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PRO, Null Case and the Interpretation of Complements.*

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In this paper I present some consequences of extending the theory of Null Case to derived nominals. I will argue that the well known distinction between ECM and Control infinitives with respect to PRO also shows up, in a slightly different way, in the DP system; in both cases that distinction will be shown to be sensitive to the proposition/event interpretation of the complement. I will argue that that relation is mediated by the presence or absence of a CP-projection, and propose a unified account of the structural conditions that determine the distribution of PRO in the DP and IP systems.

1. PRO and VISIBILITY.

1.1. The Case of PRO.

The Visibility approach to Case theory requires that argument chains have a Case position in order to be visible for Θ -role assignment. Within such a theory, the special status of PRO constitutes a classical problem, since PRO shows up only in non-Case positions despite the fact that it is an argument.

Chomsky & Lasnik (1991) suggest a way out of this problem. They propose that PRO also enters into a Case-checking relation with the Tense head of infinitive constructions; the Case checked in that configuration is what they call "Null Case".

As the paradigm in (1)-(2) illustrates, however, PRO is not uniformly licensed in [-Finite] contexts. Thus, it can appear with some infinitives, as in (1a), but not with others, as (2a) illustrates:

- (1) a. John tries [PRO to finish his thesis]. Control
 b. * John tries [Mary to finish her thesis].
- (2) a. * John believes [PRO to be clever]. ECM
 b. John believes [Mary to be clever].

We thus need a way to distinguish the Null Case checking properties of Control and ECM infinitives.

1.2. Control-Tense vs. ECM-Tense.

Martin (1992) argues that the Tense of ECM and Control infinitives are very different from one another. He focuses on two basic differences: their behavior with respect to VP-ellipsis and their temporal interpretation.

First, while ECM-infinitives do not license VP-ellipsis, control infinitives do. This contrast is illustrated in (3a-b):

- (3) a. * Sam considered Sue to be clever, and Mike considered Jane to [_{VP} e]
 b. John wasn't sure he'd win the race, but he tried [_{TP} PRO to [_{VP} e]]

Martin observes that this state of affairs is consistent with the fact, discussed by Lobeck (1990) and Saito & Murasugi (1990), that only heads that are "strong" enough to maintain agreement with their specifiers can license Ellipsis.

Second, following Stowell (1982), Martin also argues that these two types of inflexion differ from one another with regard to their Tense features. ECM-taking predicates select a [-Tense]. The inflexion of control infinitives lacks [\pm Past] features, but it is specified for other Tense features, responsible for the "unrealized tense" interpretation typical of these infinitive complements:

- (4) a. * John believed [Mary to bring the beer]. ECM
 b. * I proved [John to bring the beer].

- (5) a. John tried [PRO to bring the beer]. Control
 b. I promised Mary [PRO to bring the beer].

We thus have evidence, summarized in (6), to posit two different infinitive tenses. According to Martin, the Case as well as tense-features of these two inflexions are fully specified in the lexicon; only Control Tense has the ability to check Null Case:

(6)	T-ECM	T-Control	
	- Tense	+ Tense	
	- VP-del.	+ VP-del.	
	- Nomin.	- Nomin.	
	- Null Case	+ Null Case	Case Features <u>lexically specified</u> .

I will next show that the ECM/Control asymmetries observed with regard to the distribution of PRO reappear, in a strikingly similar way, in the nominal system. Since we cannot appeal to a difference in the properties of Tense in the nominal system, some of the assumptions concerning the distribution of PRO and Null Case will have to be revised accordingly.

2. SOME EXTENSIONS: PRO in NOMINALS.

2.1. The Presence of PRO in Derived Nominals.

It has been observed that the subject PRO of the infinitive complement in (7) is, in some sense, controlled by the 'subject' of the nominal. This fact has been taken as an indication that there is a PRO in the subject position of the NP.

- (7) [_i the desire [PRO_i to go to the meeting]].

In response to this argument, Williams argues that the coreference between the two 'subjects' is due to what we can call "thematic control". However, Kempchinsky (1985) observes that Williams' hypothesis becomes less plausible when we consider Romance subjunctives. Consider the pair in (8):

- (8) a. [Juan_i desea [PRO_i ir a la reunión]].
 John desires to go to the meeting
- b. [Juan_i desea [que pro_j vaya a la reunión]].
 John desires that go(3subj) to the meeting
 'John wants him to go to the meeting'

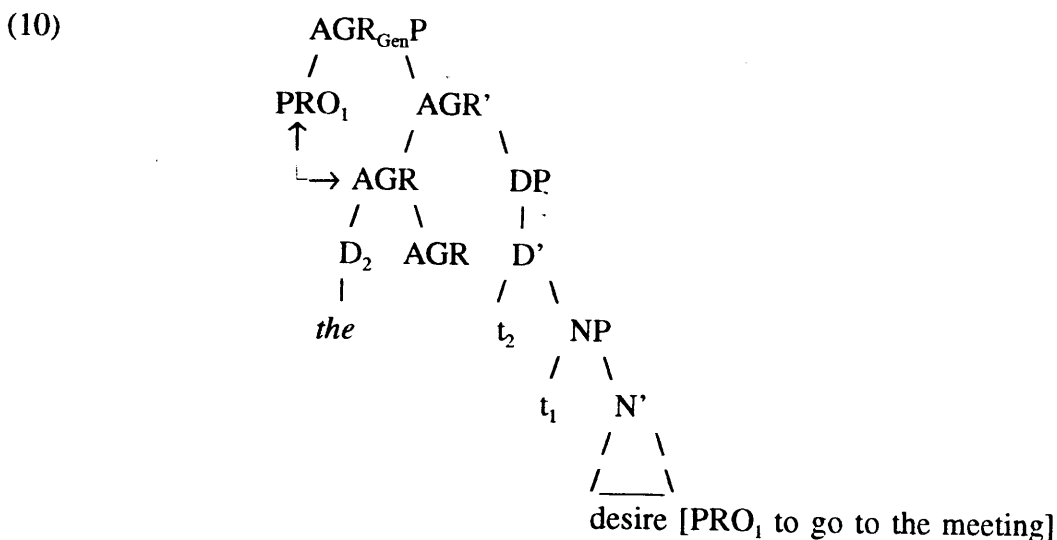
As opposed to the control of PRO by *Juan* in (8a), the subject of the subjunctive complement in (8b) must be referentially disjoint from *Juan*. This disjoint reference effect between the two subjects is characteristic of Romance subjunctive constructions with volitional verbs and some other types of predicates.

Keeping that in mind, consider (9a-b), the nominal counterparts of (8a-b):

- (9) a. [e_i el deseo [de PRO_i ir a la reunión]].
 the desire of to go to the meeting
- b. [e_i el deseo [de que pro_j vaya a la reunión]].
 the desire of that go(3subj) to the meeting

Interestingly, the same disjoint reference effect observed in (8b) shows up: the subject of the subjunctive clause in (9b) must be interpreted as different from whoever the subject of the desire is. This strongly suggests that there is an empty category in the subject position of the nominal; that empty category is responsible for both the control of PRO in the infinitive complement and the disjoint reference effect with the subject of the subjunctive clause in (9).

If PRO can be licensed in the 'subject' position of a derived nominal, we have to extend the theory of Null Case so that it also covers cases like (7) and (9). I will assume an extension to the DP-system of the mechanism proposed for Null Case checking in infinitive constructions; this is represented in (10):



In that configuration, D --together with AGR-- checks Null Case with PRO in the specifier of AGRP. Assuming that mechanism to be correct, let us concentrate on the conditions under which D can assign Null Case.

2.2. PRO in Nominals and the interpretation of Complements.

What makes the distribution of PRO in DP particularly interesting is that PRO is not freely licensed whenever it is in a structural configuration like (10). The contrast in (11)-(12) shows that even derived nominals have very restrictive conditions on the distribution of PRO.

- (11) We were aware of _____
 a. [Mary's decision to leave the company].
 b. ?* [the decision to leave the company].
- (12) a. [Mary's decision to leave the company]
 b. [The decision to leave the company]
 _____ was sudden/took several hours.

Both (11a) and (12a) are perfectly grammatical. A sharp contrast can be observed, however, when the genitive subject *Mary's* is dropped; while (12b) is still fine, (11b) is considerably degraded.¹

Consider (13a-b), a more detailed representation of (11b) and (12b) respectively:

- (13) a. ?* We were aware of [PRO the decision [PRO to leave the company]].
 b. [PRO the decision [PRO to leave the company]] took several hours.

The difference between the two sentences seems to be due to the failure of PRO to be licensed in the subject position of the nominal *decision* in (13a). In contrast,

¹ As observed by David Pesetsky (personal communication), there is an interpretation where (11b) is possible; that is the case when the "missing" argument corresponds to some unspecified subject, as in (i):

- (i) We were aware of [the (governmental) decision to leave the company].

Given that particular interpretation, Pesetsky suggests that the empty category in this case could be a third person plural empty *pro*. A second possibility to account for the interpretation in (i) is that the sentence is recovered only if the information available from the context can "fill in" the missing argument in some way. That in turn might suggest that Williams' observations concerning the 'lexical' nature of control relations is partially correct. However, we still have to account for the clear contrast between (11b)-(12b), where there is not such a semantic restriction.

PRO is permitted in the subject position of the nominal in (13b). This empty element, in turn, controls the subject PRO of the deeply embedded infinitive complement.

Note that the two DPs in (13a-b) are superficially identical; the examples only differ in the matrix predicate. In fact, the contrast between (13a) and (13b) illustrates a more systematic distinction between two major contexts where derived nominals can appear: contexts where the nominal is interpreted as a factive complement --as in (13a)--, and contexts where it is interpreted as an eventuality, in the sense of Bach. To illustrate this distinction, compare (14a-b):

- (14) a. We were aware of the fact that Mary decided to leave the company.
 b. * The fact that Mary decided to leave the company took several hours.

In (14b), the matrix predicate *took several hours* requires a process-denoting argument; it is thus incompatible with the complement introduced by *the fact*. The predicate *be aware of*, on the other hand, selects a 'fact'; this accounts for the grammatical (14a).²

It seems then that the licensing condition of PRO in the nominals is somehow sensitive to the interpretation of the complement. When the derived nominal is eventive --a description of an event, a process, a state, etc.--, as in (13b), PRO can appear in subject position; when it is of a more propositional nature --that is, a pure proposition or a fact-- as in (13a), PRO is barred from the subject position.

Turning back to infinitive constructions, a similar distinction seems to hold in the ECM/Control paradigm: ECM-verbs like *believe*, which typically take propositional complements, are incompatible with a PRO-subject in the infinitival complement. On the other hand, Control infinitives, which take PRO subjects, are not propositional, but they rather correspond to what we can roughly describe as "projective" or "unrealized" eventualities, as often observed in the literature.³

- (15) a. * John believes [PRO to be clever].
 b. John tries [PRO to be clever].

² See Vendler (1967, ch. 4.), Zucchi (1989), Asher (1993), Ormazabal (1994), and references therein.

³ See Bresnan (1972), Bach (1977), Pesetsky (1992). Control infinitives are not as homogeneous a class as the text might imply. For a more detailed analysis of some differences and similarities between the various infinitive types see Pesetsky (1992), Ormazabal (1994) and references cited there.

The correlation between the interpretation of the complement --be it nominal or verbal-- and the distribution of PRO seems to be more general. (16) and the generalization in (17) summarize that relation:

(16)	T₁ (ECM)	T₂ (Control)	Det₁	Det₂
	- Nominat. - Null Case	- Nominat. + Null Case	- Gen Case - Null Case	- Gen Case + Null Case
	↓	↓	↓	↓
	Proposit.	Unreal. Event	(Fact.) Propos	Event

- (17) **Generalization** [to be revised]: Infinitives/Nominals interpreted as propositional do not license PRO, while infinitives/Nominals interpreted as eventualities (i.e. events, processes, states) do.

2.3. The Problem of Romance Infinitives.

The conclusion in (17) is not totally welcome, however. There are good reasons to assume that the distribution of PRO cannot be determined in purely semantic terms. If the distinction was really semantic, we would not expect any relevant crosslinguistic variation. However, Romance infinitive complements to *believe*-type verbs behave exactly the opposite to their English counterparts. These verbs have the characteristic property of forcing a controlled PRO in the subject of the infinitive, as illustrated in (18a) [compare with English (18b)]:

- (18) a. *María_i cree [PRO_i haber terminado la tesis].*
 Mary believes [to have finished the thesis]
 'Mary believes that she has finished her thesis'
- b. * Mary believes [PRO to have finished the thesis].

In that respect, complements to *believe* behave exactly like other Control predicates. However, that property does not correspond to a change in the propositional interpretation of the complement, contrary to what we would expect if the generalization in (17) was correct. On the other hand we do find a contrast between eventive and factive nominals in Romance, as example (19) illustrates:

- (19) a. * *pro éramos conscientes de [PRO la decisión de [dejar la compañía]*
 were(1P) aware(pl) of [the decision of [leave-INF the comp.]

- b. [PRO la decisión de [dejar la compañía] fue repentina.
[the decision of [leave-INF the company] was sudden.

That suggests that something different from the interpretation of the complement must be responsible for the distribution of PRO. The generalization in (17) is then only indirectly derived from it.

In the next section, I will reconsider the problem from a different perspective. But in order to do that, I first need to introduce some additional concepts in section 3.1.

3. THE INTERPRETATION of COMPLEMENTS and THE E-ARGUMENT.

3.1. The Proposition/Event distinction.

Following recent Davidsonian theories, I will assume that the argument structure of a predicate includes an event argument that must be 'discharged' in a higher projection. When Tense discharges the event argument of V, it results in the interpretation of the sentence as an eventuality, in the sense of Bach. I also assume that the contribution of the complementizer to the interpretation of the clause is to transform an event into a proposition also by discharging the event argument of the verb. Finally, let me propose to extend these assumptions to the DP-system.⁴

An important consequence is that the propositional/eventive interpretation of a complement corresponds to the presence or absence of a CP-like projection over IP or DP. A CP will then be interpreted in the semantic component as a proposition of some type, and an IP will basically yield an eventuality interpretation.

That means that the different interpretation of ECM and Control infinitives correlates with a difference in the syntactic structure of each infinitive-type: ECM-infinitives, interpreted as propositions, are syntactically analyzed as CPs; control infinitives, on the other hand, are structurally IPs. This is exactly the opposite result to what was generally assumed in the *LGB*-approach. Finally, a similar structural distinction differentiates factive (propositional) DPs from eventive ones.

⁴ See Rochette (1988), Hegarty (1991), Ormazabal (1994) and references cited there for details and extensive discussion.

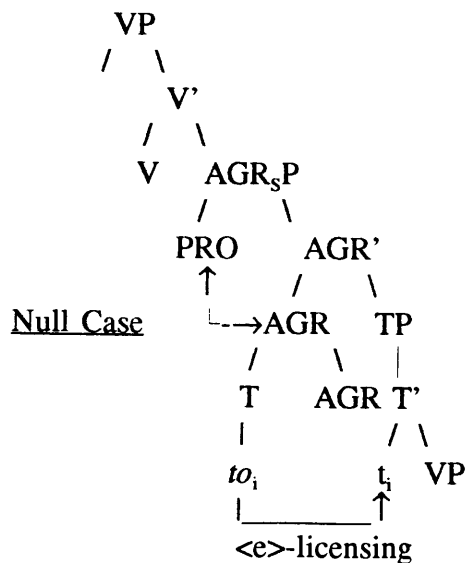
With that much background, we can now reformulate the conditions on the distribution of PRO in different terms. The ability of Tense and the Determiner to check Null Case is now directly related to the presence or absence of a Comp-type projection that "discharges" the event position of the verb:

(20) **Proposal** [tentative]:

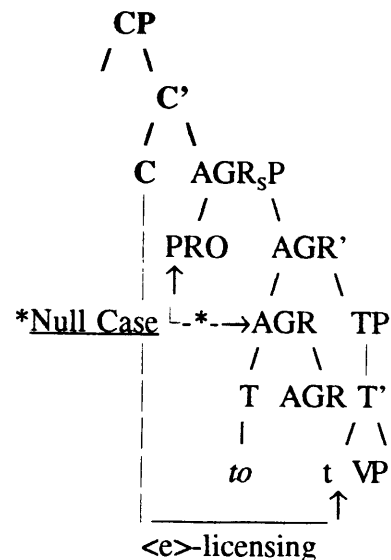
- a. Tense/Det license PRO in (Spec, AGRP) position only if they discharge the event argument of the lexical head V/N.
- b. Null Case features are structurally determined by the presence/absence of an immediately higher (Comp-like) projection that discharges the event argument of the verb (not lexically specified).

Compare the structure proposed for control-complements in (21a) with the ECM-complement in (21b):

(21) a. Control-infinitives.



b. ECM-infinitives.



When Comp is not present, as in (21a), Tense licenses the event argument of the verb. Accordingly it also has the ability to check Null Case in (Spec, AGR_s) and PRO is licensed. Whenever it is COMP that saturates the event position of V, as in ECM constructions, Tense cannot check Null Case with the subject of the clause. Consequently, PRO cannot satisfy its Case properties. This yields the desired results with respect to the distribution of PRO in Control and ECM infinitives. Moreover, the proposal extends automatically to the DP-system.

Pesetsky (1992) presents an account of these alternations that unifies them with other phenomena, such as 'double object constructions', that present the same property. He extensively argues that these constructions involve the incorporation of a zero affix into the verb. In the case of *belief*, the incorporated \emptyset -morpheme is a complementizer. When a nominalizer morpheme is attached to the complex verb formed by V and the \emptyset -affix as in (25a), the result is a configuration like (26), which falls within what is known as Myers generalization [27]:

- (25) a. * Their belief (of) [Jane to be intelligent].
 b. Their belief [that Jane is intelligent].
- (26) [_N [_V [_{COMP} \emptyset] *believe*] -NOMINALIZER].
- (27) *Myers' Generalization*: zero derived words do not permit the affixation of further derivational morphemes [exceptions: *-er* and *-able*].

Contrasting with ECM-infinitives, control infinitives are possible in nominal constructions, as (28a) shows:

- (28) a. Mary's intention [_{IP} PRO to leave the company].
 b. [[*intend*] NOMINALIZER].

According to the explanation above, this implies that there is no C-incorporation involved in these cases. Moreover, if we assume with Pesetsky that \emptyset -morphemes are uniformly affixes,⁷ these cases also lead us to an analysis of Control infinitives where there is no CP projection at all, which is precisely what we expect under the proposal in this paper.

3.2.2.2. Keyser's test and C-to-V.

A similar conclusion can be achieved if we consider cases like (29)-(30): Keyser notes that when a prefix is attached to a verb that normally takes an ECM-complement, the resulting verb differs from the original one in that it does not allow ECM-complementation. Thus, (29b) is grammatical but (30b) is impossible.

- (29) a. They considered the problem.
 b. They consider Jane to be intelligent.

⁷ Pesetsky, aware of the problems posed by control infinitives, suggests a modification of that idea. He proposes to consider ϕ_{for} , the complementizer of certain infinitives, as [-Affix], despite the fact that it is a zero morpheme.

- (30) a. They reconsidered the problem.
 b. * They reconsider [_{CP} [Jane to be intelligent]]. [Keyser in class]

He observes that if we assume the incorporation of a null complementizer, we can unify this account with the one proposed by Keyser and Roeper (1992) to explain the contrast between (31a-b) and the ungrammatical (31c):

- (31) a. John heated the soup up.
 b. John reheated the soup.
 c. * John reheated the soup up. [Keyser & Roeper 1992]

They attribute this phenomenon to the existence of a single clitic position in the structure of the verb, which cannot be filled up by the two elements re- and up competing for the same slot.

If Keyser's observation is correct, the incorporation of the complementizer is allowed in (32a), where no prefix is present in the verb. However, in (32b) the null complementizer competes with the prefix for the same position in V. The ECM-complementizer is thus incompatible with the presence of another prefix.

- (32) a. They consider [_{CP} ∅ [Jane to be intelligent]].
 ↑ _____ |
 b. * They reconsider [_{CP} ∅ [Jane to be intelligent]]. [Keyser in class]
 ↑ _____ * _____ |

Contrasting with ECM-infinitives, (33) shows that prefixation of the verb is not at all incompatible with control infinitives, and similar paradigms can be constructed with other control verbs [e.g. (re)convince (dis)like, (?re)promise, (?re)try].⁸

- (33) a. He (re)persuaded me of my interest on the topic.
 b. He (re)persuaded me [_{IP} PRO to do my job].

Once again, these differences support a structural difference between ECM- and Control-infinitives in the direction proposed through this paper.

⁸ Some of these verbs are slightly odd, but their marginality seems to be independent of whether they take an infinitive or an NP complement. What is important is that, despite their intrinsic marginality, they still contrast very clearly with the unacceptable ECM-infinitives above.

3.2.2.3. Complement/Non-complement Asymmetries.

The final argument to be considered is related to the structural position occupied by the ECM-complement. It is a well known fact that ECM clauses cannot appear in a position other than object; in particular, the ECM infinitive cannot be either passivized or clefted, as (34a-b) illustrate:

- (34) a. * [\emptyset [Mary to be intelligent]] is believed by everybody.
 b. * What I believe is [_{CP} \emptyset [John to have convinced Bill]].
 [modified from Rosenbaum 1967:58]

ECM-complements clearly contrast with Control infinitives, which can appear in subject position or in pseudo-cleft constructions, as (34) illustrates:

- (35) a. [PRO to leave now] would be a mistake.
 b. What everybody preferred was [_{IP} PRO to remain silent].
 [(35b) modified from Rosenbaum 1967:14]

The contrast between (34) and (35) can be immediately explained if ECM constructions, unlike control infinitives, necessarily involve overt C-incorporation into V. Whenever the complement is in a position from where C cannot incorporate, the result is an ungrammatical sentence.

Notice that these are stronger violations than typical adjacency cases like (36), as Roger Martin (personal communication) observes:

- (36) a. ?? John believes sincerely [Mary to be intelligent].
 b. ? John believes sincerely [Mary is intelligent].

Moreover, the relative contrast between (36a) and (34) parallels a similar difference between (36b) and (37), where the complement clause is tensed:

- (37) a. * [\emptyset [Mary is intelligent]] is believed by everybody.
 b. * What I believe is [_{CP} \emptyset [John has convinced Bill]].

In this case, however, the ungrammaticality of the sentence cannot be due to a Case-violation, since the embedded subject, *Mary*, receives Nominative Case. If we reinterpret Stowell's (1981) proposal in our terms, whenever a ϕ -complementizer has to incorporate the clause must be in complement position.

In conclusion, a structural difference between Control and ECM-infinitives in the direction proposed in this paper appears to be well motivated. This difference, I have argued, is independently responsible for both the presence or

absence of Null Case-checking by the functional head and the propositional/eventive interpretation of the infinitive.

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