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On implicit arguments

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Consider sentences of the type of (1) or (2):

(1) Mary was saying to leave

(2) The book was being written to make money

These sentences are interpreted roughly as in (3) and (4) respectively:

(3) (∃x) Mary was saying to x [x to leave]

(4) (∃x) The book was being written by x (for) x to make money

Within the theory of Government and Binding, which will provide the framework for our discussion, the understood subject of the infinitival sentence is the empty category PRO (Chomsky 1981, 1986). The nature of the understood dative in (1) and of the understood agent in (2) is, however, an open question. In particular, within the framework that we assume, they cannot correspond to empty categories, as we will argue below. Understood elements that are realised neither lexically nor as empty categories are generally known as implicit arguments. It is with implicit arguments that this chapter is mainly concerned.

Our discussion so far is compatible with a number of characterisations for implicit arguments, including in particular a pragmatic characterisation. The assumption that they exist is based so far on the interpretation of sentences like (1) and (2). For such interpretive properties a pragmatic account is in principle available. In this chapter, however, we will argue that implicit arguments are grammatically defined entities, and that they interact in crucial ways with a number of subcomponents of grammar.

Examples of the type of (1) and (2) were first pointed out in Manzini (1983), in the context of a proposal for unifying control with binding theory. In section 1, we will provide a brief summary of this theory, taking into account also the proposals in Brody (1985). We will argue that this version of the theory necessitates the presence of implicit arguments in sentences of the type of (1) and (2), to bind the PRO in the subject position of the infinitival.

In section 2, following ideas in Chomsky (1986), Rizzi (1986), and Roeper (1987) we identify implicit arguments with theta-roles not projected to syntactic positions, and we examine some of their properties in detail. One of our major conclusions will be that implicit arguments can correspond to both agents and datives, as in our original examples (1) and (2), but cannot correspond, at least in English, to direct objects.

In section 3, we examine implicit arguments in the light of the projec-

tion principle. This principle requires that all theta-roles subcategorised for must be projected to syntactic positions: implicit datives seem then to represent a straightforward counterexample to it. To explain the distribution of implicit arguments, we will propose a radical modification of the projection principle. Assuming, as in Brody (1985), that S-structure is the fundamental level of representation, our version of the projection principle will say that structural Cases must be projected to syntactic positions. Thus the inherent Case dative with its associated theta-role is allowed not to project, creating an implicit argument. Such a modification of the projection principle has wide ranging consequences, for some of which we will try to account systematically. In particular we will discuss why in general nonsubject theta-roles must be projected, the main content of the standard projection principle.

In section 4, finally, we consider the null direct objects of Italian discussed in Rizzi (1986). We will argue that Italian null objects are in chains headed by a zero clitic corresponding to an implicit argument. As we will show, this conception falls naturally within our theory of implicit arguments. The historical evidence from English presented in Rizzi (1986) in this connection will also be considered.

1 Binding theory and control

According to Chomsky (1981), anaphors and pronominals are subject to conditions A and B of binding theory respectively, as in (5):

(5) A An anaphor must be bound in its governing category
B A pronominal must be free in its governing category

In the core cases, the governing category for an element α can be defined as the minimal category that contains α, a governor for α and a subject: a more complete definition of the notion requires that the subject be accessible to α, as in (6):

(6) γ is the governing category for α iff
γ is the minimal category that dominates α, a governor for α and a subject accessible to α

In turn, a subject is said to be accessible to α if there is an indexing under which it binds α and which does not violate the i-within-i condition. The i-within-i condition states that the following configuration is excluded: $[_i \ldots i \ldots]$.

Under the definition of governing category in (6), binding theory does not account for the choice of antecedents of PRO. According to Chomsky (1981), PRO is a pronominal anaphor. If it is governed and has a governing category, it is subject both to binding condition A, requiring it to be bound in its governing category, and to binding condition B, requiring it to be free in it. It follows that PRO must be ungoverned and cannot have a governing

category. But if so, binding theory cannot account for its choice of antecedents.

In this chapter, we adopt the theory of empty categories in Brody (1985). Under this theory PRO is a pure anaphor. The ungoverned status of PRO follows from a condition on chains which requires heads of chains to be Case linked. An element is Case linked if it is governed and has Case, or if it is not governed and does not have Case. Given the assumption that lexical NPs, but not empty categories have Case, the first option corresponds to lexical NPs, the second to PRO.

Following Manzini (1983) and Brody (1985) we then assume that the notion of governing category can be extended to apply to PROs. In particular, following Brody (1985) we assume a notion of g-governor, defined as in (7):

(7) β g-governs α iff
β governs α, or β governs the c-domain of α

(The *c-domain* of α is the domain that contains all and only the nodes that α c-commands – that is, the first maximal projection that dominates α.)

Given (7), the definition of governing category in Chomsky (1981) can be modified as in (8), where the notion of governor is substituted by the notion of g-governor:

(8) γ is a governing category for α iff
γ is the minimal category that dominates α, a g-governor for α, and a subject accessible to α

Under the definition of governing category in (8) binding theory now subsumes control. Consider for example a control sentence embedded in object position, as in (9):

(9) John believed that Mary wanted [PRO to behave well]

In (9) PRO is g-governed by the verb, *want*, that governs the control sentence. The sentence S that immediately contains the control sentence is the governing category for PRO, since S dominates the g-governor for PRO and a subject, *Mary*, that is accessible to PRO. It follows that PRO is required to be bound in S, hence it must be bound by *Mary*. It cannot remain free, and receive arbitrary interpretation; nor can it be long-distance bound, for example by *John*.

Under the definition of governing category in Chomsky (1981), or the modified version of it in (8), the search for a governing category goes on until an accessible subject is found. In Manzini (1983) an alternative way of considering the accessibility requirement is suggested. Under this conception, the search for a governing category stops when the first subject is found, but at this point the subject is checked for accessibility. If the subject is accessible then the notion of governing category is properly defined; if not, no governing category is defined at all. Following this conception of accessibility the notion of governing category is then formulated as in (10):

(10) γ is a governing category for α iff
  (i) γ is the minimal category that dominates α, a g-governor for α and a subject β; and
  (ii) β is accessible to α

The empirical consequences of this move can be seen when control sentences embedded in subject position are taken into account. Consider for example (11):

(11) John believed that [PRO to behave well] Agr could be useful to Mary

In (11) the g-governor of PRO is Agr. As in (9) the sentence S that immediately contains the control sentence is the minimal category that dominates a g-governor for PRO and a subject. However, the subject is not accessible to PRO, since coindexing of the PRO with the subject that dominates it would create an i-within-i configuration. Under the definition of governing category in (10), then, PRO in (11) does not have a governing category. But this means that binding theory does not apply to it. Hence we expect PRO to be able to have a long-distance binder, for example *John* in (11); to be able to have an antecedent that does not c-command it, as *Mary* in (11); and to be able not to have an antecedent at all, and to be arbitrary in reference. These predictions seem to be correct.

The predictions of the present theory of binding for lexical anaphors in the subject position of object and subject nominals are essentially the same as for PROs in the subject position of subject and object control sentences respectively. Consider for example (12) and (13). In (12) the anaphor in the object nominal is predicted to be bound in the first sentence that contains it; in (13) the anaphor in the subject nominal is predicted not to have a governing category, hence in particular to be able to be long-distance bound by the matrix subject or to have an antecedent that does not c-command it, like the embedded object:

(12) They liked each other's pictures

(13) The boys thought that each other's pictures pleased the girls

However, lexical anaphors lacking a governing category seem, contrary to PROs, to need an antecedent in all cases. So in particular in (13) *each other* cannot be assigned arbitrary interpretation. That lexical anaphors must have antecedents will then have to be introduced into the grammar as an independent assumption.

Consider now the example in (14):

(14) Mary heard that John was saying [PRO to leave]

The PRO in (14) is essentially in the same position as the PRO in (9), and their governing category is in both cases the sentence that immediately contains the control sentence. By binding condition A, PRO is then predicted to be bound within this sentence. But the PRO in (14), contrary to the PRO in (9), does not seem to be bound at all; rather, it seems to be free and interpreted as arbitrary in reference. Examples of the type of (14), however,

differ from examples of the type of (9) in at least one other respect. In (9) all of the complements of the verb that selects the control sentence are realised. In (14) there is one complement, roughly corresponding to the dative Case, that seems to remain unrealised. Suppose we say that this dative in fact binds the PRO. If so, the structure ceases to be a violation of the theory of control.

On the other hand if our theory of control holds and PRO must be bound in the sentence that immediately contains the control sentence, it also follows that it cannot be long-distance bound, hence in particular in (14) it cannot be bound by the matrix subject *Mary*. This seems to be correct. Furthermore, if the PRO in (14) is bound by the dative we correctly predict that the dative will be interpreted as the antecedent of PRO. In short, there is evidence that the apparently unrealised dative in sentences of the type of (14) nevertheless controls the PRO. Adopting current terminology we will henceforth refer to elements like the dative in (14) as implicit arguments.

Consider now a sentence of the type of (15):

(15) Mary thought that [PRO to behave well] could be useful

(15) reproduces the configuration in (11); PRO does not have a governing category, it is not subject to binding theory and does not require a controller. In (15), however, as in (14), one of the arguments seems to remain unrealised, again a dative/benefactive: this then should be able to control the PRO. So we predict that (15) admits the interpretation '. . . for x to behave well could be useful to x', though, as in (11), and unlike in (14), PRO can also be bound by *Mary* or be free.

Examples of the type of (16) and (17), on the other hand, have quite different properties from examples of the type of (11) and (15):

(16) Mary thought that [PRO to behave well] would be easy for Peter

(17) Mary thought that [PRO to behave well] would be easy

Though (16) and (17) prima facie replicate the configurations in (11) and (15), the behaviour of the PRO is similar to that found in (9) or (14). In (16) in particular PRO is controlled by *Peter*: correspondingly in (17) PRO is controlled by the implicit dative/benefactive, yielding the interpretation '. . . for x to behave well would be easy for x'. In both cases long-distance control by *Mary* is impossible, as is free interpretation. Given the theory of control presented here, we expect structural differences to underlie this contrast between (11) and (16).

A possible hypothesis is that the control sentence in (16) is not in subject position, but in some sentence initial $\bar{A}$ position. From this position, it is 'reconstructed' into its D-structure position, which we can assume is the object position. It follows that PRO must be bound in the sentence immediately superordinate to the control sentence; where in turn it can be bound by the benefactive if the control sentence is in its 'reconstructed' position. As for the control sentence in (11), we can assume either that it is in subject position proper, or that it is in sentence initial $\bar{A}$ position and is 'reconstructed' in subject position; in both cases the predictions concerning control remain

unchanged. In fact, the adjectives that pattern like *easy* in (16) as opposed to *useful* in (11) seem to overlap with the adjectives allowing *tough* movement. If a precondition for *tough* movement is that the infinitival sentence moved from is in a subcategorised position, then the different structures postulated for (16) and (11) could be independently motivated.

On the basis of examples such as (17), Epstein (1984) and Borer (1986) conclude that all PROs associated with arbitrary interpretation are in fact bound, by what in our terms is an implicit argument; similarly, through the implicit argument, all apparently long-distance bound PROs are locally bound. The potential counterexamples quoted are of the type of (18) or (19); in (18) or (19) all argument positions in the matrix sentence are filled, thus leaving no room for an implicit argument, but arbitrary interpretation of the PRO seems to be possible:

(18) The waiter knows what to order

(19) To misbehave in public could irritate the police

According to Borer (1986), however, examples of the type of (18) have altogether special properties, while examples of the type of (19) are marginal with arbitrary interpretation of the PRO.

This disregards examples of the type of (11). The contrast between the two classes of adjectives involved in (11) and (15) and (16)–(17) is particularly striking in examples of the type of (20)–(21):

(20) To teach *them* maths is useful to *the children*

(21) *To teach *them* maths is easy for *the children*

The reading under which *them* is coreferential with *the children* makes the free reading of PRO obligatory; as before, there is no unfilled position in the matrix sentence that could correspond to an implicit argument. (21), which is a configuration of obligatory control, is then ill-formed; (20), which is not, is perfectly well-formed, and not marginal.

Finally, the examples considered so far argue for the existence of implicit datives/benefactives. However there is a well-known class of control facts that argues for the existence of at least a second class of implicit arguments, corresponding roughly to agent theta-roles. Consider purposive sentences. In general, a PRO subject of a purposive sentence must be bound in the first sentence that contains the control sentence, as in (22):

(22) Mary said that [John wrote the book [PRO to help Peter]]

In (22), where the control sentence is taken to be attached under the embedded sentence, PRO cannot have arbitrary control, and it cannot be long-distance bound, as for example by *Mary*. In fact, the only possible controller for PRO is *John*.

Consider then the example in (23):

(23) Mary said that [the book was written [PRO to help Peter]]

In (23) long distance control of the PRO by the subject of the matrix sentence *Mary* is impossible. However PRO seems to be free and associated

with arbitrary interpretation rather than bound within the embedded sentence. But again the exception disappears if we assume that in (23) the apparently unrealised agent in the embedded sentence controls the PRO. This in turn yields the intuitively correct interpretation '. . . the book was written by x for x to help Peter'. Hence examples of the type of (23) provide evidence in favour of the existence of implicit agents parallel to the implicit datives/benefactives of the examples in (14), (17) and (15).

2 What is an implicit argument?

Our next question concerns the nature of implicit arguments. A possible hypothesis is that they correspond to some type of empty category. However, they cannot be NP-traces, since in the examples that we have considered no movement can have taken place from the A-position corresponding to the implicit argument to any other position. Similarly, they cannot be PROs; for at least implicit datives clearly correspond to positions selected by a head, hence governed by it.

This still leaves two possibilities open. The first possibility is that the implicit argument is a variable. Of course it can only be a variable if it is bound by some operator. But while no overt operator is present in any of the examples considered, one can always postulate the existence of an empty operator. Furthermore, if the correct interpretation for the sentences under consideration is to be obtained, the empty operator/variable pair must have arbitrary reference. This again is possible if the empty operator is not itself bound. The problem with this analysis is not its feasibility, but the arbitrariness of the restriction of these empty operator/variable pairs to precisely the implicit arguments contexts. In fact, the variable analysis is explicitly adopted for what we have termed implicit datives or benefactives in Borer (1986); as far as we can see, the restriction of the empty operator/variable pairs to datives or benefactives is stipulated.

Finally, the last type of empty category that implicit arguments could correspond to is pro. If we assume that pros can be licensed and identified only by the strong Agr of languages like Italian, essentially as in Chomsky (1982), then implicit datives and agents cannot correspond to pros. This does not mean that the licensing conditions for pros cannot be extended; in fact, the pro analysis is explicitly adopted for datives/benefactives in Epstein (1984). As before, then, the problem with this analysis is not its feasibility, but its lack of explanatory power.

If on the other hand implicit arguments are not empty categories, what are they? According to Chomsky (1986), an implicit argument is lexically, rather than syntactically, represented, and is a constituent of a V head. According to Roeper (1987), an implicit argument is a theta-role that does not license a category though it can license one. According to Rizzi (1986),

an implicit argument is a theta-role that is not projected to a position. All these proposals follow essentially the same line of thought, and it is this that we will pursue here.

Consider the projection principle. In the formulation of Chomsky (1986) the projection principle requires every theta-role selected by a head to be categorically represented. Given a verb V associated with a theta-role θ, the syntactic representation corresponding to it is as in (24), where '—' denotes the syntactic category, or position, associated with the theta-role:

(24) $V+\theta$ —

In the case of an implicit argument, V can be associated with the representation in (25), where the theta-role does not project to a syntactic category or position; if so, an implicit argument can be identified with an unprojected theta-role:

(25) $V+\theta$

The existence of implicit arguments seems then to require a reconsideration of the projection principle.

At the same time, not all theta-roles selected by a head can correspond to an implicit argument; while we have found evidence of implicit arguments corresponding to datives, there are no direct object implicit arguments, as in (26):

(26) *Mary persuaded [PRO to leave]

Hence while a relaxation of the projection principle seems to be in order to allow for an unprojected dative, some version of it still seems to be needed to exclude the occurrence of any unprojected direct object. Any explanatory theory of implicit arguments will have to account for this dative/direct object split.

In Chomsky (1986), where only implicit agents, i.e. external theta-roles, are dealt with, no problem concerning the projection principle arises. The projection principle does not force external theta-roles to be categorically represented: rather the presence of a subject, not necessarily a theta-position, is enforced by the extended projection principle. Hence the standard version of the projection principle predicts that implicit arguments can correspond to agents.

The problem of datives is discussed in Roeper (1987) and Rizzi (1986). Roeper (1987) takes into account the distinction between datives or agents and direct objects by stipulating that implicit arguments correspond to theta-roles that otherwise license PPs. Rizzi (1986), on the other hand, assumes that the difference between direct object theta-roles and other internal theta-roles is that the former are directly associated with a head, while the latter are associated with a head through autonomous theta-markers, typically prepositions. The idea is that theta-roles directly associated with a head are obligatorily projected to a position. However, the selection of an autonomous theta-marker is optional; if it is selected, then again the theta-role with which

it is directly associated must be projected. An implicit argument corresponds to the case when the autonomous theta-marker is not selected.

In the next section we shall return to the question of the proper formulation of the projection principle. For the moment let us turn to the other properties of implicit arguments. Let us consider the derivation of the control examples involving implicit arguments. A more complete representation of the relevant portion of, say, (14) at S-structure is as in (27):

(27) . . . John was saying+θ [PRO to leave]

By the theory of binding and control PRO must as before be bound in the superordinate sentence in (27). If the implicit argument θ binds the PRO, the requirement of the theory is satisfied.

In order for the implicit argument to bind the PRO in (27) it is of course necessary that c-command holds between the two. However, it is not difficult to define c-command for implicit arguments in such a way as to obtain the desired result. In particular, we can define implicit arguments to c-command exactly those positions that are c-commanded by the category of which they are implicit arguments, as in Williams (1985) and here in (28):

(28) An implicit argument α c-commands β iff
the category γ of which α is an implicit argument c-commands β

Under the definition in (28) the implicit argument in (27) c-commands the PRO and can bind it, as desired.

Similarly, we can assume that a more complete representation of the relevant portion of (23) is as in (29), where we assume that the purposive sentence is attached under a sentential node:

(29) . . . the book [$_{VP+\theta}$ was written t] [PRO to help Peter]

Assuming that agent theta-roles are assigned by the VP, in (29) the implicit argument θ c-commands the PRO. Hence it can bind PRO, satisfying the requirements of the theory of binding and control.

Now, given that an implicit argument can control a PRO, the question naturally arises whether it can enter into other binding relations. Given our theory, if an implicit argument controls a PRO, we expect that it can bind lexical anaphors as well. Consider first implicit agents. Unfortunately, the data are not clear-cut; however, it seems that an implicit agent can in fact bind a reflexive, as in (30), from Chomsky (1986):

(30) Damaging testimony is sometimes given about oneself

Notice that independently of implicit arguments we have assumed that PROs and lexical anaphors differ with respect to their requirements on antecedents. In particular, lexical anaphors need an antecedent in all cases, while PROs can be antecedentless. According to Chomsky (1986), reciprocals, contrary to reflexives, cannot be bound by implicit agents, as in (31); in a similar vein, the explanation suggested is that reciprocals require specific antecedents, which implicit arguments are not:

(31) *Damaging testimony is sometimes given about each other

Consider then implicit datives. Binding of reflexives by implicit non benefactive datives is impossible according to Rizzi (1986). However, there are comparatively few examples that are potentially relevant, and some of them seem to us to be quite possibly acceptable, for instance (32):

(32) An analyst can put difficult questions about oneself

Whatever the situation with nonbenefactive datives, on the other hand, it seems that benefactives can serve as the antecedents of lexical anaphors. Consider for example (33), quoted by Lasnik (1984) in a context antagonistic to our present conclusions:

(33) Books about oneself make interesting reading

The interpretation of (33) is roughly '(y's) books about x make interesting reading for x'. There is no question that *oneself* is bound by the subject of the nominal; the only available antecedent is then the implicit benefactive. Thus the situation with datives/benefactives seems to be comparable to the situation with agents.

Let us consider now some possible alternatives to the theory of implicit arguments that we have presented so far. According to Jaeggli (1986) the agent theta-role in a passive is assigned to the *-en* suffix, though the *-en* suffix can in turn transmit it to a *by* phrase; the representation of a passive then is as in (34), and implicit arguments coincide with theta-roles assigned to *-en* suffixes:

(34) . . . the book [was write+en t . . .
θ

Obviously if not only agents but also datives can be implicit arguments, then this analysis is not general enough.

Jaeggli also argues that though implicit arguments can control PROs in adjunct sentences, as in (23), they cannot control PROs in object sentences, as in (35); this contrast is then used to argue that two different control relations are involved, thematic control and argument control respectively:

(35) *John was promised [PRO to leave]

However implicit agents can control a PRO in an object sentence in examples of the type of (36); hence, whatever the explanation for (35), Jaeggli's conclusion seems incorrect:

(36) It was decided to leave

In Borer (1986), the grouping together of agents and datives (benefactives) as implicit arguments is explicitly called into question. The elements that in our terms are implicit datives are identified in Borer with a variable bound by an empty operator, while the implicit argument analysis is accepted for agents. The argument that implicit datives correspond to empty operator/variable pairs is based on examples of the type of (37), where the two PROs must be interpreted as coreferential:

(37) [PRO crossing the Rockies], [PRO to behave well] is easy/useful

According to Borer in (37) the empty operator that binds the dative variable takes scope over both PROs. Both PROs furthermore must be bound by the

empty operator, because of the assumption that control is always obligatory. Hence the correct interpretation follows.

We have questioned Borer's assumption that control is obligatory in all cases; in (37) control is obligatory with *easy*, but not with *useful*. Hence one crucial link in Borer's argument is missing. Furthermore, as pointed out in Lebeaux (1984), a coreference effect holds between the two PROs in examples of the type of (38):

(38) To know her is to like her

But in (38) there is no position in the matrix sentence that could be filled by a variable bound by an empty operator; hence Borer's analysis cannot apply to this case.

Notice that while we reject Borer's idea that implicit datives correspond to empty operator/variable pairs at S-structure, we have been assuming all along that they are quantifier-like in their interpretation. In this respect we agree with Epstein (1984), though we reject Epstein's idea that implicit datives are pros at S-structure. Following Lebeaux (1984), furthermore, we can assume that arbitrary PROs are also quantifier-like at LF, or, in general, that all arbitrarily interpreted elements are. Suppose then we assume that if in (38) both PROs have the same scope, they are obligatorily identified. This not only explains (38), but the same schema of explanation can be applied to (37) as well.

Borer on the other hand uses gerund sentences of the type in (37) to argue not only for the variable analysis of implicit datives, but also for a different analysis for implicit datives and agents. According to Borer, while implicit datives can bind the PRO subject of the gerund sentence, implicit agents cannot. Here, however, we disagree with Borer's facts. An example like (39) seems to us to be well-informed with control of the gerund by the implicit agent, and the usual coreference effect of the two PROs:

(39) Taking into account the convict's good behaviour, it was decided to reduce his term of imprisonment

The proposals in Williams (1985) call into question the existence of implicit agents, and in general of implicit arguments, by an alternative analysis of control into result sentences. Consider first a sentence of the type of (40):

(40) Grass is green to promote photosynthesis

According to Williams the matrix subject *grass* cannot control the PRO in (40) because it could not be the subject of the embedded predicate *to promote photosynthesis*. The whole matrix sentence or the event it expresses, 'the being green of the grass', must then control the PRO. Williams's idea is that cases of control by implicit agents into result sentences can also be reanalysed as involving event control. Let us consider whether in fact sentences of the type of (40) provide evidence in favour of event control. To begin with, an example of the type of (41) seems to be perfectly well formed:

(41) Grass promotes photosynthesis by being green

But in (41) *grass* is the overt subject of a predicate *promotes photosynthesis*; hence control of the PRO by *grass* cannot be ruled out in (40) on Williams's grounds.

More evidence in favour of event control is provided according to Williams by sentences of the type of (42):

(42) John went to New York to annoy Mary

(42) admits of two interpretations. One possible interpretation is roughly equivalent to 'John went to New York so that (being in New York) he could annoy Mary'. The other interpretation is roughly equivalent to 'John went to New York so that by his very going to New York, he could annoy Mary'. Williams equates the first interpretation with control of the result sentence by *John*; the second interpretation is equated with event control. Consider, however, a sentence of the type of (43):

(43) John went to New York to amuse himself

(43) is ambiguous in exactly the same way as (42). However, binding condition A requires *himself* to be bound by PRO, and an event bound PRO presumably could not bind *himself*. Hence examples of the type of (43) seem to argue against taking the ambiguity in (42), or indeed (43), as an ambiguity between event and non event control.

On the other hand, there is no doubt that (42) and (43) are ambiguous. We propose that this ambiguity is independent of control and that the event reading is a byproduct of the result sentence being a sentential scope adverbial. Consider for example a sentence like (44):

(44) John hired Mary to do the job

In (44) PRO can be controlled by either *Mary* or *John*; we can furthermore assume that the possibility for *Mary* to bind the PRO depends upon the result sentence being attached under VP. The event reading is possible in (44) with subject control, but not with object control.

Finally, the case of implicit arguments, i.e. theta-roles not associated with a position, must be distinguished from the case of theta-roles never projected to the syntax. The latter case can correspond, as pointed out in Rizzi (1986a) to the intransitive use of verbs that also have a transitive subcategorisation frame. Thus there are two ways in which a theta-role can be 'optional'; either it is optionally projected to a position (the case of implicit arguments), or it is optionally selected in the lexicon (the case of transitive/intransitive pairs). In the case of verbal passives the possibility of non selection of the agent theta-role in the lexicon does not arise; hence, unless the agent theta-role is projected to a position it will always be an implicit argument.

3 Theta and case theory

Consider now again the projection principle, which requires lexical thematic structure to be represented categorially, at every syntactic level of analysis.

As Chomsky (1986) points out, 'A consequence of the projection principle is, to put it informally, that if some element is "understood" in a particular position, then it is *there* in syntactic representation, either as an overt category that is phonetically realized or as an empty category assigned no phonetic form . . .' As we have seen, agent theta-roles need not be categorially represented – they can produce implicit arguments. The existence of such syntactically active unprojected agent theta-roles is allowed for by the assumption that 'The projection principle requires that complements of heads must be syntactically represented at every level . . . but it says nothing about subjects. Thus it distinguishes between, what Edwin Williams calls "internal" and "external" arguments, specifically, object and subject. The projection principle requires that the former be syntactically realized, but not the latter . . .' (Chomsky 1986).

In the previous section we have arrived at the generalisation that not only agents but also theta-roles expressed by datives can correspond to implicit arguments. In other words, agents and dative θ-roles contrast with theta-roles expressed by direct objects in that only the latter need be projected to a categorial representation. If the observation that not all complement theta-roles need to be categorially represented is correct then clearly the projection principle cannot be maintained in the above form. Suppose that our generalisation that contrasts subjects and datives with direct object is correct. The obvious question to ask is then the following: why are dative and subject theta-roles exceptions to the projection principle? We shall suggest below that this way of formulating the problem is not the productive way of approaching it.

Before we delve deeper into this question, let us turn to a more general conceptual issue having to do with the status of Case and θ-theory. As has often been noted there is a lot of potential redundancy between Case and θ-theoretic requirements. Thus if Case assignment is obligatory, in the sense that all Cases need to be assigned to some category, as proposed in Vergnaud (1982) or Manzini (1983b), there will be two reasons that make it obligatory for a transitive verb to have a categorially represented object. One is that the relevant theta-role needs to be projected; the other is that the Case assigned must be taken up by some syntactically represented element. One way of approaching this problem and at the same time giving an account of the function of Cases in the grammar can be found in Chomsky (1981, 1986). He assumes that Case assignment is optional and that a category needs to have Case in order to be visible for theta-role assignment – i.e. theta-roles can only be assigned to Case-marked elements. What is not explained by this approach is why it is precisely Case that makes a category visible and not some other property, such as being governed, lexical, etc. To this extent we then have no explanation why there should be such entities as Cases, and Case theory in the grammar. Of course there may be no explanation.

Let us, however, try to construct one. Suppose that Cases are to syntax

what theta-roles are to the lexicon. We assume in other words that while theta-roles create lexical structures, syntactic structures are created by Cases: syntactic structures are not projections of theta-frames of heads, but projections of their Case-frames. According to this theory, Cases are necessary in syntax, since without them there would be no syntactic representations, only lexical ones created by θ-frames. Or to state the point in a different way, we immediately explain why there must be such nonsemantic features assigned by heads of constructions as Cases, if we assume that syntactic structures are not created by the projection of θ-structure.

In the remainder of this section we shall first discuss how this way of looking at the matter handles the empirical problem concerning the distribution of implicit arguments and then go on to develop the theory based on this alternative version of the projection principle so that it can account for the basic cases handled by GB theory.

In the context of our theory of the projection principle as a condition that requires all Cases to be syntactically represented, it is clear that the question of why agents and theta-roles expressed by datives need not be categorially represented should be turned upside down. No theta-roles are necessarily categorially represented – at least the projection principle carries no such requirement. So the right question is the opposite: what makes it necessary for certain theta-roles, for example those expressed by direct objects or subjects of non passive sentences to be projected to the syntax? But this question does not now concern the effects of the projection principle. With respect to this principle the question that arises is this: why is it that nominative and accusative Cases but in general not datives need to be categorially represented?

Consider the last question first. The difference between dative Case and either accusative or nominative Case is essentially the difference between structural and inherent Case. According to Chomsky (1986) 'we distinguish the "structural Cases" objective and nominative, assigned in terms of S-structure position, from the "inherent Cases" assigned at D-structure . . . We assume that inherent Case is assigned by α to NP iff α θ-marks NP, while structural Case is assigned independently of θ-marking.' Suppose we accept a distinction between inherent and structural Case formulated in these terms. Suppose furthermore that we formulate our revised projection principle as in (45):

(45) Cases are categorially represented in the syntax

We shall assume along the lines of Brody (1985) that S-structure is the fundamental level of representation, from which D-structure is derived. If so (45) can be taken to refer to only those Cases that are not assigned together with their corresponding theta-roles at D-structure, i.e. the structural Cases, nominative and accusative. As for the inherent Cases they may or may not be projected to a position, and no projection requirement holds of the related theta-roles, as is the case for theta-roles in general. Hence inherent Cases like dative can correspond to implicit arguments.

So far then the projection principle (45) has enabled us to account for the possibility of implicit arguments corresponding to inherent Cases. But how does (45) allow for implicit agents? By (45) nominative Case obligatorily projects a subject position; however, though a theta-role may be available for assignment to the nominative position, nothing in (45) itself forces this theta-role to be assigned. If nothing else in the grammar forces the assignment, then the theta-role which could in principle be assigned in the nominative position can be an implicit argument. Clearly nothing else forces theta-role assignment to subject in the case of passive; in fact passivisation depends on the theta-role available for the nominative position not being assigned; whence implicit agents.

Suppose then that we are correct in our account of how (45) in the absence of independent constraints allows for both implicit datives and agents. Still, in requiring nominative and accusative to be projected to syntactic positions, (45) does not account for the obligatory presence of subjects where nominative Case is not available – i.e. in the case of PRO. For this case it seems to be necessary to postulate very much as in Chomsky (1981) an extended version of the principle which ensures that clauses have subjects. One possible form that this extension of the projection principle may take is (46):

(46) Infl must project a position that it governs

Let us now return to the first of the two questions we asked above. Under the standard version of the projection principle implicit arguments, i.e. theta-roles that are not categorially represented, are an anomaly. Under our alternative view, which is based on the Case-projection principle in (45), the problem is the opposite: why is it that certain theta-roles are necessarily categorially represented? The case of theta-roles associated with inherent Cases is clear: since these are associated – i.e. assigned together – the theta-role will have to be projected whenever the inherent Case is. This leaves the necessity of categorial representation of theta-roles assigned to subjects of active sentences and to objects to be explained.

Consider then the simple sentence in (47):

(47) John kissed Mary

Since *John* and *Mary* are arguments, if the subject or object theta-roles were not categorially represented by having created theta-positions then the theta-criterion would be violated; there could not be a one-to-one correspondence between theta-positions and arguments. Is it always possible to attribute the obligatory nature of the categorial representation of these theta-roles to the theta-criterion? Suppose for concreteness that we state the theta-criterion as in (48) – see Chomsky (1986), Brody (1985, 1987); (48) holds at D-structure:

(48) a. Each argument is in a theta-position
b. Each theta-position contains an argument

Let us now examine subjects first. If the subject position contains an argument then this argument must be in a theta-position at D-structure. If there has been no movement, as in (47), and the argument is in the same

position throughout the derivation then the subject position must be a theta-position; the theta-role therefore is not available to create an implicit argument. Suppose the argument has moved to this subject position from a D-structure theta-position. This is the case of the passive considered above: nothing prevents the nonassignment of the subject theta-role and correctly so since it can act as an implicit argument.

What is going to prevent nonassignment of the subject theta-role in nonpassive sentences where an argument moved to subject position, e.g. as in (49)?

(49) *John kissed e

We shall assume, adopting the position in Chomsky (1986) (or e.g. Sportiche 1983), that NP-traces cannot occur in Case-marked positions, and more generally that only heads of (A-)chains may be Case-marked. This will ensure the correct distinction between (49) and the passive. Incidentally, this should not be taken to imply that we wish to take Case absorption as the defining property of the passive. Thus the existence in some languages of impersonal passives, i.e. structures like (50),

(50) Es wurde getanzt (=It was danced)

where we have passive morphology with a nontransitive verb, suggests in our terms that passive morphology is contingent on the nonprojection of the subject theta-role and not on the absorption of accusative Case.

Now suppose that the subject position contains a nonargument. This may be an NP-trace or an expletive heading a chain. Assuming that all NPs are in some chain, expletives such as *there* or *it*, or their empty correspondents in null subject languages are necessarily in some chain. Following Brody (1984, 1985, 1986) and Chomsky (1986) we assume that all chains must have a theta-role, more precisely that they must all contain some theta-position, and furthermore that this theta-position is always the root (most deeply embedded) position of the chain. (For various ways of deriving these results see the works quoted). The expletive in subject position that heads a chain then must head a chain whose root is a theta-position. This theta-position must contain an argument at D-structure by the theta-criterion, hence all expletives must be in a chain that also contains an argument. So there cannot be an unlinked expletive in a subject position with the agent theta-role unprojected, e.g. (51) with the meaning 'One kissed Mary'

(51) *It/There kissed Mary

Since only the head of the chain may be in Case-marked position, parallel to (49) we exclude the case of an expletive-argument chain where the argument is in a Case position, e.g. (51) when *It/There* and *Mary* are taken to be members of the same chain.

If the argument is not in a Case-marked position, then the expletive-argument chain can be formed as in (52).

(52) There is a man in the garden

If the expletive is related to the argument through the intermediary of one or

more NP-traces as in (53), then exactly the same comments apply, with the further proviso that this NP-trace must occupy a Caseless non-thematic position (as it is neither the head nor the root of the chain):

(53) There seems (e to appear) e to be a man in the garden

Let us turn to the remaining case: the subject position is occupied by an NP-trace. If the head of the chain is an expletive we have the situation exemplified in (53). Suppose that the NP-trace is in a chain headed by an argument. The NP-trace then may be the D-structure position of the argument as in (54) or it may be an intermediate trace as the subject of *appear* in (55):

(54) John seems e to like Mary

(55) John seems e to appear e to like Mary

Since the root position of the chain must be a theta-position, the theta-role of the embedded subject in (54) must be projected. In (55) there is no theta-role to create the intermediate trace position. Would it be possible then to have an intermediate NP-trace in a potential theta-position, where the theta-role is not projected but remains an implicit argument? This case in fact reduces to that of the example in (49). Thus consider (56):

(56) a. John seems e to have been hit e

b. *John seems e to have hit e

The theta-role available for the position of the intermediate NP-trace in these examples may fail to get projected, and indeed we have the implicit argument in the passive Case. (56b) is excluded for independent reasons – just as in (49) the nonhead of the chain is Case-marked.

Let us now turn to the question of why the theta-role corresponding to the accusative always has to project to the categorial representation of the object. As we have seen, if the object position contains an unmoved argument as in (47), the relevant theta-role has to be projected in order for the theta-criterion to be satisfied. Suppose that the argument in object position has moved there from a theta-position as in (57):

(57) a. John considered Bill [e to like Mary]

b. John PERSUADED Bill [e to like Mary]

(57a) is a 'subject to object raising' structure that is not excluded by the theory as we have developed it so far. (57b) contains the nonexistent verb PERSUADE, which differs from 'persuade' only in that the former governs the embedded position. So (57b) with the subject to object raising derivation would mean roughly: 'John persuaded one that Bill should like Mary'. Clearly at least (57b) should be excluded.

Suppose that reanalysis is triggered obligatorily by S′ deletion. This process will create structures like (58), where the embedded subject becomes the object of the reanalysed predicate (on reanalysis see Manzini 1986):

(58) a. John considered-to-like-Mary Bill–

b. John PERSUADED-to-like-Mary Bill

It is natural to assume that the reanalysed predicate projects just one object

position; if so, the presence of *Bill* excludes in (58) the presence of a trace. Hence in general raising-to-object is not a viable option if reanalysis is obligatory in these constructions. Note we have now excluded all possibilities of movement to object position, since the only possible launching position for this is the embedded subject.

Consider the flat analysis in (59):

(59) a. John considered [Bill] [to like Mary]
b. John persuaded [Bill] [to like Mary]

This would be excluded by the extended projection principle (46) which requires the Infl of the embedded S to project a subject position. How about an inflectionless predicate as in (60)?

(60) a. John considered [Bill] [clever]
b. John persuaded [Bill] [clever]

Suppose that we allowed the structure in (60a) as proposed in Williams (1983). This would not violate our assumptions – the accusative position in this case would be allowed to receive a theta-role from an element, the embedded predicate, that is different from the one that Case-projected the position (the matrix verb *consider*). Moreover, given our assumptions, we could not account straightforwardly for the impossibility of a structure like (60b) interpreted as 'John persuaded one that Bill is clever'. In other words we need to explain why the object theta-role of *persuade* must be assigned to the object position and cannot remain an implicit argument leaving the nonthematic object position free to be filled by an argument that receives a theta-role from elsewhere.

We can assimilate the impossibility of this construction to that of (61):

(61) *John [seems that it is late] [angry]

Here *John* in a position that is not θ-marked by the main verb could receive a theta-role from another predicate, *angry*. Chomsky (1986) suggests that the ungrammaticality of this structure is due to his Uniformity Condition. This requires an element that is θ-governed by more than one category to be θ-marked either by all or none of these categories (where α is θ-governed by β iff α and β are in a configuration that would allow β to θ-mark α). (61) violates the Uniformity Condition since *John* is θ-governed both by the VP, *seem that S*, and by *angry*, but it is θ-marked only by the latter. Similarly (60) would violate this condition, since *consider* and by hypothesis *persuade* assign no theta-role to *Bill*, a category they θ-govern. But this category receives a theta-role from its other θ-governor, the embedded predicate. One consequence of our assumptions is then that flat structure analyses are excluded in general, and we need an ECM analysis also for small clause cases like (60a). Notice that the problem of what excludes (60b) when both *persuade* and *clever* assign a theta-role to *Bill* is not pertinent to our present concerns – it arises in any grammar where the theta-criterion requires one-to-one correspondence between arguments and theta-positions (and not theta-roles).

For *consider*, then, we can only have the standard ECM analysis, as in (62):

(62) a. John considers [Bill to be clever]
b. John considers [Bill clever]

Our last problem with this constructions is what prevents a similar structure for *persuade*:

(63) a. John PERSUADED [Bill to be clever]
b. John PERSUADED [Bill clever]

where again (63) is interpreted as 'John persuaded one that Bill should be/is clever, i.e. with an implicit argument corresponding to the object theta-role. We shall assume that *persuade*-type verbs have two Cases; the structural accusative and an inherent Case associated with the theta-role of the post-accusative complement. There are then two possibilities. Either (63) violates the Case-projection principle – the accusative Case has not been projected. Alternatively, we may take the postverbal S to be in the position created by the accusative; however, the theta-role that *persuade* can assign to its object requires a +human recipient, a requirement that a clausal argument cannot fulfil.

Finally, consider the case of an expletive in object position. Since there are no unlinked expletives, the object position could only contain expletives that are part of a chain involving an argument/theta position. Now in general the object position cannot contain the head of an expletive argument chain for the following reasons. There are no expletive argument chains across a clause boundary, hence the argument linked to the expletive in object position would have to be a complement of the verb. But the Case assigned to nonaccusative complements is inherent Case, which is always associated with a theta-role. We assume the implicational relationship holds in both directions; the theta-role assigned to these elements is always tied to a(n inherent) Case. Hence an expletive argument chain headed from the object position would always violate the condition that only the head of a chain may be Case-marked. Suppose then that the object position contains an NP-trace. This trace must be that of an argument, by the considerations just reviewed. Since, as we have seen, there can be no movement to object position the trace must correspond to the D-structure position of the argument. Therefore the corresponding theta-role must be projected to avoid the violation of the theta criterion. Notice that if the object position is not Case-marked as in the case of passive, the presence of a categorial representation for the theta-role is ensured by the assumption that this is necessary for the moved element to be related (through a chain) to the object theta-role; i.e. chain formation can involve only syntactic categories – implicit arguments cannot be members of chains.

4 Italian null objects

Implicit arguments appear to behave as pronominal elements with respect to binding theory. Rizzi (1986a) notices that the 'null objects' of Italian, that he does not consider to be implicit arguments, have pronominal properties. The same seems to be true of English implicit agents and datives. In particular, implicit arguments can be bound by an element with an arbitrary interpretation. For example, the agent and dative theta-role of the most deeply embedded verb in (64) and (65) can be taken to be coreferential or disjoint in reference with the arbitrary PRO subject of *believe*:

(64) PRO to believe that an article can be written-θ without effort is preposterous

(65) PRO to believe that it would be easy-θ to write the article was ridiculous

According to Chomsky (1986) implicit arguments (agents) cannot be bound; this is true in Chomsky's examples (see (69) and (70) below), but only because the available antecedents are specific. Furthermore, a binder for an implicit argument has to be outside its governing category, as is shown in (66) and (67), when the implicit benefactive or agent cannot be bound by the subject of the same sentence:

(66) PRO to be kissed-θ is easy ($\neq$ PRO to kiss oneself is easy)

(67) PRO to shout-θ PRO to leave is difficult
($\neq$ PRO to shout to oneself PRO to leave is difficult)

On the basis of examples like (66) and (67) we must then conclude that a theta-role not assigned to a category is a pronominal for the purposes of the binding theory.

As is evident, arbitrary interpretation is a property of both implicit arguments and PROs. Indeed this is what made the examples in (64) and (65) possible, since implicit arguments can be controlled only by an element with arbitrary interpretation. Suppose that arbitrary interpretation is a default case for theta-roles. We are then in a position to explain why antecedentless PRO has arbitrary interpretation: this follows as the default case if a theta-role (projected or unprojected) is associated with no features that ensure specific reference.

There are two ways in which a theta-role may become associated with lexical features that make nonarbitrary interpretation possible. First, it may be assigned to a lexical category. However, a lexical category will not necessarily have specific interpretation; rather it will be taken as arbitrary if it has no features that conflict with the default interpretation. This seems to be the case with *si* in Italian and *one* in English. Secondly, the theta-role may be assigned to an empty category which inherits features from some lexical antecedent, as in (68):

(68) a. John tried PRO to go

b. Who did John see t
c. The man e John saw t

Note that we assume that an empty category can inherit features that make nonarbitrary interpretation possible from a (lexical) quantifier phrase. Thus it is the lexical nature, rather than the referentiality of the antecedent that seems to be relevant. Alternatively we may assume that the possibility of nonarbitrary interpretation of variables is due to their being associated with Case features.

We assume then that in the default case theta-roles have arbitrary interpretation. Similarly we may take it that it is the default case for theta-roles to be pronominal. The default case is fully realised with implicit arguments. Note that implicit arguments cannot inherit features from an antecedent that would make specific reference possible; hence the impossibility of (69) and (70) in the relevant coreferential interpretation:

(69) John believes that an article can be easily written-θ
(≠John believes that an article can be easily written by him)
(70) John believes that it is easy-θ to write an article
(≠John believes that it is easy for him to write an article)

As illustrated in (68a) a categorially represented theta-role behaves differently: it can inherit referential properties. When no such inheritance takes place as in the case of antecedentless PRO the empty category shows only one of the default properties, that of arbitrary interpretation; it does not show the other default property – it is not a pronominal but an anaphoric element. In the context of the theory of empty categories adopted here, where all of them are anaphors, our assumption has to be that the anaphoric nature of empty categories overrides the default pronominal specification of the theta-role assigned to them, just like the referential properties of the antecedent may override the default arbitrary interpretation of PROs.

Let us now return to the question of obligatory theta-role projection to direct object positions. As we have seen in section 3, chain-theoretical principles ensure that this position cannot contain an element that heads a chain with more than one member. There can be no expletive argument chain headed from object position and there can be no movement to this position either. If there is only a one-member chain in that position this must contain an argument, which must be associated with a theta-position, hence the object theta-role must be projected. If the object position is Case marked, it cannot be a nonhead member of an A-chain.

Consider now Ā-chains. In English, if the object position contains a nonhead of an Ā-chain this can only be a variable, i.e. an argument, so this reduces to the previous case; the theta-role must be assigned to satisfy the theta-criterion. But now suppose that a language allows Ā-chains to be headed in an Ā-position which does not make it necessary for the associated category in Ā-position to be a variable. We may think of chains headed by

clitics as instantiating this situation. Suppose furthermore that the requirement that each Ā-chain must have a theta-position is relaxed so that such an Ā-chain can also satisfy it. Under such circumstances our prediction would be that the object theta-role does not have to be projected to the object position as long as the Ā-position is a theta-position.

Now suppose that in some language an implicit argument can participate in Ā-chain formation, in particular it can head Ā-chains. We predict that in such a language an implicit argument can form a chain with the Case-projected object position and no theta-role needs to be assigned to this position. (This must be an Ā-chain because nonhead members of Ā-chains must not be Case-marked.) No such chains can be formed that involve positions that have inherent Case since such Cases are associated with theta-roles – if the Case is projected, so is the theta-role. Furthermore, we predict that the interpretation of these implicit argument–expletive object chains will be arbitrary, and that they will show pronominal properties, these being the default properties of implicit arguments. Let us then see if this possibility is realised.

Italian has implicit agents and datives exactly as English does. However, as Rizzi (1986) points out, Italian also has a null object construction that does not exist in English. The null object of Italian can control, as in (71), and bind a lexical anaphor, as in (72):

(71) Questo induce a rivedere le proprie opinioni
this induces to revise one's own opinions

(72) La musica riconcilia con se stessi
music reconciles with oneself

According to Rizzi, Italian null objects contrast in this respect with implicit arguments, or at least implicit datives, since the latter are taken not to bind lexical anaphors. If our discussion in section 2 is correct, no such distinction holds. If so, the problem arises whether null objects can at all be told apart from implicit arguments on empirical grounds. It may be that they can be told apart on grounds other than binding properties. Here, however, we will be satisfied with noting that implicit arguments (agents and datives) can appear, in English, independently of null objects.

According to Rizzi, the null object of Italian can be bound by another arbitrary element. If it is bound, however, it must be outside its governing category, as in (73):

(73) É un'illusione sperare che un buon pranzo possa riconciliare con se stessi
it is an illusion to hope that a good meal may reconcile with oneself

In (73) the null objects of *riconciliare* and the PRO subject of the superordinate sentence can be given either a disjoint or a coreferential reading. Consider by contrast (74):

(74) In questo dipartimento é difficile costringere a lavorare
in this department it is difficult to force to work

In (74) the null object of *costringere* and the PRO subject can only be taken to be disjoint in reference. In general, the null object cannot be bound by an (arbitrary) element within its governing category. This suggests that the null object has pronominal features.

What is then the nature of Italian null objects? We suggest that they correspond to the implicit argument-direct object chains postulated above. We have been implicitly assuming so far a relaxation of the definition of chains to allow implicit arguments to head chains. As we have seen they must not participate in chain formation in general – cf. the comments on the passive construction in the last paragraph of section 3. In effect they do not seem to participate in any kind of syntactic inheritance processes as the discussion of (69) and (70) suggests. Another way of looking at the problem may be the following. Nothing that we have said so far explains why the null object possibility exists in Italian but not in English. Suppose that the difference between Italian and English in having direct object implicit arguments is related to the fact that in general the option of a clitic chain is available in Italian, but not in English. A chain headed by an implicit argument is then just a special case of a clitic chain, a zero clitic chain. The implicit argument is now taken to be categorially represented, and we do not need to relax the condition that chain formation may only involve syntactic categories. We also have to say that the assumption that empty categories are necessarily anaphors holds only for empty categories in A-position, since as we have seen these implicit arguments are pronominals under the binding theory.

Consider now the theory of null objects proposed in Rizzi (1986). Rizzi argues for a revision and extension of the theory of pros in Chomsky (1982), under which Italian null objects are pros licensed by the V that governs them. Object pros are identified by the object theta-roles they are associated with, after these are assigned arbitrary features by the rule in (75):

(75) Assign *arb* to a direct object theta-role

According to Rizzi, this theory accounts not only for the examples considered so far, but also for an additional set of data, namely examples of the type of (76) and (77):

(76) Gianni ritiene probabile che Mario venga
Gianni believes likely that Mario may come

(77) Ritengo piú intelligente suo fratello
I believe more intelligent his brother

Under Rizzi's theory a pro is licensed by the matrix verb *ritenere* in the subject position of the small clause. However, the pro is not associated with a theta-role, the arb assignment rule does not apply, hence the structure is predicted to be possible with the pro interpreted as an expletive.

Under the theory proposed here there is no analysis of (76) and (77) comparable to Rizzi's, since by definition a null object is bound by a theta-role, and cannot therefore be expletive. However, an altogether different analysis seems to be possible. Rizzi (1986b) argues that small clauses in Italian instantiate reanalysis of the type associated with Romance causative constructions. The crucial piece of evidence he presents is that a clitic selected by the head of the small clause can be associated with the verb selecting the small clause itself, as in (78):

(78) Chi ne ritieni capace
Who of it you believe capable

Now consider the inverted subject example in (77). Under current theories of causative constructions, the presence of an inverted subject in Romance-type reanalysis structures depends either on the fronting of the predicate, as in Kayne (1975), or on the base generation of the subject in inverted position, as in Manzini (1983b). If so, a possible analysis for (77) has no empty category at all in the canonical subject position, but either predicate fronting or base generation of the inverted subject. Consider then (76), on the assumption that the embedded sentence is subcategorised by the adjective. If Burzio (1986) or Manzini (1983b) are correct, under Romance-type reanalysis nothing forces a predicate to have a subject position. If so, (76) has a possible analysis with no empty category in subject position either. Thus what we are suggesting is that the existence of sentences like (76) and (77) in Italian is independent of the existence of null objects, and depends on the separate properties of Romance-type reanalysis.

To support his argument Rizzi notices that in previous stages of English the existence of sentences of the type of (76) and (77) also correlated with the existence of null objects. Typical examples from Visser (1963–9) are in (79) and (80):

(79) a. I haue euer accompted my deuty to forbeare all suche maner of vnmannerly behauioure (St Thomas More, 1530)
b. I see very clerely proved that it can be done none otherwise (St Thomas More, 1534)

(80) When he commaunded to receiue the man . . . into the church again, in which church commaunded he to receiue him? (St Thomas More, 1532–3)

The examples in (79) parallel Italian examples of the type of (76), as opposed to their modern English counterparts. The example in (80) shows that at the same stage of the development of English, and again in contrast with modern English, null objects were allowed. This correlation remains accidental under our theory, since the possibility of null object examples depends on the existence of implicit argument chains, and the existence of examples like (76) and (77) depends on the separate phenomenon of Romance-type reanalysis. To refute Rizzi's argument we will then ultimately have to show either that

this correlation does not hold necessarily, and actually breaks down in some languages: or alternatively, that the true correlation is between the possibility or impossibility of implicit argument chains (in general clitic chains) and that of Romance-type reanalysis.

The major argument in favour of our theory of null objects is on the other hand that it relates identical properties of null objects and implicit arguments, relying on general principles of grammar to explain their complementary distribution. Rizzi's theory can in principle capture the correlation between arbitrary interpretation of null objects and of implicit arguments, since the arbitrary interpretation of a null object depends on assigning arbitrary features to the object theta-role. However, in Rizzi's theory the pronominal nature of null objects depends on the presence of an empty category with pronominal features, pro, in object position. Hence the fact that an implicit argument also has pronominal properties must remain a coincidence. Finally, it must be noticed that the existence of an empty category pro is a postulate of Rizzi's theory, that can be dispensed with under ours, allowing us to maintain that all empty categories are anaphoric. As for the occurrences of pros in the subject position of languages such as Italian, which account for pro-drop according to Chomsky (1982), we can dispense with them by going back to the original theory of pro-drop in Rizzi (1982), under which Italian-type Agr heads what can be taken to be a clitic chain which includes the empty subject. The specific features of Agr will override the arbitrary interpretation of the subject theta-role under the theory proposed here.

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