind
pred:leccare
tense:imp
cat:activity
subj:
    role:experiencer
    cat:or([animate, human])
    gen:mas
    pers:3
    num:sing
    ind:'_1'
    spec:
     def: +
```

```
    tab_ref:[ + ref - pro - ana + class]
    pred:lupo
obj2:
    form:si
    ind:'_2'
    cat:or([animate,human])
    gen:mas
    num:sing
    case:dat
    pers:3
    spec:
      def: +
    tab_ref:[- ref - pro + ana + me - subj]
    antecedent:'_1'
     interpretation:specific
obj:
    form:baffo
    cat:or([obj])
    num:plur
    gen:mas
    pers:3
    spec:
      def: +
    indice:'_3'
    tab_ref:[ + ref - pro - ana + class]
    subj:
          role:poss
          cat:or([_])
          gen:_
          pers:3
          num:_
          ind:'_2'
          spec:
               def: +
          tab_ref:[ + ref - pro - ana + class]
          pred:vbl
idiom:
  funcs:
    subj:
       role:to(actor, experiencer)
    obj2:
       role:to_nil(benef)
      form:si
    obj:
       role:to_nil(theme_unaff)
      form:baffo
      num:plur
      spec:
        def: +
adjs:[]

_____target FS_____
prop:main
mood:ind
tense:past_prog
```

```
pred:lick_ones_lips
subj:
    role:experiencer
    pred:wolf
    pers:3
    num:sing
    ind:'_1'
    spec:
     def: +
    tab_ref:
     + ref - pro - ana + class
obj:
    form:lip
    num:plur
    subj:
      role:possessor
      antecedent:X
idiom:
  funcs:
    subj:
      role:to(actor, experiencer)
      indice:X
    obj:
      role:to_nil(theme_unaff)
      form:lip
      num:plur
      subj:
        role:possessor
        antecedent:X
adjs:[]
```

7. GraFo: the Generation Algorithm

One can think of GraFo(for a more detailed description see Pianta, 1992) grammar rules producing a syntactic tree that is further passed to an interpretation algorithm producing a semantic representation. Nevertheless we feel that GraFo does its best in a framework akin to that proposed by Fenstad et al.(1987: 15): "In our approach, all levels of linguistic description have equal theoretical status. They all stand in a mutally constraining relationship. There are principles internal to each level which determine the properties and well-formedness of the representation on that level." Thus there are indeed different description levels with their separate principles, but they are not built one on the top of the other but rather they mutually constraint each other. "In the constraint based theory the focus is not on the derivation or construction of one level (say semantics) on the basis of another (typically syntax). The 'inter-level' constraints ... are declarative descriptions of the relationships holding between

aspects of linguistic form and the semantic representation itself". From an execution point of view this amount to think of Natural Language Generation Process as exploiting in every moment all the (syntactic, semantic, pragmatic...) available information.
It should be pointed out that with respect to a strictly constraint based approach GraFo encourages to afford a central status to constituency. All other constraints and description levels are attached to rules specifying first of all constituents or word order. We do not feel this is a flaw. Linear order is indeed a central characteristic of human language heavily conditioning both parsing and generation. Rewriting rules (more or less context free) may not be the best way to represent word order, but they seem very effective at least for the most part of Romance and Germanic languages. The generation transducer starts from Rosie's source grammar and follows basically a top down strategy. This is not very far from what happens when one uses DCGs for generation purposes, apart of course from the unification mechanism. Two important remarks should be made, however: one regarding the selection of rules, the other regarding the flow of information from rule to rule.
Rewriting rules cannot apply blindly, without any exit condition: suppose that rules are applied starting from a (syntactic or semantic) structure that is progressively "consumed" during computation and that no rule can be applied if such structure is void.
We can think thus that every GraFo rule must have a particular feature containing information that guides rule selection and finally ends the generation process. Although this seems quite sensible, a problem arises from the unification mechanism we have chosen. Subsumption-based unification is not adequate to guide rule selection simply because the empty constraint (sub)unifies with everything, and more generally the absence of structure does not prevent two features to unify. Two solution are available in GraFo. The first consists in using a Prolog term as value of the generation guiding attribute. In GraFo the value of an attribute can in fact be a set of features or any Prolog term. In the latter case standard Prolog unification is called. The second solution is to invoke a special unification mechanism for the generation guiding attribute. GraFo allows assigning

to an attribute one of two special unification mechanism: equiv and equiset. The assignment can be persistent, through a global declaration, or temporary, through the use of a local operator. 'equiv' unification recursively requires strict equivalence between attributes clusters, while in the 'equiset' based unification the equivalence relation must obtain only for the topmost nodes of the cluster. For the lowest nodes only a 'subunify' relation is required.
What we mean by the problem of information flow in sentence generation can be made clear by considering the generation of the sentence: "nello stesso luogo viveva un terribile lupo"/in the same place lived a terrible wolf. Suppose that you have a set of context free rules with attributes, that you have chosen situation semantics as semantic representation formalism and LFG as syntactic framework. The situation semantics representation of the sentence uses semantic roles to label arguments and works as generation guiding attribute. In the LFG based framework, information about how to realize predicate arguments are to be found in the lexicon, namely in a verb entry. This means that in all languages where verb is not the first element of the sentence (i.e most languages) there is a flow of information from verb to the preverbal argument inverse to the word order. One is tempted to generate the verb before its arguments, in order to retrieve information about the grammatical function that must be used to express semantic roles. But now consider that in Italian there is subject/verb agreement and that in most cases NP subject comes before verb. This means that if you want to generate the right verbal form you should generate the preverbal subject before the verb. In other words there is a cross information flow between verb and the preverbal argument.
One could think that postverbal arguments do not suffer from information flows contrary to word order, but this is false because in Italian NP subjects can be found freely in postverbal position (and in English when locative inversion takes place), as in the example above where again we have a cross information flow between verb and postverbal argument.
If we use a top down generation strategy, inverse flows of information can be solved by a generate and test behaviour. But this will cause the system to work in a highly inefficient

and unnatural way. A solution to this problems could be abandoning the depth-first, left-to-right traversal of the generation tree typical of the top down strategy, in favour of a "post-order traversal (with prediction acting as a pre-order filter)". A detailed discussion of this proposal is out of the scope of this paper. Let's just mention three problems we see: 1) For the mechanism to work we are bound to choose a certain semantic formalism and use it in a fixed way. 2) Some of the problems the algorithm tries to solve arise from a wrong use of the generation guiding attribute. 3) The mechanism seems not to handle cross information flows. 4) The order in which words are generated is unnatural.
The solution we propose tries to generate words in the natural left to right order. This means that preverbal arguments are generated before verbs and so on.

8. THE GENERAL MAPPING ROUTINE

The following algorithm is the outcome of the conjoined effort of a team including a number of people, among whom the actual programmer E.Pianta, and the compiler of a doctoral dissertation on Machine Translation, P.Rossi. The process of translation is thought to have the following structure: source sentence ==> parser ==> source FS ==> FS mapping (with source and target subcat list) ==> target FS ==> generator ==> target sentence.

```
/************************
fs_map(+SourceFS, -TargetFS) takes as input SourceFS represented as a
list of lists and recursevely maps all the attribute containd in it. Certain
attributes are handled contextually, for example pred and funcs, i.e. the
verbal predicate and the list of grammatical function.
************************/
/************************
End of recursion. The whole FS has been mapped
************************/
fs_map([], []) :-
  !.

/************************
If a functional structure contains a pred and a funcs attribute, i.e a
predicate/arguments pattern, map them contextually, then map the rest of
the structure
************************/
fs_map(
  [Fun|S],
```

```
   [pred:PredTr, funcs: FuncsTr, idiom:Idiom
  | RestFunsTr])
  :-
   remove(pred:Pred, [Fun | S], RestFuns),
   remove(funcs:Funcs, RestFuns, RestFuns1),
  !,
   pred_funcs_map(Pred, Funcs, PredTr, FuncsTr, IdiomTr),
   (IdiomTr=''->Idiom=[funcs:[]] ; Idiom=IdiomTr),
   fs_map(RestFuns1, RestFunsTr).

/************************
If a functional structure doesn't contain a pred and funcs attribute, map
the attributes one by one
************************/
fs_map([Fun | Funs], [TrFun | TrFuns]) :-
   fs_map(Fun, TrFun),
  !,
   fs_map(Funs, TrFuns).

/************************
If there is no explicit information about how to treat a specific attribute,
drop it from the target FS
************************/
fs_map([_ | Funs], TrFuns) :-
  !,
   fs_map(Funs, TrFuns).

/************************
The prop, index, pers, num, tab_ref and spec attributes are kept
unchanged. Notice that for at least num, tab_ref and spec these is an
evident oversimplification. But the mapping of such attributes is out of the
scope of the present work
************************/
fs_map(prop:Prop, prop:Prop) :-
  !.
fs_map(index:Ind, index:Ind) :-
  !.
fs_map(pers:Pers, pers:Pers) :-
  !.
fs_map(role:Role, role:Role) :-
  !.
fs_map(num:Num, num:Num) :-
  !.
fs_map(tab_ref:TabRef, tab_ref:TabRef) :-
  !.
fs_map(spec:Spec, spec:Spec) :-
```

```
  !.

/************************
The pred is mapped by the pred_map function. Notice that the preds treated
by this definition are those that have not an explicit predicate/arguments
pattern, i.e., there is no funcs attribute at the same FS level in which they
are.
************************/
fs_map(pred:Pred, pred:PredTr) :-
  !,
   pred_map(Pred, PredTr).

/************************
The tempo attribute is mapped by the tens_map function
************************/
fs_map(tempo:Tense, tempo:TenseTr) :-
  !,
   tense_map(Tense, TenseTr).

/************************
The mods (modifiers) and adjs (adjuncts) attributes are mapped by
recursively mapping the FS they label
************************/
fs_map(mods:Mods, mods:TrMods) :-
  !,
   fs_map(Mods, TrMods).

fs_map(adjs:Adjs, adjs:TrAdjs) :-
  !,
   fs_map(Adjs, TrAdjs).

/************************
To map the pred & funcs attributes we first search for a specialized
function. Specialized functions are supplied for all those couples of source
and target verbal preds that have functional and thematic discrepancies
not reducible to generalized patters
************************/
pred_funcs_map(Pred, Funcs, PredTr, FuncsTr, IdiomTr) :-
   pm(Pred, PredTr, Funcs, FuncsTr, IdiomTr),
  !.

/************************
If there isn't a specialized function to convert a certain verbal pred then
use the general rules. To do this, map the verbal pred, then find the
subcategorization lists of the source and target pred and supply them to the
funcs_map function along with the source functions and the (possibly
```

```
/************************
The pred is mapped by the pred_map function. Notice that the preds treated
by this definition are those that have not an explicit predicate/arguments
pattern, i.e., there is no funcs attribute at the same FS level in which they
are.
************************/
fs_map(pred:Pred, pred:PredTr) :-
  !,
   pred_map(Pred, PredTr).

/************************
The tempo attribute is mapped by the tens_map function
************************/
fs_map(tempo:Tense, tempo:TenseTr) :-
  !,
   tense_map(Tense, TenseTr).

/************************
The mods (modifiers) and adjs (adjuncts) attributes are mapped by
recursively mapping the FS they label
************************/
fs_map(mods:Mods, mods:TrMods) :-
  !,
   fs_map(Mods, TrMods).

fs_map(adjs:Adjs, adjs:TrAdjs) :-
  !,
   fs_map(Adjs, TrAdjs).

/************************
To map the pred & funcs attributes we first search for a specialized
function. Specialized functions are supplied for all those couples of source
and target verbal preds that have functional and thematic discrepancies
not reducible to generalized patters
************************/
pred_funcs_map(Pred, Funcs, PredTr, FuncsTr, IdiomTr) :-
   pm(Pred, PredTr, Funcs, FuncsTr, IdiomTr),
  !.

/************************
If there isn't a specialized function to convert a certain verbal pred then
use the general rules. To do this, map the verbal pred, then find the
subcategorization lists of the source and target pred and supply them to the
funcs_map function along with the source functions and the (possibly
```

```
null) idiomatic constraints on funcs of the target pred. You'll get the
funcs to be included in the target FS as output of the mapping
************************/
pred_funcs_map(Pred, Funcs, PredTr, FuncsTr, IdiomTr) :-
   pred_map(Pred, PredTr),
    select_grammar(italian),
   constraints_pred(Pred, verbo,_, _, _,_, SubCat, _),
    select_grammar(english),
   constraints_pred(PredTr, verbo,_, _, _,_, SubCatTr, IdiomTr),
    extract_funcs(IdiomTr, IdiomFuncsTr),
   funcs_map(
     SubCat, SubCatTr, IdiomFuncsTr, Funcs, FuncsTr).

/***************************
funcs_map
  (+SubCat, +SubCatTr, +IdiomFuncsTr, +Funcs, -FuncsTr).
***************************/
/************************
End of recursion. All the funcs have been mapped
************************/
funcs_map([], [], [], [], []) :-
  !.

/***************************
== Eliminating target FORMS.
If a source func  contains a FORM attribute, do not include the func in the
target FS. If the func is present in the original subcategorization list of the
source pred, i.e. it hasn't been added by a general lexical rule, absorb it.
***************************/
funcs_map(SubCat,
      SubCatTr,
      IdiomTr,
      Funcs,
      FuncsTr)
  :-
   remove(Fun:FsFun, Funcs, RestFuncs),
   remove(form:_, FsFun, _),
  (remove(Fun:_, SubCat, RestSubCat)
  -> NewSubCat=RestSubCat
  ; NewSubCat=SubCat),
  !,
   funcs_map(NewSubCat, SubCatTr, IdiomTr, RestFuncs, FuncsTr).

/***************************
== Adding source FORMS.
```

```
If in the idiomatic constraints of the target pred there is a function with a
'role:to_nil(_)' attribute, add the idiomatic function to the target FS. If the
original subcat list of the target pred contains the func, absorb it.
*****************************/
funcs_map(SubCat,
      SubCatTr,
       IdiomTr,
      Funcs,
       [Fun:RestFsFunIdiom | OtherFuncsTr])
  :-
   remove(Fun:FsFunIdiom, IdiomTr, RestIdiomTr),
   remove(role:to_nil(_), FsFunIdiom, RestFsFunIdiom),
  (remove(Fun:_, SubCatTr, RestSubCatTr)
  -> NewSubCatTr=RestSubCatTr
  ;  NewSubCatTr=SubCatTr),
  !,
   funcs_map(
     SubCat, NewSubCatTr, RestIdiomTr, Funcs, OtherFuncsTr).

/*****************************
Search a source FS with a certain Role and a certain Function. Then
search the same Role in the target subcat list or in the idiomatic
constraints list as interpreted role and find the target Function. Map the
original into the target Function, changing the argument Pred category if
necessary.
*****************************/
funcs_map(
  SubCat,
  SubCatTr,
   IdiomTr,
  Funcs,
   [FunTr:[role:Role | RestFsTr] | OtherFunTr])
  :-
   remove(Fun:FsFun, Funcs, RestFuncs),
   remove(role:Role, FsFun, RestFsFun),
  (
    remove(IdioFun:IdiomFunFs, IdiomTr, RestIdiomTr),
    remove(role:to(LeterRoleTr, Role), IdiomFunFs, _)
    -> RoleTr=LeterRoleTr,
       NewIdiomTr=RestIdiomTr
    ;  RoleTr=Role,
       NewIdiomTr=IdiomTr
  ),
  remove(Fun:_, SubCat, RestSubCat),
   remove(FunTr:[_, role:RoleTr | _],
       SubCatTr, RestSubCatTr),
```

```
  !,
   func_map(Fun, FunTr, RestFsFun, RestFsTr),
   funcs_map(RestSubCat, RestSubCatTr, NewIdiomTr,
         RestFuncs,OtherFunTr).

/*******************
If the source Fs contains an obj2 function with [pred:si, caso:dat,
role:benef] attributes and the function is not contained in the subcat lists
of neither the source nor the target pred, do not include it in the target FS
*******************/
funcs_map([], [], IdiomTr, Funcs, OtherFunTr)
  :-
   remove(obj2:FSFun, Funcs, RestFuncs),
   nogen_member(pred:si, FSFun),
   nogen_member(caso:dat, FSFun),
   nogen_member(role:benef, FSFun),
  !,
   funcs_map([], [], IdiomTr, RestFuncs, OtherFunTr).

/*******************
If an Ncomp function is to be mapped into an Acomp function, then map
the source pred into the target pred and convert the category of the mapped
pred from noun to adjective
*******************/
func_map(ncomp, acomp, FsFun,
      [pred:PredTrConv | RestFsFunTr])
  :-
  !,
   remove(pred:Pred, FsFun, RestFsFun),
   pred_map(Pred, PredTr),
    name_to_agg_english(PredTr, PredTrConv),
   fs_map(RestFsFun, RestFsFunTr).

/*******************
In all other cases simply map the source semantic form in the target one
*******************/
func_map(_, _, FsFun, FsFunTr) :-
   fs_map(FsFun, FsFunTr).

pred_map(A, B) :-
  pm(A, B).

/*****************
Specialized pred mapping
*****************/
pm(nutrire, feed_on, FuncsIn, FuncsOut, [funcs:[]]) :-
```

```
  equiv(FuncsIn,
    [subj:[indice:X | RestSogg],
    obj:
      [pred:si,
      antecedent:X | _],
    obl:Obl]),
  fs_map(RestSogg, RestSoggTr),
  fs_map(Obl, OblTr),
  FuncsOut = [sogg:RestSoggTr, obl:OblTr].

/*****************
Verbal pred mapping
*****************/
pm(correre, run).
pm(cantare, sing).
pm(vivere, live).
pm(decidere, decide).
pm(proteggere, protect).
pm(essere_cop, be_cop).
pm(piacere, like).
pm(costruire, build).
pm(avere_emot, be_emot).
pm(avere_alle_calcagna, chase).
pm(leccarsi_i_baffi, lick_ones_lips).
pm(nutrire, feed).

/*****************
Nominal and adjectival pred mapping
*****************/
pm(saggio, wise).
pm(jimmi, jimmi).
pm(marta, marta).
pm(tommy, tommy).
pm(lupo, wolf).
pm(ragazzo, boy).
pm(porcellino, little_pig).
pm(canzone, song).
pm(paura, fear).
pm(campagna, country).
pm(casa, house).
```

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Negation in small clauses

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NEGATION IN SMALL CLAUSES

Introduction *

In the last years, the syntax of negation has received much attention in generative grammar. In several works, negation is taken to be a functional head, although some different opinions exist with respect to the exact location of the Neg projection (see a.o. Pollock, 1989; Belletti, 1990; Laka, 1990; Ouhalla, 1988; Zanuttini, 1991). All analyses have concentrated on negation in clausal contexts, whereas almost no attention has been paid to negation in other syntactic contexts. This paper intends to fill the gap, by analyzing negation in adjectival small clauses and in nominals. Similarly to full clauses, negation can

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be found in small clauses, as shown by the examples in (1) and (2): [1]

(1) Il professore non è soddisfatto del suo lavoro

The professor not is satisfied with his work

(2) Ritengo il professore non soddisfatto del suo lavoro

(I) consider the professor not satisfied with his work

The question arises as to whether negation in small clauses has the same status as negation in full clauses. The distribution of negative adverbs and the scope phenomena indicate that negation in small clauses has a different status and distribution than negation in full clauses; however, negative quantifier licensing and Neg-raising make negation in small clauses similar to negation in full clauses. These properties can all be made to follow by assuming the following: (1) that negation in small clauses is structurally different from negation in full clauses — whereas in the latter case it projects a NegP, in the former it is expressed in an Adverbial Phrase — (2) that in full clauses, NegP, on a par with AGRSP and TP, is a member of the set of functional projections typically associated to the verb, i.e., it is an extended projection of the verb in the sense of Grimshaw (1991) whereas in small clauses it is not part of the extended projection of the adjectival phrase, but it is a specifier-like element, similar to adverbs.

These assumptions are adequate for dealing with the properties of negation not only in small clauses, but also in nominals.

---

[1] Notice that the negation in (2) is not a constituent negation, since it does not necessarily imply a contrast, as it is usually the case for this kind of negation:

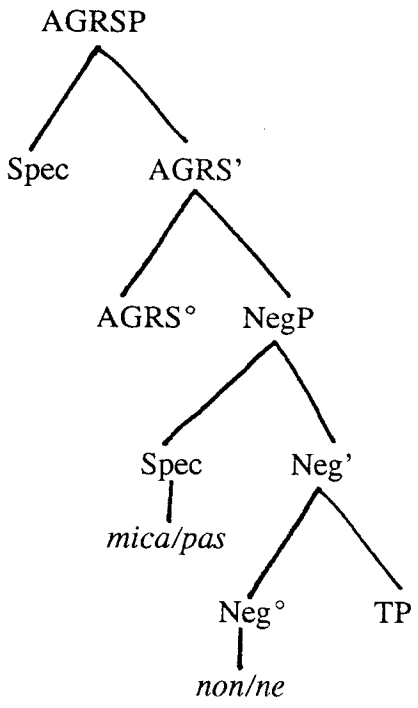
i) Il professore è **non** soddisfatto *(ma scontento)

The professor is not satisfied but unhappy

1. The status of Negation in small clauses

In recent works, it has been proposed that negation heads its own functional projection, NegP. Elaborating on Pollock (1989), Belletti (1990) has suggested that the Italian negation *non*, analogous to French *ne*, is the head of NegP. French and Italian differ minimally with regard to the specifier of NegP. Whereas in French, SpecNegP must be filled with the negative adverb *pas*, in Italian it is only optionally filled with negative adverbs such as *mica* (most common in Northern Italian), *mai*, *più* and *ancora*. These assumptions are represented in the following structure where NegP is located in between AGRSP and TP (cf. Zanuttini, 1991 for an alternative proposal).

(3)



As it stands, this structure does not account for the linear order of elements inside a sentence, as the examples in (4) show.

(4) a. Gianni non mangia mica/più/mai

b. Jean ne mange pas

John not eat not/anymore/never

Belletti (1990) and Pollock (1989) account for this order by proposing that the negative head is a syntactic clitic that must undergo head-movement to the highest functional head of the clause, AGRS°, in Belletti's analysis. The hypothesis is supported by the observation that on a par with clitic pronouns (Kayne, 1977), negation *non* in full clauses cannot be stressed as displayed by (5) (Adriana Belletti, p.c.). (The example (5) is grammatical in an irrelevant

reading, i.e., as a correction of a previous utterance. The same is true for French *ne*, in (6).

(5) * Gianni NON mangia (più)

(6) * Jean NE mange pas

Gianni not eat not/anymore

Now the question arises as to whether negation in the small clause in (2) should be analyzed in the same way. In various proposals, it has been argued that small clauses contain functional projections (Belletti, 1990; Cardinaletti & Guasti, 1991; Cinque, 1991; Hornstein & Lightfoot, 1987; Raposo & Uriagereka, 1991, among others). Under these views, the minimal hypothesis could be to extend to small clauses the analysis of negation proposed for full clauses. This makes the immediate prediction that negation in full and small clauses should manifest the same behavior. This expectation seems to be fulfilled by the distribution of negative quantifiers (§ 5) and by the so-called Neg-raising phenomenon (§ 6). However, there are other domains where it is not satisfied. These are represented by the distribution of negative adverbs (§ 2) and by the scope properties of negation (§ 3). In addition, Italian negation *non* in the two contexts manifests different phonological properties (§ 4).

2. Negative adverbs

In full clauses, negation *non* can co-occur with negative adverbs, as noticed previously. Interestingly enough, the same distribution is not attested in small clauses. In this context, negation *non* can never co-occur with negative adverbs — *mica* and *mai* (for *più* and *ancora*

see below). Notice that the relative order of the negative elements and the adjective does not affect the grammaticality of the sentences. [2]

(7) a. * Ritengo Gianni non mai contento

(I) consider Gianni not never happy

b. * Ritengo Gianni mai non contento

(I) consider Gianni never not happy

c. * Ritengo Gianni non contento mai

(I) consider Gianni not happy never

Interestingly, all the sentences improve if *non* is dropped.

(8) ? Ritengo Gianni mai contento

(I) consider Gianni never happy

This suggests that *non* and negative adverbs are in complementary distribution. An immediate consequence of this observation is that *non* in small clauses is like negative adverbs.

The Italian paradigm can be essentially reproduced in French. Similarly to Italian, the negative head *ne* and *pas* never co-occur in small clauses. Differently from Italian, the

[2] The negative adverb *mica* is a contra-assertive adverb that is subject to pragmatic restrictions. In order to avoid this disturbing factor, we provide examples with *mai*.

negation is always expressed by *pas* or by another negative adverb. [3]

(9) a. * Je considère Jean ne pas prêt pour son examen

I consider Jean not not ready for the exam

b. Je considère Jean pas prêt pour son examen

I consider Jean not ready for the exam

c. ? Je considère Jean jamais prêt à aider les gens

I consider Jean never ready to help people

These facts lead to the conclusion that *non* in small clauses does not have the same status as its homophone in full clauses, but rather it is similar to negative adverbs such as Italian *mai* and French *pas* and *jamais*. As for full clauses, we have assumed that negation is structurally expressed by a NegP and that this NegP, on a par with AGRSP and TP, is part of the functional projections associated with the verb. We suggest that in small clauses, negation is expressed in an Adverbial Phrase (affected with negative features) that functions as a specifier-like element as other Adverbial Phrases (Jackendoff, 1977; Lonzi, 1991). Structurally, this instance of negation is adjoined to the AP. [4] For the sake of concreteness,

---

[3] Contrary to Italian *non*, French *ne* can never realize the negation in small clauses (see below, fn. 19).

i) * Je considère Jean ne prêt pour son examen
I consider Jean not ready for his exam

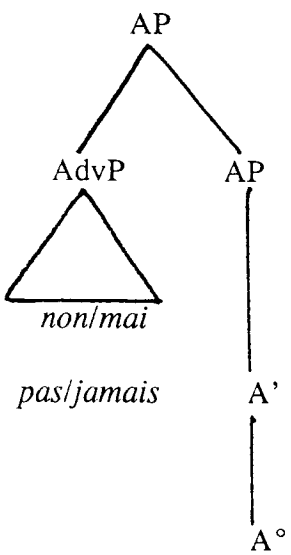
[4] An alternative would amount to saying that the negation is directly adjoined to the adjectival head. However, this hypothesis cannot account for the following facts. First, a FQ stranded by the small clause subject can intervene between negation and the adjective. Notice that this word order is only compatible with the idea that negation is adjoined to AP. For the hypothesis that small clauses are AGROPs, refer to Cardinaletti & Guasti (1991).

i) Ritengo [$_{AGROP}$ gli studenti [$_{AP}$ non ancora [$_{AP}$ tutti pronti per l'esame]]]

ii) Je considère [$_{AGROP}$ les étudiants [$_{AP}$ pas encore [$_{AP}$ tous prêts pour l'examen]]]

we will refer to this negation as Adverbial Negation. For the internal structure of AdvP, see (19).

(10)



Our hypothesis needs additional qualification with regard to other negative adverbs. We have seen that an intrinsic negative adverb, such as Italian *mai* and French *pas*, can negate the adjectival predicate of a small clause. We have also seen that *non* and *mai* are in complementary distribution. However, other adverbs can co-occur with *non*, such as *più* and *ancora*. This is illustrated below:

I consider the students not yet all ready for the exam

Second, the small clause subject in a post-adjectival position can contain a negative quantifier.

iii) Ritengo non soddisfatto proprio nessuno studente
(I) consider not satisfied really no student

Since in Italian, post-predicate negative quantifiers have to be c-commanded by negation at S-structure (in order to satisfy the Neg-criterion at LF, see section 5 below), the grammaticality of (iii) leads us to conclude that *non* c-commands *nessuno studente*. But, this is only possible if negation is not adjoined to the head, but to the maximal projection. For concreteness, we assume that the post-adjectival subject is in its base-generated position and that this position is to the right of the adjectival head (see Giorgi & Longobardi, 1991).

(11) Ritengo Gianni non più contento del suo lavoro

(I) consider Gianni not anymore happy with his work

'I consider Gianni no longer happy'

(12) Ritengo Gianni non ancora idoneo per quel compito

(I) consider Gianni not yet apt for this work

These facts are compatible with the above observations, since the sequences *non più* and *non ancora* are complex specifiers of the adjective where the negation *non* functions as a specifier of the adverb itself. [5] Given that these adverbs are not intrinsically negative, as shown by the positive meaning of the sentences in (13) and (14), they have to co-occur with *non* in order to convey a negative meaning, as in (11) and (12).

(13) Ritengo Gianni più contento (di ieri)

(I) consider Gianni more happy (than yesterday)

'I consider Gianni happier than yestarday'

---

[5] The idea that *più* can be modified by a negative element is independently supported by the grammaticality of the following example, where the negative adverb *mai* modifies *più*.

i) Maria non è **mai più** tornata (Belletti, 1990:134 fn. 45)
Maria not is never anymore come back
'Maria has no longer come back'

The sequence *mai più* forms a constituent as attested by the ill-formedness of the following example (The reader can refer to Belletti, 1990, for relevant discussion).

ii) * Maria non è **mai** tornata **più**
Maria not is never come back anymore
'Maria has no longer come back'

Notice that the sequence *mai ancora* (never still) is never found. This is probably due to a semantic clash.

(14) Ritengo Gianni ancora malato

(I) consider Gianni still sick

Notice incidentally that French displays the same possibilities with regard to *encore*. Differently from Italian *più*, the French counterpart *plus* can count as intrinsically negative, thus, conveying a negative meaning without *pas*. [6]

(15) ? Je considère Jean (*pas) plus capable de faire ce travail

*I consider Jean (*not) anymore apt to do this job*

(16) Je considère Jean pas encore prêt pour l'examen

I consider Jean not yet ready for the exam

(17) Je considère Jean encore malade

I consider Jean still sick

For concreteness, we propose that the adverbs *più* and *ancora* are the head of the AdvP whose specifier is filled with another AdvP headed by *non* (or *mai*, see fn. 5), as in (18)a. [7] The diagram (18)b represents the French equivalent.

---

[6] Analogous to the Italian example in (13), *plus* in French can also enter comparative clauses, as in (i).

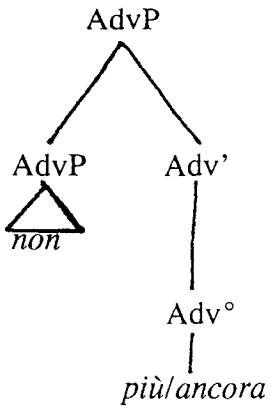
i) Je considère Marie plus intelligente que Jean
I consider Marie more intelligent than Jean

[7] The hypothesis that these complex negative adverbial phrases form a constituent is supported by the fact that they can be used in isolation, e.g., in answers.

i) Vai ancora in piscina? Non più
Do you still go to the swimming-pool? *Not anymore*

Notice that the order *non più* is base generated here, whereas it is obtained through cliticization of *non* in full clauses, as mentioned earlier.

(18) a.



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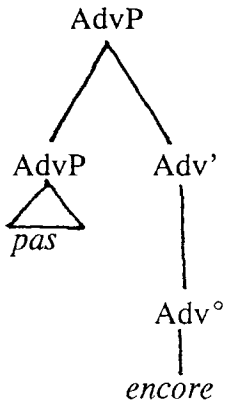
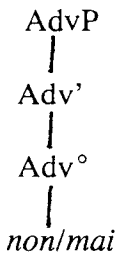
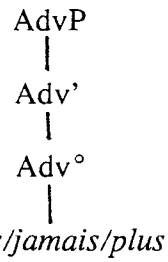


When the Italian negative adverbs *non* and *mai* and the French *pas*, *jamais* and *plus* occur alone, the AdvP does not contain any specifier.

(19) a.



b.



3. Scope phenomena

There is an interesting contrast between full and small clauses which indicates that in the former, but not in the latter case negation has a prominent position in the structure, thus supporting our previous proposal. The relevant phenomenon is represented by the interactions between negation and quantifiers.

Consider the full clause complement in (20) involving sentential negation and a quantifier. As apparent from the representations in (21), the complement is ambiguous: the quantifier can have wider scope than negation as in (21)a, meaning that for many/all students the professor is not satisfied with them, or viceversa, negation can have scope over the quantifier, as in (21)b, meaning that the professor is satisfied only with few students.

(20) Ritengo che il professore non sia soddisfatto di molti/tutti gli studenti
(I) believe that the professor is not satisfied with many/all students

(21) a. Ritengo che [[di molti/tutti studenti (x)] il professore NON sia soddisfatto x]
(I) believe that [[with many/all students] the professor is not satisfied x]

b. Ritengo che [il professore NON sia [[di molti studenti/tutti (x)] soddisfatto x]]
(I) believe that [the professor is not [with many/all students] satisfied x]

The ambiguity disappears if the full clause (complement) is replaced by a small clause. Sentence (22) can only have the interpretation in (23)a according to which the professor is not content with many students. It cannot mean that he is content with few students, as exemplified in (23)b, parallel to (21)b. In other words, the quantifier must always have wider scope than negation.

(22) Ritengo il professore non soddisfatto di molti/tutti gli studenti

(I) consider the professor not satisfied with many/all students

(23) a. Ritengo [[molti studenti/tutti (x)] il professore NON soddisfatto di x]

(I) believe that [[with many/all students] the professor not satisfied x]

b. * Ritengo [il professore NON [[molti studenti/tutti (x)] soddisfatto di x]]

(I) believe that [the professor not [with many/all students] satisfied x]

The contrast between (20) and (22) can be made explicit by the minimal pair below:

(24) * Ritengo il professore non soddisfatto di molti studenti, ma di pochi

(I) consider the professor not satisfied with many students, but with few

(25) Ritengo che il professore non sia soddisfatto di molti studenti, ma di pochi

(I) believe that the professor is not satisfied with many students, but with few

A parallel situation is found in French, as proven by the fact that a sentence such as (26) is not ambiguous. The only interpretation is the one in which the quantifier has wider scope than negation.

(26) Je considère le professeur pas fier de beaucoup de/tous les étudiants

I consider the professor not proud of many/all students

It is uncontroversial that to be properly interpreted, a quantifier must be assigned scope. For the sake of concreteness we assume that a quantifier receives its scope through the LF operation of Quantifier Raising (QR) (May, 1985). In a full clause, the minimal domain of an argument of the verb can be the VP. Since NegP dominates the VP, the negation c-commands the quantified expression and can have scope over it, thus allowing the reading in (21)b, whose LF representation is given in (27) (see below for an account of why the whole PP must be LF-raised): [8]

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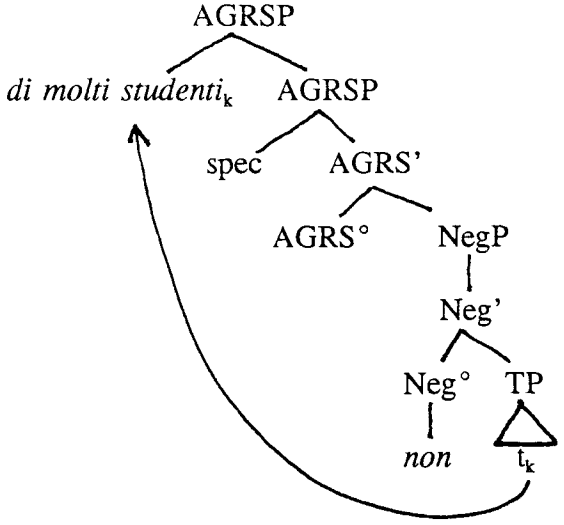
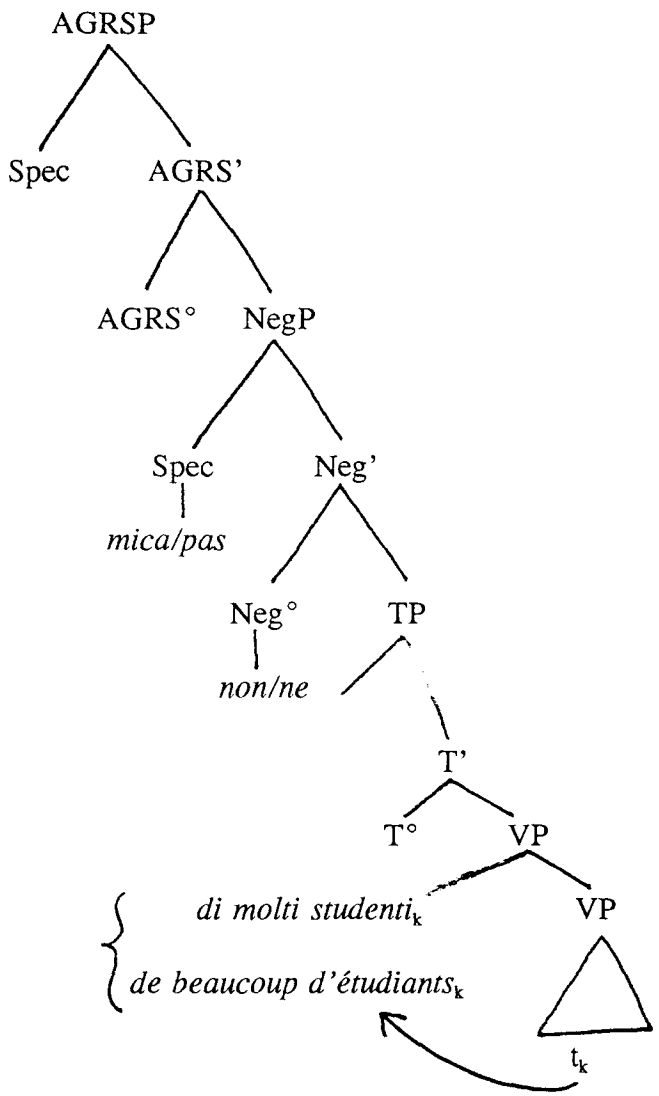
[8] The wide scope reading in (21)a is obtained by LF-movement of the quantified expression to a position higher than negation, presumably to a position adjoined to AGRSP:

i)



(27)

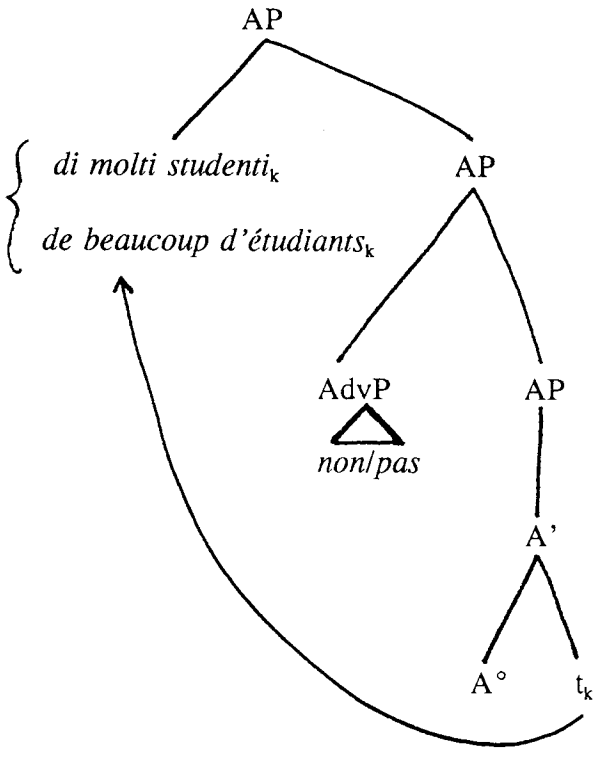


On the other hand, an argument of the adjective in a small clause has the AP as the minimal scope domain. This implies that the quantified expression, *molti studenti* or *tutti gli studenti*, in (22), must be adjoined to the AP, thus landing in a position which is outside the scope of the adverbial negation, as illustrated by the LF representation below: [9] [10]

---

[9] For some speakers, adverbial negation can take wider scope than the quantifier if it is focalized. This can be explained by assuming that a focalized negation also has to move at LF, thus landing in a position from which it c-commands the quantified expression.

(28)



This way of interpreting the above contrast is confirmed by the fact that under certain circumstances, adverbial negation can have scope over a quantified expression in the complement of A°. This happens when the complement of A° can count as a domain for the quantified expression as in (29):

[10] According to the scope principle (May, 1985), operators moved by QR and adjoined to one and the same maximal projection form a Σ-sequence and are free to take on any type of relative scope relation. Although the configuration in (28) resembles the one relevant for the scope principle, nevertheless, there is no freedom in the relative scope of negation and the quantifier. This may attributed to the fact that negation, unlike quantifiers, does not qualify as an operator for the scope principle.

(29) Ritengo [Gianni non disposto [$_{CP}$ ad affrontare molti/tutti i problemi]], ma solo pochi/alcuni

(I) consider Gianni not willing to face many/all problems, but only a few/some

In (29), *molti problemi* is adjoined to some projection inside the CP complement, thus remaining in the c-command domain of the negation adjoined to the AP. The contrast between (22) and (29) complies with our conclusion that in the former example, the PP complement of the adjectival head cannot count as a scope domain for the quantified expression *molti studenti* [11].

In lines with our previous observations, the French counterpart of (29) can have the same interpretation.

(30) ? Je considère Jean pas prêt [$_{CP}$ à affronter beaucoup de/tous les problèmes]

I consider Jean not ready to face many/all the problems

---

[11] The configuration of sentence (i) is similar to that of (29) in the text, in that the complement of the adjective contains a potential landing site for the quantified expression, namely a position inside the PP1.

i) Ritengo [le vostre proposte non concordi [$_{PP1}$ con le conclusioni [$_{PP2}$ di molti nostri collaboratori]]]

I consider your proposals not consistent with the conclusions of many our collaborators

Thus, we expect that in (i), similarly to (29), wide scope for negation should be possible, contrary to fact. Since, under similar circumstances, the same interpretation is found when the PP is contained in a full clause (see (ii)), the lack of wide scope for negation in (i) is not counterevidence for our approach. Rather, it should be attributed to an additional factor operating both in the full clause in (ii) and in the small clause in (i).

ii) Le vostre proposte non sono concordi [$_{PP1}$ con le conclusioni [$_{PP2}$ di molti nostri collaboratori]]

Your proposals not are consistent with the conclusions of many our collaborators

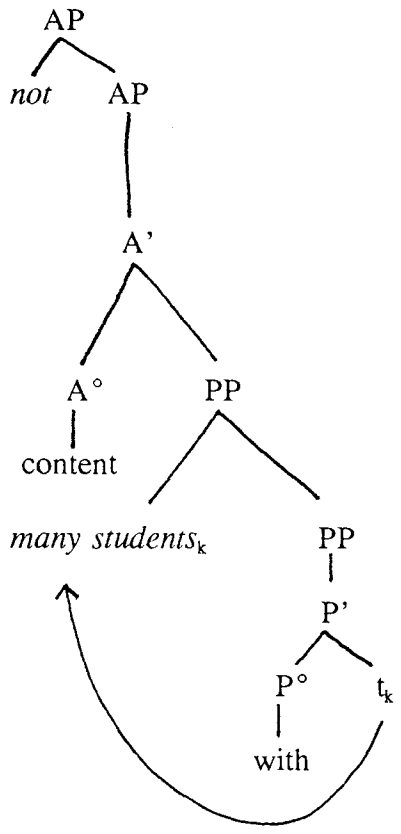
Our interpretation of the scope properties of negation inside small clauses is further supported by an interesting contrast between Italian and French, on one side, and English, on the other. In English, examples similar to (22) can have the reading in (23)b, where negation has scope over the quantifier:

(31) a. I consider John not content with many/all students, but only with few/some

b. I consider this professor not proud of many/all students, but only of few/some

We can accommodate this fact as follows. Assume that in English, contrary to Italian and French, the quantified expression can be adjoined to the PP complement of the adjective. In this configuration, the negation c-commands the quantifier and takes scope over it. The relevant LF representation of (31)a is given in (32):

(32)



The contrast above can be traced back to an independent property distinguishing the two groups of languages, i.e the ability of stranding prepositions. Whereas in English, prepositions can be stranded under S-structure movement, such as wh-movement, in Italian and French the same strategy is not available (Kayne, 1984).

(33) a. Who$_k$ did you speak with t_k?

b. * Chi$_k$ hai parlato con t_k?

c. [Con chi]$_k$ hai parlato t_k?

d. * Qui$_k$ as-tu parlé avec t_k?

e. [Avec qui]$_k$ as-tu parlé t_k?

Our proposal amounts to saying that the same phenomenon is found in instances of LF-movement. In English, the sole NP containing the quantified expression is moved and adjoined to the PP, thus stranding the preposition as in (32). On the contrary, in Italian and French, the whole PP must be moved, preposition stranding being forbidden. Thus, the minimal domain for the quantified expression is the next maximal projection, the AP, as in (28).

4. Phonological properties of *non*

As pointed out by Adriana Belletti (p.c.), *non* in full clauses cannot bear any stress (see § 1), as a reflex of its clitic nature. On the contrary, negation in small clauses can be stressed. The minimal pair is given below:

(34) a. * Gianni NON è soddisfatto del suo lavoro
Gianni not is satisfied with his work

b. Ritengo Gianni NON soddisfatto del suo lavoro
(I) consider Gianni not satisfied with his work

This contrast indicates that *non* in small clauses cannot be analyzed as a clitic, thus confirming our previous proposal. The different syntactic status of the two negations has a further phonological reflex. Adriana Belletti (p. c.) notes that in some varieties of Italian *non* is pronounced differently according to the syntactic context. For example, *non* in full clauses has a closed vowel n[o]n. Interestingly enough, in small clauses the negation *non* has an open

vowel n[ɔ]n. This is not an idiosyncratic property, but reflects a general phonological rule of Italian. An /o/ can be open in a stressed syllable, whereas it must be closed in an unstressed one, as shown by the contrast between *'p[ɔ]co* (little) and *p[o]'chissimo* (very little). Under the hypothesis that sentential *non* is a clitic and consequently is not assigned any stress, we expect it to display a closed [o], whereas *non* in small clauses is an independent word, thus bearing stress and displaying an open [ɔ]. The phonological contrast illustrated so far is naturally captured by our hypothesis according to which, in small clauses, negation is an Adverbial element .

5. Negative quantifiers

So far we have outlined the differences between negation in full and small clauses. In full clauses, NegP is one of the functional projections associated with the verb. In small clauses, negation is in an adverbial position adjoined to the AP. In spite of this structural difference, the negation found in small clauses can license a negative quantifier, as shown in (35) and (36), on a par with the negation found in full clauses, as displayed in (37) and (38).

(35) Ritengo Gianni non fedele a nessuno

(I) consider Gianni not faithful to nobody

'I consider Gianni not faithful to anybody'

(36) Ritengo Gianni non interessato a niente

(I) consider Gianni not interested in nothing

(37) Ritengo che Gianni non sia fedele a nessuno

(I) believe that Gianni is not faithful to nobody

(38) Ritengo che Gianni non sia interessato a niente

(I) believe that Gianni is not interested in nothing

These facts show that negative quantifiers can be licensed both by the negation found in full clauses and by the adverbial negation found in small clauses. This raises the question of how the licensing of negative quantifiers takes place. Haegeman & Zanuttini (1991) and Rizzi (1991) suggest that the syntax of negative quantifiers is governed by the Negative criterion which states that

(39) a. A Neg-operator must be in a spec-head configuration with an X° [+neg]

b. An X° [+neg] must be in a spec-head configuration with a Neg-operator

According to this criterion, a negative quantifier must enter into a spec-head configuration with a head affected with negative features. In Italian, the relevant relation is obtained by LF movement of the negative quantifier. Since the sentential negation is cliticized on AGRS° (§ 1), the negative feature [+neg] percolates up to this head. This implies that the Negative criterion must be satisfied at the level of AGRSP. At LF, a negative quantifier is adjoined to AGRSP. This configuration meets the specifier-head configuration required by the negative

criterion (see Haegeman, 1991). Elaborating on this approach, we propose that the negative adverb in the AP-initial position enriches the Adjectival head with negative features. At LF, the negative quantifier is adjoined to the AP thus entering into a Spec-head configuration with a [+neg] head in compliance with (39). [12]

6. Neg-raising phenomena

With bridge verbs, a matrix negation can license a negative quantifier in the embedded complement, (40) - (41), giving rise to the well-known phenomenon of Neg-raising.

(40) Non ritengo che Gianni sia fedele a nessuno

(I) not believe that Gianni is faithful to nodoby

(41) Non ritengo che Gianni sia interessato a niente

(I) not believe that Gianni is interested in nothing

Small clauses manifest essentially the same paradigm, as illustrated below.

(42) Non ritengo Gianni fedele a nessuno

(I) not consider Gianni faithful to nodoby

---

[12] One may wonder how clause (b) of the negative criterion is satisfied in small clauses. Two solutions can be envisaged. Either we assume that it does not apply at all or we can imagine that there is an empty operator in the position where negative quantifiers land at LF.

(43) Non ritengo Gianni interessato a niente

(I) not consider Gianni interested in nothing

These facts can be accounted for by assuming that at LF, negative quantifiers are moved and adjoined to the head containing the [+neg] features, i.e., to the matrix AGRS°, thus entering into the spec-head configuration in compliance with the Neg-criterion. [13] This predicts that no difference is found between full and small clauses in this respect.

Similarly to the examples in (40) through (43) involving negative quantifiers, a matrix negation can license a negative adverb, such as *ancora*, both in full and in small clauses, as in (44) and (45), respectively.

---

[13] French differs from Italian in that a negative quantifier does not seem to be licensed by a negation in the matrix clause, as shown in (i). We attribute this to the fact that Neg-raising seems to be more restricted in French than in Italian. In fact, the counterpart of (40) is also very marginal, if accepted at all:

i) *? Je ne considère Jean fidèle à personne
I not consider Jean faithful to nodoby

ii) *? Je ne crois que Jean est/soit fidèle à personne
I not believe that Jean is faithful to nodoby

Notice that if *pas* is introduced in the matrix clause, the result is the mutual erasure of the two negations; hence, the sentences acquire a positive meaning.

iii) ? Je ne considère pas Jean fidèle à personne
I not consider not Jean faithful to nodoby

iv) ? Je ne crois pas que Jean soit fidèle à personne
I not believe not that Jean is faithful to nodoby

This implies that the embedded clauses in (iii) and (iv) have by themselves a negative meaning, in spite of the absence of a negation. In this respect, French differs from Italian where a negative quantifier must be licensed by a preverbal negation. Compare examples (v) - (vi) with (35) through (38) in the text.

v) Je considère Jean (*pas) fidèle à personne
I consider Jean not faithful to nodoby

vi) Je crois que Jean (ne) est (*pas) fidèle à personne
I believe that Jean not is not faithful to nodoby

(44) Non ritenevo che quei ragazzi fossero ancora pronti per l'esame

(I) not believed that those boys were yet ready for the exam

(45) Non ritenevo quei ragazzi ancora pronti per l'esame

(I) not considered those boys yet ready for the exam

However, this strategy is not available for intrinsically negative adverbs, such as *mai* and *mica*, neither in full nor in small clauses, as illustrated below. [14]

(46) * Non ritengo che questi ragazzi siano mai disposti ad aiutarci

(I) not believe that these boys are never ready to help us

(47) * Non ritengo che questi ragazzi siano mica disposti ad aiutarci

(I) not believe that these boys are not ready to help us

(48) * Non ritengo questi ragazzi mai disposti ad aiutarci

(I) not consider these boys never ready to help us

(49) * Non ritengo questi ragazzi mica disposti ad aiutarci

(I) not consider these boys not ready to help us

---

[14] Sentences (46) and (47) allow us to rule out a possible alternative to the approach proposed in the text. One might argue that a NegP can be present in small clauses as an additional strategy, but that there is not a suitable host on which the negative head *non* can cliticize. Hence, it must raise to the matrix AGRS°. If this approach were correct, the sentences (46) and (47) should be grammatical, given that *mai* and *mica* could be analyzed as negative adverbs occupying SpecNegP, as in the representation in (i).

i) * Non_k ritengo [$_{sc}$ questi ragazzi [$_{NegP}$ mai t_k disposti ad aiutarci]]
(I) not believe these boys never ready to help us

The impossibility of having a sentential NegP in small clauses is also the source of the ungrammaticality of the French sentence in (ii) with the same derivation.

ii) * Je ne_k considère [Jean [$_{NegP}$ pas t_k intelligent]
I not consider Jean not intelligent

These facts suggest that *ancora* in (44) and (45) has to be assimilated to negative quantifiers, such as *nessuno* and *niente*, and that negative adverbs such as *mai* and *mica* have to be treated separately. This difference may be viewed as a consequence of the fact the elements belonging to the former class must be licensed by a preceding negation, as in (14), (40) and (42), whereas elements of the latter class can and must survive alone, as in (8).

There is an other way of analyzing these facts which amounts to interpreting *mai* and *mica* in (48) and (49) as an instance of adverbial negation, i.e. they are negative elements by their own. To the extent that these sentences could be acceptable, the only interpretation is the one where the two negations cancel each other producing a positive meaning. This is mostly clear when the adverbial negation in the small clause is realized as *non* in Italian or *pas* in French.

(50) Non ritengo questi ragazzi non disposti ad aiutarci

(I) not consider these boys not ready to help us

(51) ? Je ne considère pas ces garçons pas disponible à nous aider

I not consider not these boys not ready to help us

Notice that there is no way of rescuing the sentences (46) and (47), in other words, *mai* and *mica* can never survive alone in a full clause, here the embedded clause. The sentence negation strategy requires that the head *non* of NegP be always lexically realized. The lack of *non* in (46) and (47) is evidence that a sentential NegP is not present here. Thus, a simple adverbial negation is not sufficient to express negation in full clauses.

7. Two strategies for negation

So far we have pointed out that there exist two ways of expressing negation syntactically. Although the two instances of negation are semantically quite similar, nevertheless they are realized in different syntactic ways, according to the syntactic context. [15] In full clauses, negation is realized as a functional projection belonging to the clausal system whereas in small clauses, it is realized as a adverbial element functioning as a specifier. Notice that these two strategies are in complementary distribution. Negation in full clauses must be expressed as a functional projection associated with the verb and not as an adverbial-like element. [16] In other words, NegP, analogous to AGRSP and TP, forms an extended projection of the VP (Grimshaw, 1991). This view finds support in languages, such as Turkish, in which sentential negation is a bound morpheme which is part of the verb morphology (see Payne, 1990). Although in Italian and French, the negative head, *non* and *ne*, is not a bound morpheme, it combines with the inflected verb via cliticization. [17]

---

[15] Another instance of negation is the prefixal negation that is attached to a lexical head, e.g. the adjective as in *in-fedele*. This differs from both sentential and adverbial negation in being a lexical negation. Contrary to the two syntactic negations, it cannot license a negative quantifier (see § 5):

i) * Ritengo Gianni infedele a nessuno.
(I) consider Gianni unfaithful to nobody

Then, we have three different types of negation, leaving aside constituent negation (see fn. 1): sentence negation, adverbial negation and morphological negation. This threefold distinction has been independently proposed by Manzotti & Rigamonti (1991).

[16] Belletti (1990) notes that in full clauses, adverbs such as *mai* can occupy a VP-initial position, beyond SpecNegP, but only if negation *non*, hence a sentential NegP, is also present. Under our approach, this entails that the adverbial strategy is available in full clauses provided that it is licensed by a sentential NegP.

[17] Unlike finite verbs, French infinitives do not move to AGRS°. Assuming that the clitic negation *ne* moves to AGRS°, as in finite clauses, the order *ne pas manger* (not not eat) is obtained. Thus, negation combines with a functional projection associated with the infinitive verb.

In small clauses negation is expressed as an adverb and is not part of the extended projection of the adjectival phrase. This tantamounts to saying that negation has a verbal nature, thus it cannot combine with a nominal element such as an adjective. In such a case, it can only occur in a specifier-like position, thus not entering into the extended projection of the adjective. This approach has the additional consequence that small clauses must be assigned a reduced structure with respect to full clauses, in particular they should not contain all the projections with a verbal status, such as TP and AGRSP. This conjecture is confirmed by the fact that small clauses lack tense morphemes and person morphemes, typically found in full clauses. This fact, combined with Giorgi & Pianesi's (1991) hypothesis that there is a biunique correspondence between temporal morpheme and temporal projections, leads us to conclude that TP is absent in small clauses. The same conclusion could be extended to AGRSP. [18] [19]

The analysis presented here raises the question as to the status of negation in Germanic languages. It is generally assumed that in Scandinavian languages (Holmberg & Platzack, 1988) and in German (Grewendorf, 1990) sentential negation is adjoined to VP, on a par with other adverbs. If our view is correct, this analysis of negation in Germanic languages cannot be maintained. Modulo independent differences, NegP should be included in the extended head of the verb, as it is assumed for example for West Flemish (see Haegeman & Zanuttini, 1991). Further investigation is needed in order to validate this expectation.

---

[18] Our conclusion derives Zanuttini's (1991) correlation, according to which the presence of tense is a prerequisite for the occurrence of sentential negation.

[19] According to the proposal advanced here, negative elements may vary cross-linguistically as follows:
i) French *ne* is always the head of a sentential negation;
ii) Italian *non* can be the head of both a sentential and of an adverbial negation;
iii) French *pas* and Italian *mai* can only realize the adverbial negation.

Conclusions

Negation in small clauses manifests different properties from negation in full clauses, among these the scope phenomena. These observations have led us to propose that negation in the two cases does not enter the same structural configuration. In a full clause, negation is the head of NegP, an extended projection of the VP with Neg° functioning as an extended head of the verb. Because of its verbal nature, NegP cannot be an extended projection of an adjectival phrase or equivalently Neg° cannot be the extended head of the adjective. In this case, negation is expressed by an AdvP adjoined to the AP.

This distinction finds additional support by the investigation of negation in the domain of noun phrases, as illustrated in the appendix.

Appendix: Negation in Noun Phrases

Another environment where negation is not realized as sentential negation is noun phrases. Although negation in this context is not fully identical to negation in small clauses, it displays many similarities. Noun phrases have by definition nominal properties, analogous to small clauses. Thus, we predict that they do not contain sentential negation, which is found only in the extended projection of a verbal phrase.

As a matter of fact, all the properties displayed by negation in small clauses are also found in noun phrases. This resemblance supports the view that negation in noun phrases should be treated as the one found in small clauses.

a. *Negative adverbs*. As in small clauses, the sequence *non mai* is prohibited in noun

phrases.

(52) La non ammissione di quei candidati provocò uno scandalo

The not admission of those candidates caused a scandal

(53) * La non mai ammissione di quei candidati provocò uno scandalo

The not never admission of those candidates caused a scandal

b. *Scope phenomena*. Negation in noun phrases cannot have scope on a quantified expression functioning as a complement of the noun. Hence, (54) can only mean that the strike was caused by the fact that 'all the demands' were not accepted.

(54) La non accettazione di tutte le domande causò lo sciopero degli studenti

The not acceptance of all demands caused the strike of the students

c. *Phonological properties*. Similarly to small clauses, and contrary to full clauses, in some varieties of Italian, *non* in nominals is pronounced with an open vowel, i.e., it is a stressed element.

d. *Negative quantifiers*. Negation in noun phrases can license a negative quantifier in the complement of the noun, as in (55).

(55) ? La non accettazione di nessuna domanda...

The not acceptance of no demand

In fn. 4, we provided arguments in favor of the view that negation in small clauses is not adjoined to the adjectival head, but to the AP. Similarly, in noun phrases the negation *non* is not adjoined to the nominal head but to the NP. This is proven by the fact that a negative quantifier is also licensed in the external argument position of the noun.

(56) La non adesione di nessuno studente fece fallire l'iniziativa
The non-adhesion of no student made fail the initiative

In summary, negation in noun phrases behaves as negation in small clauses, as far as scope phenomena, phonological properties and distribution of negative quantifiers are concerned. These facts lead us to propose that negation in noun phrases is an adverbial element, adjoined to the NP. This conclusion, based essentially on Italian data, seems to be only partially correct, if we extend the investigation to other languages, e.g., French. In French noun phrases, *pas* cannot be used and negation is expressed by *non*.

(57) La *pas/non-admission de ces candidats a causé un scandale
The not admission of those candidates has caused a scandal

Leaving aside this lexical difference, negation in French nominals behaves as negation in Italian nominals with respect to the properties (a), (b). As in Italian, negation and negative adverbs cannot co-occur, as in (58), parallel to (53), and a quantified expression always has wider scope than negation, as in (59), parallel to (54).

(58) * La non jamais admission de ces candidats a causé un scandale

The not never admission of those candidates has caused a scandal

(59) La non-admission de tous les candidats a causé un scandale

The not admission of all candidates has caused a scandal

This quick comparison confirms the view that in nominals, we are not faced with an instance of sentential negation. However, the exact status of negation in nominals remains a matter for further investigation, particularly in view of the fact that in French, the lexical item expressing negation in nominals is different from the one found in small clauses. It is unlikely that this is just an idiosyncrasy of French, given that the same situation is found in English, where *not* is used in small clauses and *non* in nominals.

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On Leftward Movement of *tutto* in Italian

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ON LEFTWARD MOVEMENT OF *TUTTO* IN ITALIAN*

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1. (Non emphatic) object *tout* ("everything"), in French, and its equivalent, in Italian, *tutto*, occupy different positions with respect to the past participle in compound tenses:

(1) a Il a tout compris
b *Lui ha tutto capito
c *Il a compris tout
d Lui ha capito tutto
He has understood everything

Recently, it has been suggested (Belletti 1990,77ff) that this could be due not to a difference in the position of the object quantifier (which could, then, be taken to occupy the same A'- position at S-structure in the two languages), but rather to the different location of the past participle, which is known to move further to the left in Italian than in French (Cf. Pollock 1989, 411ff, Belletti 1990,78):[1]

(2) a Il a [$tout_j$ [compris t_j]]

b Lui ha $capito_i$ [$tutto_j$ [t_i t_j]]

Indirect support for this analysis comes from another set of facts to be discussed here which also suggest that *tutto* in Italian moves (may move) leftward in the syntax.

2. Consider the following contrasts:

(3) a Gli parve tutto facile
To-him appeared everything easy
b *Gli parve qualcosa facile
To-him appeared something easy

(4) a Credo che sia tutto in ordine, finalmente
I think that is everything in order, at last
b *Credo che sia qualcosa in ordine, finalmente
I think that is something in order, at last

In (3)-(4), it is the grammaticality of the a. cases that is surprising, not the ungrammaticality of the b. cases. For it is known that in Italian (perhaps generally) no case is available to the subject of a small clause complement to a raising verb (see Burzio 1986, sect.2.4, and Belletti 1988,27f for an account)[2].

To be assigned (nominative) Case, the small clause subject must either raise to the specifier position of the matrix Agreement ((5)a), or be in the "inverted subject" position of the small clause ((5)b), another case assignment position in Italian:[3]

(5) a Qualcosa gli parve [t facile]
Something to-him appeared easy
b Gli parve [*e* facile qualcosa]
To-him appeared easy something

This implies that *tutto* in (3)a/(4)a does not fill the small clause pre-predicate subject position. Otherwise, the contrast with (3)b/(4)b would remain unexplained.

The contrast directly follows, instead, if *tutto* has one more possibility than ordinary lexical DPs; namely, if it can (perhaps, must) move to an A' position of scope already at S- structure.

Note that the origin of such movement cannot be the pre-predicate subject position of the small clause (cf. (6)a), as the trace would not be Case marked, just as *qualcosa* in (3b/4b) is not. The origin of the leftward movement of *tutto* can however be the "inverted subject" position occupied by *qualcosa* in (5b), as indicated in (6)b:

(6) a (*) Gli parve tutto$_j$ [t$_j$ facile]
b Gli parve tutto$_j$ [e facile t$_j$]

The French equivalent of (3)a is instead ungrammatical (cf. (7)), since the putative sources of the movement of *tout* are both ungrammatical.See (8)a-b:

(7) *Il lui semblait tout facile

(8) a *Il lui semblait quelque chose facile
b *Il lui semblait facile quelque chose

3. What remains to be determined is the S-structure A'-position of *tutto* in (3)-(4), and, more generally, the factor that allows *tutto* (and *tout*) to move to one such position at S-structure, in contrast to other DPs (cf. Kayne 1975,chapter 1).[4] I take up the two questions in turn.

Concerning the first, one may note that (non-emphatic) *tutto* and *tout* precede a (temporal) VP initial adverb in both Italian and French, modulo the past participle's position, which is further to the left in Italian:

(9) a I bambini hanno detto tutto subito alla mamma
b Les enfants ont tout dit immediatement a leur mere
The children have told everything immediately to their mother

In this light, consider the following two sentences:

(10) a Gli e' parso subito tutto facile
To-him appeared immediately everything easy
b Gli e' parso tutto subito facile
To-him appeared everything immediately easy

In (10)a, but not in (10)b, *subito* modifies the matrix verb ("everything immediately appeared to him easy"), which suggests that in (10)a, though not in (10)b, the adverb is located in the Spec of the matrix VP. This, in turn, implies that *tutto* has not moved to the same (Spec) position hosting object *tutto* in the participial phrase, to the left of the VP adverb (cf. (9)a and b). Otherwise, (10)b, in which *tutto* is to the left of the adverb, should also allow for the same reading. But (10)b only admits the reading in which the adverb modifies the adjective, suggesting that it has not left the adjectival small clause ("Everything appeared to him immediately easy").

If *subito* in (10)b is in the Spec of the functional head selecting the AP, *tutto* has presumably moved to the Spec of a higher functional phrase:[5]

(11) ... parso [AGRP... [FPtutto$_i$ _ [FPsubito _ [AP t$_i$ facile ...

Consider the second question. Why can *tout/tutto* and no other quantifier or quantified DP move leftward to an A'-position?

(12) a Lui ha apprezzato { tutto / *qualcosa / *qualcuno / *tutti i libri } molto
b
c
d
He appreciated everything/something/someone/all the books much

(13) a Il a { tout / *quelque chose / *quelqu'un / *tous ces livres } vu
b
c
d
He has everything/something/someone/all these books seen

As observed by Kayne (1984,chapter 4), contrasts such as (14)a-b suggest that the trace of *tout* (*tutto*), as opposed to that of the clitic, is a variable since it does not need to be locally bound:[6]

(14) a Marie a tout$_i$ voulu faire t$_i$
Marie has everything wanted to do
b *Marie l$_i$'a voulu faire t$_i$
Marie it has wanted to do

The A'-position occupied by *tout/tutto* at S-structure, however, must not be a position open to any (quantificational) XP. Otherwise, one would not expect the asterisks of (12/13). This is especially true of *qualcosa/qualcuno* in Italian, which can bind a variable from one such position: the A'-position of the "Clitic Left Dislocation" construction. See (15) and the discussion in Cinque (1990, chapter 2):

(15) a Qualcosa, credo che faranno
Something, I think they will do
b Qualcuno, trovero'
Someone, I'll find

We would have an answer if only *tout/tutto*, among XPs, could move to what appears to be an adverbial-like A'-position (as Kayne 1975, sect. 1.3, originally suggested), while retaining their ability to bind a variable (a nominal-like expression).

Here, I will suggest a possible implementation of this idea, elaborating on a suggestion made in Cinque (1986).

Something that uniquely characterizes *tutto/-i/-a/-e* 'all masc. sing./ masc.pl./ fem.sing./ fem.pl.' is that it takes a full DP as its complement, itself being the head of a distinct QP projection ([$_{QP}$tutto [$_{DP}$il libro]] 'all the book'; [$_{QP}$tutti [$_{DP}$i libri]] 'all the books',etc.). See Giusti (1991), and Bianchi (1992) for evidence that *tutto/-i/-a/-e* is a head embedding a DP and Shlonsky (1991) for similar conclusions concerning its analog in Hebrew.

Both DPs and QPs act as arguments, hence as variables as well. See (16)a-b:

(16) a [$_{DP}$I LIBRI], ha letto [$_{DP}$]
The books (focus) he/she has read
b [$_{QP}$ TUTTI [$_{DP}$I LIBRI]], ha letto [$_{QP}$]
All the books (focus) he/she has read

In (16)b, the QP qualifies as an "extended projection" of N, in the sense of Grimshaw (1991) (after receiving +N,-V features from its complement via percolation):[7]

If only QPs could freely occur in the adverbial-like L-*tous* position (as well as in argument position), because they alone can be categorially neutral between a nominal (i.e. +N,-V) projection and an adverbial-like projection, we would have part of the answer for (12/13).[8] First, the b and c cases would be excluded as they contain a DP, not a QP, in the L-*tous* position.

The difference between (12a) on one side and (12d) and (17) below, on the other, would also follow if in (12a) *tutto* is a bare QP, unspecified for the features +/-N, +/-V, while in the latter two cases the QP head, as a consequence of taking a +N,-V complement, from which it inherits the features, becomes a nominal projection. See (18) and (19):[9]

(12) a Lui ha apprezzato tutto molto
He appreciated everything much

(12) d *Lui ha apprezzato tutti i libri molto
He appreciated all the books much

(17) (A proposito di quei libri) *Lui ha apprezzato tutti molto
(Concerning those books) He appreciated all much

(18) ... apprezzato [QPtutti [DPi libri]] molto
[+N,-V] [+N,-V]

(19) ... apprezzato [QPtutti [DP]] molto
[+N,-V] [+N,-V]

That *tutto* in (12a) is a bare QP (with no DP complement, and with default neuter agreement) is supported by the following observation: when *tutto* is followed by the overt neuter pro-DP *cio'* 'it', it cannot move to the L-*tous* position. Thus (12a) (see (20a)) sharply contrasts with (20b):[10]

(20) a Lui ha apprezzato [QPtutto] molto [QP]

b * Lui ha apprezzato [QPtutto [DPcio']] molto [QP]
He appreciated all it much

The same holds for subject *tutto*. See (3a), repeated here as (21a), and (21b):

(21) a Gli parve [tutto]$_i$ facile t_i
To him appeared all (everything) easy

b *Gli parve [tutto cio']$_i$ facile t_i
To him appeared all it (everything) easy

Notice that (21a) is interpreted differently from (22), which contains a "floating" instance of *tutto*:

(22) Cio' gli parve tutto facile
It to-him appeared all easy

In (22), *tutto* can only be interpreted as 'entirely', not as 'everything'. Of course, this interpretation (alongside the 'everything' interpretation) is also available in (21a) given the possibility, in Italian, of moving the null counterpart of the overt neuter pronominal *cio'* to the Spec of the matrix AGRP.

But this suggests that the analysis of (21a) cannot be reduced to a simple floating quantifier analysis along the lines of (22) with a null *cio'*. If that were the case, (21a) should have only the 'entirely' reading, contrary to fact.

The fact that other (apparently bare) neuter quantifiers such as *molto,poco,troppo*,etc. cannot occur in the L-*tous* position (cf. (23)-(24)), would follow if these obligatorily required a complement DP:

(23) a Diede { tutto / *molto / *poco / *troppo } subito ai poveri
He/she gave everything/much/little/too much to the poor

b Gli parve { tutto / *molto / *poco / *troppo } facile
To-him appeared everything/much/little/too much easy

This need not be stipulated. Differently from *tutto/i/a/e*, which transmits to the DP the case it receives, indefinite Qs assign partitive case (see Cardinaletti and Giusti 1991), and this must presumably be discharged on a DP.[11]

The above evidence only showed that (non-emphatic) *tutto* in Italian *can* move to an A'-position at S-structure (presumably anticipating in the syntax what must in any event happen in Logical Form, where quantifiers have to move to scope positions). Whether it *must* remains still to be determined.

FOOTNOTES

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1. For empirical evidence that (non-emphatic) object *tutto* occupies, at S-structure, a position to the left of its base position, see Belletti (1990), incorporating suggestions by Kayne and Rizzi, and Rizzi (1991). Evidence that past participles move further to the left in Italian than in French is provided by their positioning with respect to certain negative adverbs, such as *piu'/plus* ("anymore") (Cf. Pollock 1989, sect. 6.3, Belletti 1990, 77ff), at least under the reasonable assumption that such adverbs are, for scope reasons, generated in the same base position in the two languages, and are not moved in one but not the other language:

(i) a Non ho mangiato piu'
b Je n'ai plus mange'

Additional evidence to the same effect comes from the distribution of floating quantifiers (FQ). Sportiche (1988,427) notes that in a French sentence consisting of an auxiliary, a participle and an object, a FQ can be found between the auxiliary and the participle ((ii)a), but not between the participle and the object ((ii)b):

(ii) a Les enfants ont tous vu ce film
The children have all seen this film
b *Les enfants ont vu tous ce film
The children have seen all this film

Sentences corresponding to (ii)b in Italian are instead perfectly grammatical:

(iii) I bambini hanno visto tutti questo film
The children have seen all this film

Once again, this can be taken not as an additional independent difference between the two languages but simply as another manifestation of the same abstract difference: the participle can move further to the left in Italian than in French, only in the former crossing over the FQ, as it does over the negative adverb in (i).

2. Standard cases showing this restriction are:

(i) a *Sembrano [molti studenti intelligenti]
Seem many students intelligent
b *Sono [molti studenti intelligenti]
Are many students intelligent

Belletti's account is based on the unaccusative character of raising verbs and on the assumption that unaccusative verbs assign inherent case; hence only to DPs which are thematically related to them (cf. Chomsky 1986). Since the subject of the small clause complement of the unaccusative verb is not thematically related to it, and does not receive case from anything else, it is in violation of the Case Filter.

3. On analogy with full clauses, I assume that case assignment to the inverted subject position of the small clause in (5)b is by the (abstract) head T(ense) (cf. Roberts 1991 for discussion). 'e', an expletive pronominal, also needs case, and may receive it if it raises to the matrix subject position. Whence the contrast between (i)a and b:

(i) a [e_i sembrano [t_i esserne arrivati molti]]
Seem to be arrived many
b *[[e esserne arrivati molti] e' preoccupante]
To be arrived many is worrying

4. On the DP (Determiner Phrase) analysis of NPs, cf. Abney (1987), Longobardi (1991) and references cited there. In French, *rien* 'nothing' too moves in the syntax.
Clear evidence that *niente*, its equivalent in Italian, moves leftward in the syntax is however lacking. V.:

(i) a *Non ci pare niente in ordine
Not to us seems nothing in order
'Nothing seems to us in order'
b *Non apprezza niente molto (cf. Apprezza tutto molto)
He/she does not appreciate nothing much

Also see Belletti (1990,138,fn.72).

5. *Tutto* follows *loro* in the small clause (i) as it does in the full clause (ii):

(i) a Non so se sia loro tutto chiaro

I do not know whether is them(DAT) everything clear

b *Non so se sia tutto loro chiaro
I do not know whether is everything them(DAT) clear

(ii) a Diremo loro tutto bene
We will tell them(DAT) everything well

b *Diremo tutto loro bene
We will tell everything them(DAT) well

It is not clear what prevents *tutto* in (10) from moving 'successive cyclically' to the higher position it could fill in the participial phrase, thus making (10b) acquire the reading of (10a), in which the adverb modifies the matrix verb. Some factor appears to make leftward movement of *tutto* in Italian clause bound, as is overtly visible from the following systematic contrasts with French:

(iii) a J'ai tout voulu faire

b *Ho voluto tutto fare
I have everything wanted to do

(iv) a ?Il faut tout que tu fasses

b *Bisogna tutto che tu faccia
It is necessary everything that you do

Parallel contrasts involve the leftward movement of *tous* and of certain 'VP-initial' adverbs (Kayne 1975,chapter 1,fn.29; Kayne 1991,fn.23), suggesting the existence of a single deep-seated difference between the two languages:

(v) a Il a tous fallu qu'on les lise

b *Ci e' tutti voluto che li leggessimo
It has all been necessary that we read them

(vi) a J'ai mal dû raccrocher

b *Ho male dovuto riappendere
I have had to hang up badly

This remains as an open problem.

6. The fact, noted in Obenauer (1992), that *tout* does not license parasitic gaps from the L-*tous* position (**Il a tout envoyé t sans relire e* 'He has everything sent without checking') is not problematic for the A' status of that position if parasitic gaps have pronominal features (cf. Cinque 1990, chapter 3) incompatible with *tout* (cf. **Tout est tombé parce qu'ilé 'tait mal attacheé 'Everything fell because it was hitched up badly'- from Kayne 1975,1.3).*

7. See also Abney's (1987) notion of *f-selection*

8. Concerning the feature content of such a projection, we can assume for concreteness, and begging certain questions, that Q is U(nspecified) N, U(nspecified) V.
That QPs can possibly inherit categorial features from their complements (with important limitations, in Italian) is indicated by the fact that they can be 'extended Ns' (*tutti i libri* 'all the books'), 'extended A's' (*una casa tutta sporca* 'a house all dirty') and even 'extended Ps' (*E' piovuto tutto dentro* 'it rained all inside'). In French, though not in Italian, they can in certain cases be extended adverbs (*J'ai marché tout doucement* 'I walked quite slowly').

9. The DP complement in (17)/(19) is presumably necessitated to host a pronominal, required for interpretive reasons. In addition to transmitting its +N,-V features to QP (hence rendering the QP unsuitable for the L-*tous* position), this pro also fails to be properly identified.

Notice that *Lui ha apprezzato tutti molto* 'He has appreciated all much' is grammatical with a (necessarily) arbitrary human interpretation. In the present context, this implies that the Q takes no DP complement, acquiring, as a consequence of that, a default human interpretation. Independent evidence for this assumption is discussed in Belletti and Rizzi (1981,fn.9) and Cinque (1986,fn.12). I differ here from Cinque (1988,fn.36).

10. As Cardinaletti (1991, fn.19) notes, *tutto* can be preceded by a specifier such as *quasi* 'almost':

(i) Lui ha apprezzato quasi tutto molto
He appreciated almost all much

Thus, the unacceptability of (20b) cannot be imputed to heaviness factors. (i) also suggests that *tutto* in the L-*tous* position is not a head (Q) but a full XP (QP), as Cardinaletti observes, with its specifier optionally filled (cf. (i) vs. (12a)).

11. If Sportiche's (1988) analysis of FQs as Qs "stranded" under NP- and Clitic-movement is correct, then the well-formedness of (i)-(ii), which contain QP with a DP complement in the L-*tous* position, requires a modification of the analysis assumed in the text.

(i) [DPI bambini] sono stati apprezzati [QPtutti [DP]] molto [QP]
The children have been appreciated all much
(ii) Noi li abbiamo apprezzati [QPtutti [DP]] molto [QP]
We them have appreciated all much

The relevant generalization can no more be that only bare (intransitive) QPs can fill the L-*tous* position by virtue of their non-distinctness with adverbial phrases.
What distinguishes *tutto* from floating *tutti* (and floating *tutto*) is that the former, though not the latter, has to bind a variable.
Capitalizing on this difference, it could be suggested, then that the generalization is that the XP in L-*tous* position may not have a complement just in case it must bind a variable.
A possible reason for it is that the L-*tous* position counts as an operator position only when it is filled by an U(nspecified)N, U(nspecified)V QP; namely, when the QP is not an extended projection of N.
Movement of [QPQ [DP]] to the L-*tous* position, an A'-position, must occur after DP-movement has stranded the Q. For relevant discussion, see Cardinaletti (1991,fn.23).

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THE ANALYSIS OF THE *PASSE' SURCOMPOSE'*: A HYPOTHESIS ON SENTENCE STRUCTURE FORMATION

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1. INTRODUCTION*

Recent studies in generative Syntax have developed a complex system of functional projections within both the verbal and the nominal structure. The current trend is to interpret Baker's Mirror Principle regarding the symmetry between the syntactic and the morphological component of the grammar in its strongest form, namely as a strict correspondence that can be formulated as follows: for each inflectional morpheme there is a corresponding syntactic projection.

Such a working hypothesis raises a number of problems regarding the sequence of Functional projections: in particular it could be asked whether all natural languages have the same set of Functional projections or if there are common principles that rule their distribution.

This work proposes a tentative hypothesis expressed in terms of a general condition that rules the occurrence and the respective order of inflectional projections. This will be done on the basis of some particularly complex structures in some Romance varieties known as "passe' surcompose" in the descriptive grammars.

Looking at the order of inflectional morphemes in these structures it is possible to note that every verbal root has an Agreement morpheme as its rightmost component and that Functional heads such as Tense, Aspect and Voice alternate with Agreement projections.

On this basis we will formulate a principle concerning the form of Romance inflected verbs, which are always saturated by an Agreement morpheme.

A second observation regarding the order of the inflectional morphemes attached to the verb will be formalized as a universal condition that applies whenever a language activates Agreement and Functional projections. It seems that Agreement and Functional projections such as Tense, Voice, Aspect, appear in a one to one relation within the structure of the sentence. This phenomenon, noted in Romance languages, can also be found in other languages such as Basque, Polish and Finnish.

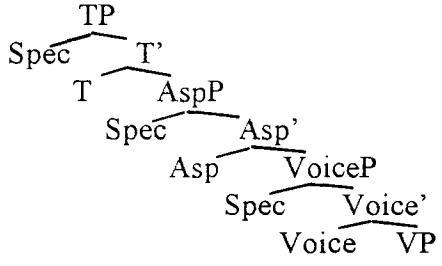
Section one considers recent analyses of sentence structure and in particular the mechanism that rules the suffixion of inflectional morphemes to the verbal root.

In section 2 we will examine the "passe' surcompose" structure, showing that, even in a quite complex structure with three auxiliary verbs, only some sequences of inflectional morphemes are found and that not all possible combinations are realized. Section three formalizes the two conditions ordering Agreement and Functional projections and applies one of them to other languages.

1.2 INFLECTIONAL MORPHEMES AS HEADS

Since Pollock's seminal work showing the necessity of splitting the inflection projection, IP, into at least two distinct syntactic projections, it has been claimed that not only should Tense and Agreement have their own maximal category, but so should Mood, Aspect and Voice. The existence of an aspectual syntactic projection has been proposed by various authors on the basis of languages that show morphological aspect distinctions. Rivero (1990), for instance, looking at the order of the inflectional morphemes in Macedonian and Albanian, postulates that in these languages the Aspect projection is placed below Tense but above Voice, as illustrated in (1):

(1)



The Voice morpheme, which is the first morpheme after the verbal root, is the head of the first inflectional projection above the VP. The Aspect morpheme, which is realized after the Voice morpheme, constitutes the head of the Aspect projection, which is placed above the VoiceP. Tense and Agreement are projected higher up in the structure, and they are realized in an auxiliary verb.

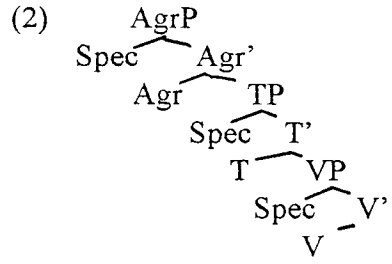
This line of reasoning, followed by Rivero in order to determine the position of the various Functional projections, relies on the assumption of Baker's Mirror Principle, (cf. Baker (1985)) which states a strict parallelism between Morphology and Syntax: the order of the inflectional morphemes attached to the verb reflects the hierarchical order of their syntactic projections. This explanation of the symmetry between Syntax and Morphology is purely structural: every inflectional morpheme constitutes the head of an independent projection in the Syntax, but it does not always constitute an independent word in the morphological component.

In the cases in which the inflectional morpheme is not an independent word, it has to be incorporated into the verb. Hence, the verb moves up to the head of the inflectional projection in the Syntax in order to incorporate the bound morpheme and constitute with it an independent word. If more then one inflectional head is filled by a bound morpheme, as happens for instance, with both the Tense and Agreement morphemes in Romance, the theory predicts that the verb must move cyclically, first to the head of TP in order to incorporate the Tense morpheme and then to the head of AgrP where it incorporates the Agreement morpheme.

In this way, the successive head to head movement of the verb into every inflectional head that contains a bound morpheme yields the order that the morphemes show with respect to the verbal head. For instance, if the Tense morpheme is closer to the verbal root than the Agreement morpheme, this means that it has been incorporated before the Agreement morpheme, namely that TP is lower than AgrP in the structure of the sentence (cfr Belletti (1990)).

Belletti proposes for Italian (but the proposal can be extended to Romance in general) that the order of the Tense and Agreement projections is the one illustrated in (2):

(2)



In her system, the verb moves to Tense and incorporates the Tense bound morpheme and then the whole complex V+T moves to Agr where it incorporates the Agreement morpheme. In this way it is possible to account for the order of the inflectional morphemes deriving it directly from Baker's Mirror principle.

Both Rivero's and Belletti's proposals exploit this principle in order to infer the hierarchical order of the Functional projections by simply looking at the linear order of the morphemes with respect to the verbal root.

The claim that every morpheme corresponds to a complete syntactic projection is a strong one, because it predicts that for every visible morpheme there is not only a syntactic head but also a specifier and a complement position in the Syntax.

As for the specifier position, at first sight things seem to be unclear. It has been recently proposed that specifiers are projected only when they are needed. Trying to maintain a more conservative view, one could ask if specifier positions of FPs are always empty or if there is some element that can occupy them. In Belletti's (1990) theory the Spec of the AgrP is assumed to be the position of the preverbal subject. But what about the specifiers of the other inflectional projections such as Tense or Aspect?

We could assume that these are precisely the positions that adverbs occupy (apart from negation which probably has a projection of its own). If this is true, the fact that every inflectional projection has a specifier position does not represent a problem. On the contrary the presence of these specifier positions explains the restrictions against the free occurrence of adverbs in every position of the sentence and the fact that some classes of adverbs are in a complementary distribution: only if there is a specifier available can an appropriate adverb occur, thus yielding a grammatical sentence.

As for the complement position of FPs, it is saturated by the lower Functional projection as (2) shows: AspP is the complement of T, VoiceP is the complement of Asp, and so on. This fact is normally expressed as a relation of selection that the higher head performs on the lower one.

At first sight, it seems strange to apply the mechanism of selection, which has been developed to account for the relation between a lexical head (as the verb or the noun) and its

arguments, to functional projections. As functional heads do not have arguments, it seems more reasonable to account for the respective order of FPs in Grimshaw's (1991) terms: she proposes that functional projections constitute the "perfect projection" of a lexical head. The functional projections up to AgrP constitute for instance the perfect projection of the verb, the DP (or even QP following Giusti (1992)) is the perfect projection of the head N.

Whatever device is used to explain the fixed order of the functional projections, this must be a consequence of very general syntactic and semantic principles: for instance, the dominance relation between Tense and Aspect is connected with the interpretation of the sentence. This entails that Tense and Aspect are always in the same position in every language, so, we expect that every time it is possible to isolate a functional projection through syntactic tests in a given language, this FP occupies the same position which has been observed in other languages. Note that we are not saying that every language has the same inventory of functional categories, our claim is much weaker: our hypothesis concerns only the position in which FPs are realized. It says that every time an FP is present in the syntactic structure of the sentence in a language, its place is fixed: so AspP is always below TP, CP is always above TP and so on.

In section two we will try to prove that in Romance languages there is evidence for the existence of a complete Aspect phrase with a head, a complement and a specifier position, and that its position is the same as that postulated by Rivero (1990) for the Balkan languages (cfr. (2)).

Moreover, on the basis of a structure known in traditional grammar as the "passe' surcompose" (PSC), it will be shown that we have to impose some general conditions on structure formation regarding the association of inflectional projections and that only some sequences of inflectional projections are possible.

We will use examples from two Northern Italian dialects, Alto Vicentino (VI.) and Friulian (FR.), but the data are the same in some varieties of French and in other Northern Italian Dialects as well.

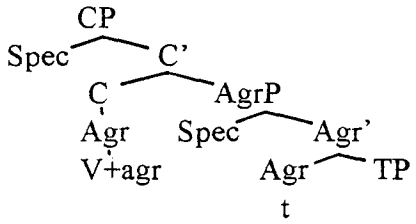
1.3 INCORPORATION THEORY

Before we discuss the distribution and the features of the PSC construction, it is necessary to consider how the theory of incorporation has been developed in relation to inflectional bound morphemes. In particular Roberts (1991) has proposed an articulated analysis of incorporation in three different mechanisms, which are essentially parallel to XP movement.

Incorporation exploits the three mechanisms of a)substitution b) adjunction and c)selection.

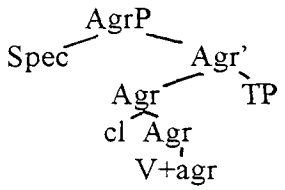
A head can move in one of these three ways. Substitution is movement of a head into an empty head. This is for instance the case of verb movement to C in non-verb second languages. The inflected verb moves into the empty head C and fills it totally (see Roberts (1991) for details). The structure that this type of movement builds is the following:

(3)



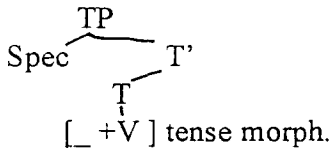
The second type of movement is adjunction. A head adjoins next to another head which is already filled by some material. Following Roberts (1991), this is the case of clitics, which adjoin to the Agreement head occupied by the inflected verb as illustrated in (4):

(4)



The third type of incorporation involves verb movement to inflectional projections. It applies through a mechanism of selection, as the bound morpheme in the inflectional head position opens a slot for the verb.

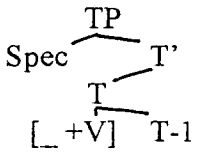
(5)



Another way to formulate structure (5) has been proposed by Roberts (1991a). Using negative projections, it is also possible to apply X'-theory to this level of representation.

Hence, structure (5) can be rewritten as in (6), where the movement applies at the morphological level, but follows a syntactic procedure of movement:

(6)



In (6) the tense morpheme is inserted under T-1, while the selected verbal root is in its complement position.

Keeping in mind that selected incorporation applies under the level of heads, namely at the X-1 level, we will now consider the order of inflectional projections and how they are arranged in the structure of a specific complex construction such as the PSC.

2.1 THE SYNTACTIC REFLECTION OF ASPECT

In a recent article by Marcato (1986) it has been noted that some Northern Italian dialects present a sort of reduplication of the auxiliary verb *have* in compound tenses, as is shown in (7):

(7) I dise che el ze morto parche' el ga *bio* dito massa busie
They say that he has died because he has had told too many lies

(7) illustrates a case of PSC, in which the auxiliary inflected for Tense and Agreement is followed by the past participle of the auxiliary *have*, underlined in the example, which precedes the main past participle.

Marcato notes that the translation of this particular construction into Standard Italian should include an adverb, because there is no way to express it simply with a verbal form. The fact that the corresponding Italian verbal form does not exist shows that the auxiliary *bio* is not purely redundant but contributes to the meaning of the sentence. She states that the auxiliary *bio*, which appears in (7), has an Aspect function in the sentence.

We are not in a position here to examine the semantics of this aspectual auxiliary we refer to Marcato (1986) and Beninca' (1990) for a detailed discussion of this point. We will concentrate on the Syntax of the PSC, describing first its distribution.

The occurrence of the aspectual auxiliary does not depend on the main versus embedded character of the sentence. It can appear both in main and embedded clauses as is shown in (8):

(8) a Stamatina go bio stira'
This morning (I) have had ironed
b Co go bio stira' so nda' fora
When (I) have had ironed (I) have gone out
c Go bio visto el papa
I have had seen the Pope

In order to reinforce the claim that the auxiliary *bio* is really an aspectual form, it is interesting to note that the examples in (8) have a particular interpretation, that entails the idea that the action is completely over, and that it has no relation with the present.

This type of double auxiliary is not confined to the past perfect. It can appear in all compound tenses, in indicative as well as in subjunctive and conditional verbal forms, as indicated by the schema in (9):

(9)

pres. perf.	go bio
past perf.	gavevo bio
fut. perf.	gavaro' bio
subj. pres. perf.	gabia bio
subj. past perf.	gavesse bio
conditional	gavaria bio

This additional auxiliary can also appear in questions as illustrated in (10):

(10) Cossa galo bio fato?
What has+he had done?

It seems that the occurrence of the PSC is restricted neither by the main versus embedded character of the sentence nor by the verbal mood nor by the presence of an interrogative operator.

This pattern is valid not only for VI., but also for the varieties of French that permit the PSC and for Friulian.

We will thus assume that this double auxiliary form expresses an Aspect category for which there is no correspondent verbal form in Standard Italian nor in other Romance languages.

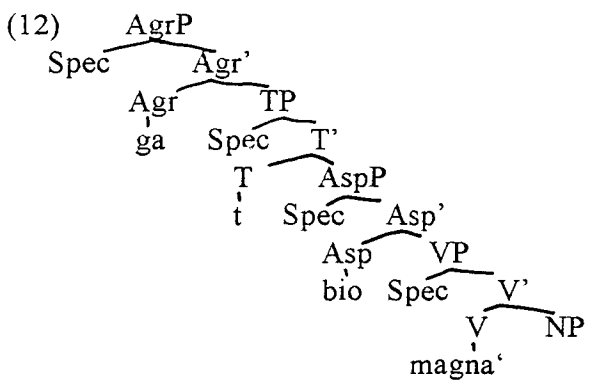
It is interesting to ask how the structure of a sentence like (7) (here repeated as (11)) could be represented and in particular whether the auxiliary *bio* constitutes the realization of an independent Aspect projection, which lies above the VP but below Tense:

(11) I dise che el ze morto parche' el ga *bio* dito massa busie
They say that he has died because he has had told too many lies

In (11) the auxiliary inflected for Tense and Agreement is infact not *bio* but another auxiliary above it.

The case of (11) would thus imply that the head of a syntactic inflectional projection can be filled not only by a bound morpheme but also by an independent auxiliary head. This assumption is admitted in a number of cases by the standard theory, as for instance in the English structures with "do- support" (cf. Roberts (1991a)).

Following the hypothesis that the aspectual auxiliary occupies the head of an independent AspP, we obtain a structure of the Romance PSC which is completely parallel to the one proposed by Rivero for Albanian and Macedonian:

(12)


In structure (12), the head of Agr is filled by the auxiliary *ga*, which has moved from the head of T to the head Agr. The head of Asp is filled by *bio*, and it selects the VP, where the V *magna'* is found.

In (12) the position in which the Aspect feature is realized is the same as that in (2), namely under the Tense projection.

The only difference between VI. and Albanian regards the type of element that fills the head of the AspP: in Albanian it is a bound morpheme that forces the verb to move to Asp in order to create an independent word. In VI. it is the auxiliary that realizes the Aspect feature as independent from the main verb.

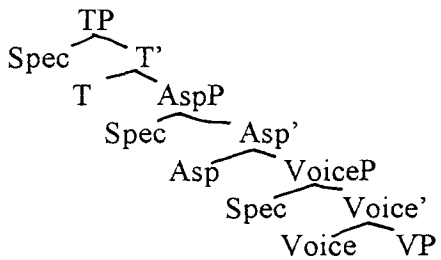
Rivero proposes furthermore that the Aspect projection can select a Voice projection, where the passive morpheme is realized. In fact, Macedonian and Albanian show that the Voice morpheme is closer to the verbal root than the Aspect morpheme, indicating that the verb has passed through Voice incorporating the Voice morpheme before raising to Aspect. The same observation can be made for the PSC construction. The auxiliary *bio* is perfectly possible even in passive sentences, and it always appears before the passive auxiliary, exactly as predicted by Rivero's analysis:

(13) Co me sorela la ze bia sta ciama'...
When my sister she is had been called

(14) *Co me sorela la ze sta bia ciama'...

If the passive auxiliary is the realization of the Voice projection, then the linear order of the auxiliaries is precisely that predicted by Rivero (1990), namely Tense which selects Aspect which selects Voice. We can conclude that Rivero is right assuming that the Asp phrase directly selects the VP or a VoiceP, as in the case of (13). Hence the structure of (13) will be (2), here repeated:

(2)



The parallelism found between the Romance PSC on one hand and Macedonian and Albanian on the other seems at first sight to satisfy the expectation that different languages have a symmetric behaviour with respect to the order of inflectional projections. Nevertheless, things seem to be more complicated in Romance, in particular with regard to the structure of the main past participle.

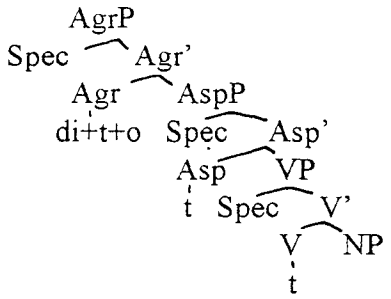
2.2 THE PAST PARTICIPLE AS A COMPLEX UNIT

In the last section we considered how the aspectual auxiliary *bio* present in VI. can be syntactically analyzed, assuming that it occupies the head of an inflectional Aspect projection that is placed in the same position as the one proposed by Rivero for Macedonian and Albanian.

Furthermore, we considered the main past participle as being the head of a VP projection which is the lowest projection in the structure. Nevertheless, the main past participle looks like a complex form both in VI. and in Standard Italian. Consider for instance (7), here repeated as (15):

(15) I dise che el ze morto parche' el ga *bio* dito massa busie
They say that he has died because he has had told too many lies

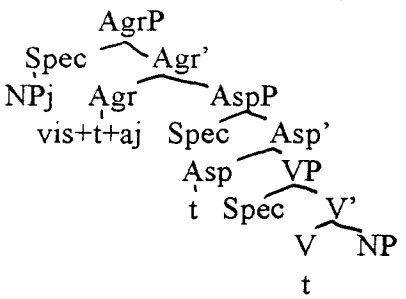
If it is true that for every bound morpheme there is a corresponding inflectional projection to which the verbal head moves, we might expect that the past participle would appear in its bare form, as it is the head of a lexical projection such as the VP, and does not raise to any inflectional projection. This is simply not true, because the form of the main verb, *dito* is not a bare stem, but it consists of the verbal root, a *t* morpheme and a vowel, *o*. This fact has already been noted in the literature. In fact, the past participle has been analyzed in Kayne (1989) and Belletti (1990) as a complex form consisting of an Aspect morpheme, namely the *t*, and of an Agreement morpheme, the vowel, each of which corresponds to a complete projection. The syntactic structure of a past participle will thus be (16):

(16)


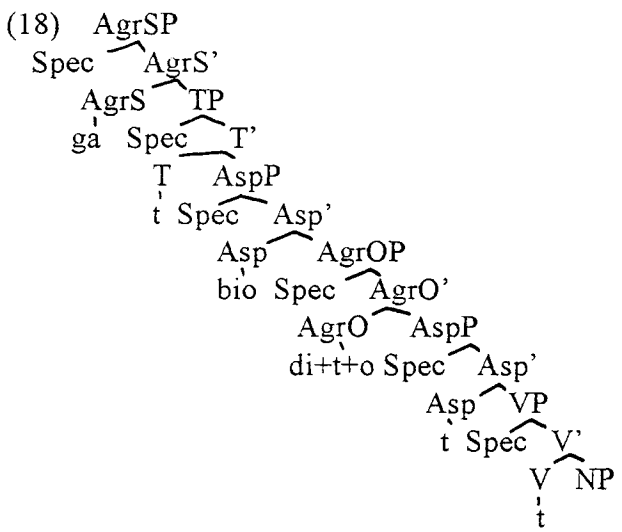
In (16) the verbal root moves from the V position to the Asp position in order to incorporate the Aspect morpheme and then to Agr, where it incorporates the Agreement morpheme.

Kayne (1989) proposes furthermore that the cases of Agreement of the past participial form with an object clitic or with the superficial subject in a passive sentence are instances of Spec-head Agreement, where the NP bound by the clitic has passed through the specifier position of the Agreement projection of the past participle, inducing the Agreement vowel to match its features in number and gender, as in a sentence like (17):

(17) a I la ga vist*a*
They her have seen+agr (feminine, singular)

b


On this basis we cannot consider the main past participle in VI. and Standard Italian as a lexical head, but rather as an inflectional Agreement head resulting from the movement of the past participle to object Agreement passing through an Aspect head. If we want to maintain Kayne's analysis of the past participle, which accounts for the Agreement facts in an interesting way, and we compare it with the structure proposed in (12) for the PSC in Vicentino, we are faced with a potential problem. In (12) the past participle does not have any Functional projection, the first Functional projection being AspP, occupied by the auxiliary *bio* or a VoiceP occupied by the passive auxiliary (when there is one as in (13)). Following Kayne's and Belletti's analysis, we could assume that the symbol VP in (12) is to be substituted with the Agr of (16), yielding a more complex structure like (18):



In (18) the higher Agreement head is occupied by an auxiliary which is also inflected for Tense and which has moved from the head of T, as the trace in that position indicates. The Asp selected by Tense is occupied by the auxiliary *bio*, which selects an Agreement projection, corresponding to the Object Agreement projection. The main verb has moved into this position from its base position inside the VP passing through the Aspect selected by the Object Agreement projection.

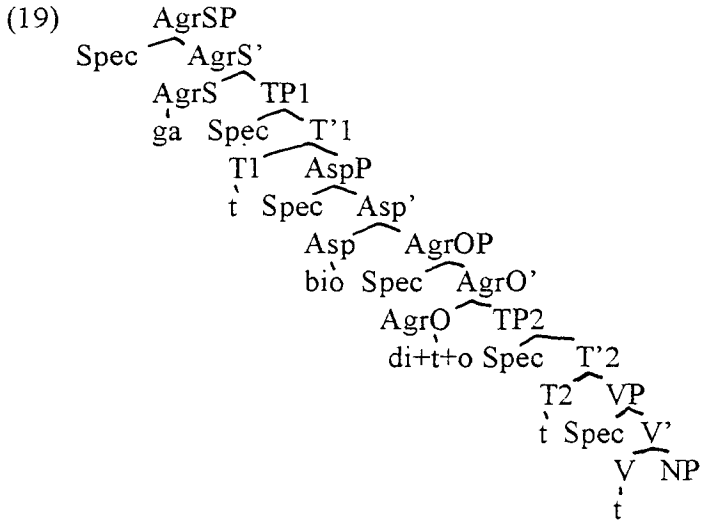
At first sight such a structure seems quite complicated and redundant. However, the fact that there are two Agreement projections does not constitute a problem, because they are Agreement with different arguments. This fact, on the contrary, is predicted by the theory (cf. Chomsky (1991)).

Nevertheless, structure (18) may constitute a problem because it contains two Aspect projections, one occupied by the Aspect auxiliary *bio* and the other occupied by the trace of the main verb which has been moved to the Object Agreement projection.

It has recently been proposed by Giorgi and Pianesi (1991) that the *t* morpheme of the past participle, which is treated as aspectual by Kayne (1989) and Belletti (1990), can be analyzed as a tense morpheme. Giorgi and Pianesi propose an interesting syntactic implementation of the Reichenbachian theory on Tense: they assume that there are two tense heads, T1 and T2, which can be projected in the sentence structure, T1 being the syntactic realization of the relation

between the speech time and the reference time, while T2 instantiates the relation between the event time and the reference time.

T1 is projected in the position of the usual TP, while T2 is the functional projection realized by past participles, which incorporate the *t* morpheme in Romance. A structure like (18) can thus be rewritten as (19), where the aspectual projection occupied by the auxiliary *bio* is placed below T1 but above T2:

(19)


But is this really unavoidable to postulate an independent aspectual projection to host the auxiliary *bio*? In the next section we will see that there are purely syntactic reasons to assume that *bio* constitutes the head of an independent inflectional position.

2.3 bio AS AN INDEPENDENT HEAD

In section 2.1 we considered the hypothesis that for every inflectional morpheme there is a corresponding syntactic projection, and we applied this assumption to the analysis of the PSC. Let's now consider all the possible ways of analyzing a sentence like (7) and the predictions that each hypothesis makes to see if it is really necessary to assume a complex structure such as the one in (19). The problem is to determine the position that *bio* occupies in the Syntax: is it an independent head or is it adjoined to another Functional head and if so to which one?

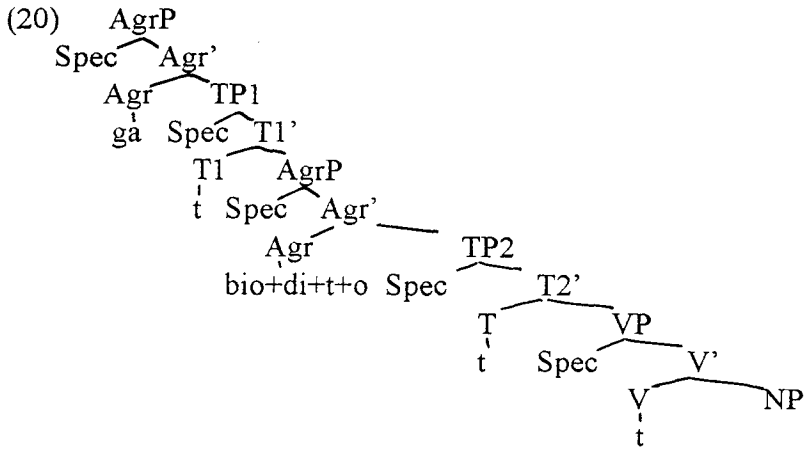
There are at least three possible hypotheses that can be explored. The auxiliary *bio* can be adjoined to the higher auxiliary inflected for Tense and Subject Agreement, forming a syntactic unit with it. In this case the higher auxiliary and *bio* should behave as a single head in the Syntax.

Otherwise, we can imagine that *bio* is adjoined to the main past participle and that in this case it forms a unit with the main past participle and not with the higher auxiliary.

The third possibility is of course the one mentioned above, namely that *bio* constitutes the head of an independent Functional projection as already illustrated in (18) in the preceding section. In other words, assuming that *bio* is the head of an independent projection means that we have to exclude that it is adjoined either to the higher verb or to the lower one.

Let's first admit that *bio* is not syntactically independent, but parasitic on the main past participle as illustrated in (20):

(20)



A structure like (20) illustrates the idea that there is no aspect projection in the sentence, but only the two Tense projections TP1 and TP2 (in Giorgi and Pianesi (1991) T1 is not even realized in the present perfect, but this is irrelevant for the present discussion) which are associated to an AgrP each.

The aspectual auxiliary is contained in the T2 head as a sort of prefix. This head must also contain the *t* morpheme, which appears on the main verb. The main verb moves to T2, where it incorporates the *t* morpheme at the right and the *bio* prefix at the left. Then the whole complex moves up to the head of the Object Agreement, where the Agreement morpheme subcategorizes for T20. Being a suffix, the object Agreement morpheme adjoins to the right of the complex.

In this way structure (20) yields the right linear order of *bio+ di+t+o*.

There are at least two predictions that we can test immediatly in order to discover if (20) is correct or not. If *bio* is so strictly connected to the main past participle that together they end up occupying the same position at S structure, no other element should be able to intervene between *bio* and the main past participle.

This is clearly not true, because an adverb is perfectly grammatical in a position between *bio* and the past participle:

(21) Nol ga bio de sicuro dito gninte
Not+he has had for sure said anything

In (21) the adverb *de sicuro* (for sure) intervenes between *bio* and the past participle, showing that they do not form a constituent and that the Aspect auxiliary and the main past participle are not even part of the same projection, because the intervening adverb must be in the Spec position of a maximal projection (or adjoined to it).

We have already noted that *bio* can appear in a passive sentence, and that the order is *bio*-passive auxiliary-main past participle. Hence *bio* and the main past participle cannot be part of the same projection, as another head (the passive auxiliary) can intervene between the two.

Another possible way of showing that they are not so closely connected as structure (20) would predict is to look for rules that move only the past participle and leave *bio* in situ. The structure preservation principle, as formulated in Chomsky (1986) states that only heads or maximal projections can move in the Syntax. On this basis, if it is possible to move the main past participle and not *bio*, we have to assume that they are independent heads in the Syntax, given that it is not possible to move only a portion of a syntactic head (but see Roberts (1991)).

There are at least two cases in which the main past participle projection is moved, leaving *bio* in situ. The first case is topicalization, which can move the past participle to the left of the whole sentence, as in (22):

(22) Laora' go bio stamatina, no ciacola'
Worked (I) have had this morning, not chattered

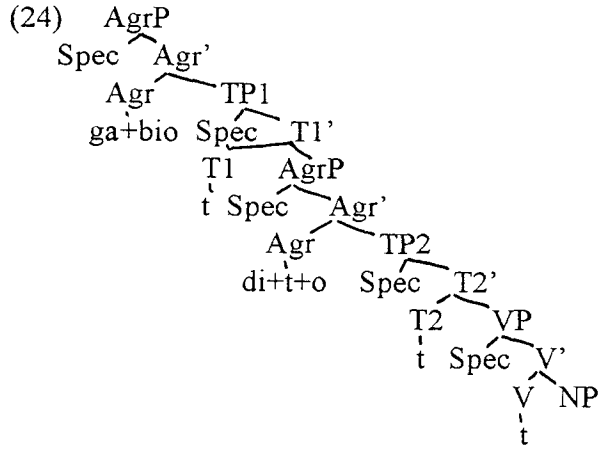
In example (22) the main past participle phrase has been moved to the Spec of the Comp projection while the aspectual auxiliary appears in its basic position inside the sentence. (22) shows that *bio* and the main past participle do not constitute a unique head. The second test that shows that they are not even part of the same syntactic projection is the so-called rule of VP coordination. Consider example (23):

(23) El ze sta male parche' el ga bio bevu' massa vin e magna' massa pan
He has been sick, because he has had drunk too much wine and eaten too much bread

In (23) the whole VP with its internal arguments has been coordinated. The rule of VP coordination applied in (23) puts together two maximal projections, informally labelled as VP.

Given what we have said above about the Functional projections of the past participle, we should consider this rule as a case of AgrOP (Agreement with the object) coordination. What is relevant here is that this rule takes the highest projection containing the main past participle and its internal arguments, leaving the aspectual auxiliary out. (23) shows that *bio* is not part of the AgrOP projection just as the auxiliary *ga* and the subject clitic *el* are not. This test not only shows that *bio* is a distinct head from the main past participle, but also that they belong to different maximal projections. A structure like (20) cannot be the right one because it makes incorrect predictions in at least three cases: it predicts that no adverb can intervene between the aspectual auxiliary and the main past participle, but this is perfectly possible. It predicts that whenever the main past participle is moved, *bio* must be moved too, which is not the case. And finally, it predicts that *bio* has to be repeated with the VP in a coordinated structure, which is not the case.

Let's now examine the second possibility, namely that *bio* is adjoined to the higher auxiliary, as in a structure like (24):

(24)


We can repeat the same reasoning just illustrated for structure (20): if the aspectual auxiliary and the tense auxiliary constitute a unit, we predict that they can never be separated by an adverb. Consider example (25):

(25) No i ga piu' bio dito gninte
Not they have anymore had said anything

In (25) the two auxiliaries are separated by the adverb *piu'*, and the sentence is perfectly grammatical. Another prediction that (24) makes regards the movement rules: every time that the tensed auxiliary is moved, *bio* must be moved too. This prediction is falsified by the data, because there are at least two rules that move the tensed auxiliary but not that of Aspect.

The first one is the subject clitic interrogative inversion, which is analyzed as the movement of the verb to C in main interrogative sentences (cf. Rizzi and Roberts (1989) and Poletto (1991)). If the tense and the aspectual auxiliary were a unit, they should both move to C, in which case we would observe the order tensed aux-aspectual aux-subject clitic. This is not the correct order in main interrogatives, as (26) shows:

(26) a *Cossa ga bio*lo* fato?
What has had he done?
b Cossa ga*lo* bio fato?
What has he had done?

(26a), in which the order is that which is predicted by a structure like (24), is excluded. On the contrary, (26b), in which the order is tense aux-subject clitic-aspectual aux, is grammatical.

Hence, the tense auxiliary is moved to C, while *bio* remains in situ. Another fact, which is not predicted by (24) is the position of an object clitic in infinitival sentences. The order infinitival verb-object clitic in Standard Italian and in some dialects has been recently analyzed by Kayne (1991) as a derived order, in which the infinitive has adjoined to T' while the clitic adjoins to the head of TP. If the tense auxiliary and the aspectual auxiliary were a unit, they should move together to T', leaving the object clitic behind, as in (27):

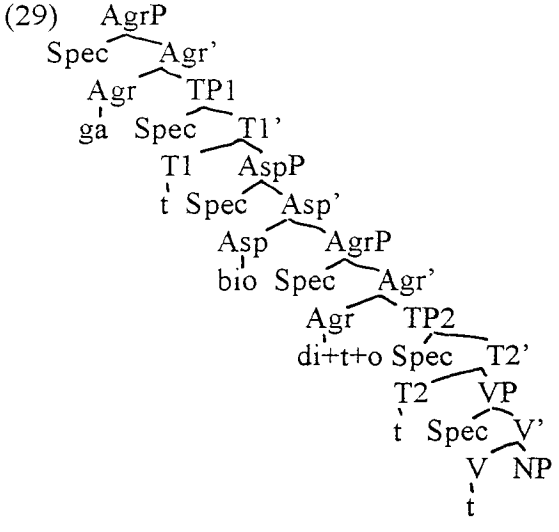
(27) *Aver bio*lo* magna', me ga fato mal
To have had it eaten, to me has done bad

(28) Averlo bio magna', me ga fato mal
To have it had eaten, to me has done bad

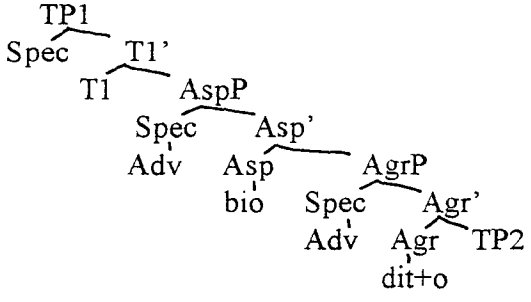
The correct order of the two auxiliaries with respect to the object clitic is the one in (28) and not the one in (27), which is predicted by a structure like (24). This means that the tensed auxiliary has been moved alone to the higher position, leaving the aspectual auxiliary in situ.

On the basis of these arguments, we exclude that (24) is the right structure for a sentence with an aspectual auxiliary.

The third possibility mentioned above is to admit that a structure like (19) (here repeated as (29)) is correct, and that *bio* is the head of an independent syntactic projection, which has a specifier and a complement position:

(29)


The specifier position can be occupied by adverbs and the complement position is filled by the Agreement with the object selected by the aspectual auxiliary, as in (30):

(30) a


b Nol ga piu' bio de sicuro dito gninte
Not+he has anymore had for sure sayd anything

(30a) seems to be the correct structural analysis of the syntactic representation of the PSC. On the basis of (30a) we predict that an adverb can intervene between *bio* and the higher tensed auxiliary or between *bio* and the past participle, as (30b) shows.

Furthermore, (30a) correctly predicts that *bio* is syntactically independent both from the higher auxiliary which bears the tense features of T1 and from the past participle which bears the T2 *t* morpheme and the agreement with the object morpheme.

At this point we have to accept the hypothesis that *bio* is really the head of an independent projection, and that in VI. there is an Aspect projection, which is realized below TP1 but above TP2 and which is occupied by an auxiliary head, namely *bio*. We will thus assume that the analysis presented in (29) is essentially correct as far as the position of the Aspect auxiliary is concerned. In the next section we will discuss some facts regarding the position of Agreement projections.

3. AGREEMENT PROJECTIONS AND FUNCTIONAL PROJECTIONS

Consider now sentence (31):

(31) El li ga bi*i* fini*i* ieri
He them has had+agr finished+agr yesterday

It is interesting to note that the Agreement morpheme *i* with the object clitic *li* is not only present in the main past participle, but also in the Aspect auxiliary *bio*.

If we insert another auxiliary, such as the passive auxiliary, we obtain the following result:

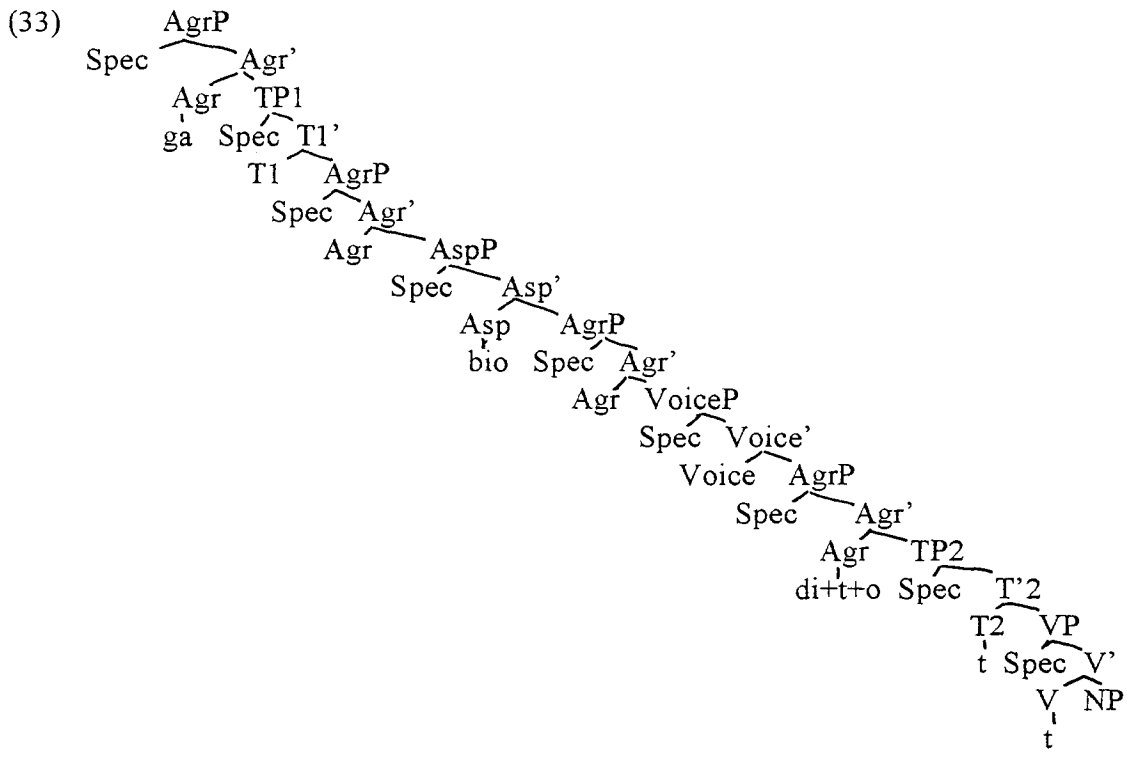
(32) O sin bud*is* stad*is* viodud*is*
We are had+agr been+agr seen+agr

In (32) the Agreement with the object morpheme (which has been underlined in the example) is multiplied once more: it appears on the aspectual auxiliary, on the passive auxiliary and on the main past participle.

In section 2.2 we briefly discussed Kayne's proposal for treating the object Agreement phenomenon in Romance. He proposes that only when the object passes through the SpecAgrO position is it in a Spec-head configuration with the past participle and can be coindexed with it, triggering morphological Agreement. On the contrary, when the object remains in its basic position inside the VP, the Spec-head configuration is not present, and no matching between the features of the object and the past participle is possible.

Following this analysis we have to admit that for every past participle, aspectual auxiliary *bio*, passive auxiliary and main past participle there is an Agreement projection, through which the object clitic passes, triggering morphological Agreement through the Spec-head configuration. The corresponding structure would be as in (33):

(33)



Note that a structure like (33) shows a peculiar property: for each of the four verbal roots there is an Agreement projection and Agreement projections are always the last stop of every verb movement. Once a verb meets an Agreement morpheme it does not move anymore.

At this point we can ask two basic questions. First, why is it so that every verbal head, be it a main verb or an auxiliary, must have an Agreement projection as its final morpheme?

Second, why is the Agreement with the object morpheme present only in compound tenses and not in simple tenses? In other words, why don't we find two different Agreement morphemes on the same verbal head?

This fact does not follow from our theory of Functional projections, because we would expect that the simple verb of the present tense, for instance, moves first to the object Agreement projection, taking up the object Agreement morpheme, then moves to T and finally to the Agreement of the subject. There is nothing in the theory of Functional projections or movement that prevents such a case, which is not realized (to my knowledge) in any of the Romance languages. On the contrary, if the Past Participle Agreement in Romance corresponds to the Agreement with the object of Chomsky (1991), it should be realized in simple tenses too.

The fact that not all possible morpheme combinations are realized shows that there must be some restriction on the sequence of non- lexical projections. Moreover, we expect some conditions to be universal and others to be a specific choice of some languages.

Let's now examine all the possible orders of non-lexical projections that a language like Italian presents:

(34) a V-Functional morpheme- Agreement morpheme
b *V-Agreement morpheme-Functional morpheme
c *V
d *V-Functional morpheme
e V-Agreement morpheme
f *V-(Functional morpheme)-Agreement morpheme-Agreement morpheme
g *V-Functional morpheme-Functional morpheme-Agreement morpheme
h *V-Functional morpheme-Agreement morpheme-Functional morpheme-Agreement morpheme

(34) shows the possible combinations of verbal root, Functional morphemes and Agreement morphemes.

Note that there are only two possible combinations that can be found in Standard Italian: (34a) and (34e).

All other cases are excluded: a verbal root by itself can never appear as a complete word nor can a verbal root plus a Functional morpheme. In order to form a complete word it is necessary to incorporate an Agreement morpheme to the verbal root.

Moreover, it must be noted that no more that one Agreement is tolerated on each verb. In fact, there is no agreement with the object in simple tenses and no Agreement with the subject on past participles. On this basis we can formulate the following condition:

(35) Agreement saturates a word

Condition (35) has already been proposed in Li (1990) and Giorgi and Pianesi (1991). It states that once an Agreement morpheme has been incorporated into the verbal root, the item represents an independent word.

The impossibility of verbal forms as (34b/f/h), is thus derived from condition (35) if we admit that once a word has been completed it is impossible to go on incorporating new items (cf. Roberts (1991) and section 2.1 for the discussion on incorporation).

Once the verbal root incorporates an Agreement morpheme, it cannot move any further by exploiting the mechanism of incorporation. This approach presupposes that the complete word can move out of an Agreement projection, but that it must substitute within a totally empty head and not move into the slot opened by a bound morpheme.

A verbal root that has already incorporated one Agreement morpheme can move only by means of adjunction or substitution, but not through selection.

On the basis of (35) it is also possible to derive the impossibility of (34c/d), because in both cases no Agreement is present, hence the verbal form does not constitute an independent word.

We can thus state that condition (35) captures an interesting fact about standard Italian verbal forms: the fact that one Agreement morpheme is always present but no more than one Agreement morpheme can be realized.

Condition (35) explains the impossibility of (34b/c/d/f/h) because in all these sequences there is more than one Agreement or no Agreement morpheme at all.

(34a/e/g) on the contrary satisfy condition (35) because in these sequences only one Agreement morpheme is realized.
Nevertheless, (34a) and (34e) are attested, while (34g) is never found in Standard Italian.

Condition (35) is clearly not a universal condition on verbal forms, but it applies only in some languages. There are languages in fact in which no Agreement morpheme is realized or languages in which it is possible to stack several Agreement morphemes onto the verbal root.

English for instance seems to have a more restrictive condition on word formation: in English not only an Agreement morpheme, but every functional morpheme (as for instance the tense *ed* morpheme, used for both T1 and T2) saturates a word. We will come back to this in the next section. Let's now turn our attention to another condition ruling the order of FPs.

3.2 CONDITIONS ON STRUCTURE FORMATION

Structure (33) presents another peculiarity which has not been discussed so far.

Looking at the distribution of non-lexical heads in (33), it seems that Functional morphemes and Agreement morphemes are ordered with respect to the verbal root: Functional morphemes always precede Agreement morphemes. Moreover, in Italian there cannot be more than one Functional morpheme on each verbal root (cf. (34g)). We can formalize this observation as follows:

(36) Functional morphemes and Agreement morphemes alternate in a one-to-one proportion

It is interesting to note that this restriction regarding the order in which Functional projections combine with Agreement projections can also be found in other languages. We will examine here three languages: Basque, Finnish and Polish, in which restriction (36) is active.

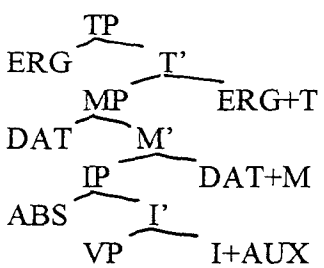
It has been noted by Laka (1991) for Basque, that when a verbal root has more than one Agreement morpheme, as for instance absolutive Agreement, ergative Agreement and dative Agreement, they dispose in the structure in a one-to-one proportion with respect to Functional heads. She gives the schema in (37) (Laka (1991:22)):

(37)

absolutive	verb	dative	modal	ergative	tense
Agreement	root	Agreement	marker	Agreement	marker

Laka notes that Agreement morphemes seem to behave as parasitic elements on Functional morphemes and proposes the structure in (38):

(38)



In (38) the ergative Agreement morpheme is parasitic on the Tense projection, dative Agreement clusters with the head of a Modal phrase and absolutive Agreeement is adjoined to the I head.

The successive movement of the verb from the position inside the VP to the heads of the Functional positions yields the order illustrated in (37). Basque does not show anything comparable to condition (35), which is operative in Standard Italian. In fact more than one Agreement morpheme can be realized in a unique verbal head. Nevertheless, Basque follows condition (36), because Agreement morphemes and Functional morphemes dispose in a one-to-one proportion.

Another case in which we can observe the same phenomenon is the compound past tense in Finnish (cf. Mitchell (1991)).

When there is more than one past participle in the structure, as in the negated past tense, every participial form shows an Agreement with the subject morpheme similar to that of Romance PSC:

(39) Mina e-n ol-lut tul-lut
I-Nom no-1sg be pst.ptc/sg come-pst.ptc/sg

In (39) both past participles (*ol-lut* and *tul-lut*) are marked with an Agreement singular morpheme. Hence also Finnish seems to obey condition (36), following which Agreement and Functional projections alternate (cf. again Mitchell (1991) for an analysis of past participles as including a Functional Aspect head). Condition (36) is active in other languages too. Polish, for instance, (and probably other languages genetically related to it) represents such a case. The form for the conditional shows that Polish does not obey condition (35), because there is more than one Agreement morpheme on the same verbal root, but Agreement morphemes and Functional morphemes alternate as predicted by (36):

(40) Czytalbym
(I) read+agr+mood+agr

In (40) there are two Agreement morphemes, the first *l* is a participial Agreement: it expresses the gender and number of the subject, the second, *m* is similar to the Agreement with the subject of Romance languages, because it contains a feature of first person singular. These two Agreement morphemes are separated by the mood morpheme which expresses a conditional feature.

On the basis of these three examples we could tentatively conclude that (36) is a general condition on structure formation. It seems that condition (36) captures a very general fact, namely that when Agreement and fuctional projections are activated in a language they are disposed following a precise order, which corresponds to a one-to-one alternation.

However, (36) looks like a purely descriptive generalization and does not explain the reason why inflectional projections are disposed in such a way. The general principle underlying (36) is still mysterious, but it must be something very general that also has a semantic reflection. In fact, if we consider Functional projections as the structural equivalent to predicates and agreeement projections as arguments (recall the numerous proposals that consider Agreement as

pronominal and/or anaphoric, a feature typical of NPs, hence of arguments), we obtain a one- to-one relationship between arguments and predicates, which correspond to a very general semantic principle, as proposed in Larson (1988).

If this is true, condition (36) on the alternation between Functional phrases and Agreement phrases turns out to be the syntactic correlate of a general semantic principle, and as such confirms the symmetry between the different modules of the grammar.

Let's now briefly consider how (36) is active in standard Italian and how it interacts with condition (35).

In (34) we have seen that the order corresponding to (34g), namely the order verbal root+Functional morpheme+Functional morpheme+Agreement morpheme, is never realized in standard Italian. This sequence is not excluded by (35), because in (34g) there is only one Agreement morpheme that saturates the word. The fact that when there are two Functional morphemes and one Agreement morpheme the order must be Functional morpheme+Agreement morpheme+fuctional morpheme is a consequence of (36), following which Functional and Agreement morphemes must alternate. Nevertheless, condition (35) blocks this order in standard Italian, because it states that an Agreement morpheme is always the last to be incorporated, and after it has been adjoined to the verb, the complex will constitute a complete word and no other morpheme can be incorporated. We can thus conclude that the combination between (35) and (36) in Standard Italian excludes the possibility of having more than one Functional and one Agreement morpheme on the verbal root.

3.3 ON THE DIFFERENCE BETWEEN AGRP AND FP

Let's now consider briefly the general picture which emerges from condition (35) and condition (36) repeated here in (41):

(41) a Agreement saturates a word
b Functional morphemes and Agreement morphemes alternate in a one to one proportion

As discussed above, (41a) is a language specific condition which can be reformulated as a parameter defining word boundaries:

(42) @ defines X° elements

In Standard Italian @ is an Agreement morphemes which is the only marker able to create an X° element.

In English on the contrary @ can be a Functional morpheme as *ed*, an Agreement morpheme as the *s* which appears on the third person singular in the simple present or even O when the bare stem is realized.

If (41a) can be the consequence of a specific parametric choice, (41b) is a general condition expressing the way in which the structure of a sentence is formed. It states that once FPs and AgrPs are activated in a given language they must be disposed in a precise order. Note that both conditions treat Agreement as different from other non-lexical heads. In (41a) Agr is the only element which is able to mark an X° element in standard Italian (while Functional

morphemes are not). Moreover, (41b) implicitely defines AgrPs and FPs as two different kinds of non-lexical projections. FPs are not lexical in the sense that their heads are not nouns, verbs etc. Nevertheless they bear some semantic content related to the predicate: Tense, Mood, Aspect.

Also C has some content of this kind as it is the place where the nature of a sentence is determined, namely if it is an assertion or a question (and in some languages a negation). AgrPs on the contrary bear only structural information: they connect a certain argument to a predicate.

One could also express this fact considering AgrPs the only true functional projections and assimilating FPs to lexical projections. I do not think that this move is correct, as FPs never constitute the lowest projection of the sentence as it is the case of lexical XPs.

If it is necessary to distinguish Mood, Tense, Aspect, C and so on from AgrPs and on the other side it is not possible to assimilate FPs to lexical projections, we are left with three types of syntactic objects, which show different properties:

a) lexical projections, which are the starting point of the "perfect projection" in Grimshaw's (1991) sense,

b) FPs, which bear some semantic content but can never start a "perfect projection"

c) AgrPs which bear only relational information between an argument and a predicate

It is possible to implement this observation in terms of [+/-V] and [+/-N] features, where V is a symbol for "predicate" and N for "argument": AgrPs are always [+N] and can be specified for [+ or -V], while FPs are always [+V] and can be specified for [+ or -N].

In this way it is possible to derive the difference between two types of Agreement, already noted in Romance by many authors: subject Agreement is [+N +V] and it bears a person feature (which is probably responsible for case marking). Object Agreement is [+N-V] and it does not bear a person feature.

Moreover, it is also possible to derive the difference between T1 and T2 whithin Giorgi and Pianesi's theory that we discussed about structure (19): T1 is [+V-N] while T2 is [+V+N].

The hypothesis that FPs are always [+V] while AgrPs are always [+N] corresponds to the observation made in the previous section about condition (41b), namely that the order between AgrPs and FPs must correspond to a very general semantic principle which can be states, following Larson (1988) as: for every predicate there is an argument. FPs are intrisecally predicates, while AgrPs are intrisecally arguments: FPs are thus endowed with the feature [+V] while AgrPs with the feature [+N].

4. CONCLUSION

On the basis of a complex structure such as the Romance PSC, we have shown that there are restrictions on the order of the Functional projections.

The conditions on structure formation which may be found by looking at the order of inflectional projections may be peculiar to one language or to a group of languages. This is the case of condition (35), which states the blocking capacity of an Agreement morpheme in Romance: after an Agreement morpheme has incorporated, the word is complete and no other morpheme can be incorporated into it. Note that the reformulation of condition (35) as a parameter (cfr. (42)) can prove a fruitful means to account for the traditional division between inflected and agglutinating languages. Further research is needed in this direction, as the value of @ in (42) is not defined by means of a bynary choice, which suggests the possible split in more than one parameter.

Conditions on sentence structure formation can also be seen as general principles.

A general restriction which can be observed in various languages is the one formalized in (36) which states the order in which Agreement and Functional projections have to be disposed in the structure. Looking at the formulation of such a condition, it seems plausible to assume that this is only a descriptive generalization and that it is not a primitive but derives from a general principle, as for instance the one proposed by Larson (1988). Moreover, the fact that sentence structure must follow such an order confirms the exceptional nature of Agreement with respect to other Functional projections. Agreement constitutes, informally speaking, a sort of "glue" which keeps sentence structure together.

We can conclude that the order of inflectional projections is not exceptional with respect to other fields of the grammar in general and of the Syntax in particular, because it is possible to find both general conditions that apply to all languages and parametrized choices which are a peculiar feature of a language.

FOOTNOTES

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1. The item *bio* is a specialized form of the past participle of the verb *ver* (have), which is nowadays used only in this context.
2. As Beninca` (1990) notes, when *bio* is present in main clauses, it indicates that the action is completed or very rapid and that it happened only once, as the translation of (8c) suggests.
3. The distribution of *bio* suggests that this additional auxiliary contributes to the meaning of the sentence denoting the perfect/non-perfect aspect, namely the relevance of the action with respect to the specified time frame. This Aspect feature is different from the perfective/imperfective distinction which is normally expressed by the past participle of the main verb in all Romance. The distinction between two kinds of Aspect features is not unknown in the literature.
   Finnish, for instance, (cf. Mitchell (1991)) marks the perfective/imperfective feature on the main past participle, while the perfect/non-perfect feature is coded onto the auxiliary *olla* (be), which is placed below Tense, exactly as in the Romance PSC. This may be a problem is Giorgi and PIanesi's theory, as they admit that the perfect/non-perfect distinction is connected to T2 and is not aspectual.
4. The Agreement of the past participle in Romance would correspond to the Agreement with the object of Chomsky (1991), which must be present in all sentences.
5. Maybe the infinitive represents a case in which the verbal form only contains the verbal root plus a Functional morpheme and no Agreement. It depends on how the inflectional morpheme *re* and the thematic vowel, which varies depending on the class of the verb, are analyzed. Note however that in Standard Italian every words which does not have an overt Agreement morpheme ends with the word marker *e*, not only the infinitival form of the verb, but also adverbs and some nouns or adjectives. It could be possible to maintain the hypothesis that every word in Standard Italian has an Agreement marker considering the morpheme *e* as a sort of "expletive" Agr-1.
6. This incidentally shows that a verbal root is to be considered as a V-1 and not as a Vo component, as has been proposed by Guasti (1991)
7. Note that the choice of the parameter is not a bynary one which may suggest that it is derivable from some other principle.
8. Our proposal differs from Rizzi (1991) who considers AgrP and FPs as functional categories defined by the feature +F.
9. The idea that the past participle may have a nominal feature has a long tradition and has been exploited in a number of recent work in generative Syntax (see among others Baker, Johnson and Roberts (1989))

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Prepositional Particles and the Portuguese Personal Infinitive

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0. Introduction

In Benucci (1991) we proposed an analysis of Romance prepositional infinitival particles as base generated Specifiers of CP, arguing that they can be incorporated, in relevant cases, into the governing and selecting Verb. That analysis developed an idea originally due to Kayne (1989, fn. 26), fleshing it out and trying to motivate it theoretically; the original assumption was taken up again by Kayne (1991, 668-9), who complementarily argued for the SPEC-C status of the Prepositions introducing Infinitives in Romance languages and possibly in Dutch.

The discussion so far has mainly concentrated on Italian and French data: we would like to consider here the prepositional particles from a different point of view, analyzing their behaviour in Portuguese "Personal Infinitive" constructions, which were studied from a general point of view in Benucci/Poletto (1992). The phenomena we are to observe will confirm the assumption of Kayne's and our previous works about the position of those particles.

Crucial to the present analysis are the definitions of Government in (A), of Barrier in (B) and of Closer Governor in (C), originally proposed by Uriagereka (1991), which we assume here without further discussion:

(A) A governs B iff
  (i) A is a sister of B; or
  (ii) A governs M; there is no G, G a barrier for B, such that G excludes M; and there is no D; D a closer governor of B than A.

(B) G is a barrier for B only if G is a maximal projection with an agreeing Specifier and G dominates B.

(C) D is a closer governor of B than A iff D governs B by fewer steps [in the definition of Government] than A does.

By (B), the crucial element for a maximal projection to be a barrier is the presence of an agreeing Specifier: only full fledged functional XP's may count as barriers.

The definition in (A) introduces a distinction between Government by the base step (i) and Government by the induction step (ii). Given the principled (as opposed to a "visual") definition of closeness of a potential governor in (C), in the absence of a (directly governing) sister an item may govern an XP and void its barrierhood (then govern inside it) by induction, from a higher position in the tree.

Finally, the notion of barrier is relativized to a particular relation between (an item in) a full fledged XP and a potential governor outside it.

1. *Infinitivo Pessoal* and Prepositions

As is well known, contemporary Portuguese has a full paradigm of personally inflected Infinitive (traditionally called *Infinitivo Pessoal*) that is currently used both as a sentential Subject in larger constructions and in complement or adverbial constructions. We will not analyse the full range of phenomena relating to personal Infinitive, for which we refer to Raposo (1987) and to Benucci/Poletto (1992), and will concentrate on the cases of infinitival sentences introduced by a P, trying to establish the syntactic position of the Preposition.

Prepositionally introduced inflected Infinitive constructions are to be found both as adverbial or circumstancial adjuncts (in absolute construction as in (1.a,b) or depending on another Preposition as in (1.c)) and as arguments (in dependence on a Verb as in (2.c), on an Adjective as in (2.a) or on a Noun as in (2.b)):

(1) a. Eu entrei em casa *sem* os meninos ver*em*
I entered in home without the children (to) see+infl

b. *A* bebere*s* assim, acabarás abafando
At (you to) drink+infl so, (you) will-finish suffocating

c. Eles entraram depois *de* chegar*mos* do escritorio
They entered after of (we to) arrive+infl from the office

(2) a. Eles estão ansiosos *por* votar*em* a proposta (Raposo 81)
They are anxious by (they to) vote+infl the proposal

b. A estrutura é muito mais complexa em virtude *de a mesma* ser mais longa
(Ortiz da Fonseca (*s.d.*, 8))
The structure is much more complex in virtue of the same (to)be+infl more long

c. O meu amigo concorda *em o* Manel vi*r* à feira
The my friend agrees in the Manel (to) come+infl to the fair

As we can see, all the contexts are possible, but we will see that they have different morphosyntactic properties, corresponding to different syntactic structures.

1.1 As noticed by Rizzi (1990, I.II.7) (and by traditional grammars), the contraction of a Preposition with the Article of the following NP is mandatory in Portuguese inside a PP, while it is blocked when the articulated NP is not the Object of the Preposition but the preverbal Subject of a personal Infinitive sentence:

(3) a. Estou contente *pelo/*por o* João
(I) am happy by-the João
b. Estou contente *por o/*pelo* João estar melhor
(I) am happy by the João (to) be+infl better

Analogously, the cases exemplified in (2.a) (had it an expressed nominal Subject) and (2.b) don't admit the formation of an articulated Preposition (**pelos deputados, *da mesma*)[1]. Rizzi (1990) accounts for this phenomenon assuming for (3.b) a structure like (4), where "la formazione della forma sintetica *pelo* è bloccata dai due nodi limitanti che intervengono" (we adopt here and farther on Rizzi's simplified structure, slightly adapting it to fit recent analyses of the structure of NP, the so-called "DP Hypothesis"):

(4) ...[PPpor [CP[DPo João] ...]] (Rizzi 81)

This account in terms of Subjacency seems then to be in favour of a [PPP CP] structure for the infinitival sentence: the Preposition here would be a "true" one, heading the PP whose complement is the infinitival CP, and perhaps Case-marking the latter (cfr. Raposo (1987)).

Yet, we must point out some cases where Rizzi's (1990) analysis is not applicable, since it is falsified by the facts. Namely, the contraction of Preposition and Article takes obligatorily place in (adverbial) infinitival constructions of the kind of (1.c), introduced by a so called "complex Preposition":

(5) a. Antes *da* (/**de a*) chuvada estalar no pavimento, entrou pela vila [...]
uma charrete (Carlos de Oliveira *Uma abelha na chuva* 12)
Before of-the downpour (to) rattle+infl in the soil, (there)entered by the village a barrow
b. Eu entrei depois *do* (/**de o*) meu pai chegar do escritorio
(Ortiz da Fonseca (*s.d.*, 71))
I entered after of-the my father arrive from the office

The contraction may also take place when a prepositionally governing Verb occurs with an Adverb placed between the Verb and the particle, as in (6.a). This case is particularly significant, since it coexists with an uncontracted construction, as in (6.b):

(6) a. Penso sempre *no* Manel ter casado com a Maria apesar dos anos de noivado com a minha irmã
b. Penso sempre *em o* Manel ter casado com a Maria ...
(I) think always in the Manel (to) have+infl married with the Maria in-spite of the years of engagement with the my sister

On the contrary, when no sentential Adverb appears, the only possible construction is the uncontracted one, as in (7) (cfr. 2.c)):

(7) a. *O meu amigo concorda *no* Manel vir à feira
b. O meu amigo concorda *em o* Manel vir à feira
The my friend agrees in the Manel (to) come+infl to the fair

If Rizzi's (1990) analysis of cases like (2.a,b) and (3) is correct (and could then carry over to (2.c) = (7)), we must infer that in cases like (5) and (6) the Subjacency principle is not violated and that only one bounding node intervenes between the Preposition and the Article: this is just the same as saying that the (one-syllable) Preposition is CP internal and the only intervening node is the DP one[2]:

(5') a. [PPantes [CPd(e) [DPa chuvada]...]]
b. [PPdepois [CPd(e) [DPo meu pai]...]]
(6') penso sempre [CP(e)m [DPo Manel]...]]

In both cases, the Preposition seems not to be a "true" one, heading a sentential PP, but, as we called it up to now, a simple particle, located somewhere in CP (and possibly performing Case functions, as we proposed in Benucci (1991), cfr. also Battye (1992)). The dilemma of its placing inside the CP projection crucially arises in this connection: does it occupy the head or the SPEC position ? The answer to this question will also give an explanation to the somehow tricking distribution of P+Art contraction in Portuguese personal Infinitive constructions, which, as we have seen, is sometimes impossible, sometimes obligatory, and sometimes optional.

2. The structure of adverbial personal Infinitives

In order to formulate a minimal hypothesis about the structural position of the introducing P, a rapid survey of the phenomenology of personal Infinitive adverbial constructions and of the related structure is necessary.

2.1 Consider first circumstancial constructions as (1.b), which only admit a post-verbal Subject:

(8) a. A continuarem os meninos assim, que faremos ?
At (to) continue+infl the children so, what will-do (we) ?
b. *A os/Aos meninos continuarem assim, que faremos ?

A sentence like (8) appears to be a standard case for the analysis of personal Infinitives proposed in Benucci/Poletto (1992). According to that analysis, at s-structure, the Infinitive normally occupies C, while SPEC-C can host any other element, not necessarily the Subject DP. When the Subject DP is promoted to SPEC-C, *SPEC-Head Agreement* holds in CP, which is turned in an A projection. Otherwise, when any other item fills the SPEC-C position, no *SHAgr* takes place in CP and this remains an A' projection (cfr. Rizzi (1991)).

We also assumed that if the Subject is not promoted to SPEC-C (i.e. when it is in post-verbal position), it remains in SPEC-I, where it is assigned Case by the Infinitive under Government.

If that analysis is correct, the structure of (1.b) and (8.a) will be as in (9.a,b) respectively:

(9) a. [CPa [Ccontinuarem$_i$][IPos meninos [It$_i$][VPassim---]]]
b. [CPa [Cbeberes$_i$] [IP*pro* [It$_i$] [VPassim ---]]]

We are assuming here that, even if it has no visible effect, due to the absence of the relevant context for contraction, P is CP internal and occupies the SPEC-C position. However, one could imagine the P to be CP external, heading a sentential PP with an empty SPEC-C, as in:

(10) a. *[PPa [CP [Ccontinuarem$_i$] [IPos meninos [It$_i$][VPassim ---]]]]
b. *[PPa [CP [Cbeberes$_i$] [IP*pro* [It$_i$] [VPassim ---]]]]

The occurrence of circumstancial prepositional personal Infinitives in coordinated conditional structures, as in (11), shows that the correct analysis for sentences like (1.b) and (8.a) is the one indicated in (9):

(11) A continuares assim e se nunca dormes, que farás ?
At (you to) continue+infl so and if (you) never sleep, what will-do (you)?

Assuming Benincà/Cinque's (1991) analysis of coordination, according to which it is only possible to coordinate structures of the same projection level containing no higher empty position, and under the current assumption that *se* is a C intrinsically associated with a [wh-] operator in SPEC-C, which completely saturates the CP projection, we are forced to conclude that the infinitival clause in (11) is also a complete CP, with the structure shown in (11'), where the particle occupies SPEC-C, as we have assumed up to now:

(11') [CP[CPa [Ccontinuares$_i$] [IP*pro* [It$_i$] [VPassim ---]]] e [CP[*wh*] [Cse] [IPnunca [IP*pro* [Idormes] [VP---]]]]]

The phenomenology of Clitic placement in structures like (1.b) further confirms the analysis of prepositional particles as occupiers of SPEC-C. The only possible construction of a sentence like (1.b) involving Clitics is in fact the proclitic one:

(12) De *nos* encontrarmos/*encontrarmo-*nos* todos os dias ficamos amigos
Of (we to) ourselves meet+infl all the days (we) became friends

Again, if Benucci/Poletto's (1992) assumptions, namely that proclisis at CP level is only possible when the latter is an A' projection (i.e. after all when SPEC-C is occupied by an element different from the Subject), are correct, then (12) is to be analyzed as in (12'), with the prepositional particle, which is non-argumental, occupying SPEC-C:

(12') [CPde [Cnos encontrarmos]$_i$ [IP*pro* [It$_i$] [VPtodos os dias ---]]]

2.2 Consider next the adverbial constructions like (5) which, besides a canonical pre-verbal Subject triggering contraction with the introducing P, also admit a post-verbal placement of the Subject:

(13) a. Antes dessas pessoas telefonarem, o João bateu à porta
Before of-these people (to) telephone+infl, the João knocked at the door
b. Antes de telefonarem essas pessoas, as moças já tinham saido
Before of (to) telephone+infl those people, the girls already had left

In our analysis, (13.b) is a further instanciation of the normal construction of personal Infinitives, where the Verb occupies C, governing and Case-marking the Subject DP in SPEC-I, and is preceded by the particle in SPEC-C as in the following structure:

(14) [PPAntes [CPde [Ctelefonarem$_i$] [IPessas pessoas [It$_i$][VP---]]]]

On the contrary, construction (13.a), paralleling examples in (5), corresponds to the canonical structure with both Infinitive and Subject at IP level, where Nominative Case is assigned by *Spec-Head Agreement*. The particle acts here as "a Specifier of an empty C" (as in Kayne (1989, fn. 26)). The structures in (5') are then to be further specified as in:

(15) [PPAntes [CPd(e) [IP [DPessas pessoas] [Itelefonarem][VP---]]]]

where IP does not count as a bounding node for Subjacency, since the particle governs it by the induction step, and then does not prevent the contraction of the particle with the Subject (see §3.2 for a more detailed analysis).

The behaviour of adverbial constructions in cliticization contexts confirms the double structure we are assuming for such sentences. In fact, both constructions in (13) only admit proclisis:

(16) a. Antes dessas pessoas *te* verem, sai pela cozinha
Before of-those people (to) you see+infl, leave by the kitchen
b. Antes de *te* verem essas pessoas, sai pela cozinha
Before of (to) you see+infl those people, leave by the kitchen

Once again, according to the analysis in Benucci/Poletto (1992), which we briefly resume here, proclisis is possible in Portuguese only if it does not interfere in the Spec-Head relation of the Verb with its Subject DP. Proclisis will then be excluded when the Subject occupies the SPEC-C position and entertains a Spec-Head relation with the Verb (CP is then specified as an A projection and the Verb will excorporate from C and adjoin at C' level (*à la* Kayne (1991)), triggering enclisis to avoid Minimality effects on his Spec-Head relation with the Subject). On the contrary, proclisis will be found:

a. in any case at IP level (i.e. in a structure corresponding to (15), paralleling the canonical construction of all Romance languages), since this is an intrinsically Aprojection, where the Clitic cannot interfere in the Spec-Head relation (cfr. Benucci/Poletto (1992, fn. 8));

b. at CP level when this is specified as an A' projection (i.e. in a structure corresponding to (14)), since there is no Spec-Head relation to interfere with.

In both cases the Subject is bound to fill the SPEC-I slot, allowing the particle to be in SPEC-C, as we are claiming.

A hypothetical analysis of sentences like (13.a) that considered the pre-verbal Subject to be in SPEC-C (then *de* to be CP external) would predict that in this case, CP being specified as an A projection, enclisis should be required to avoid Minimality effects in the Spec-Head relation. This prediction is completely falsified by the facts (cfr. (17.a)), thus showing that an analysis of (13.a) as in (17.b) is untenable and that the right one is (15):

(17) a. *Antes dessas pessoas verem-te, sai pela cozinha
Before of-those people (to) see+infl you, leave by the kitchen

b. *[PPAntes d(e) [CPessas pessoas$_i$ [Ctelefonarem$_j$][IPt$_i$ [It$_j$] [VP---]]]]

Consider finally the occurrence of adverbial personal Infinitive clauses in coordination with tensed ones, which is accepted by many Portuguese speakers, though not by all:

(18) Antes de te verem e que te falem, sai pela cozinha
Before of (they to) you see+infl and that (they) to-you speak, leave by the kitchen

Under Benincà/Cinque's (1991) analysis, (18) is to be considered as a coordination of two C' constituents under the same CP and PP nodes, since the tensed clause is introduced by *que* and constitutes then a C'. The infinitival clause in coordinated constructions can then crucially correspond only to a configuration like (14), with the Infinitive in C (18'.a). In a situation like (15), the coordinate structure would in fact contain an empty position (namely the infinitival C) (18'.b):

(18') a. [PPAntes [CPde [C'[C'[Cte verem]$_i$ [IP*pro* [It$_i$][VP---]]] e [C'[Cque] [IP*pro* [Ite falem] [VP---]]]]]]

b. *[PPAntes [CPde [C'[C'[C∅] [IP*pro* [Ite verem][VP---]]] e [C'[Cque] [IP*pro* [Ite falem][VP---]]]]]]

Once again, we are forced to conclude that the prepositional particle occupies the SPEC-C slot.

The basic assumption of our analysis, then, will be that at least in the adverbial and circumstancial construction analyzed so far the Prepositional particles are base generated in SPEC-C, much as in Kayne (1991).

3. Prepositional Infinitives and WH-movement

An interesting confirmation for this assumption and for the Incorporation analysis proposed in Benucci (1991) comes from the behaviour of prepositional constructions with regard

to WH-extraction from the infinitival sentence. In fact, if the particle were in C, the embedded SPEC-C should remain available for the WH-moved constituents to pass through.

Let us leave aside, for the time being, the adverbial constructions like (5), which we will return to at §4, where both long and short WH-movement are impossible. We can reasonably assume that the promotion of the WH-phrase is blocked in these cases by the higher PP node (the *antes/depois* one), and one could consider the surfacing of a WH-phrase in the embedded CP to be blocked (in the hypothesis that the particle were in C) by some version of the "doubly filled COMP Filter":

(19) a. *Donde$_i$ (é que) entraste [$_{PP}$depois [$_{CP}$do teu pai chegar t$_i$]] ?
Whence (is that) (you) entered after of the your father (to) arrive+infl ?
b. *Entraste [$_{PP}$depois [$_{CP}$donde$_i$ [$_{C}$d(e)] [$_{IP}$o teu pai chegar t$_i$]]] ?
Entered (you) after whence of the your father (to) arrive+infl ?

We will also leave aside for a moment the absolute circumstancial constructions (1.b), (12), which also exclude WH-extraction:

(20) *Onde é que de encontrarem-se todos os dias ficaram amigos ?
Where is that of (they to) meet+infl themselves all the days (they) became friends ?

Opacity of adjuncts to WH-extraction, in fact, has often been observed.

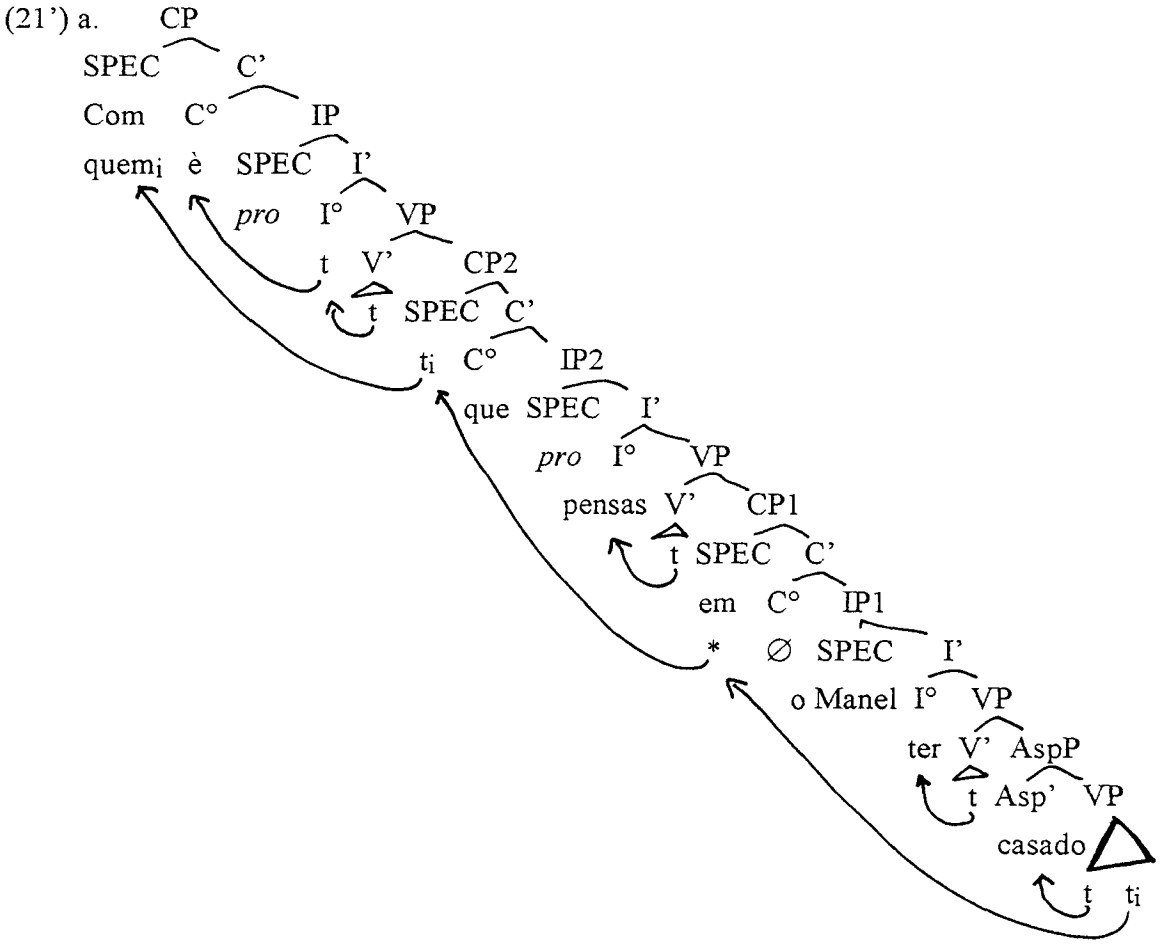
3.1 We will rather concentrate on prepositional completives like (6) and (7), which are easily testable as to the transparency to extraction. Their behaviour is very clear and significant: the construction with articulated Preposition (6.a) doesn't allow any extraction from the complement sentence, while extraction is possible in (6.b) and (7.b), where the Preposition and the Article remain separated:

(21) a. *Com quem é que pensas sempre no Manel ter casado ?
b. Com quem é que pensas sempre em o Manel ter casado?
With whom is that (you) think always in the Manel (to) have+infl married ?
c. Onde é que o teu amigo concorda em o Manel vir ?
Where is that the your friend agrees in the Manel (to) come+infl?

We draw from this the conclusion that also in completive personal Infinitive constructions introduced by a Preposition, P is base generated in the SPEC-C position, whence it can contract with the (Article of the) pre-infinitival Subject DP. Its presence in this position makes the SPEC node unavailable for the WH-moved constituents to pass through, and determines thus the opacity of the prepositional complement clause.

Let us see why this should be so, given the technical framework of definitions (A)-(C) at section 0. The (simplified) structure of an ungrammatical clefted question like (21.a) is something like the following (cfr. Benucci/Poletto (1992, 5)):

(21') a.



In this configuration, since the head of CP1 is empty, it cannot count as a base governor for IP1; on the other hand, the base generated particle blocks the SPEC position, thus preventing the WH-phrase from landing there and from becoming a governor for IP1 by the induction step. IP1 is then a non governed full fledged functional XP and counts as a first barrier for the moved WH-phrase. The latter continues its movement up to the Specifier of CP2, which is free and can host it. But the head of CP2 is lexical and counts as a closer governor for IP2, so that the WH-phrase cannot inductively govern it. IP2 counts then as a second barrier for the WH-phrase. Two barriers are crossed and the whole sentence is ungrammatical, since both Subjacency and antecedent Government of the WH-trace are violated.

Yet, if the infinitival clause (IP1) is governed by a lexical head which is able to incorporate the Preposition (i.e. a matrix Verb, when the particle is subcategorized for and governs "in the same way" as the Verb does (in Kayne's (1981) terms)), P is incorporated into it: the governing head becomes thus "complex" and, by Baker's (1988, 64) *Government Transparency Corollary*, can govern the whole infinitival structure once governed by P.

When the Preposition moves out of the CP1 projection, it loses the possibility of contracting with the (Article of the) infinitival Subject DP and clears the Specifier of CP1 for the WH-phrase to pass through[3]. From that SPEC position, the WH-phrase can act as an inductive governor for IP1, so that the latter does not count as a barrier and allows antecedent Government of the WH-trace.

The WH-phrase, in its way up, crosses only one barrier (IP2): no Subjacency violation occurs and the grammatical results (21.b,c) are obtained.

3.2 A brief survey of the Preposition+Article contraction at issue is now necessary, in order to understand our analysis of WH-extraction. It appears that this kind of contraction is phenomenologically and structurally different both from the *Determiner Cliticization* (i.e. Incorporation into a governing head) proposed for Galician by Uriagereka (1991) and from the *Coalescence of Definite Article and (Functional) Preposition* in Italian analyzed in Poletto/Tomaselli (1992).

First of all, both in Galician and in Italian, Cliticization of the Article is only possible from a Direct Object (and assimilated, i.e. postverbal Subjects in unaccusative, ECM and Restructuring contexts, etc.) position onto the governing item, within a Head-to-Head Movement frame, while in the case at issue we are dealing with contraction from a left-branch (the Determiner of the embedded Subject NP) onto an (argued) SPEC position.

Secondly, contraction in Portuguese differs both from Galician and Italian ones with regard to the involved items: the simplest case is represented by Italian, where one can only contract (most) one-syllable Prepositions with Definite Articles; in Galician, on the other hand, Definite Articles can cliticize onto any governing head (P, V, Q) provided that the mentioned configuration occurs. In Portuguese, on the contrary, contraction is again triggered by one-syllable Prepositions only (even if in a different inventory than in Italian), but it involves Subject Pronouns and Demonstratives, as well as Definite and Indefinite Articles. The case of Demonstratives is crucial, as in Uriagereka's analysis they should occupy a SPEC position, inaccessible to Head Incorporation (cfr. ex. (13.a))

While it is conceivable that what looks like a unitary phenomenon is in fact but the surface convergence of different syntactic processes, we can possibly consider the P+Art contraction observed in (5) and (6.a) (as well as the P+Dem contraction in (13.a)) as a two-steps process: first a D-to-C raising of the Article/Pronoun/Demonstrative (as the most prominent head of the (agreeing) Specifier of the Infinitival IP selected by the "empty C"), second a mere phonological cliticization of the element in C to the P in SPEC-C[4]. The Incorporation of the Preposition into the governing head would then simply destroy the context for phonological cliticization to occur, since the two elements would be too far away from each other.

The proposed analysis raises in this connection a major technical problem: if it is true that Incorporation leaves a trace of the Incorporee in its original position, as proposed by Baker (1988), SPEC-C should not be free for WH-movement even after the Incorporation of P, and (21.b,c) should be ruled out on a par with (21.a), which of course is an undesirable result.

A possible way to deal with this[5] is to consider the impossibility of WH-extraction from (6.a) (i.e. (21.a)) not simply as a mechanic consequence of the base generated Preposition occupying the SPEC-C position, as we have done up to now, but rather as a consequence of the intrinsic non-operator features of that P, then of the whole SPEC-C position.

If we analyze WH-extraction from a clause whose SPEC-C is already occupied as WH-adjunction to that SPEC-C (and final substitution into a free (matrix) SPEC-C) (see Adams (1984), Rudin (1988)), it seems plausible that this process is only possible when the embedded SPEC-C is transformationally occupied by a WH-phrase and configurates then as an operator

position which can host the adjunction of an other operator, much as in the WH-island violations of Italian, first studied by Rizzi (1982, Ch. 2).

On the contrary, such an adjunction would not be possible when SPEC-C is occupied, already at D-structure, by an intrinsically non-operator item such as our prepositional particles. We will then assume that WH-extraction from a prepositional infinitival construction is barred when P remains in its basic SPEC-C position, due to the non-operator features it assigns to that position.

On the other hand, it also seems reasonable to think that when the Preposition is incorporated into the governing Verb, its trace is underspecified and not strong enough to characterize the SPEC-C as a non-operator position: the adjunction of an extracted WH-phrase is then possible, yielding (21.b,c).

3.3 As we have seen in (6) and (21.a,b), the presence of an Adverb between the governing Verb and P makes the Incorporation optional, giving rise in both cases to the expected consequences in terms of transparency of the completive and of formation of an articulated Preposition.

Besides Portuguese examples in (21), the transparency of sentential Adverbs to Incorporation phenomena is to be noticed in constructions like the following[6]:

(22) a. Il modo in cui penso sempre di comportarmi
(pointed out to me by Paolo Acquaviva)
The way in which (I) think always of (to) behave me
b. ?Who did you speak briefly to ?
(pointed out to me by Adrian Battye)

The transparency of Adverbs in the case at issue is on the other hand analogous to the one they exhibit in the contexts analyzed and recalled by Longobardi (1980, 105-6), who concludes that "neither of the four major categories ([...] N, V, A, P) nor their projections [...] can occur [...], but some particular categories such as Adverbs [...] never produce, in the same position, ungrammatical output [...], as if they were on a different dimension with respect to the major ones."

The transparency of matrix Adverbs, triggering facultativity of P Incorporation into the main Verb, may possibly be analyzed as a case of (optional) Adverb Incorporation, analogous to what Rivero (1992) observes in Modern Greek and Nauhatl. This hypothesis is supported by the fact that in all the cases we are analyzing, as in Rivero's ones, the involved Adverbs are Manner and *Aktionsart* ones, which "should be syntactically represented as heads of complements in the VP, attached under V'" (Rivero (1992, 329))[7].

Rivero's assumption is consistent with the indirect (prepositional) character of the (nominal as well as sentential) objects of Verbs like *pensar(e)* ("think"), *speak*, etc.: if we assume that a single head cannot incorporate more than one item at the same time, but that in the relevant cases a choice between the most internal argument and the selected particle (as for the item to be incorporated) is available, we can possibly explain in a principled way the alternation in (6.a,b).

The proposed uniqueness of Incorporation, in fact, is only a further instanciation of the general impossibility for a single head to enter more than one relation or syntactic mechanism of the same kind at a time, which we already pointed out in Benucci/Poletto (1992, §5) and which we can formulate in even more general terms as follows:

(23) *Extended Uniqueness Condition on Licensing*
A head can license one and only one XP through one and the same syntactic mechanism.

3.4 The possibility of Incorporation is then a function, secondarily of phonological and structural adjacency between Incorporator and Incorporee (cfr. Rizzi (1982) and Hornstein/ Weinberg (1981)), some categories as sentential Adverbs being somehow "transparent" (in the sense of 3.3) to this kind of operations, but chiefly of selection requirements of the incorporating head.

In particular, the Incorporation of a P into another P is impossible (cfr. Baker (1988, Ch. 7 fn. 20, cfr. also 384 and Ch. 8 fn. 4)), probably due to the incompatibility of the respective Case Assignment characteristics, which would induce a violation of the *Case Frame Preservation Principle* (Baker (1988, 122)). That is why the Incorporation of the prepositional particle is blocked in the case of adverbial infinitival sentences embedded in a PP, as in (5).

The traditional label of "complex Prepositions" attributed to locutions as *antes/depois de* is then completely improper: the two prepositional elements occupy in fact distinct positions in the structure of sentences like (5) and cannot be considered at any level as parts of one and the same complex item.

4. Prepositional particles and Parasitic Gaps

A specific argument in favour of the structure indicated in (5') comes, for that kind of adverbial constructions, from their behaviour with respect to Parasitic Gaps.

According to the standard analysis of these constructions (cfr. Chomsky (1986, §10)) the parasitic gap is in a chain with a null operator occupying the SPEC position of the adverbial CP (i.e. the CP embedded in the adverbial PP), which is in turn in "chain composition" with the real gap chain.

This accounts for the island nature of parasitic gap constructions with regard to WH-extraction: the presence of a null operator in SPEC-C makes in fact this position unavailable for an eventually extracted constituent to pass through, thus determining the ungrammaticality of a sentence like (24.b), which is derived from the (marginally) acceptable parasitic gapping construction (24.a) (see in (24.c) the contrast with a construction where the parasitic gap is "filled" by a resumptive Clitic and WH-extraction is allowed):

(24) a. (?)Questa è la ragazza alla quale$_i$ hai consegnato il libro t_i senza supporre che interessasse $\varnothing_i$
This is the girl to whom you have given the book without (to) imagine that interested

b. *Questa è la ragazza alla quale$_i$ hai consegnato il libro t_i senza supporre cosa interessasse $\varnothing_i$

c. Questa è la ragazza alla quale$_i$ hai consegnato il libro t$_i$ senza supporre cosa le$_i$ interessasse ∅i
This is the girl to whom you have given the book without (to) imagine what *(to-her) interested

Sentences like (24.b,c) show that when the SPEC-C position is occupied by a WH-phrase the parasitic gap is not admitted, and vice versa. We would then expect an analogous behaviour if that position is occupied by other elements, like (as we are claiming) the prepositional particles.

Notice now that parasitic gap constructions are normally admitted also in Portuguese personal Infinitive adverbial constructions:

(25) a. Este é o homem que$_i$ t$_i$ entrou em casa sem os meninos verem ∅i
This is the man that entered in home without the children (to) see+infl
b. Quem é que$_i$ t$_i$ entrou em casa sem os meninos verem ∅i?
Who is that entered in home without the children (to) see+infl ?

Significantly, however, parasitic gap constructions as (25) are ungrammatical when the adverbial is introduced by sequences like *antes/depois de*. In sentences like (26) the presence of a resumptive Clitic is obligatory:

(26) a. Esta é a saia que$_i$ já t$_i$ estava estreita antes da Maria *(a) lavar ∅i
This is the skirt that already was narrow before of-the Maria (to) *(it) wash+infl
b. O que é que$_i$ já t$_i$ estava estreito antes da Maria *(o) lavar ∅i??
What is that already was narrow before of-the Maria (to) *(it) wash+infl?

This fact confirms that the particle *de* in constructions like (5) and (26) occupies the SPEC-C position[8], and allows us to attribute the opacity of the adverbial (i.e. the ungrammaticality of (19.b)) not to the "doubly filled COMP" Filter, as one could initially consider, but rather to the non-availability of SPEC-C for a WH-phrase.

An analogous analysis will also hold for the particle *a* in circumstancial constructions (1.b): here the particle in SPEC-C is the first constituent of the sentence and simply lacks a governing item to incorporate into, which explains the impossibility of voiding SPEC-C and the opacity of such constructions to WH-extraction (cfr. (20)).

5. Preposition Incorporation and Clitic placement

We will now turn to the consequences of the proposed analysis on the theory of Clitic placement in Portuguese that we have summarized in §2.

As is well known, Portuguese complement Clitics always occupy the "second position" in the sentence, being proclitic to the Verb when the relevant clause is introduced by an appropriate item counting as "first element", and enclitic when such an element is lacking and the Verb itself occupies the first position (for details and analysis cfr. Salvi (1990), Benucci/Poletto (1992)).

Our analysis of clause initial prepositional particles predicts that they shall alternate triggering of enclisis and proclisis according to whether or not they occupy the "first position" of the clause, i.e. respectively whether they remain in their SPEC-C base generation position or void it due to Incorporation into an appropriate governor.
This prediction is indeed borne out as is shown by the following data: Clitics precede the Verb when the particle remains in SPEC-C, thus suitably qualifying as "first element" of the clause, due to either the lack or the inadequacy w.r.t. Incorporation of the governing item, as in (27.a,b) respectively[9]:

(27) a. De *nos* encontrarmos/*encontrarmo-*nos* todos os dias ficamos amigos
Of (we to) ourselves meet+infl all the days (we) became friends (= 12)
b. Falei-lhes depois de *o* terem/*terem-*no* examinado
(I) spoke to them after of (they to) him have+infl examined

On the other hand, when the particle is Incorporated into the governing Verb, it does not count as "first element" of the clause and enclisis is found[10]:

(28) a. O Manel concorda em falarmos-*lhe*/%*lhe* falarmos amanhã
The Manel agrees in (we to) speak+infl to him tomorrow
b. A noite passada sonhei com comprarmo-%*lo*/**o* comprarmos
The night last (I) dreamt with (we to) buy+infl it

Crucially, a sentence like (6) admits both enclisis and proclisis, as is predicted by our analysis of optional particle Incorporation (see §3.3):

(29) Penso sempre em terem-*na*/*a* terem convocado sem razão
(I) think always in (they to) have+infl summoned her without reason

Semantically full P's as *sem* in (1.a), *antes/depois* in (5) and *para* in final sentences like (30), which occupy the head position of a sentential PP, are obviously to be kept distinct from the particles we analyzed here[11]:

(30) Dei-lhes a fruta *para* comerem amanhã
(I) gave them the fruits for (they to) eat+infl tomorrow

Besides the WH-extraction facts discussed in §3, the difference in the intrinsic nature and in the structural position of true Prepositions is also shown by their behaviour with regard to Clitic placement.

Sentences introduced by a semantically full P, in fact, always exhibit proclisis, thus showing that the Preposition suitably occupies the "first position" of the clause:

(31) a. Dei-lhes a fruta para *a* comerem/*comerem-*na* amanhã
(I) gave them the fruits for (they to) it eat+infl tomorrow

b. Entrei em casa sem *me* verem/*verem-*me*
(I) entered in home without (they to) me see+infl

Full Prepositional constructions as (31) can then be assimilated in this respect to "normal", *que*-introduced, embedded sentences, which also require obligatory proclisis:

(32) A Joana diz que *te* falou/*falou-*te* ontem
The Joana says that (she) to-you spoke yesterday

Both the Complementizer and the full Preposition count in this respect as suitable occupiers of the "first position" of the relevant clause.

6. Preposition Incorporation into Nouns and Adjectives ?

In Benucci (1991) we claimed that Preposition Incorporation in contemporary Romance is a relic of a formerly much more diffused and productive situation. It is not surprising then that the above pattern of Clitic placement interacting with Preposition Incorporation is found in Portuguese, whose syntax is known to be one of the most conservative among Romance languages, particularly with regard to Clitic placement, which still obeys a variation of the so-called "Tobler-Mussafia Law".

The present analysis, as well as its diachronic facet just mentioned, receives further support by the fact that the same pattern is found in mediaeval languages, where the "Tobler-Mussafia Law" was much more widespread, holding for Clitic placement throughout the whole *Romània* (see Benincà (1991), Salvi (1990)). The following examples, coming from mediaeval languages geographically as far away as Portuguese and Friulian, show in fact the same dichotomy between semantically full P's and prepositional particles w.r.t. Clitic placement, as in (28)-(31) above[12]:

(33) a. E non mi valha Deus nen al se eu trobo *por m 'en* pagar
And not me grant God nothing else if I versify for myself of-this (to) gratify
(Don Dinis *Senhor, dizen-vus por meu mal* 4-5)

b. E cuid'i muit', e empero non ei *de* fazê-*la*
And (I) think of-this a lot, and power not have (I) of (to) do it
(Pai Gomez Charinho *Que mui de grad'eu querria fazer* 7-8)

(34) a. Uno horo in di *per vo* vede per la contrado passaraj
One hour per day for you (to) see through the borough (I) will-pass
(*Biello dumlo* 85-86)

b. Vigno vus di me pecgiat *di* lasa*mi* in tant ardor
Come to-you for me pity of (to) let me in so-much ardour
(*Biello dumlo* 55-56)

Notice that examples (33.b) and (34.b), where enclisis is displayed, involve in our analysis Incorporation of the particle from the Specifier of the embedded CP into the governing Noun, rather than into a Verb. This can possibly be analyzed, with Baker (1988, 299), as an Incorporation due to Case requirements: namely, the prepositional particle would be

incorporated into the governing Noun in order to licence the direct assignment of an oblique Case to the embedded clause.

This analysis would lead to the expectation that a similar phenomenon of P-to-N Incorporation occurred in a conservative Romance language as contemporary Portuguese, in sentences like (2.b), where Preposition+Article contraction does not take place. However, this expectation is not satisfied, as it is made clear by the behaviour of Clitics in such sentences: proclisis shows in fact that the Preposition occupies the "first position" of the relevant clause[13]:

(35) Não pude falar com a Maria por causa de *a* terem/*terem-*na* chamado ao telefone
(I) not could speak with the Maria by cause of (they to) her have+infl called to the telephone

We are then led to the conclusion that also in Portuguese the Incorporation of Prepositional particles into governing heads is somehow going lost with respect to the mediaeval language (as it is probably the case for Incorporation in general as well) and is by now lexically governed and limited to Prepositionally governing main Verbs.

We can assume, along the lines of Benucci (1991), that in the case of governing Nouns, the Preposition has completely "unhooked" from them and has become the head of a newly projected independent PP. The sentential structure, accounting for both the lack of P-to-N Incorporation and the impossibility of P+Art contraction in these cases, will be very similar to the one proposed by Rizzi (1990) for an Adjectival construction like (2.a), (3.b), with both a CP and an IP nodes intervening between the PP heading Preposition and the D item:

(36) a. . ..em virtude [PPde [CP [IP [DPa mesma] ...]]] (= 2.b)
b. ...por causa [PPde [CPa terem [IP [DP*pro*] ...]]] (=35)

Notice that adjectival constructions like (2.a), (3.b) also require proclisis, on a par with (2.b), (35):

(37) Estamos contentes por *a* terem/*terem-*na* votado
(We) are happy by (they to) it have+infl voted

We assume for (37) a structure like (38), which fully specifies Rizzi's (1990) proposal (see here in (4)) we already adopted in (36) for nominal constructions. As in the latter case, we take the Preposition to head an independent full projection dominating both a CP and an infinitival IP nodes:

(38) ...contentes [PPpor [CP [IP [DP*pro*] a terem votado]]]

Both in (36) and (38) we have placed the inflected Infinitive in IP: this was made for convenience and does not mean that it is the only possibility. If we observe constructions with lexical Subjects, we can see that both the pre- and the post-verbal positions are allowed:

(39) a. Não pude falar com a Maria por causa de eles a terem/a terem eles chamado ao telefone
(I) not could speak with the Maria by cause of (they) (to) her have+infl (they) called to the telephone
b. Estamos contentes por os deputados a terem/a terem os deputados votado
(We) are happy by (the deputies) (to) it have+infl (the deputies) voted

Assuming once more Benucci/Poletto's (1992) analysis of inflected Infinitives, we consider the possibility of both SV and VS linear orders in (39) as a demonstration that the infinitival clause is indeed a CP, where the Infinitive can either raise to C or remain in I.

On the other hand, we consider the obligatory proclisis as a proof that the Subject remains in all instances in Spec-I and does not raise to Spec-C: if this were the case, enclisis would be triggered as a last resort in order to avoid minimality effects in CP, which would be specified as an A projection by the Agreement holding between the Subject and the Verb.

The impossibility of contracting the Preposition with the (Article of the) embedded (pre-verbal) Subject both in nominal and adjectival constructions shows at the same time that P is not placed within CP but is rather separated from that Subject by at least two maximal projections counting as barriers, namely CP and DP, much as in Rizzi's original account we are taking up here:

(40) a. *Não pude falar com a Maria por causa deles a terem chamado ao telefone
b. *Estamos contentes pelos deputados a terem votado

7. Conclusion

The survey of both morphological and syntactic properties of prepositional personal Infinitive constructions of Portuguese has led us to splitting this class of constructions into two structurally well distinguished subgroups, depending on the nature of the matrix governing head.

Noun/Adjective governed prepositional clauses are full PP's whose P head does not undergo Incorporation into the governing head and dominates a CP clause, thus not allowing any form of P+D contraction, which would be a Subjacency violation.

On the other hand, the analysis of Verb governed prepositional constructions confirms what we proposed in Benucci (1991), namely that Romance (Verb) prepositional particles occupy at D-structure the SPEC-C position of completive and adverbial infinitival sentences, whence they can incorporate into the governing head. If such an Incorporation takes place, particles clear their original position and allow then, if not otherwise realized by an element in C, the "deletion" of the CP projection, whose effects are visible in WH-extraction and Clitic placement characteristics of these prepositional constructions.

The remaining class of prepositional Personal Infinitive constructions, namely those that are governed by another Preposition, have been shown to have the same base-generated structure as the Verb governed ones, the difference with the latter being the impossibility of incorporating a P into another P, due to Baker's (1988) *Case Frame Preservation Principle*: the prepositional

particle is then bound to stay in its D-structure position, where it triggers the expected consequences in terms of P+D contraction, cliticization, etc.

FOOTNOTES

* I wish to thank all the native speakers of Portuguese that assisted me with their judgements and intuitions on examples, as well as Cristina Gibellato for her help in collecting and checking the Portuguese data. I am also grateful to Xavier Villalba, Juan Uriagereka, Cecilia Poletto, Richard Kayne, Guglielmo Cinque, Adrian Battye, Paolo Acquaviva and the audience of the GISSL 1992 Workshop for their useful remarks to preliminary versions of this paper.

1. Examples in (1.a,b) are not relevant for this property as *sem* never contracts with an Article and (1.a) only admits post-verbal Subjects. We will return to the latter phenomenon in §2. For (1.c) see the whole discussion beneath.

2. The contraction of Preposition and Article takes also obligatorily place in nominalized infinitival constructions:

   (i) a. *Ao* avistares a cidade, que foi o que sentiste ?
   At the (you to) see+infl the city, what was that (you) felt ?

   b. O Manel e o António perceberam o que é verdadeiramente a arte *ao* contemplarem aquele espectáculo medonho
   The Manel and the António understood what is really the art at the (they to) gaze-at+infl that spectacle frightening

   This case, however, is not relevant here, as the corresponding structure must arguably be as follows:

   (i') [PPa [DPO [CPavistares/contemplarem [IP*pro* ...]]]]

   The contraction does not occur then with the Subject, but with the Article of the nominalized sentential complement of P, thus paralleling (3.a). The intervening DP node also accounts for the opacity of such sentences to WH-extraction (cfr. §3).

3. If Raposo's (1987) and Battye's (1992) claims that Infinitival CP's need to be licensed by Case-marking are correct, the analysis we are proposing here is fully compatible with their assumptions: before Incorporation the Preposition Case-marks C by *Spec-Head Agreement*, afterwards by Government from the incorporating head. As for the Incorporation from a SPEC-C position, see Baker (1988, 61-2, 170-1, 369).

4. A similar phenomenon involving an empty C and its Specifier position, that could also be interpreted as phonological cliticization, is to be found in Bavarian, where the 2nd person inflectional morphemes *-st/-ts*, which are generally realized on the Complementizer, appear on the WH-phrase when C is phonologically null (*daß-st/ts* >*wia-st/ts* (= that+infl > how+infl), etc.). I am indebted to Cecilia Poletto for having brought to my attention these data, originally pointed out by Bayer (1985, §3).

5. We will not explore here an alternative hypothesis which, if tenable, would solve from the root the problem at issue, namely Lasnik/Saito's (1984) suggestion (as well as Chomsky's p.c., reported by Keyser/Roeper (1992, 103)) that non-argument traces are deletable. Prepositional particles are in fact non-argumental items: if the traces left by their Incorporation into the governing head can be freely deleted, no problem for WH-extraction from the embedded clause in (21.b,c) and analogous examples will arise.

6. It is significant that English Preposition Stranding constructions like (22.b) have an acceptability judgement largely varying from a speaker to another, as it is shown by the ?? attributed to sentences analogous to ours by Hornstein/Weinberg (1981, 71). The crucial point is that the Adverbs in (21) and (22.a) are related to the matrix: the eventual insertion of Adverbs related to the embedded sentence between V and P blocks any Incorporation possibility, as we can see in (23) (cfr. Benucci (1991, §2.3):

   (ii) *Il modo in cui penso *domani* di comportarmi
   The way in which (I) think tomorrow of (to) behave me

7. The same is true for the "bare-NP" Adverbs of Uriagereka (1989), which admit Incorporation of the Determiner into the Verb, as in (iii):

(iii) Con ela falamo-lo Luns da Feria (Uriagereka (1989, 32))
With her (we) talked-the Monday of-the Market

As Uriagereka himself points out (1989, 24), these "can be seen as quasi-argumental and governed by some projection of the Verb, or perhaps the Verb itself".

8. Notice also the proclitic position of *a* in (26). An enclitic construction would in fact be ungrammatical, which confirms once again the proposed analysis, with both Infinitive and Subject at IP level (cfr. §2):

(iv) *Esta é a saia que já estava estreita antes da Maria lavà-*la*
This is the skirt that already was narrow before of-the Maria (to) wash it

9. We are using here examples with a null *pro* Subject, in order to be sure of the absolute relevance of the particle as the "first (realized) element" of the clause (cfr. Benucci/Poletto (1992, fn. 7).

10. We mark some word orders in (28) by a percentage sign (%) to mean that some speakers of Portuguese do not fully accept those constructions. Yet, to the extent that the marked sentences are accepted, they display a clear (positive or negative) difference in grammaticality judgement with respect to the competing arrangement of word order.

11. Cfr. Kayne (1991, fn. 54) for a somehow different conclusion.

12. Examples (33) and (34) involve uninflected Infinitives, due to a mere fact of availability of relevant data, but this has no consequences for the analysis proposed so far.

13. The opacity of sentences like (2.b), (35), which could also be taken for significant in this respect, is on the contrary irrelevant, as it can be attributed to the presence of a semantically full PP and of an NP nodes dominating the infinitival clause (cfr. fn. 2):

(v) *Onde é que não pudeste falar com a Maria por causa de ela não chegar a tempo ?
Where is that (you) not could speak with the Maria by cause of she not (to) arrive+infl at time ?

In an Adjective governed Personal Infinitive prepositional construction there is no such problem due to the intrinsic transparency to extraction of the Small Clause headed by Adjectives and a sentence like (2.a) is in fact transparent to extraction:

(vi) O que é que eles estão ansiosos por votarem ?
What is that they are anxious by (they to) vote+infl ?

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