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ADRIANA BELLETTI AND LUIGI RIZZI

PSYCH-VERBS AND  $\theta$ -THEORY\*

## 0. INTRODUCTION

The descriptive goal of this paper is to give an analysis of certain syntactic peculiarities of psychological verbs in Italian. A broader theoretical question lies in the background of our discussion. It is generally recognized that thematic information and syntactic configurations are related in systematic ways; the informal idea behind various formalizations of the PROJECTION PRINCIPLE is that the initial syntactic representations are literally built on the basis of the thematic representations stored in the lexicon ( $\theta$ -GRIDS). Still, the nature and strength of the principles involved remain quite unclear. In particular, there are important problematic areas which seem to resist principled attempts to constrain the mapping of  $\theta$ -grids onto D-structures.

One classical problem is raised by PSYCH-VERBS. A fairly standard assumption is that in the general case, verbs expressing psychological states have a uniform  $\theta$ -grid, involving an EXPERIENCER, the individual experiencing the mental state, and a THEME, the content or object of the mental state (see section 5 for detailed discussion). This  $\theta$ -grid can be projected onto a variety of syntactic configurations in an apparently arbitrary way. Putting aside processes of derivational morphology, which multiply the possibilities, we find three primitive lexical classes in Italian:

- (1) Gianni teme questo.  
*Gianni fears this*
- (2) Questo preoccupa Gianni.  
*this worries Gianni*
- (3)a. A Gianni piace questo.  
*to Gianni pleases this*

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standing what someone is saying. That's one of the things psycholinguistics is about." Quite so, and pleasant to find a novelist who knows it.

6. *The Languages of Pao*, by Jack Vance (1957). From *Mao to Pao*. The original language of the planet Pao had no verbs and no adjectives. How can anything be said given such a linguistic deficit? The morpheme gloss of a sentence meaning 'The farmer chops down the tree' is given as follows:

farmer-EXRT axe-INSTR tree-VICT

where EXRT indicates 'in a state of physical exertion', INSTR indicates 'an instrument or agency', and VICT indicates 'in a state of subjection to an attack.' A more complex example is this utterance, spoken to a representative from the planet Mercantil:

rhomel- en- shrai bogal- mercantil- nli- en  
 IMPRT- RDY- two ear- Mercantil- GEN- RDY  
 mous- es- nli- ro  
 mouth- PROX- GEN- VOL

'There are two matters I wish to discuss with you.'

Here, IMPRT is an importance marker, RDY indicates being in a state of readiness, GEN is the genitive suffix, PROX indicates 'this person here', and VOL indicates 'in a state of volition': 'Two-important-things-ready Mercantil's-ear-ready this-person's-mouth-willing.' Getting the hang of it? Linguist readers of this novel about language planning will be relieved to know that by the end of the story the hapless Paonese are being provided with a new language intended to shake them out of their political apathy, the original one having given them a bad case of Orwell's Problem.

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Cowell College  
 University of California  
 Santa Cruz, CA 95064  
 U.S.A.

GEOFFREY K. PULLUM

Note

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- (3)b. Questo piace a Gianni.  
*this pleases to Gianni*

(1) and (2) seem to be simple transitive structures with an apparent inversion in the assignment of  $\theta$ -roles: the subject is the Experiencer and the object is the Theme with **temere**, while the subject is the Theme and the object is the Experiencer with **preoccupare**. The third class, represented by **piacere** 'please', involves a dative Experiencer and a nominative Theme, with both orderings allowed. This variety is not a peculiarity of Italian, nor does it appear to be statistically marked: similar inversions are frequently found across languages. This state of affairs has sometimes been interpreted as evidence that any principled approach is doomed to fail in this domain, and the mapping problem is simply a matter of lexical idiosyncrasy.

This cannot be literally true in general: if we look at other verb classes we do not find the freedom apparently manifested by psych-verbs. A typical example involves agentive verbs. Neither in English nor in Italian is there any lexical choice for V allowing structures like (4b, c) with the same  $\theta$ -grid (Agent, Theme) as the verb *write* in (4a):

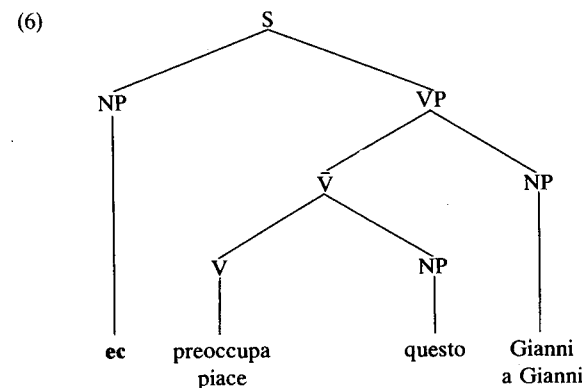
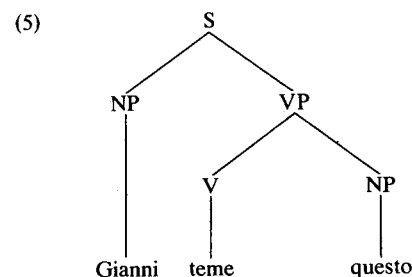
- (4)a. John wrote the letter.  
 b. \*The letter V John.  
 c. \*The letter V to John.

A reasonable interpretation is that the lexical gap is systematic, not accidental: there must be principles determining, among other things, which members of a given  $\theta$ -grid can or must be selected as the external argument. But a comparison between (1)–(3) and (4) would suggest that the domain of such principles does not extend to the whole lexicon; in particular, they appear to be suspended with psychological verbs. The lexicon would then be split into one set of verbs constrained by mapping principles and another set where the mapping is idiosyncratic.

Years ago, a more optimistic view of the coverage of the mapping principles was defended by generative semantics (cf. Fillmore 1968). In the specific domain of psych-verbs, it was argued (Postal 1970) that only structures like (1) corresponded to initial syntactic configurations, while the ordering of constituents in (2) (and (3)) was transformationally derived. One could then say, somewhat anachronistically, that these analyses postulated strict principles enforcing the projection of configuration (1) from the  $\theta$ -grid of psych-verbs.

We would like to argue that this approach was a step in the right direction and that a modified version of it can be made compatible with a

restrictive theory of grammar like the GOVERNMENT/BINDING (GB) framework. We believe that the D-structure configurations of (1), (2) and (3) do differ, but not as drastically as prima facie evidence would suggest. Our claim is that the D-structure configuration of (1) is the uncontroversial (5), whereas the D-structure of (2) and (3) is (6), a kind of double object construction with a nonthematic subject position:



Examples (2) and (3a, b) can be derived from (6) through NP-movement to the subject position. If this hypothesis is substantiated, then the argument can be reversed: there *must* be strict principles constraining the projection of  $\theta$ -structures onto D-structures; otherwise, why should the language learner depart from the null hypothesis for (2) and postulate initial syntactic representations which do not surface as such? Notice that, in spite of the obvious differences in linear order and category labels, (5) and (6) have an important property in common: in both cases the verb directly  $\theta$ -marks the Theme, and the constituent Verb + Theme

compositionally  $\theta$ -marks the Experiencer; hence,  $\theta$ -marking relations are held constant. This amounts to saying that even in the problematic area of psych-verbs the theory constraining the syntactic projection of  $\theta$ -grids has an important regularity to capture.<sup>1</sup>

Before turning to the empirical evidence, we would like to mention another conceptual issue which lies in the background of our discussion.  $\theta$ -theory is a central component of the GB framework. But what kind of  $\theta$ -theory is needed within formal grammar? Opinions diverge here: there are two alternative views which we will phrase in their extreme forms for the sake of clarity. The first claims that the only syntactically relevant distinction made by  $\theta$ -theory is the one expressed by the formalism  $\theta$  vs.  $\theta'$ , i.e., presence versus absence of  $\theta$ -role. This suffices for the purposes of formal grammar: the qualitative distinction between, say, Agent and Patient is presumably relevant at some conceptual level of categorization of events, but is not exploited by the grammar. The alternative view claims that substantive distinctions between  $\theta$ -roles can be referred to by grammatical processes; for instance, there can be rules referring to Agents. This view stems from Jackendoff (1972); one basic claim of that work is that various grammatical processes behave in accordance with a thematic hierarchy. It is clear that the first view is a priori preferable on methodological grounds of restrictiveness. On the other hand, it seems unlikely that it can be kept in its extreme form. Genuine generalizations like the systematic contrast of (1)–(3) vs. (4) could not be represented without referring to such distinctions as Agent vs. Experiencer: we would simply have two arbitrary classes of verbs behaving differently.

We will adopt the following revision of the more restrictive approach: substantive distinctions between  $\theta$ -roles are irrelevant within formal grammar but play a crucial role at the interface between formal grammar and other cognitive systems. In fact, they contribute to determining the initial syntactic representations (D-structures) through a system of mapping principles projecting  $\theta$ -structures onto syntactic structures. On this view the apparent sensitivity of certain grammatical processes to  $\theta$ -

<sup>1</sup> Our general theoretical assumptions, as well as some specific aspects of our analysis, have important antecedents within Relational Grammar. Particularly relevant is the discussion of the UNIVERSAL ALIGNMENT HYPOTHESIS (Perlmutter & Postal 1984, Rosen 1984) and the study of the INVERSION construction (see Perlmutter (1983) and various chapters in Perlmutter & Rosen (1984)). See also Guéron (1986), Johnson (1986), Pesetsky (1987), Stowell (1986) and the earlier proposal of den Besten (1982) on German and Dutch, for slightly different approaches having in common the assumption that, at some level of representation, the structure of (2) and (3) is more complex than superficial evidence might suggest. Cf. also Georgopoulos (1987) for evidence that (6) is the correct representation (modulo categorial and linear adjustments) for psych-nouns in Palauan.

hierarchies may be empirically correct but is epiphenomenal: everything is mediated through structure, and grammatical processes only refer to structural information which indirectly reflects  $\theta$  information through the operation of the mapping principles.  $\theta$ -hierarchies and the like intervene only once, in the formation of D-structures. From there on, reference to such entities is excluded in formal grammar.

The bulk of this paper is devoted to justifying what is probably the most surprising aspect of our proposal, i.e. the hypothesis that (6) is the D-structure representation of (2). There are two kinds of empirical evidence supporting this hypothesis. The first is that the subject of (2) has a cluster of properties typical of derived subjects (section 1). The second is that the object lacks one typical object property – full transparency to extraction processes. An analysis of this phenomenon in section 3 will suggest certain readjustments to the Bounding theory presented in Chomsky (1986b). Section 2 is devoted to showing that the adoption of hypothesis (6) allows us to explain certain well-known puzzles raised by the behavior of psych-verbs with respect to the theory of Binding. The analysis of the Binding facts will lead us, among other things, to explore a new approach to the so-called reconstruction problem. In section 4 we extend the analysis to the third class of psych-verbs exemplified in (3). Section 5 gives an explicit characterization of the theory of lexical representations and the mapping principles implicitly assumed in the rest of the paper. It illustrates the predictive power of this approach and its contribution to a tight characterization of the notion 'possible lexical representation'.

## 1. THE SUBJECT OF **PREOCCUPARE** IS NOT A DEEP SUBJECT

### 1.1. *Anaphoric Cliticization*

A very reliable test discriminating between deep and derived subjects in Romance is the ability to bind an anaphoric clitic. Consider the following contrast:

- (7) Gianni si è fotografato.  
Gianni himself photographed
- (8)a. \*Gianni si è stato affidato.  
Gianni to himself was entrusted
- b. \*Gianni si sembra simpatico.  
Gianni to himself seems nice

The deep subject of (7) can bind a reflexive clitic, whereas the derived subjects of the passive and raising constructions (8a, b) cannot. In Rizzi (1982b) it is argued that the ill-formedness of these examples can be derived from the following assumptions: 1) arguments in  $\theta'$  positions must be connected to traces in  $\theta$  positions through a chain formation algorithm in order to ensure satisfaction of the  $\theta$ -criterion at S-structure; 2) the chain formation algorithm only connects positions in configurations of local binding, i.e.,  $(x, y)$  is a possible link of a chain only if  $x$  is the closest binder of  $y$ . Examples (8a, b) and any similar examples involving a derived subject are ill-formed because the argument filling the  $\theta'$  subject position cannot be connected to its trace due to the intervention of the coindexed clitic:

- (9) \*NP<sub>i</sub>... si<sub>i</sub>... e<sub>i</sub>

Now, the **temere** and the **preoccupare** classes contrast very systematically with respect to this diagnostic:

- (10)a. Gianni si teme.  
Gianni himself fears

- b. \*Gianni si preoccupa.  
Gianni himself worries

- (11)a. Io mi conosco.  
I myself know

- b. \*Io mi interesso.  
I myself interest

- (12)a. Maria si accetta.  
Maria herself accepts

- b. \*Maria si attrae/attira.  
Maria herself attracts

- (13)a. Gianni si ammira.  
Gianni himself admires

- b. \*Gianni si commuove.  
Gianni himself moves

The hypothesis that the **preoccupare** class involves a derived subject is thus supported.<sup>2</sup>

The contrasts of (10)–(13) get somewhat weaker with non-clitic anaphors, and tend to disappear if the anaphor is heavily stressed:

- (14)a. Gianni conosce se stesso.

Gianni knows himself

- b. \*?Gianni preoccupa se stesso.

Gianni worries himself

- b'. (?)Ultimamente, Gianni preoccupa perfino se stesso.

lately Gianni worries even himself

In English, examples corresponding to (14b) are judged deviant to some extent, varying from ? (Jackendoff 1972) to \* (Postal 1970). Stress seems to affect the acceptability of other deviant structures for which a chain formation analysis has been proposed. Note the impossibility of anaphors in the *by* phrase of the passive construction (Roberts 1987):<sup>3</sup>

- (15)a. \*John was fired by himself.

- b. John was fired by **himself**.

It thus appears that the intervention effect illustrated in (9) can be weakened by stress. A possible analysis is that elements receiving heavy stress are assigned a special FOCAL INDEX (F) at S-structure, which is

<sup>2</sup> The (b) sentences of (10) and (13) are acceptable in an irrelevant reading. These verbs, in addition to the construction Theme V Experiencer admit the construction Experiencer si V P Theme with an inchoative sense. For instance we have:

- (i) Questo commuove/preoccupa Gianni.  
this moves worries Gianni

- (ii) Gianni si commuove/preoccupa per/di questo.  
Gianni moves worries for of this

Here **si** is nonthematic, presumably akin to the ergative marker **si** discussed in Burzio (1986). The PP designating the Theme can be omitted, so that, for instance, (10b) is acceptable in the interpretation corresponding to (ii) 'Gianni gets worried at something unspecified'. Sentences (10b) and (13b) are impossible with thematic **si** corresponding to the EXPERIENCER (Exp). The irrelevant reading does not arise with the verb of (12), which does not occur in the inchoative construction. As for the verb in (11), it does occur in the inchoative construction, but does not allow for the omission of the PP; hence, no irrelevant reading arises in this case either.

<sup>3</sup> In Roberts' analysis the intervening element responsible for the ill-formedness of (15a) is not the anaphor, which presumably does not c-command the object trace, but the *-en* morpheme coindexed with the *by* phrase, hence, by transitivity, with the object trace.

later identified, at the level of LOGICAL FORM (LF), with a normal referential index. We would then have:

- (16) SS: Gianni<sub>i</sub> preoccupa e<sub>i</sub> [<sub>NP<sub>F</sub></sub> perfino se stesso]  
 LF: same with F = i

At the level of application of the chain formation algorithm – S-structure – there would be no intervention effect. This option, of course, is unavailable in principle with anaphoric clitics, which by definition cannot bear stress. Hence we find a higher degree of ill-formedness in (10b), etc. as compared to (14b) and the corresponding English examples, in which the option of stressing the anaphor is always available.

There is a second factor which can improve the (b) examples of (10)–(13) to full acceptability. With some verbs in this class, a human subject can be interpreted as voluntarily inducing the psychological process or state in the Experiencer. Under this interpretation (pragmatically more natural when a reciprocal is involved and prompted by such adverbs as *voluntarily*, *intentionally* etc.) sentences corresponding to the (b) examples can reach full acceptability:

- (17) Quei due si spaventano intenzionalmente ogni volta che ne hanno l'occasione.  
*These two guys frighten each other intentionally every time that they have the opportunity.*

This is not surprising: here the subject is an Agent, hence there is no reason to assume anything else than a simple transitive structure with a deep agentive subject. The compatibility with an anaphoric clitic is therefore expected.<sup>4</sup> There is a class of cases in which the agentive/nonagentive distinction correlates with an important modification in meaning. Consider the following pair:

- (18)a. Gianni mi ha colpito con un bastone.  
*Gianni struck me with a stick*  
 b. Gianni mi ha colpito per la sua prontezza.  
*Gianni struck me by virtue of his quickness*

Example (18a) illustrates the primary meaning of *colpire*, a verb of physical activity involving an Agent and a Patient. Such verbs admit a

<sup>4</sup> Example (21b) of Rizzi (1982b) is amenable to this analysis, which is perhaps extendable to the French example (146a) of Ruwet (1972, p. 216) and other complex cases that Ruwet discusses.

derivative psychological interpretation illustrated in (18b) (cf. Ruwet 1972, ch. 5 for important discussion): the subject is a Theme – the nonintentional trigger and content of the psychological process – and the object is the Experiencer. As expected, the first case, which involves a simple transitive configuration, is compatible with an anaphoric clitic, while the second is not:

- (19)a. Gianni si è colpito con un bastone.  
*Gianni himself struck with a stick*  
 b. \*Gianni si è colpito per la sua prontezza.  
*Gianni himself struck by virtue of his quickness*

In conclusion, nonagentive Themes of psychological processes syntactically pattern with derived subjects with respect to this test.

### 1.2. *Arbitrary pro*

In Italian a *pro* subject grammatically specified as 3rd person plural (a specification visible from the verbal agreement), in addition to the usual definite pronominal interpretation 'they', allows a kind of arbitrary interpretation in which the plural specification does not imply semantic plurality: there is simply no commitment as to the real number of the argument in question. For instance, a sentence like:

- (20) *pro* ti stanno chiamando.  
*They are calling you*

can mean 'They are calling you'. (where *they* refers to a group of people already identified in discourse, or somewhat salient) or 'Somebody is calling you.' On the latter interpretation, the structure could have the following continuation in a coherent discourse:

- (21) Deve essere Gianni.  
*It must be Gianni*

in which the referent of the grammatically plural argument is identified as a single individual. The relevant property of this phenomenon is that the *arb* interpretation is not possible with all verb classes and structures:<sup>5</sup>

<sup>5</sup> The \* on the examples of (23) refers to the *arb* interpretation. All the examples are in fact acceptable with the definite pronominal interpretation of the null subject, e.g. 'They arrived at my place.', etc. In this section we draw freely from an MIT talk by Alfredo Hurtado (Fall, 1984) on the corresponding construction in Spanish.

- (22)a. *pro* hanno telefonato a casa mia.  
*Somebody telephoned my place*
- b. *pro* mi hanno mandato un telegramma.  
*Somebody sent me a telegram*
- c. *pro* hanno arrestato Gianni.  
*Somebody arrested Gianni*
- d. *pro* hanno visto Gianni in giardino.  
*Somebody saw Gianni in the garden*
- (23)a. \**pro* sono arrivati a casa mia.  
*Somebody arrived at my place*
- b. \**pro* mi sono sembrati matti.  
*Somebody seemed to me crazy*
- c. \**pro* sono stati arrestati dalla polizia.  
*Somebody has been arrested by the police*
- d. \**pro* sono stati visti in giardino.  
*Somebody has been seen in the garden*

The discriminating property seems to be that *arb* interpretation can be assigned to deep subjects *pro*'s only: it is incompatible with unaccusative structures (ergative structures in Burzio's (1986) sense: (23a)), raising (23b) and passive (23c, d).<sup>6</sup> It thus appears that *arb* interpretation is licensed through  $\theta$ -marking. For concreteness, let us make the following assumption concerning the  $\theta$ -marking of deep subjects: the external

<sup>6</sup> The contrasts are very sharp when the structures refer to specific events as in (22), (23). In such cases, *arb* is close to existential quantification. There are weaker, but still detectable contrasts when the structures are generic (in which case *arb* is close to universal quantification or to generic NPs like *people* etc.):

- (i) Qui hanno sempre rispettato gli americani.  
*Here (people) always respected Americans*
- (ii) ?Qui sono sempre stati rispettati dagli Americani.  
*Here (people) were always respected by Americans*
- (iii) ??Qui mi sono sempre sembrati filoamericani.  
*Here (people) always seemed to me pro-American*

The contrast is probably weakened because the definite pronominal interpretation and *arb* interpretation in generic contexts (*they* and *people*) are more difficult to tease apart than in specific contexts (*they* and *somebody*).

$\theta$ -role of the VP is first assigned to INFL under sisterhood, and is then transmitted by INFL to the subject NP under government. We would then conclude that *pro* in subject position can have *arb* interpretation when the licensing INFL  $\theta$ -marks it.<sup>7</sup>

The two classes of psych-verbs pattern again in an opposite way:

- (24)a. Evidentemente, in questo paese per anni *pro* hanno temuto il terremoto.  
*Evidently, in this country people feared the earthquake for years*
- b. \*Evidentemente, in questo paese per anni *pro* hanno preoccupato il governo.  
*Evidently, in this country people worried the government for years*
- (25)a. Qui *pro* hanno sempre ammirato/apprezzato gli americani.  
*Here, people always admired/liked the American people*
- b. ??Qui *pro* hanno sempre entusiasmato/commosso gli americani.  
*Here, people always excited/moved the American people*

Similarly, agentive **colpire** 'strike' admits the *arb* interpretation, whereas psychological **colpire** does not:

- (26)a. *pro* hanno colpito il giornalista con un bastone.  
*Somebody struck the journalist with a stick*
- b. \**pro* hanno colpito il giornalista per la gentilezza.  
*Somebody struck the journalist by virtue of kindness*

<sup>7</sup> This formal condition would then parallel the assignment of *arb* interpretation to *pro* in V-governed positions, which is also contingent upon  $\theta$ -marking (cf. Rizzi 1986b). Still, arbitrary interpretation of *pro* subjects (let us call this *arb'*) differs from what is generally referred to as *arb* interpretation (assigned to uncontrolled PRO, impersonal *si*, and *pro* in object position) in at least two respects: 1) ordinary *arb* can be interpreted as including the speaker, whereas *arb'* is always exclusive; 2) *arb* is grammatically singular in some languages (Spanish) and plural in others (Italian), whereas *arb'* is always plural. We will leave open the question of whether one should factor out a unique procedure responsible for the assignment of *arb* and *arb'*, or two independent mechanisms should be admitted to exist. Cf. Jaeggli (1986), Suñer (1982), Otero (1985).

We thus have additional evidence for the derived nature of the subject with the **preoccupare** class.<sup>8</sup>

### 1.3. The Causative Construction

Burzio (1986) has shown that structures containing a derived subject cannot be embedded under the causative construction in Italian:

- (27)a. Gianni ha fatto telefonare (a) Mario.  
*Gianni made Mario call*
- b. \*Gianni ha fatto essere licenziato (a) Mario.  
*Gianni made Mario be fired*

This fact follows, under Burzio's analysis, from the derived structure of causative sentences: the causative rule applies to abstract representations like (28) and extracts the VP from the embedded clause (29):

<sup>8</sup> Additional evidence is provided by Cinque (1987). Cinque points out that impersonal *si*, unlike arbitrary *pro*, shows a selective compatibility with nonthematic subject position: in tensed clauses it can correspond to a thematic or to a nonthematic subject:

- (i)a. Si lavora sempre troppo.  
*One always works too much*
- b. Spesso si arriva in ritardo.  
*Often one arrives late*
- c. Spesso si preoccupa anche chi non si vorrebbe.  
*Often one worries even those who one would not want to worry*  
 (Cinque's (1)(b, c, d))

In certain untensed clauses (e.g. in Raising complements), *si* can only correspond to a thematic subject:

- (ii)a. Sembra non essersi lavorato a sufficienza.  
*It seems that one has not worked sufficiently*
- b. \*Sembra essersi arrivati troppo tardi.  
*It seems that one has arrived too late*
- c. \*Sembra essersi preoccupato un solo genitore.  
*It seems that one has worried only one parent*  
 (Cinque's (5b, c, d))

(Irrelevantly, a sentence like (iic) is acceptable with the interpretation corresponding to the inchoative construction mentioned in note 2, not involving impersonal *si*: 'It seems that only one parent got worried.') See Cinque (op. cit.) for an analysis of this selective compatibility. The important point in the present connection is that **preoccupare** patterns with unaccusatives, not with verbs involving thematic subjects.

- (28)a. Gianni ha fatto [Mario telefonare].  
*Gianni made [Mario call]*
- b. Gianni ha fatto [Mario<sub>i</sub> essere licenziato e<sub>i</sub>].  
*Gianni made [Mario<sub>i</sub> be fired e<sub>i</sub>]*
- (29)a. Gianni ha fatto [<sub>VP</sub> telefonare] [Mario VP].  
 b. Gianni ha fatto [<sub>VP</sub> essere licenziato e<sub>i</sub>] [Mario<sub>i</sub> VP]

Example (29b) is excluded because the trace is not bound by its antecedent at S-structure; moreover, proper binding cannot be restored through reconstruction of the moved VP for reasons discussed in Burzio (1986).

Our two classes of psych-verbs differ sharply as to the possibility of embedding under a causative verb. Given the following potential sources:

- (30)a. Questo ha fatto sì che Mario lo  
*this caused that Mario him*  
 apprezzasse/temesse/ammirasse ancora di più.  
*liked/feared/admired even more*
- b. Questo ha fatto sì che Mario lo  
*this caused that Mario him*  
 preoccupasse/commuovesse/attraesse ancora di più  
*worried/moved/attracted even more*

only (30a) has acceptable counterparts produced by the causative rule:

- (31)a. Questo lo ha fatto apprezzare/temere/ammirare ancora di più a Mario.  
*This made Mario estimate/fear/admire him even more*
- b. \*Questo lo ha fatto preoccupare/commuovere/attrarre ancora di più a Mario.  
*This made Mario worry/move/attract him even more*

Moreover, while the potential source (32a) admits both the physical and the psychological sense of **colpire** 'strike', the corresponding causative structure (32b) admits only the physical interpretation:

- (32)a. Questo ha fatto sì che io lo colpissi.  
*this caused that I him struck*

- (32)b. (\*)Questo me lo ha fatto colpire.  
           *this me him made strike*

Burzio's test thus further discriminates between the two classes of psych-verbs. The contrast is accounted for, given our hypothesis that the embedded subject of (31b) is a derived subject. The relevant representation is given in (33):

- (33) Questo lo<sub>i</sub> ha fatto [<sub>VP</sub> preoccupare e<sub>j</sub> e<sub>i</sub>] [a Mario<sub>j</sub> VP].

Here, e<sub>j</sub> is not properly bound by its antecedent, and the structure is excluded on a par with (27b)/(29b).<sup>9</sup>

Notice that, as the translation of (31b) indicates, verbs of the *worry* class embedded under the causative construction give rise to structures ranging from acceptable to marginal in English. The contrast with the total impossibility of the Romance construction is expected, given the lack of (syntactic) movement in English causatives. The marginality is not explained by our assumptions, but it is not inconsistent with them: in fact a similar marginality characterizes the embedding under the causative verb of structures involving a derived subject of passive. A solution appropriate for the latter fact would presumably be extendable to the former.

#### 1.4. Infinitival VPs with *fare*

There is a second type of causative construction in Romance that is relevant in the present context. Burzio (1986) argues that causative verbs can also select bare VP complements. The basic property of this structural option is illustrated by the following:

- (34)a. Gianni ha fatto [<sub>VP</sub> mettere la macchina in garage].  
           *Gianni made put the car in the garage*
- b. Gianni ha fatto [<sub>VP</sub> telefonare alla polizia].  
           *Gianni made telephone to the police*

<sup>9</sup> If the embedded subject is cliticized to the main verb, the structure does not improve:

- (i) Questo gli<sub>i</sub>, lo<sub>i</sub> ha fatto [<sub>VP</sub> preoccupare e<sub>i</sub> e<sub>j</sub>] [e<sub>i</sub> VP].  
       *This to him it made worry*

The same is true in the case of (27b). This shows that the clitic cannot count as the antecedent for the NP trace e<sub>j</sub>, a result which can be obtained if the assumption is made that the relation between the clitic and an empty category in the VP is not to be assimilated to the NP-trace relation, but rather to the licensing relation of *pro* (cf. Rizzi 1986b).

- (34)c. \*Gianni ha fatto [<sub>VP</sub> andare e a Milano].  
           *Gianni made go to Milan*
- d. \*Gianni ha fatto [<sub>VP</sub> arrivare e in ritardo].  
           *Gianni made arrive late*

Infinitival VPs corresponding to transitive and intransitive structures are well-formed (the external  $\theta$ -role is left unassigned; see Burzio (1986), Zubizarreta (1985) for different solutions), but VPs corresponding to unaccusative structures like (34c, d) are not, because the empty category in object position is unbound.

Given our claims on psych-verbs, we would predict a sharp difference between the two classes in this environment. Things are considerably more complicated, though. Verbs of the **temere** class are, in general, quite acceptable (cf. (35)), and some verbs of the **preoccupare** class are impossible, as expected (cf. (36)), with the infinitival verbs used in the psychological sense, of course:

- (35) Questo farà apprezzare/temere/ammirare il presidente ancora di più.  
       *This will make (one) estimate/fear/admire the president even more*
- (36) \*Questo farà attirare/attrarre/colpire il presidente ancora di più.  
       *This will make attract/strike the president even more*

But other verbs of this class, including **preoccupare** give rise to a surprisingly acceptable result:

- (37) Questo farà preoccupare/commuovere/entusiasmare il presidente ancora di più.  
       *This will make worry/move/excite the president even more*

The ill-formedness of (36) is predicted: the VP would contain an unbound empty category, corresponding to the Theme, and would be excluded on a par with (34c, d):

- (38) \*Questo farà [<sub>VP</sub> colpire e il presidente].

But why are the examples of (37) well-formed? We claim that there is an independent representation for them, different from (38) and not available for (36). In fact, the verbs of (37), but not those of (36), allow the inchoative construction **Exp si V (P Theme)** mentioned in note 2:

- (39)a. Il presidente si preoccupa/commuove/entusiasma (per la partenza dei Marines).

*The president gets worried/moved/excited (for the Marines' departure)*

- b. \*Il presidente si attrae/attira/colpisce (per la partenza dei Marines).

*The President gets attracted/struck (for the Marines' departure)*

Now, nonargument *si* of the kind manifested in (39) generally disappears in the causative construction (Zubizarreta 1985): (40b) thus corresponds to the fully explicit tensed structure (40a), involving the inherently reflexive verb *pentirsi* 'repent':

- (40)a. Questo ha fatto sì che il presidente si pentisse.

*This caused the president to repent*

- b. Questo ha fatto pentire il presidente.

*This made the president repent*

Therefore, there should be an independent representation for (37), involving the inchoative form of the verbs (*preoccuparsi*, etc.) and the disappearance of *si*. Example (37) would then be the infinitival counterpart of the following (41), in the same way in which (40b) is the infinitival counterpart of (40a):

- (41) Questo ha fatto sì che il presidente si preoccupasse/commuovesse/entusiasmasse.

*This caused the President to get worried/moved/excited*

Distributional evidence supporting the proposal that (37) involves the inchoative forms of (39a) is provided by the fact that the structures of (37) are compatible with a PP specifying the Theme, on a par with (39a):<sup>10</sup>

<sup>10</sup> This option is obviously not available when the same verbs are found in the familiar NP\_NP frame:

- (i) \*Questa ha preoccupato/commosso/entusiasmato il presidente per la partenza dei Marines.

*This worried/moved/excited the President for the Marines' departure*

The role Theme is assigned twice in the same structure in (i), therefore the structure is ruled out by the  $\theta$ -Criterion.

- (42) Questo ha fatto preoccupare/commuovere/entusiasmare il presidente per la partenza dei Marines.

*This made the President get worried/moved/excited about the Marines' departure*

But what kind of structural representation should (37) and (42) receive? Burzio (1986) points out that unaccusative structures are acceptable in the bare VP construction if the underlying object is overtly realized in situ (i.e., if the empty positions in (34c, d) are filled):

- (43)a. Gianni ha fatto [<sub>VP</sub> andare Piero a Milano].

*Gianni made Piero go to Milan*

- b. Gianni ha fatto [<sub>VP</sub> arrivare Maria in ritardo].

*Gianni made Maria arrive late*

Then, accusative case can be assigned to that position, presumably by the reanalyzed form **fare + V**. If the inchoative construction **si V (PP)** is unaccusative, then the most plausible structure for (37) and (42) is the bare infinitival VP, parallel to (43):

- (44) Questo ha fatto [<sub>VP</sub> entusiasmare il presidente (per la partenza dei Marines)].

Whatever mechanism is responsible for the nonrealization of nonargument *si* in (40b) will be operative here as well.

There is one additional question that our assumptions raise: if **fare + V** can assign accusative, one would expect that (36) could be salvaged if the Theme position were filled by the overt argument, on a par with (43), (44). This is incorrect:

- (45) \*Questo farà [<sub>VP</sub> colpire la loro partenza il presidente].

*This will make their departure strike the President*

(cf. the grammatical **Questo farà sì che la loro partenza colpisca il presidente**. 'This will cause their departure to strike the President.') Why is (45) excluded? The obvious difference between (43)–(44) and (45) is that only in the latter example do two NPs need accusative Case. The contrast can then be accounted for through the assumption that only one instance of accusative Case can be assigned in a given verbal domain. This Case-theoretic property presumably is to be derived from the

adjacency requirement on accusative assignment, which would inevitably be violated in such cases.<sup>11</sup>

In conclusion, once we have abstracted away from the interfering independent representation (44) (possible with some members of the relevant class), and from the interaction of Case-theoretic properties, the behavior of the **preoccupare** class in Burzio's infinitival VPs is amenable to the familiar pattern of unaccusative verbs, as predicted by our structural assumptions.<sup>12</sup>

### 1.5. *Passive*

It is well known that structures with nonthematic subjects cannot undergo passivization: in general natural languages do not allow (further) passivization of passive, raising or ergative verbs. For example, French allows impersonal passive with intransitives but not with ergatives:

<sup>11</sup> This analysis can be maintained even if the Experiencer is lexically associated with inherent accusative, as is proposed later on. The double object construction in English does not necessarily involve a violation of the adjacency requirement if two distinct assigners are involved (Kayne 1983). The possibility of double accusative constructions in Icelandic is not relevant here, due to the fact that the adjacency requirement clearly is not operative in that language, presumably as a consequence of the overt morphological realization of the Case.

<sup>12</sup> The unacceptability of the **preoccupare** class in the **fare da** construction (Kayne 1975, Burzio 1986, Zubizarreta 1985) is less significant, because the **temere** class also seems to give rise to deviant **fare da** structures:

- (i) \*?Questo lo ha fatto temere da tutti.  
*This made him feared by everybody*
- (ii) \*Questo lo ha fatto preoccupare da tutti.  
*This made him worried by everybody*

The generalization seems to be that only agentive subjects can occur in this construction (Trigo 1985); hence **da** is a real  $\theta$ -marker here and does not simply transmit the external  $\theta$ -role assigned by the VP as in the passive construction. Still, (ii) appears to be more deviant than (i), suggesting that more is involved here than simple thematic incompatibility. The additional deviance of (ii) can be related to the derived status of the subject, given Burzio's (1986) hypothesis that the **fare da** construction is mono-clausal and involves selection of a bare VP (i.e., is a special case of the construction discussed in the text):

- (iii) Questo lo<sub>i</sub> ha fatto [<sub>VP</sub> preoccupare e e<sub>i</sub>] da tutti].

Here the VP internal trace corresponding to the Theme could not be properly bound. The argument can be given a sharper form in French: the equivalent of (i) is acceptable with **de**, the *by* phrase specialized for nonagentive logical subjects (Nicolas Ruwet, p.c.):

- (iv) Ceci a fait craindre/estimer Max de tout le monde.  
*this made fear/ estimate Max by everyone*

The equivalent of (ii) remains impossible.

- (46)a. Il a été discuté de la question.  
*it was discussed on the matter*
- b. \*Il a été venu chez moi.  
*it was come to my house*

Different theoretical accounts of this incompatibility have been proposed (Perlmutter & Postal 1977, 1984; Burzio 1986; Marantz 1984; Baker, Johnson & Roberts 1986). Whatever the correct analysis, we seem to have another clear diagnostic environment for derived subjects. At first sight, our hypothesis is contradicted: at least some of the verbs of the **preoccupare** class seem to allow perfectly natural passive sentences:

- (47)a. Gianni è disgustato dalla corruzione di questo paese.  
*Gianni is disgusted by the corruption of this country*
- b. Gianni è affascinato da questa prospettiva.  
*Gianni is fascinated by this perspective*

We claim that syntactic passivization is indeed excluded with psych-verbs of the **preoccupare** class, and that apparent passive structures like (47) are instances of adjectival passivization. That these structures *can* involve adjectival passives is straightforwardly shown by the possible occurrence of typical adjectival morphology like the superlative suffix **-issimo**: **Gianni è affascinatissimo, preoccupatissimo**, etc. 'Gianni is very fascinated, very worried'. If it can be shown that this is the only possibility and that structures like (47) cannot be verbal passives, the *prima facie* counterevidence would in fact provide additional support for our hypothesis.

A very clear test discriminating between verbal and adjectival passives in Italian is made available by the fact that only verbal passives can bear a clitic pronoun in reduced relatives (a subcase of the general fact that only verbs can bear clitics). Consider the following paradigm discussed in Chomsky (1981):

- (48)a. La notizia che gli è stata comunicata  
*the news that was communicated to him*
- b. La notizia che gli è ignota  
*the news that was unknown to him*
- (49)a. La notizia comunicata a Gianni  
*the news communicated to Gianni*

- (49)b. La notizia ignota a Gianni  
*the news unknown to Gianni*
- (50)a. La notizia comunicatagli  
*the news communicated to him*
- b. \*La notizia ignotagli  
*the news unknown to him*

Now, the **da**-phrase in (47) can be pronominalized with **ne**, and the whole structure can occur in a reduced relative, but the participial form cannot bear the clitic:

- (51)a. La sola persona che ne è affascinata  
*the only person that is fascinated by it*
- b. La sola persona affascinata da questa prospettiva  
*the only person fascinated by this perspective*
- c. \*La sola persona affascinata  
*the only person fascinated by it*

If sentences like (47) were structurally ambiguous between verbal and adjectival passivization, we would expect (51c) to be possible as a verbal passive, but in fact it is out.

Further evidence supporting the same conclusion is provided by the selection of the passive auxiliary. While **essere** 'be' is compatible in Italian with both verbal and adjectival passive, **venire** 'come' used as a passive auxiliary allows only verbal passive: for instance, (52a) is ambiguous between the adjectival interpretation 'The door is in the state of being closed at five.' and the verbal interpretation (somewhat marked with present tense, but still possible) 'Somebody closes the door at five.:' (52b) is unambiguous, only the verbal interpretation being allowed:

- (52)a. La porta è chiusa alle cinque.  
*The door is closed at five*
- b. La porta viene chiusa alle cinque.  
*The door comes closed at five*

Now, verbs of the **temere** and of the **preoccupare** class systematically contrast in the expected way:

- (53)a. Gianni viene temuto da tutti.  
*Gianni comes feared by everyone*

- (53)b. Gianni viene apprezzato dai suoi concittadini.  
*Gianni comes appreciated by his fellow-citizens*
- c. Questa scelta viene rispettata dalla maggioranza degli elettori.  
*This choice comes respected by the majority of the voters*
- (54)a. \*Gianni viene preoccupato da tutti  
*Gianni comes worried by everybody*
- b. \*Gianni viene affascinato da questa prospettiva.  
*Gianni comes fascinated by this perspective*
- c. \*Gianni viene appassionato dalla politica.  
*Gianni comes excited by politics*

A third piece of evidence: some verbs of the **preoccupare** class do not naturally allow the regular participial form:

- (55)a. Le sue idee mi stufano/stancano/entusiasmano.  
*His ideas tire/excite me*
- b. \*Sono stufo/stanco/entusiasmato dalle sue idee.  
*I am tired/excited by his ideas*

Instead, these verbs have corresponding irregular adjectival forms:

- (56) Sono stufo/stanco/entusiasta delle sue idee.  
*I am tired/excited of his ideas*

The contrast (55b)/(56) recalls Kiparsky's (1973) BLOCKING PRINCIPLE: the existence of an irregular adjectival form blocks the regular formation of the adjectival participle. But notice that this natural analysis also implies that these structures do not allow verbal passive participles: if they did, the blocking principle would still exclude the formation of the regular adjectival form in the lexicon, but could have no effect on the formation of the regular verbal participle in the syntax; hence, (55b) should be possible; but again, in fact (55b) is out.<sup>13</sup>

<sup>13</sup> An additional fact to notice is that some of these participial structures cannot co-occur with the regular **da**-phrase of passives, and require a different preposition:

- (i)a. Gianni è interessato a/\* da Maria.  
*Gianni is interested to/ by Maria*
- b. Gianni è appassionato di/\*dalla poesia.  
*Gianni is fond of/ by poetry*

These lexical idiosyncrasies appear once again to be more easily compatible with the view

In conclusion, the subject of the **preoccupare** class cannot bind an anaphoric clitic and does not allow *arb* interpretation; moreover, the structure cannot be embedded under the (clausal or VP) causative construction, nor does it allow syntactic passivization. These five properties consistently point to the conclusion that the subject position is nonthematic, and the surface subject is moved there from a VP-internal position.

## 2. PSYCH-VERBS AND THE THEORY OF BINDING

### 2.1. Local Anaphors and D-structure Binding

Perhaps the most notorious puzzle raised by psych-verbs of the **preoccupare** class is their anomalous behavior with respect to the theory of Binding. The Experiencer in object position can bind an anaphor contained within the subject, in apparent violation of the usual c-command requirement on the antecedent-anaphor relation: compare (57a) with the expected behavior of a non-psych-verb (57b):

(57a) Questi pettegolezzi su di sé preoccupano **Gianni** più di ogni altra cosa.

*These gossips about himself worry Gianni more than anything else*

b. \*Questi pettegolezzi su di sé descrivono **Gianni** meglio di ogni biografia ufficiale.

*These gossips about himself describe Gianni better than any official biography*

A fairly standard approach to this problem, initiated by Jackendoff (1972), is to exploit the thematic difference between these structures. The basic idea is that the notion of PROMINENCE relevant for the assignment of an antecedent to an anaphor is not purely configurational,

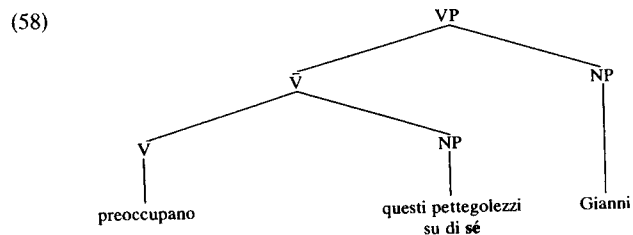
that the only possibility here is adjectival formation in the lexicon. No analogous idiosyncratic selection is found with the **temere** class, nor with other plausible cases of syntactic passivization. See also Grimshaw (1987) for arguments suggesting that passives with the *worry* class in English are adjectival.

That the regular formation of the verbal past participle is not affected by the existence of the adjectival form is shown by the fact that sentences corresponding to (55a) show the regular participial form in compound tenses:

- (ii) Le sue idee mi hanno stufato/stancato/entusiasmato.  
*His ideas have tired/excited me.*

but involves some kind of thematic hierarchy: an Experiencer is intrinsically more prominent than a Theme belonging to the same thematic complex.

In fact, given the standard view that (57a) is a simple transitive structure, contrasts such as (57a–b) do raise a major difficulty for any configurational approach to anaphora. But we now have strong independent evidence that the structure of (57a) is more complex. This offers a fresh perspective on the binding problem. The D-structure of (57a), given our assumptions, has the following form (irrelevant details omitted):



Thus, there is an important structural difference between (57a) and (57b), a bona fide simple transitive sentence: the c-command requirement on the antecedent-anaphor relation is met in the D-structure representation of (57a), whereas it is not met at any level of representation of (57b). The most straightforward theoretical interpretation of this state of affairs seems to be the following: PRINCIPLE A of the Binding theory, which requires anaphors to be bound in their governing category, can be fulfilled already at D-structure; this means that if a correct binding configuration holding at D-structure is destroyed later on, the structure remains well-formed.

Is it reasonable to assume that principle A can be fulfilled at D-structure? Standard evidence against this view and for its application at S-structure (or LF) is provided by sentences like:

- (59) They<sub>i</sub> seem to each other<sub>i</sub> [e<sub>i</sub> to be intelligent].

In (59), given the usual raising analysis, the correct binding configuration arises only at S-structure. But, of course, (59) simply shows that principle A can be fulfilled at S-structure, not that it cannot be fulfilled at D-structure. In fact, (59) is, in a sense, the mirror image of (57a) under our interpretation. There is a general consensus that principle A differs from the Projection Principle in that it does not have to be fulfilled at all

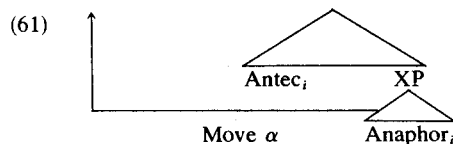
levels of representation. What (59) and (57b) jointly suggest is that it suffices for principle A to be met somewhere, either at D-structure or S-structure or, perhaps, LF. Our claim then is that principle A is a kind of 'anywhere' principle – an assumption which does not seem conceptually less desirable than the standard assumption that it applies at some arbitrarily chosen level.

There is considerable empirical evidence supporting this view. Consider the well known RECONSTRUCTION problem, i.e. the fact that a structure remains well-formed even if Wh-movement destroys the configuration required by principle A:

(60) Which picture of himself<sub>i</sub> do you think [that Bill<sub>i</sub> likes *e* best]?

Standard interpretations of this fact are either that the binding principle can be fulfilled at a level preceding Wh-movement (for instance, van Riemsdijk & Williams' (1981) NP-structure), or that the binding principle applies after a reconstruction procedure has put (part of) the Wh-phrase back into the position of the variable (Belletti & Rizzi 1981, Cinque 1984, Barss 1985). Our hypothesis that principle A is an anywhere principle in a sense trivializes the reconstruction problem: if the D-structure configuration already fulfills the binding requirements for anaphors, subsequent applications of Wh-movement cannot affect the acceptability of the structure.

The literature offers detailed discussions of cases of reconstruction arising from applications of Wh-movement, but there is virtually no discussion of cases determined by NP-movement. This asymmetry is easily understandable. The relevant abstract configuration is one where an application of Move  $\alpha$  destroys a well-formed binding configuration by extracting (the constituent containing) an anaphor from the c-domain of its antecedent:



Concrete instances of this configuration are much easier to find for  $\alpha = \text{WH}$  than for  $\alpha = \text{NP}$ , due to the general fact that Wh-movement is much freer than NP-movement (a difference which in turn follows from various factors: the anaphoric status of NP-traces versus the nonanaphoric status of Wh-traces; the different class of landing sites, etc.). Still, we believe that it is not impossible to find relevant cases

involving NP-movement. Psych-verbs are one such case under our analysis.

Another clear case involving NP-movement is the following:

- (62) \*I propri<sub>i</sub> genitori gli<sub>i</sub> hanno telefonato ieri.  
*his own parents him called yesterday*
- (63) I propri<sub>i</sub> genitori gli<sub>i</sub> sembrano [*e* i piú simpatici].  
*his own parents to him seem the nicest*

When the anaphoric possessive **proprio** modifies a deep subject, it cannot be bound by a lower antecedent, as the familiar c-command condition predicts; cf. the ungrammaticality of (62). When **proprio** modifies a derived subject, it can be bound by a lower antecedent, provided that the antecedent c-commands it in the D-structure representation; such a representation for (63) is the following:

- (64) *e* gli<sub>i</sub> sembra [*i* propri<sub>i</sub> genitori i piú simpatici]  
*e to him seems his own parents the nicest*

Again, D-structure satisfaction of the binding requirements seems to suffice for the well-formedness of a structure.

Consider now the following cases:

- (65)a. Gli<sub>i</sub> hanno fatto commentare [queste spiacevoli voci su di sé<sub>i</sub>] nel corso della conferenza stampa.  
*They made him comment-on these unpleasant rumors about himself during the press conference*
- b. [Queste spiacevoli voci su di sé<sub>i</sub>] gli<sub>i</sub> sono state fatte commentare nel corso della conferenza stampa.  
*[These unpleasant rumors about himself] to-him have been made to-comment-on e during the press conference (= passive of (a))*
- c. [Queste spiacevoli voci su di sé<sub>i</sub>] sembrano essergli<sub>i</sub> state fatte commentare nel corso della conferenza stampa.  
*[These unpleasant rumors about himself] seem to-him to-have been made to-comment-on e during the press conference*

In (65) a dative subject of the causative construction binds the anaphor embedded within the direct object. In Italian it is possible to passivize the causative construction, as in (65b); and the derived subject can be further raised, as in (65c). In the latter two cases the anaphor **sé** has been extracted from the domain of its D-structure antecedent **gli**, with no

significant loss of acceptability; (65b) and (65c) appear slightly more awkward than (65a), as structures where the anaphor precedes the antecedent generally are; but the contrast is much weaker than cases involving violations of the Binding Theory, such as (57b).

A comparable example can be found in English. The following contrast was pointed out to us by K. Johnson (cf. also Johnson 1985):

- (66)a. Replicants of themselves<sub>i</sub> seemed to the boys<sub>j</sub> [*e* to be ugly].  
 b. \*Replicants of themselves<sub>i</sub> promised the boys<sub>j</sub> [PRO to become ugly].

At D-structure *themselves* is bound by *the boys* in the raising structure (66a), but not in the control structure (66b).

Consider also the following contrast between raising and control, pointed out by Langendoen & Battistella (1982):

- (67) Friends of each other<sub>i</sub> seemed [*e* to amuse (*e*) the men<sub>i</sub>].  
 (68) \*Friends of each other<sub>i</sub> wanted [PRO to amuse (*e*) the men<sub>i</sub>].

In the D-structure representation of (67), according to our analysis, *each other* is bound by *the men*, whereas at no level of representation is *each other* bound by its only potential antecedent in the control structure. Hence, the theory of Binding is violated in (68) but not in (67).

Moreover, Burzio (1981, ch. 4, notes 5, 10) points out that the marginal acceptability of structures in which an anaphor contained in the object is bound by a dative is not affected by passivization:

- (69)a. ?John gave pictures of each other to the kids.  
 b. ?Pictures of each other were given to the kids.

In sum, there seems to be clear evidence that the reconstruction issue arises in exactly the same form, as far as principle A is concerned, for Wh- and NP-movement structures – a fact which strongly supports the view that principle A can be fulfilled by both input and output structures of Move  $\alpha$ .<sup>14</sup>

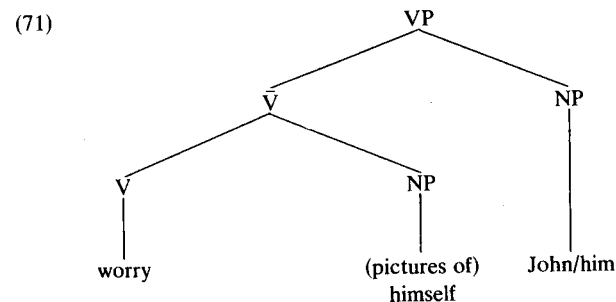
<sup>14</sup> Notice that our evidence is also compatible with a representational approach to reconstruction, phrased in terms of syntactic chains read off from S-structure (or LF) representations. See Cinque (1984), Barss (1985), Hornstein (1984) for different formulations of the representational approach. In the text discussion we have chosen the derivational approach merely for reasons of perspicuity. But it should be clear that our substantive contribution to the reconstruction problem can be phrased in neutral terms with respect to the derivational vs. representational controversy: reconstruction for principle A is a property of X-chains ( $X = A$  or  $A'$ ), and not only of  $A'$ -chains, as is generally assumed. A potential case of satisfaction of principle A only at LF is example (14b), if analyzed as proposed in the text.

## 2.2. As Asymmetry between Principle A and the Other Binding Principles

There is an important empirical problem that our approach must deal with. The object of psych-verbs can bind an anaphor properly contained within the subject, but cannot bind an anaphor which is the subject:

- (70)a. Pictures of himself<sub>i</sub> worry John<sub>j</sub>/him<sub>i</sub>.  
 b. \*Himself<sub>i</sub> worries John<sub>j</sub>/him<sub>i</sub>.

Given our assumptions, (70b) can no longer be excluded as a violation of principle A. At D-structure *himself* is bound by *John/him* in both cases:



Hence, (70b) must be excluded in an independent way.

A natural device to differentiate the two examples can still be found within the Binding theory. In general, while anaphors must be bound, pronominals and referential expressions must be (locally) free, a fact stated by PRINCIPLES B AND C of the Binding theory. The obvious difference between (70a) and (70b) is that only in the latter is the antecedent c-commanded by the anaphor at S-structure. Hence, (70b) is ruled out by principles B or C at S-structure.<sup>15</sup>

<sup>15</sup> On examples like (70b) see also Pesetsky (1987, note 4). In Italian there are some cases in which the anaphor seems to be allowed to c-command its antecedent at S-structure. This happens when the anaphor and the antecedent c-command each other. This is perhaps the case in the following examples, in which the direct object can bind an anaphoric indirect object or vice versa, provided that the antecedent precedes the anaphor:

- (i)a. Ho affidato Maria a se stessa.  
 I entrusted Maria to herself  
 b. Ho affidato a Maria se stessa (e la sua famiglia).  
 I entrusted to Maria herself (and her family)

Why isn't principle C violated in these examples? The obvious difference with (70b) is that in (ia, b), c-command is symmetric. If we assume that binding is intrinsically asymmetric (Higginbotham 1983), in cases of symmetric c-command we have to choose the direction of the binding relation (perhaps linear order gives the favored direction). Then, the antecedent

This analysis implies a fundamental asymmetry in the application of principle A and principles B and C. The latter cannot be regarded as anywhere principles in the same sense as principle A: in D-structure representations like (71), the whole Binding theory is fulfilled with a bound anaphor and a free antecedent. Therefore, if we assumed full symmetry between principle A on the one hand and principles B, C on the other, (70b) could not be ruled out as proposed. In fact there is clear independent evidence that satisfaction of B and C at D-structure is not sufficient, and the two principles must be met at S-structure:

- (72)a. It seems to him<sub>i</sub> [that it is likely [that he<sub>i</sub> will win]].  
 b. \*He<sub>i</sub> seems to him<sub>i</sub> [<sub>e</sub> to be likely [<sub>e</sub> to win]].
- (73)a. It seems to Bill<sub>i</sub>'s sister [that he<sub>i</sub> is the best].  
 b. \*He<sub>i</sub> seems to Bill<sub>i</sub>'s sister [<sub>e</sub> to be the best].

Sentences like (72a), (73a) are well-formed, and in particular principles B and C are not violated. Since the D-structure representations of the (b) examples are identical to those of the (a) examples in the relevant respects, if it was sufficient for B and C to be satisfied at D-structure, all the examples of the paradigm should be well-formed, contrary to fact. The (b) examples are correctly excluded if we assume that principles B and C must be fulfilled at S-structure. Once this assumption is independently granted, the impossibility of (70b) can be accounted for in the proposed manner.<sup>16</sup>

would be free in (ia, b) even if it is c-commanded by the anaphor. This option does not materialize in the case of (70b), where c-command is asymmetric; hence the only possible binding relation at S-structure is that the anaphor binds the antecedent, which produces a violation of principle B or C.

<sup>16</sup> Examples like (70b), (72b), (73b) show that satisfaction of B and C at D-structure is insufficient to grant well-formedness. Is it also unnecessary? The answer depends on a notoriously murky domain: noncoreference effects under pied-piping. Consider the following paradigm adapted from van Riemsdijk & Williams (1981):

- (i)a. \*He<sub>i</sub> likes John<sub>i</sub>'s picture of Mary.  
 b. \*He<sub>i</sub> likes this picture of John<sub>i</sub>.  
 c. \*He<sub>i</sub> likes pictures that John<sub>i</sub> saw.
- (ii)a. \*Mary<sub>i</sub> John<sub>i</sub>'s picture of whom he<sub>i</sub> likes e  
 b. ??Which picture of John<sub>i</sub> did he<sub>i</sub> like e?  
 c. Which picture that John<sub>i</sub> saw did he<sub>i</sub> like?

The examples in (i) illustrate ordinary cases of principle C violations. The examples in (ii) show that the disjunction effect is preserved under Wh-movement in some cases, weakened or eliminated in others. If we take (iia) to be the representative case, the conclusion is that satisfaction of C at D-structure is necessary (even if not sufficient, given (73b)); if we take (iic) as representative, the conclusion is that satisfaction of C at D-structure is neither

One might wonder what excludes an example like (74) in which the Experiencer is also anaphoric:

- (74) \*Each other<sub>i</sub> worried themselves<sub>i</sub>.

At D-structure *each other* would be bound by *themselves*, and at S-structure *themselves* would be bound by *each other*; hence, the example would technically satisfy the requirements of principle A. Of course, what is wrong with this example is the circularity in the assignment of a referent to the anaphors: in general, if X is the antecedent of y, then y cannot be taken as the antecedent of X (see Higginbotham 1983). In fact, if the circularity is broken and one of the two elements can have a different antecedent, structures comparable to (74) are more or less acceptable:

- (75) ?They<sub>i</sub> believe themselves<sub>i</sub> to worry each other<sub>i</sub>.

(Of course, they still produce a weak violation of the chain condition, cf. section 1.1.)<sup>17</sup>

### 2.3. Long Distance Anaphors

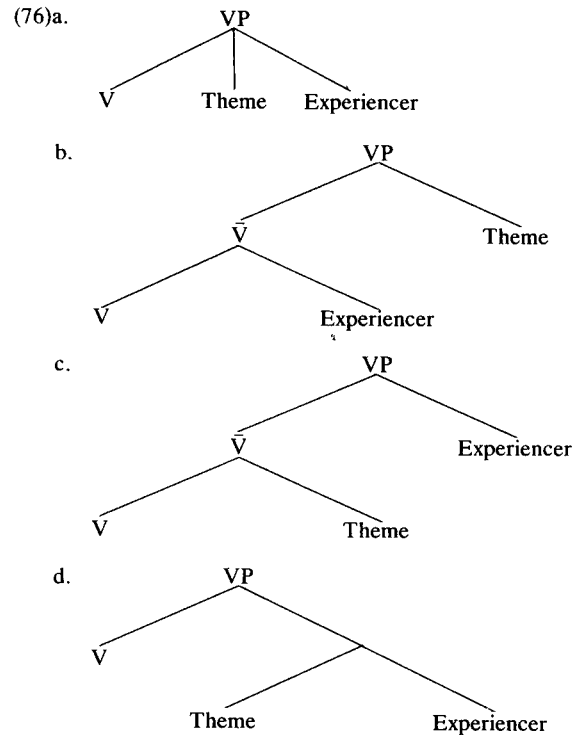
Let us now try to determine in a more precise way what kind of D-structure configuration the evidence discussed so far implies. The arguments given in section 1 show that the subject is non-thematic, hence moved from some VP-internal position, but do not give us any clue as to the internal structure of the VP. In principle there are four possibilities (order is irrelevant in (76a) and (76d):

sufficient nor necessary (i.e. this principle does not concern D-structure representations). A satisfactory answer to this question would require a detailed analysis of this complex empirical domain, a task that we cannot undertake here.

<sup>17</sup> Given the asymmetry we have introduced between principles A and B, one might wonder whether the PRO theorem can still be derived. What excludes a governed PRO in cases like the following?

- (i) Pictures of PRO<sub>i</sub> pleased the boys<sub>i</sub>.

The anaphoric properties of PRO could be satisfied at D-structure and the pronominal properties at S-structure, and no contradiction would arise. This unwanted result is excluded if the theory of Binding of Chomsky (1986a) is adopted: neither at D-structure nor at S-structure would there be an indexation *BT-COMPATIBLE* for PRO (i.e. simultaneously fulfilling the pronominal and anaphoric properties); hence, PRO would be governed but could not receive a governing category – a situation explicitly excluded in Chomsky's system.



Either we have a flat tripartite structure (a), or the Theme is more prominent than the Experiencer (b), or vice versa (c), or Theme and Experiencer form a small clause (d). We will now have to choose among these options on empirical and theoretical grounds. The Binding facts already reduce the indeterminacy in part: (76b) cannot be the right structure because neither at D-structure nor at S-structure would the Experiencer c-command the (content of the) Theme (assuming the original definition of Reinhart (1976) to hold, as seems to be correct for the Binding theory). Theoretical considerations further narrow down the options. If Kayne's (1983) UNAMBIGUOUS PATH approach to phrase structure is correct, then (76a) should be discarded as a case of nonbinary branching. If we take a strong enough version of the Projection Principle, (76d) should also be discarded, there being no plausible  $\theta$ -role for the small clause constituent. We would then single out (76c) as the only

structure compatible with the empirical evidence and with plausible theoretical assumptions.

The study of long distance anaphors provides interesting evidence supporting this conclusion. Here we will rely on Giorgi's (1984) analysis of the anaphoric possessive **proprio** in Italian. We have already seen that **proprio** can function as a local anaphor; it also allows long distance binding (naturally for some speakers, marginally for others, see below). As a local anaphor, it behaves as expected: we find symmetric binding options with the **preoccupare** class, and asymmetric options with the **temere** class:

- (77)a. I propri<sub>i</sub> sostenitori preoccupano Gianni.  
*His own supporters worry Gianni*
- b. Gianni, preoccupa i propri<sub>i</sub> sostenitori.  
*Gianni worries his own supporters*
- (78)a. \*I propri<sub>i</sub> sostenitori temono Gianni.  
*His own supporters fear Gianni*
- b. Gianni, teme i propri<sub>i</sub> sostenitori.  
*Gianni fears his own supporters*

In our terms (77a, b) are both possible because the anaphor is bound by **Gianni** at D-structure and S-structure, respectively. Example (78a) is excluded, because at no level of representation is the binding requirement satisfied.

Things get more complicated with long distance **proprio**. Giorgi points out that, while the **temere** paradigm remains unchanged (80), the **preoccupare** paradigm becomes asymmetric (79): the Experiencer can bind a long distance **proprio** embedded within the Theme, but the Theme cannot bind a long distance **proprio** embedded within the Experiencer, even though at S-structure the c-command configuration would hold:

- (79)a. Chiunque dubiti della propria, buona fede preoccupa Gianni.  
*Whoever doubts of his own good faith worries Gianni*
- b. \*Gianni, preoccupa chiunque dubiti della propria, buona fede.  
*Gianni worries whoever doubts of his own good faith*
- (80)a. \*Coloro che vogliono sostenere la propria, candidatura temono Gianni.  
*Those who want to support his own candidature fear Gianni*

- (80)b. Gianni, teme coloro che vogliono sostenere la propria, candidatura.

*Gianni fears those who want to support his own candidature*

These judgments are extremely subtle, and the usual OK vs. \* notation is perhaps not appropriate for characterizing such contrasts. In fact, examples like (79a)–(80b) are already quite marked; still, there seems to be a detectable systematic difference in the indicated direction. The problematic and interesting case is the relatively more severe ill-formedness of (79b). Giorgi interprets it through a special binding principle for long distance anaphors which makes direct reference to a thematic hierarchy – an option which we have already ruled out for the behavior of local anaphors with psych-verbs.<sup>3</sup> It would seem desirable to give a purely structural account of long distance anaphors as well.<sup>18</sup> A natural way to account for the contrast (79b)/(80b) within our system would be to take advantage of the hypothesis that the subject position is non-thematic in (79b). The possibility which comes to mind is the following:

- (81). A LONG DISTANCE (LD) anaphor must be bound from a  $\theta$ -position.<sup>19</sup>

The adequacy of (81) can be easily checked on independent grounds: it suffices to look at structures like (59), in which the short distance anaphor is bound from a non- $\theta$ -position. The prediction is that LD

<sup>18</sup> Giorgi's system includes the following definitions and principles:

- (i) P-DOMAIN: ... each lexical head defines a thematic domain ( $\theta$ ), i.e. the set of arguments  $\theta$ -marked by that head. One of the arguments of this thematic domain can be said to be 'prominent' with respect to the others, and the set of the remaining ones, with all the material they dominate, can be called its P-domain ... The prominent argument should be identified with the highest one in the following thematic hierarchy: 1) agent, 2) experiencer, 3) theme and others. p. 64
- (ii)  $x$  is P-bound by  $y$  iff  $x$  is coindexed with  $y$  and  $x$  is in the P-domain of  $y$ .
- (iii) A LD anaphor is P-bound.

Example (79b) would then be ruled out, because there the Theme would not be thematically prominent with respect to **proprio** embedded within the Experiencer, hence it would not qualify as a binder for a LD anaphor.

<sup>19</sup> Alternatively, we might assume that binding of a LD anaphor is checked at D-structure, where all potential binders are in  $\theta$ -positions. The two formulations appear equivalent for all the cases we will consider. Of course, any such statement is only a partial characterization of the properties of LD anaphors. Familiar work on Japanese, Korean and the Scandinavian languages suggests that other conditions are operative. See note 21 for a more structured conjecture.

anaphors could not survive in this environment. The prediction appears to be correct:

- (82)a. \*Gianni<sub>i</sub> sembra [<sub>e</sub> essere efficiente] a chiunque sostenga la propria<sub>i</sub> candidatura.

*Gianni seems to be efficient to whoever supports his own candidature*

- b. Gianni<sub>i</sub> promette [<sub>di</sub> PRO essere efficiente] a chiunque sostenga la propria<sub>i</sub> candidatura.

*Gianni promises to be efficient to whoever supports his own candidature*

Again the contrast is subtle, because (82b) is already less than perfect; in fact (82) seems to us exactly on a par with the contrast between (79) and (80). Principle (81) thus receives independent support.<sup>20</sup>

This approach has a direct impact on the choice among the a priori possible D-structure configurations. In fact, it gives the optimal result of picking exactly one of the four possibilities given in (76). Only configuration (76c) allows a correct characterization of the facts: a LD anaphor contained within the Theme can be bound by the Experiencer (at D-structure the c-command configuration is met). A LD anaphor contained within the Experiencer cannot be bound by the Theme: the peculiar binding requirement of LD anaphors is met neither at D-structure nor at S-structure; at S-structure the Theme NP has been moved to subject position, but this position, being nonthematic, is not available for LD binding, according to principle (81). Hence (79b) is ill-formed.

(76b), already excluded by short distance binding, also gives an incorrect result for long distance binding: this asymmetric c-command configuration would predict reversed grammaticality judgments on (79a, b). Configurations (76a) and (76d) also give the wrong result. In these representations the two  $\theta$ -positions mutually c-command each other,

<sup>20</sup> Cf. also:

- (i) \*Gianni<sub>i</sub> pare intelligente a chiunque accetti le proprie<sub>i</sub> idee.  
*Gianni seems intelligent to whoever accepts his own ideas*
- (ii) Gianni<sub>i</sub> dà aiuto a chiunque accetti le proprie<sub>i</sub> idee.  
*Gianni helps whoever accepts his own ideas*

hence we would expect symmetric binding possibilities in (79), contrary to fact.<sup>21</sup>

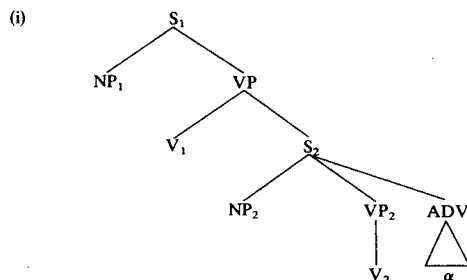
In conclusion, the syntax of LD anaphors supports the choice of (76c) as the correct D-structure representation for the **preoccupare** class.

### 3. PROPERTIES OF THE OBJECT OF PREOCCUPARE

#### 3.1. Island Properties

In the structural representation we have selected, the object Experiencer of the **preoccupare** class is not a configurational object: it is the sister of

<sup>21</sup> Recent work on LD anaphors in different languages suggests that (81) cannot be the complete characterization of LD anaphora: other conditions must be operative as well. One such condition is subject orientation (not always respected though; cf. (79a)), with the qualification that if the LD anaphor is contained within an adverbial clause, the immediate superordinate subject cannot function as a binder.



In (i), a LD anaphor  $\alpha$  can be bound by  $NP_1$ , but not by  $NP_2$  (cf. Kuroda 1965, Maling 1984). This effect can be captured by a more structured principle referring to  $\theta$ -positions.

- (ii) A LD anaphor  $\alpha$  must be bound from the highest  $\theta$ -position of a Thematic complex containing  $\alpha$ .

In (ii), the HIGHEST  $\theta$ -POSITION is the one which c-commands (perhaps asymmetrically, see note 12) all the other positions in the Thematic complex. Now,  $NP_1$  and  $NP_2$  are  $\theta$ -positions in (i). However,  $NP_2$  does not qualify as a binder because it is not contained within its thematic complex (which contains only  $V_2$  and its arguments).  $NP_1$ , on the other hand, does qualify as a possible binder because it is the highest  $\theta$ -position of the thematic complex of  $V_1$ , which contains  $\alpha$  ( $\alpha$  is contained in  $S_2$ , an argument of  $V_1$ ). In (79a) the Experiencer qualifies as a possible antecedent for the same reason. Principle (ii) amounts to a minor reformulation of Giorgi's approach (see note 15) within a framework which bans direct reference to Thematic hierarchies in formal grammar. Prominence within a thematic complex is now defined in purely structural terms. The principle reflects thematic hierarchies only indirectly, inasmuch as structural prominence is determined by thematic prominence through the principles projecting  $\theta$ -grids into D-structure. As for the other important property of LD anaphors, the parametric variation concerning the opacity-creating factor, our assumptions are compatible with an approach à la Manzini & Wexler (1987).

$V'$  ( $V' = \bar{V}$ ) and is immediately dominated by VP. The canonical object position is filled by the Theme at D-structure and by its trace at S-structure; the Experiencer is a kind of second object, sister of  $V'$  (as in some analyses of the double object construction in English; cf. Chomsky (1980)). If this is correct, we would expect the Experiencer to lack typical properties of canonical objects. One such property is transparency to extraction processes: direct objects differ from subjects, prepositional objects and adverbials in that they, by and large, allow extraction of material. We will discuss in a moment some theoretical characterizations of this fact. But let us start by noticing that transparency is not a property shared by our Experiencer objects. In fact, we find very systematic contrasts between the **temere** class and the **preoccupare** class:

(83)a. La compagnia di cui tutti ammirano il presidente.  
*the company of which everybody admires the president*

b. \*La compagnia di cui questo spaventa il presidente.  
*the company of which this frightens the president*

(84)a. La ragazza di cui Gianni teme il padre.  
*the girl of whom Gianni fears the father*

b. \*La ragazza di cui Gianni preoccupa il padre.  
*the girl of whom Gianni worries the father*

(85)a. Il libro di cui molta gente disprezza l'autore.  
*the book of which many people despise the author*

b. \*Il libro di cui molta gente disgusta l'autore.  
*the book of which many people disgust the author*

(86)a. Il candidato di cui questa ragazza apprezza i sostenitori.  
*the candidate of whom this girl likes the supporters*

b. \*Il candidato di cui questa prospettiva impaurisce i sostenitori.  
*the candidate of whom this perspective frightens the supporters*

- (87)a. La persona di cui la tua segretaria conosce la sorella.  
*the person of whom your secretary knows the sister*
- b. \*La persona di cui la mia macchina entusiasma la sorella.  
*the person of whom our car excites the sister*

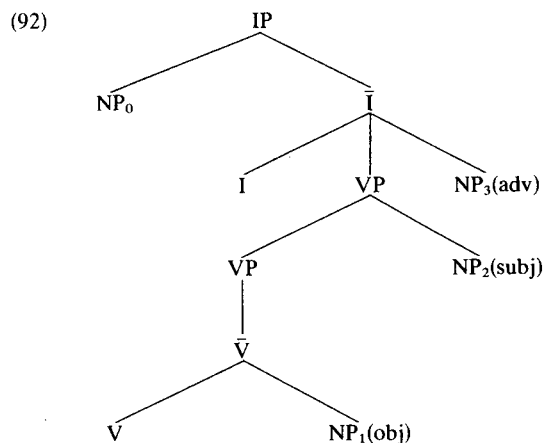
There are several other instances of postverbal NPs which are not transparent to extraction. Extraction is not possible from postverbal subjects of nonergative verbs: in the following cases this type of extraction is compared with extraction from direct objects, which is fully acceptable:

- (88)a. Il ragazzo di cui amavi la sorella.  
*the boy of whom you loved the sister*
- b. ??Il ragazzo di cui ti amava la sorella.  
*the boy of whom loved you the sister*
- (89)a. Il diplomatico di cui hai contattato la segretaria.  
*the diplomat of whom you contacted the secretary*
- b. ??Il diplomatico di cui ti ha contattato la segretaria.  
*the diplomat of whom contacted you the secretary*

A sharper contrast is given by direct object NPs and adverbial NPs:

- (90)a. Gianni ha passato [<sub>NP</sub> la prima settimana del mese] a Milano.  
*Gianni spent the first week of the month in Milan*
- b. Gianni è tornato [<sub>NP</sub> la prima settimana del mese scorso].  
*Gianni came back the first week of last month*
- (91)a. Il mese di cui Gianni ha passato [<sub>NP</sub> la prima settimana e] a Milano.  
*the month of which Gianni spent the first week in Milan*
- b. \*Il mese di cui Gianni è tornato [<sub>NP</sub> la prima settimana e].  
*the month of which Gianni came back the first week*

We will assume that postverbal subjects are adjoined to VP and temporal adverbials like the one in (90b) are VP-external (hanging from some projection of I). Thus, in the following structure:



NP<sub>1</sub> is a possible extraction site, while NP<sub>2</sub> and NP<sub>3</sub> are not.

Various systems have been proposed to deal with similar differences (Kayne 1983, Huang 1983, Cinque 1984, Longobardi 1985, Chomsky 1986b). We will phrase the effect in terms of a *Barriers*-type system. In this system a maximal projection counts as a BARRIER for subjacency if it is not LEXICALLY  $\theta$ -MARKED (L-marked); in addition, a maximal projection immediately dominating it inherits barrierhood. Consider the following system of definitions:

- (93)a.  $p$  L-MARKS  $q$  iff  $p$  is lexical and  $p$   $\theta$ -marks  $q$ .
- b.  $x$  is a BLOCKING CATEGORY (BC) for  $y$  iff  $x$  is a maximal projection,  $x$  includes  $y$  and  $x$  is not L-marked.
- c.  $x$  is a BARRIER for  $y$  iff (i) or (ii)
- (i)  $x$  is a maximal projection and  $x$  immediately dominates  $z$ ,  $z$  a BC for  $y$ ;
- (ii)  $x$  is a BC for  $y$ ,  $x \neq IP$ .

Taking this definition literally, cases of extraction from NP<sub>2</sub> (e.g. (88b), (88b)) would only cross one barrier, i.e. NP<sub>2</sub> itself: neither segment of VP qualifies as a barrier because the category VP does not immediately dominate NP<sub>2</sub> – only its higher segment does (VP does not include NP<sub>2</sub>) – and the next maximal projection IP is too far away to inherit barrierhood (it does not immediately dominate NP<sub>2</sub> because a segment of a different projection intervenes). If crossing of only one barrier suffices to produce ill-formedness, the contrasts of (88)–(89) are accounted for;

moreover, the system correctly predicts that extraction from NP<sub>3</sub> is worse than extraction from NP<sub>2</sub> (cf. (91b) vs. (88b), (89b)): in case of extraction from NP<sub>3</sub>, IP inherits barrierhood, hence two barriers are crossed. The system also correctly predicts different status for extraction from preverbal or postverbal non-ergative subject, as illustrated by (94):

(94)a. \*II diplomatico di cui la segretaria ti ha telefonato.  
*the diplomat of whom the secretary called you*

b. ??II diplomatico di cui ti ha telefonato la segretaria.  
*the diplomat of whom called you the secretary*

In (94a) extraction crosses two barriers (NP<sub>0</sub> and IP of (92)); in (94b) only one barrier is crossed (NP<sub>2</sub>), as just discussed. Hence extraction from a postverbal nonergative subject is slightly less deviant than extraction from a preverbal subject.<sup>22</sup> However, the hypothesis that crossing of a single barrier is enough to produce ill-formedness is in conflict with the fact that another case of movement crossing only one barrier, i.e. extraction from (untensed) Wh-islands, seems to be fully acceptable, as discussed in Chomsky (1986b).<sup>23</sup> A way to differentiate the two cases could consist in taking advantage of the fact that the postverbal subject NP is an inherent barrier, while a Wh-CP becomes a barrier through inheritance; the postverbal subject thus has the capacity to 'pass on' barrierhood, but the Wh-CP does not, the inheritance clause of the definition being nonrecursive. Suppose that we qualify the inheritance clause to the effect that segments can inherit barrierhood, so that the VP segment containing NP<sub>2</sub> in (92) can become a barrier. Definition (93c) should then read:

- (93)c'.  $x$  is a barrier for  $y$  iff (i) or (ii):  
 (i)  $x$  is (a segment of) a maximal projection and  $x$  immediately dominates  $z$ ,  $z$  a BC for  $y$ ;  
 (ii)  $x$  is a BC for  $y$  ( $x \neq \text{IP}$ )

<sup>22</sup> The relatively mild ill-formedness of (94b) suggests that the empty category left after extraction is properly governed within NP, otherwise these examples would violate the ECP, and a stronger unacceptability should result.

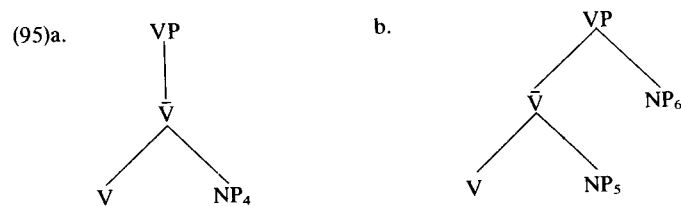
<sup>23</sup> Consider, for instance:

- (i) Una persona a cui non so mai [che cosa [PRO dire t t]]  
*a person to whom I never know what to say*

where extraction of *a cui* crosses one barrier, the embedded CP, which inherits barrierhood from the embedded IP.

Then, intrinsic barriers always are full categories, while inherited barriers can be segments. Extraction from NP<sub>2</sub> of (92) crosses NP<sub>2</sub> and the relevant VP segment. Hence we have a subjacency violation determined by the crossing of two barriers, as usual. The gradation between (94a) and (94b) can now be attributed to the fact that barrierhood is inherited by a category (IP) in the first case, and by a segment (VP) in the second: it would seem natural to assume that a barrier yields a stronger violation when it is a category than when it is a segment.

This system is immediately transposable to (83)–(87) given our hypothesis on the structural configurations. The VPs of the (a) and the (b) examples are, respectively:



In (95a) NP<sub>4</sub> is lexically  $\theta$ -marked by V, hence it does not qualify as a barrier and is fully transparent to extraction; in (95b) NP<sub>6</sub> is not lexically  $\theta$ -marked, hence it is a barrier. Since VP inherits barrierhood, extraction from NP<sub>6</sub> produces a subjacency violation. If this conclusion is to hold, however, it must also be the case that the option of adjoining the extracted element to VP (along the lines of Chomsky (1986b)) does not cancel VP's barrierhood. The desired result is already achieved by our assumption that inheritance of barrierhood can involve segments (cf. (93c')): adjunction to VP in (95b) would still cross NP<sub>6</sub> and a VP segment which would inherit barrierhood from the NP.

Notice that the deviance of the (b) examples in (83)–(87) is quite pronounced. If these examples are to be considered worse than cases like (94b), then the system should be further refined. One difference between extraction from NP<sub>6</sub> of (95b) and extraction from NP<sub>2</sub> of (92) is that the VP segment which is crossed in (95b) (assuming VP adjunction) is the 'BASE MAXIMAL PROJECTION' in Safir's (1985) sense, i.e., the lowest segment of an adjunction structure, while it is the highest segment in case of extraction from NP<sub>2</sub> of (92). In short, a more refined system could be made sensitive to the distinction between segments which are base maximal projections and segments which are not. Since the empirical

motivation for this refinement hinges on subtle contrasts between deviant structures, we leave this aspect of the analysis open.<sup>24</sup>

Extraction of **ne** from the object of **preoccupare** produces deviant structures, even though the violation seems weaker than in cases of Wh-extraction:

(96)a. \*La compagnia di cui questo fatto preoccupa il  
the company of which this fact worries the  
presidente.  
president

b. \*?Questo fatto ne preoccupa il presidente.  
this fact of it worries the president

c. ??Questo fatto ne preoccupa molti.  
this fact of them worries many

If the clitic **ne** is moved directly from NP to INFL, then subjacency is violated in all the cases, with both NP and VP barriers crossed. Then the deviance of these structures is accounted for, but the gradation is not captured by bounding theory. If the clitic is first moved to the verb inside the VP, then only one barrier is crossed, i.e. NP, hence subjacency would be violated in (96a), but not in (96b, c). The deviance of the latter should then be accounted for by a different module.<sup>25</sup> The choice between the

<sup>24</sup> There is potential independent evidence supporting the idea that base maximal projections inheriting barrierhood count as strong barriers for subjacency. Notice that extraction from preverbal subjects through topicalization is as ill-formed as in interrogatives or relatives:

- (i) \*John, a picture of *e* impressed me
- (ii) \*Who did a picture of *e* impress you?
- (iii) \*the man whom a picture of *e* impressed you . . .

Baltin (1978) and Lasnik and Saito (forthcoming) claim that topicalization involves adjunction to IP rather than movement to COMP. If this is right, then the structure of (i) is:

- (iv) [<sub>IP</sub> John [<sub>IP</sub> [<sub>NP</sub> a picture of *e*] . . . ]]

The parallel status of (i) and (ii), (iii) suggests that movement crosses two barriers of equal strength in the three cases, hence the base maximal projection IP in (iv) counts on a par with the category IP in (ii) and (iii). If a further differentiation between (i) and examples like (94b) is needed, we should again assume that full categories and segments which are base maximal projections are stronger barriers for subjacency than other segments inheriting barrierhood.

<sup>25</sup> An account which comes to mind is that if in (96b, c) **ne** is moved to the verb inside *V'*, then it c-commands its trace only in the weak sense of Aoun & Sportiche (1981), not in the

two alternatives would require specific assumptions on the nature of the cliticization process, a topic which we cannot adequately discuss here. We then leave this issue open.

### 3.2. The Case of the Experiencer

Although the Experiencer object lacks the typical properties of canonical objects, it does have some object properties. In particular, it receives accusative Case, overtly manifested when it is cliticized:

(97) Questo **lo** preoccupa.  
this him worries

This fact raises an immediate problem for our hypothesis: the verb must be an accusative Case assigner. Assignment to the Experiencer is possible because Case assignment is done under government, and the verb governs the whole content of the VP, including the Experiencer. Since only one Case is assigned by this verb, the other VP-internal argument – the Theme – moves to subject position, where it gets nominative Case. So from (98a) we obtain (98b). But the question that arises is: why can't we also obtain (98c)?

(98)a. *e* preoccupa questo Gianni.  
worries this Gianni

b. Questo preoccupa Gianni.  
this worries Gianni

c. \*Gianni preoccupa questo.  
Gianni worries this

I.e., what prevents accusative assignment to the Theme (which certainly is governed by *V*) and movement of the Experiencer to the nominative marked position? If the Case manifested in (97) was an ordinary type of accusative, there would be no obvious way to force the assignment procedure to systematically skip the Theme. But there is an important theoretical reason to conjecture that this Case is not the ordinary accusative of simple transitive sentences. We have given detailed evidence that the subject position here is nonthematic, and we have seen

strong sense of Reinhart (1976) which seems to be required for binding purposes. The further subtle gradation which seems to be detectable between (96b) and (96c) would remain unexplained.

that the object receives morphological accusative. This state of affairs is in apparent contradiction with a familiar theoretical statement, often referred to as BURZIO'S GENERALIZATION; "Case is assigned to the object iff a  $\theta$ -role is assigned to the subject." (Burzio 1986, pp. 178–186.) If we take Burzio's generalization as a strict principle, then our theoretical proposals and empirical observations are inconsistent with it.

The system can be made consistent and the empirical problem of (98) can be dealt with through the elaboration of a theory of Case along the lines of Chomsky (1986a). Following Chomsky, we will assume that there are two fundamentally different types of Case: STRUCTURAL CASE (nominative and accusative), assigned at S-structure under government, and INHERENT CASE (genitive, dative...), assigned at D-structure and realized at S-structure. Inherent Case is lexically idiosyncratic and thematically related. Lexical entries of verbs contain a Case grid, a primitive specification of the inherent Cases they assign; slots in the Case grid will be systematically related to slots in the  $\theta$ -grid:

$$(99) \quad \theta: \dots \theta_i \dots \theta_j \dots$$

$$\quad \quad \quad | \quad \quad \quad |$$

$$C: \dots C_i \dots C_j \dots$$

Hence an inherent Case can only be assigned to a member of the argument structure of the verb, and in general to the bearer of a specific  $\theta$ -role. In contrast, structural Case assignment is thematically blind: the receiver of structural Case does not have to be specified in the  $\theta$ -grid of the assigner. Moreover, we claim that structural Case is nonidiosyncratic. Following in essence a proposal due to Choe (1985), we will assume that the capacity of a verb to assign structural accusative is determined by the following general rule:

(100) V is a structural Case assigner iff it has an external argument.

This is our interpretation of Burzio's generalization. So, the capacity of assigning structural Case is not an idiosyncratic property specified in Case grids: whether or not a verb has that property can be determined by a simple inspection of its  $\theta$ -grid.

Given this set of assumptions, our original problems become more manageable. The accusative shown in (97) cannot be a structural accusative; rule (100) fails to characterize **preoccupare** as a structural Case assigner because it has no external argument. Hence, this accusative must be inherent. Thus the morphological entity Accusative Case can be a manifestation of both syntactic classes: structural Case and

inherent Case. This hypothesis provides a natural device to account for (98): inherent accusative will be specified in the Case grids of these verbs as related to the Experiencer slot in the  $\theta$ -grid, so that the Theme will always be skipped, and will have to move. This proposal becomes particularly plausible when we look at the third class of psych-verbs – the **piacere** class – which clearly assign an inherent Case (dative) to the Experiencer. The only difference between the two classes lies in the nature of the inherent Case assigned to the Experiencer. Let us simply note, for the time being, that the syntactically spurious nature of the morphological notion 'accusative' is clearly shown by languages like German, where some prepositions assign a morphological accusative which has the syntactic properties of inherent Cases (van Riemsdijk 1981); and Icelandic, where accusative is one of the morphological manifestations of so-called QUIRKY CASE, certainly different in nature from structural Case since it is idiosyncratic,  $\theta$ -related etc. (cf. Zaenen et al. 1985).<sup>26</sup> Note that verbs with inherent accusative case are typically unaccusative in Icelandic (Zaenen & Maling 1984).

One important problem raised by our analysis, which we cannot deal with in detail in the present paper, concerns the process of auxiliary assignment. The aspectual auxiliary of the **preoccupare** class is **avere** 'have', not **essere** 'be'. If our hypotheses are correct, then assignment of **essere** cannot be an automatic reflex of the lack of an external argument. (Cf. Burzio (1986) for detailed discussion of the assignment mechanism.) It seems to us that there is still an interesting generalization involving Aux assignment: a verb takes **avere** if it has the capacity to assign accusative Case (structural or inherent), and **essere** otherwise. This amounts to saying that a verb will take **avere** if it has an external argument (in this case, through rule (100), it will be a structural assigner of accusative) or if it has inherent accusative in its Case grid (as in the **preoccupare** class). This revised generalization still allows us to use the **avere/essere** alternation as a partial diagnostic for deep vs. derived

<sup>26</sup> Noam Chomsky (p.c.) has suggested that a structure like (98c) is also excluded for independent, more principled reasons. The trace of the moved Experiencer would be governed but not c-commanded (in Reinhart's (1976) sense) by the verb. Since in the system of Chomsky (1986b) an NP trace must be antecedent-governed by a member of its extended chain (here V) and antecedent government appears to require strict c-command (Baker 1985), then structures like (98c) would violate ECP. No ECP violation is produced when the Theme is moved, as in (98b), because the verb strictly c-commands and antecedent-governs the trace. Notice that this alternative is not incompatible with the Case analysis proposed in the text, which is independently motivated by the facts discussed in note 27.

subjects, at least in the sense that a verb taking **essere** will have a derived subject.<sup>27</sup>

#### 4. THE PIACERE CLASS

##### 4.1. Basic Properties

Three main properties characterize the third class of psychological verbs:

- A. the NP carrying the Experiencer  $\theta$ -role is marked with dative Case;
- B. the aspectual auxiliary selected by these verbs is **essere**;
- C. both orders – Experiencer V Theme and Theme V Experiencer – are possible, a freedom which is not found with the other two classes.

The three properties are illustrated by the following pairs:

- (101)a. A Gianni è sempre piaciuta la musica.  
to Gianni is always pleased music
- b. La musica è sempre piaciuta a Gianni.  
music is always pleased to Gianni

The second property immediately classifies these verbs as ergatives in Burzio's (1986) sense; therefore, the subject position is unquestionably nonthematic here. So, both Theme and Experiencer are VP-internal at

<sup>27</sup> This holds for lexically induced choices of **essere**. This auxiliary is also obligatorily induced by adjacency with a reflexive anaphor and impersonal **si** in Italian. Such cases must receive a different treatment given our current assumptions. Certain dissociations found in various Italian dialects raise doubts about the desirability of a fully unified account of all the cases of **essere** selection. For instance, in the Veneto dialect, motion verbs select **essere**, clitic anaphors can freely co-occur with **essere** and **avere**, and impersonal **si** requires **avere**. See Benincà & Vanelli (1984) for detailed discussion.

Corroborating evidence for the idea that the accusative of the **preoccupare** class is inherent is provided by an important observation of Benincà's (1986). She notices that a pronominal accusative object of the **preoccupare** class can be related to a left-dislocated NP overtly marked as dative. This option is not available in standard Italian for ordinary accusative marked pronouns:

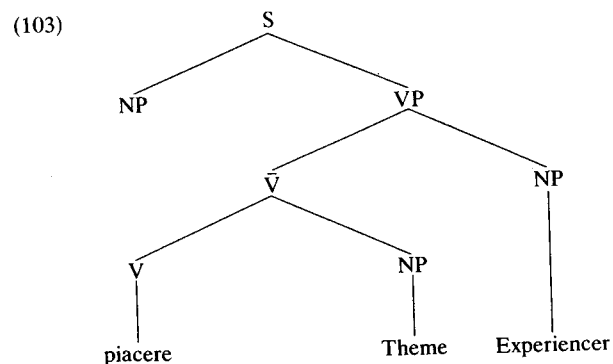
- (i) A Giorgio, questi argomenti non l'hanno convinto.  
to Giorgio these arguments not him have convinced  
Benincà's (58a)
- (ii) \*A Giorgio, la gente non lo conosce.  
to Giorgio people not him know

(Irrelevantly, (ii) is acceptable in southern varieties that systematically allow dative marking on direct objects, even in canonical object position.) It thus appears that the Case consistency condition on this particular type of A'-chain (cf. Cinque 1984) treats dative and inherent accusative on a par, as opposed to structural accusative.

D-structure. The evidence involving LD anaphors shows again that the Experiencer position must be structurally higher than the Theme, but not vice versa; (102a) is marginal but (102b) is impossible:

- (102)a. A Gianni, piace chiunque accetti le proprie, idee.  
to Gianni pleases whoever accepts his own ideas
- b. \*Gianni, piace a chiunque accetti le proprie, idee.  
Gianni pleases to whoever accepts his own ideas

Hence the structure must be as given in (103):



The only difference with the **preoccupare** class is that here the inherent Case assigned to the Experiencer is dative. The Theme can move to get nominative Case, as with the other class. So, the first and second property are related in our system. More precisely, property B is a consequence of property A: these verbs cannot be structural assigners of accusative (because they have no external argument), nor are they idiosyncratic assigners of inherent accusative: the only inherent Case they assign is dative. Therefore, by the generalization mentioned at the end of the preceding section, they must select **essere**.<sup>28</sup> The third

<sup>28</sup> This correctly predicts that if a verb belongs to both the **preoccupare** and **piacere** classes it will take **avere** or **essere** depending on the inherent Case it assigns to the Experiencer. Some cases of this kind exist, for instance **interessare**:

- (i)a. La politica lo ha sempre interessato.  
politics him has always interested
- b. La politica gli è sempre interessata.  
politics to him is always interested

property remains to be accounted for. We would like to claim that it can in turn be related to property A, and more specifically to the nature of the inherent Case assigned here. We shall adopt another aspect of Chomsky's (1986a) system, i.e. the assumption that inherent Case is assigned at D-structure by the  $\theta$ -marker (more precisely by the head that has the corresponding  $\theta$ -slot in its  $\theta$ -grid; see section 5 for details) and is realized at S-structure through government from an appropriate Case marker (which is either the Case assigner or an inserted preposition, as in NPs in English and Romance). Now, dative assignment at D-structure involves insertion of the preposition/Case marker *a*. The **a+NP** phrase thus constructed can move around freely: at S-structure, dative realization on the NP will be insured by the governing preposition. Structure (101a) is therefore allowed, with the dative NP extracted from the government domain of the verb, and the Theme can receive nominative Case from INFL, in the way described below (see note 33). Accusative assignment, on the other hand, does not involve insertion of a special preposition/Case marker. Therefore, the object cannot move freely: it must remain within the government domain of the verb in order to have its Case realized at S-structure, and no permutation comparable to (101a, b) is possible. The contrast between the second and third class with respect to permutability thus seems to be a simple consequence of the nature of the inherent Case assigned: the dative preposition/Case marker frees its object from any further Case-theoretic constraint, hence movement is free, whereas an accusative-marked NP cannot be extracted from the VP if the Case realization requirement is to be met.<sup>29</sup>

<sup>29</sup> This constraint is not operative on A'-chains because the experiencing object can be Wh-moved:

- (i) le persone che la venuta di Gianni preoccupa di più  
*the persons that the arrival of Gianni worries most*

One can simply assume that here inherent Case is realized on the variable. This assumption is at variance with Chomsky's (1986a) analysis of preposition stranding. But notice that in German a dative marked complement of V (or A) can be Wh-extracted from VP (or AP), whereas a dative-marked complement of P cannot be extracted from PP:

- (ii) Wem hast du [<sub>VP</sub> e dass buch gegeben]?  
*To whom did you give the book?*
- (iii) \*Wem war sie [<sub>PP</sub> mit e]?  
*Whom was she with?*

Since it is plausible that in the two cases *wem* receives inherent Case (dative), the P-stranding parameter does not seem to depend on Case properties (or perhaps it does indirectly, as suggested in Kayne (1983, ch. 9)). In any event, whatever the right analysis of (ii), it should directly extend to deal with (i).

#### 4.2. Quirky Subjects

The following question arises at this point: what structural position does the preverbal dative fill in structures like (101a)? There seem to be two plausible answers: (a) the TOP position, or whatever position is filled by left-dislocated and topicalized phrases in Italian; (b) the subject position. Circumstantial evidence in favor of the latter hypothesis is that the order Experiencer V Theme appears to be unmarked, i.e. the most natural order – the one which does not require contextual justification. For instance, in adverbial clauses where discourse factors motivating marked orders are weak, Topicalization of a dative verbal complement is quite strange, but a preverbal dative Experiencer is perfectly natural:

- (104)a. Tutti sono preoccupati perché ho raccontato questa storia a Gianni.  
*Everybody is worried because I told this story to Gianni*
- b. ??Tutti sono preoccupati perché a Gianni ho raccontato questa storia.  
*Everybody is worried because to Gianni I told this story*
- (105) Tutti sono preoccupati perché a Gianni piace everybody is worried because to Gianni pleases la linguistica.  
*linguistics*

More precise evidence is provided by the following observation: in general, Wh-extraction across a topicalized dative is weakly deviant (106a), whereas extraction across a preverbal Experiencer is fully natural (106b). Here the preverbal Experiencer patterns exactly like any overt preverbal subject (106c):

- (106)a. ??I libri che a Gianni ho dato sono questi.  
*the books that to Gianni I gave are these*
- b. I libri che a Gianni sono piaciuti sono questi.  
*the books that to Gianni are pleased are these*
- c. I libri che Gianni mi ha dato sono questi.  
*the books that Gianni gave me are these*

A simple interpretation is the following: in (106a) the dative is in TOP and the projection of TOP (TOP', corresponding to S'' of Chomsky

(1977)) adds a barrier for subjacency, producing the mild deviance of the example.<sup>30</sup> In (106c) the NP is in subject position, hence no TOP node or its projection is involved and the structure is fully natural. Example (106b) has the same status as (106c), as is expected when the dative is in subject position.

Another argument pointing to the same conclusion is given by the following contrast:

- (107)a. \*A nessuno gli hanno detto di andare al diavolo.  
           to nobody to him they said to go to hell
- b. ?A nessuno gli piace esser mandato al diavolo.  
           to nobody to him pleases to be sent to hell

Example (107a) shows that quantifiers like **nessuno** cannot be found in left-dislocated constructions. The reason presumably is that the operator cannot bind any well-formed variable. Consider a more detailed structural representation:

- (108) [<sub>TOP</sub> A nessuno<sub>i</sub>] [<sub>IP</sub> PRO<sub>i</sub> [<sub>VP</sub> gli<sub>i</sub> hanno detto **ec**<sub>i</sub> [<sub>S</sub> di PRO<sub>i</sub> andare al diavolo]]].

If both the trace of the clitic and the clitic itself are specified [+pronominal], there is no syntactic variable [-anaphor, -pronominal] that the quantifier can bind. Moreover, if the quantifier undergoes Quantifier Raising (QR) in LF, its trace in TOP does not qualify as a proper variable either, being in an A'-position. Consider now (107b). If the Experiencer phrase can be in subject position here, the S-structure is:

- (109) [<sub>IP</sub> [<sub>NP</sub> A nessuno<sub>i</sub>] [<sub>VP</sub> gli<sub>i</sub> piace ... ]]

If the quantifier undergoes QR, the empty category qualifies as a proper syntactic variable; in particular, it is in an A-position. Therefore, the LF representation is well-formed. The contrast in (107) would thus be akin to the contrast between French (110a) and the Fiorentino dialect (110b), on the interpretation given in Rizzi (1986a):<sup>31</sup>

<sup>30</sup> If Topicalization involves adjunction to IP (cf. the discussion in note 24) the fact that Topicalization in an embedded clause creates a weak island can be treated through the stipulation that the exception to clause (ii) of the definition of barrier (cf. (93)) holds only when IP is monosegmental, i.e. does not hold when an element is adjoined to IP.

<sup>31</sup> The marginality of example (107b) is probably to be attributed to the fact that a dative NP in an A-position is doubled by a clitic – an option generally disallowed in standard Italian.

- (110)a. \*Personne, il n'a rien dit.  
           Nobody, he said nothing.
- b. Nessuno l'ha detto nulla.  
           Nobody he said nothing.

In conclusion, there seems to be evidence supporting the hypothesis that the dative Experiencer can end up in preverbal subject position.<sup>32</sup> Since the D-structure representation is (103), this means that here Move  $\alpha$  can affect either one of the postverbal arguments. If the moved element is the Experiencer carrying inherent case, nominative will be assigned by INFL to the Theme directly in postverbal position.<sup>33</sup>

#### 4.3. More on Word Order

With psych-verbs of the **piacere** class, either the Theme or the Experiencer must be in preverbal position. If they both remain in the VP, the structure is deviant:

<sup>32</sup> Other arguments for a quasi-subject status of the dative Experiencer can be found in Perlmutter (1983) and Calabrese (1985a). Notice that the text proposal is not unproblematic. First of all, most of the tests showing the subject status of quirky subjects in Icelandic (see Zaenen, Maling & Thráinsson 1985) cannot be reproduced in this case. Secondly, the hypothesis is incompatible with the proposal of note 26. In this respect, one might speculate that the dative Experiencer could be moved to subject position through VP adjunction, thus satisfying ECP. One should then assume that this type of improper movement, excluded for an ordinary NP, is allowed for the **a+NP** category (presumably nondistinct from PP). This distinction could be made to follow from Cinque's (1985) hypothesis that a locally A'-bound PP trace is not necessarily a variable, hence does not necessarily give rise to strong crossover-type effects which bar ordinary improper movement.

<sup>33</sup> We assume in accordance with the analysis of Belletti (1988) that government by INFL cannot penetrate the VP barrier, hence the Theme cannot get nominative Case in object position, but only in VP-adjoined position. Notice that non-Null Subject languages do not seem to allow the order Dative V nominative with the **piacere** class. For instance, French contrasts directly with Italian with respect to the paradigm (107):

- (i)a. La musique plait à Jean.  
       b. \*A Jean plait la musique.

This difference could be related to the Null Subject parameter (cf. Platzack (1987) on the Scandinavian languages), perhaps in the following way: the INFL node of Null Subject languages can assign nominative Case directly to the right, whereas in non-Null Subject languages nominative Case can be assigned only to the left. Cf. also nominative assignment and agreement with the postcopular argument in identificational sentences: **Il colpevole sono io.** vs. **Le coupable c'est moi.** 'The guilty one is me'. (Longobardi 1983).

- (111)a. Le tue idee piacciono a Gianni.  
*your ideas please to Gianni*
- b. A Gianni piacciono le tue idee.  
*to Gianni please your ideas*
- c. \*Piaccono le tue idee a Gianni.  
*please your ideas to Gianni*

According to our hypothesis, (111c) corresponds to the D-structure underlying both (111a) and (111b). Its unacceptability would then lead to the surprising conclusion that the D-structure order can never surface as such. Notice that the problem arises with the **preoccupare** class as well: the linear order V Theme Experiencer corresponding to the D-structure representation is not a possible surface order:

- (112) \*Preoccupano le tue idee Gianni.  
*worry your ideas Gianni*

In fact, the restriction is more general, and includes the **temere** class as well:

- (113) \*Teme le tue idee Gianni.  
*fears your ideas Gianni*

In short, it seems that the order V Theme Experiencer is always deviant, regardless of the D-structure representation. Notice that the surface VOS order is not banned per se. The following examples, which involve nonpsych-verbs and are derived via rightward movement and VP-adjunction of the deep subject, are fully natural:

- (114)a. Mi ha mandato una lettera il Presidente.  
*to me sent a letter the President*
- b. Ha vinto le elezioni una studentessa.  
*won the elections a student*

The difference between (113) and (114) appears to be that the predicate is eventive in the latter case, but not in the former. It seems to be the case that noneventive sentences must always involve a nonvacuous predication at S-structure (with a referential subject), while eventive sentences do not have this requirement, and can have all the arguments in the VP at S-structure (cf. Calabrese (1985b) for relevant discussion).

Analogous contrasts can be found outside the class of psych-verbs

stricto sensu. For instance, **capitare** 'happen' and **appartenere** 'belong', have similar  $\theta$ - and Case-grids (Theme, Benefactive, the latter associated with inherent dative). The verb **capitare** allows the three possible orders illustrated in (111) (the third is possible only if the Theme is indefinite; cf. Belletti (1988) for relevant discussion), while **appartenere** like **piacere** does not allow the example corresponding to (111c):

- (115)a. Questa casa appartiene a Gianni.  
*this house belongs to Gianni*
- b. A Gianni appartiene una casa.  
*to Gianni belongs a house*
- c. \*Appartiene questa casa a Gianni.  
*belongs this house to Gianni*
- (116)a. Questo incidente è capitato a Gianni.  
*this accident happened to Gianni*
- b. A Gianni è capitato questo incidente.  
*to Gianni happened this accident*
- c. È capitato un incidente a Gianni.  
*happened an accident to Gianni*

The acceptability of (116c) thus parallels (114), and the ill-formedness of (115c) parallels (111c), (112), and (113). In conclusion, it appears to be the case that only eventive predicates allow a referentially vacuous predication. This gives the effect that NP movement must obligatorily apply on D-structure representations similar to (111c), (115c), etc. to move one of the referential arguments to subject position.<sup>34,35</sup>

<sup>34</sup> Notice that (111c), (112), (113), and (115c) become acceptable if one of the two VP-internal arguments is cliticized:

- (i) **gli** piacciono le tue idee  
*to him please your ideas*
- (ii) **lo** preoccupano le tue idee.  
*him worry your ideas*
- (iii) **le** teme Gianni.  
*them fear Gianni*
- (iv) **gli** appartiene questa casa.  
*to him belongs this house*

The exact interpretation of this effect depends on the precise formal characterization of the predication requirement. Perhaps the clitic can fulfill the role of the element of which the predicate is nonvacuously predicated. Pesetsky (MIT talk, October 1986) has noticed that Heavy NP Shift cannot move the Experiencer of the *worry* class to the right of an extraposed sentential Theme:

- (v) It surprised [everyone who'd had business dealing with the King of France] [to learn about Mary].
- (vi) \*It surprised [to learn about Mary] [everyone who'd had business dealing with the King of France].

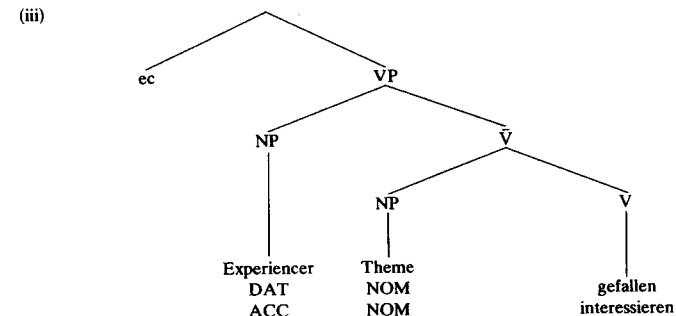
In the terms of our system, a representation of (vi) in which both the Theme and the Experiencer are in their D-structure position is excluded by, among other things, Case-theoretic considerations: the Theme must be moved to allow accusative Case to be assigned to the Experiencer under string adjacency (Stowell 1981). So, (v) must be derived from (vi) via rightward movement of the Theme. The other possible representation of (vi), derived from (v) via further rightward movement of the Experiencer, is excluded by the crossing configuration which would result:

- (vii) \*It surprised t t Theme Experiencer.

<sup>35</sup> Den Besten (1982) points out that both the *piacere* and the *preoccupare* class in German (illustrated by *gefallen* and *interessieren*, respectively) naturally allow the orders Dative, Nominative; Accusative, Nominative; which are otherwise highly restricted or impossible:

- (i)a. dass deine Geschichten meinen Vater überhaupt nicht interessieren  
that your stories-NOM my father-ACC at all not interest
- b. dass meinen Vater deine Geschichten überhaupt nicht interessieren  
that my father-ACC your stories-NOM at all not interest
- (ii)a. dass deine Musik meinem Bruder nicht gefällt  
that your music-NOM my brother-DAT not pleases
- b. dass meinem Bruder deine Musik nicht gefällt  
that my brother-DAT your music-NOM not pleases

Den Besten gives a different analysis of these two cases. A natural extension of our system permits a parallel analysis: the D-structure is, in both cases:



## 5. CONCLUSIONS: LEXICAL REPRESENTATIONS

In this section we would like to make explicit the nature of the lexical representations which we have been assuming all along. In the discussion which follows we will try to achieve two results. First of all, the lexical representations of the three classes differ in a minimal way. They are identical except for one lexical parameter involving the selection of different inherent Cases. Our second goal is to show that a simple theory of the lexicon predicts the existence of exactly the classes of psych-verbs which are empirically attested.

The theory of the lexicon we have in mind includes two components: (a) lexical representations; and (b) a set of principles guiding the mapping of lexical representations onto deep syntactic configurations. Concerning lexical representations, we assume that the lexical entry of each verb contains at least two specifications: a  $\theta$ -grid and a Case-grid. The  $\theta$ -grid is an unordered list of  $\theta$ -roles. Following Williams (1981) and Stowell (1981), we adopt the hypothesis that  $\theta$ -grids have a minimal internal structure in that they formally single out, for instance through underscoring, the external  $\theta$ -role, the  $\theta$ -role assigned to the subject position. For concreteness, we will assume an optimally simple procedure operating on lexical representations, hence prior to D-structure:

### (117) Underscore $\theta$

where  $\theta$  is any role. We further assume that the massive overgeneration of this procedure is blocked through its interaction with a set of mapping principles, some of which will be formulated in the following discussion.

The Case-grid is a specification of the inherent Cases idiosyncratically selected by a verb. Each inherent Case is  $\theta$ -related in the sense that it is linked to a specific slot in the  $\theta$ -grid. We keep the hypothesis of section 3.2, according to which structural (accusative) Case is not to be specified in the Case-grid, because the capacity to assign it is rule-governed. It is determined through rule (100), repeated here for ease of reference:

The Experiencer is assigned either inherent accusative or dative; either the Experiencer or the Theme can be moved to the non-thematic subject position, giving both orders: (ia, iia) and (ib, iib). As for the fact that an argument carrying inherent accusative can be moved to subject position in German but not in Italian (cf. (ib) and (98c)), it could be related to the frequently discussed hypothesis that in German (but not in Italian) S is a projection of V. Hence, the inherent Case could be properly realized in subject position through government from the  $\theta$ -marking V. See also Hoekstra (1984, pp. 182-194), Everaert (1986, pp. 112-115) for relevant discussion of the equivalent construction in Dutch. On the question of whether movement really takes place to the subject position in these cases, see also the critical remarks of Zaenen, Maling & Thráinsson (1985).

(118) V is a structural Case assigner iff it has an external argument.

Verbal entries consisting of  $\theta$ - and Case-grids are then mapped to syntactic representations under the constraining effect of a set of mapping principles. These principles guide the shaping of syntactic structures on the basis of the substantive thematic information in lexical entries. In this sense they can be regarded as the substantive component of the Projection Principle. These principles have the effect of arranging in specific configurations the structural positions projected from the members of a  $\theta$ -grid: they can be seen as encoding intrinsic thematic prominence into configurational prominence. The statement which is needed for our purposes is the following:

(119) Given a  $\theta$ -grid [Experiencer, Theme], the Experiencer is projected to a higher position than the Theme.

Here 'higher' means 'asymmetrically c-commanding'.

Given this frame of reference, the lexical representations that generate the required syntactic configurations for the three classes of psych-verbs are the following:<sup>36</sup>

(120) **temere**:  $\theta$ -grid [Experiencer, Theme]

Case-grid [ - - ]

(121) **preoccupare**:  $\theta$ -grid [Experiencer, Theme]

Case-grid [ACC - ]

(122) **piacere**:  $\theta$ -grid [Experiencer, Theme]

Case-grid [Dat - ]

**Temere** has the Experiencer underscored, i.e. selected as the external  $\theta$ -role, and no inherent Case is specified. This gives rise to the simple transitive structure which was shown to be empirically motivated. **Precoc-**

<sup>36</sup> A plausible generalization of this statement would consist in a general thematic hierarchy: (1) Agent, (2) Experiencer, ... (3) Theme, and the instruction that syntactic configurations projected from a given  $\theta$ -grid should reflect the hierarchy, so that for every pair of  $\theta$ -roles in the grid, the higher role in the hierarchy is projected to a higher structural position. We will not develop this generalization further here. Notice that this proposal would amount to a relativized version of Baker's (1985) UNIFORMITY OF  $\theta$ -ASSIGNMENT HYPOTHESIS (UTAH).

**cupare** and **piacere** have no external  $\theta$ -role, and the Experiencer is linked to an inherent Case – accusative and dative, respectively. Given principle (119), these lexical representations generate the right syntactic configurations: the Experiencer must remain VP-internal because it is not marked as the external  $\theta$ -role, and by (119) it must be higher than the Theme. The only configuration meeting these requirements is the one with the Theme as sister to V and the Experiencer as sister to V'.<sup>37</sup>

We now have to check whether this system is sufficiently constrained to allow only the attested cases. In other words: why are (120)–(122) the only possibilities? A number of specific questions arise:

A. why is it that the Theme can never be chosen as the external  $\theta$ -role?

<sup>37</sup> Throughout this paper we have accepted the standard assumption that the three classes of psych-verbs have identical  $\theta$ -grids. The point is not uncontroversial, though. Pesetsky (1987) observes that there is a subtle semantic difference between the understood role of the NP *the article* in the following examples:

(i) John feared the article.

(ii) The article worried Mary.

*The article* necessarily is the object of John's concern in (i), while it simply denotes the cause of Mary's psychological state in (ii). Pesetsky then suggests that two distinct roles are to be postulated – OBJECT OF EMOTION and CAUSE OF EMOTION, – and that the  $\theta$ -grids of *fear* and *worry* differ accordingly. If this was correct, the mapping principle would be greatly simplified in this domain: different  $\theta$ -roles would simply map to different positions, and a more restrictive mapping principle could be formulated than the one we have introduced. Still, two problems suggest that things are less straightforward. First of all, Pesetsky himself notes that if causes and objects of emotion were distinct roles, one would expect them to be allowed to co-occur in some structures, contrary to fact:

(iii) \*The article worried Mary about nuclear war.

See Pesetsky (in progress) for an attempt to deal with this problem. Secondly, Pesetsky notices the same subtle difference in various pairs related by derivational morphology:

(iv) The article angered/worried Bill (greatly). CAUSE

(v) Bill was very angry at/worried about the article. OBJECT

If cause and object were two distinct roles, one would be forced to admit that the derivational process involved a systematic modification in the  $\theta$ -grid, a rather surprising conclusion: morphological processes seem to allow the suppression or addition of a  $\theta$ -role, but not the systematic transformation of a role into another, as would be required here. The fact that these problems exist gives some support to the standard assumption of an essential thematic uniformity across psych-predicates, but certainly does not undermine the importance of Pesetsky's observation, which we will not try to integrate into our analysis here. It goes without saying that not much progress is to be expected on the mapping problem unless the fine-grained semantics of the relevant constructions is addressed, and a better notional characterization is given of thematic roles.

B. why is it that the Experiencer cannot be selected as the external  $\theta$ -role with the **preoccupare** and **piacere** classes?

C. why is it that with the **temere** class the Experiencer *must* be externalized?<sup>38</sup>

As for question A, the impossibility of externalizing the Theme follows from principle (119): if the Theme were selected as the external  $\theta$ -role, it would be projected to a higher position than the Experiencer, in violation of principle (119). This principle can thus be met in one of only two ways: either the Experiencer is externalized or both  $\theta$ -roles are VP-internal, with the Experiencer higher than the Theme. The system thus correctly predicts that for no choice of psych-verb V can the structure *This V John* have the properties of a simple transitive structure.

As for question B, the Experiencer cannot be chosen as the external  $\theta$ -role with the **preoccupare** and **piacere** classes because there is an intrinsic incompatibility between the structural requirement of externalization and the inherent Case assignment encoded in the lexical representations: if a  $\theta$ -role is selected as the external  $\theta$ -role it will, by definition, project a position external to the VP, and hence external to the government domain of the verb. If, on the other hand, a  $\theta$ -role is linked to an inherent Case, it will project to a VP-internal position; otherwise Case assignment at D-structure, crucially involving government by the verb, would be impossible.<sup>39</sup>

Finally, as for question C, the obligatory externalization of the Experiencer with the **temere** class is due to Case-theoretic reasons. The defining property of this class is that no inherent Case is selected in the lexical representation. Therefore, only structural Case is available for the two nominals involved: the one which ends up in subject position will receive nominative (or will be PRO or NP-trace, which do not need Case); the only remaining Case for the one left in the VP will be structural accusative. By rule (118), for the verb to be an assigner of structural accusative there must be an external  $\theta$ -role in the  $\theta$ -grid; by principle (119), in turn, the only  $\theta$ -role which qualifies for externalization is the Experiencer. Hence, the obligatory externalization of the Experiencer with this class of psych-verbs ultimately follows from the

<sup>38</sup> A principled answer to this question is particularly important given our program of identifying the lexical parameter in the Case-grid. If this is correct, then any difference in the  $\theta$ -grids of (120)–(122) should follow from primitive differences in the Case-grids.

<sup>39</sup> From this it follows that in all S-structures involving an inherently Case-marked NP in subject position, this NP is a derived subject. If we combine this conclusion with the fact that Agents are always selected as the external  $\theta$ -role, we derive the interesting prediction that Agents can never be inherently Case-marked.

necessity of Case-marking the Theme. In other words, this property is derived from properties of the Case-grid; and this allows us to keep our initial hypothesis that the specification of the Case-grid is the only lexical parameter differentiating these verb classes.

This system correctly characterizes the attested classes and excludes various unattested ones, in particular:<sup>40</sup>

1. a verb class like **temere** (no inherent Case) with no externalization;
2. a verb class like **temere** with externalization of the Theme;
3. a verb class like **preoccupare** with the properties of a simple transitive structure;
4. a verb class like **piacere** with structural accusative assigned to the Theme, and **avere** 'have' as aspectual auxiliary etc.

A closer look reveals that two further classes are predicted to be possible:

5. a verb class selecting inherent Case for both the Theme and the Experiencer;
6. a verb class selecting inherent Case for the Theme and allowing externalization of the Experiencer.

Both 5 and 6 appear in fact to be attested. One possible instance of a member of the first class is a verb like **importare** 'matter', which appears to select dative Case for the Experiencer and genitive Case for the Theme:<sup>41</sup>

<sup>40</sup> The alternative of note 26 excludes movement of the Experiencer into subject position with the **preoccupare** class via ECP; it thus seems to make recourse to Case theory unnecessary. In particular, in the analysis of the cases at issue we could dispense with the assumption that inherent accusative is involved, and that the capacity to assign structural accusative is determined by rule (118). But notice that the ECP solution alone is silent on points 1 and 4 of the following list. Concerning point 1, if structural accusative can be freely assigned even by a verb with no external  $\theta$ -role, all other things being equal **temere** should allow a D-structure like **preoccupare** with two internal arguments and NP-movement of the Theme; under this approach the only way available to differentiate the **temere** and **preoccupare** classes would be the stipulation that externalization of the experiencer is obligatory with the former. Concerning point 4, if rule (118) is dropped, a verb like **piacere** would be allowed to assign structural accusative to the Theme, in addition to the assignment of inherent dative to the Experiencer. It thus seems that the consequences of the Case approach cannot be entirely subsumed under the ECP approach.

<sup>41</sup> The order Gen V Dat as in (i) is possible but more marked than the one in (123); moreover a preposed dative does not give rise to island effects, but a preposed genitive does (cf. (ii) and section 4.2):

- (i) Di questo importa solo a Gianni.  
of this matters only to Gianni
- (ii)a. la cosa di cui a Gianni importa veramente  
the thing of which to Gianni matters really

- (123) A me importa solo di questo.  
to me matters only of this

A member of the second class could be a verb like **gioire** 'rejoice' which, again, selects genitive for the Theme:

- (124) Gianni gioisce di questo.  
Gianni rejoices of this

The fact that the inherent Case for the Theme is genitive in both cases is probably not accidental. Notice that genitive is the Case normally selected for the Theme in NPs and APs, where structural Case is not available because of the intrinsic nature of the head. Presumably genitive is the inherent Case normally associated with the Theme  $\theta$ -role. Therefore, the nonexistence, in Italian, of a further class identical to the **importare** class but assigning inherent accusative to the Theme does not come as a surprise.<sup>42</sup>

An important question that we have left open is why agentive verbs do not allow for the alternatives which are found with psych-verbs. The fact of the matter seems to be that whenever an Agent is present in the  $\theta$ -grid of a verb, it must be selected as the external  $\theta$ -role. We can formally express this substantive property of Agents by stating that Agents are intrinsically underscored (see (120); cf. also Hale & Keyser (1986)). This property as well as our principle (109) may be amenable to a deeper level of explanation through the investigation of the notional content of

- (ii)b. ??la persona a cui di questo importa veramente  
the person to whom of this matters really

This suggests that **a** is a true Case marker (and/or realizer), and the **a** phrase is nondistinct from an NP (perhaps it is also nondistinct from a PP, cf. note 32; if this is correct, the NP/PP opposition is neutralized in this case), while **di** is a normal preposition and the **di** phrase is a PP. Then, only a preposed dative can fill the subject position of structure (103) due to structure preservation; a genitive can only be preposed via topicalization, which gives rise to island effects.

<sup>42</sup> Joan Maling reminds us that the association between genitive Case and Theme cannot be strengthened too much given the existence, in Icelandic, of Themes receiving inherent accusative and dative. We must also exclude a class assigning inherent genitive to the Theme and inherent accusative to the Experiencer, that is to say something like

- (i) \*importa di questo Gianni  
matters of this Gianni

Here we can assume that assignment of inherent accusative shares the adjacency requirement with assignment of structural accusative (where an un-Case marked trace does not count to block adjacency, as with the **preoccupare** class). This also correctly excludes the possibility of a double accusative structure (one structural and the other inherent), because the adjacency requirement could not be met by the second NP.

$\theta$ -roles, an enterprise which is well beyond the aims of this paper. Notice that our current assumption on Agents, combined with principle (119), gives the following partial characterization of the mapping procedure: an Agent is always selected as the external  $\theta$ -role; an Experiencer can be selected as the external  $\theta$ -role (if further conditions warrant); a Theme specified in a  $\theta$ -grid containing an Experiencer or an Agent can never be selected as the external  $\theta$ -role.<sup>43</sup> The system, however, does not completely exclude the possibility of a Theme being chosen as the external  $\theta$ -role; this possibility holds when the Theme does not co-occur with a more highly ranked  $\theta$ -role, typically when the Theme is the only member of the  $\theta$ -grid. This option is in fact attested in ergative/intransitive alternations that sometimes occur with monoargumental predicates in Italian, as illustrated in the pairs in (125):<sup>44</sup>

- (125)a. E' piovuto.  
is rained  
b. Ha piovuto.  
has rained  
c. E' ruotata.  
is turned  
d. Ha ruotato.  
has turned

Thus, our tentative, partial characterization of the mapping procedure leads us to a thematic hierarchy not too dissimilar from familiar formulations. What distinguishes the present approach is the conjecture that this intrinsic hierarchization is not further accessible to grammatical processes. We have tried to show that this conjecture, a priori desirable

<sup>43</sup> This implies that if a  $\theta$ -grid contains both an Agent and an Experiencer it will always be the Agent which will be selected as the external  $\theta$ -role. A possible case in point is presumably provided by the agentive interpretation which some verbs of the **preoccupare** class allow (cf. class 1).

<sup>44</sup> The ability of these verbs to take both **avere** and **essere** as aspectual auxiliaries is evidence that they are both ergative and intransitive. Notice that under the interpretation at the end of section 3, this standard diagnostic keeps its validity for the case at issue. The roles corresponding to the only argument of **ruotare** and to the object of a psychological state seem to be quite different entities, and a unification under the label Theme appears quite misleading. A more adequate classification should perhaps distinguish between the 'affected' role of the former case and the 'unaffected' role of the latter, an elaboration which will not be pursued here.

on grounds of restrictiveness, does not preclude the construction of empirically adequate analyses in a traditionally recalcitrant domain.

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Belletti  
 Faculté des lettres  
 Département de langues et littératures romanes  
 Université de Genève  
 CH-1211 Genève 4  
 Switzerland

Rizzi  
 Faculté des lettres  
 Département de linguistique générale  
 Université de Genève  
 CH-1211 Genève 4  
 Switzerland

and

Scuola Normale Superiore  
 56100 Pisa  
 Italy