NON-OBLIGATORY CONTROL AND THE MOVEMENT TOWARDS MOVEMENT[*]

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Recently, it has been proposed to eliminate PRO from UG (Hornstein 1999, 2001; Manzini & Roussou 2000; Boeckx & Hornstein, 2001). In this spirit, we propose a movement-based analysis of partial control (PC). PC was first noted by Williams (1980), but no account was offered until Martin (1996).[1] It is defined as a case of control where the syntactic controller represents only a subset of the individuals implied by the controlled element. This phenomenon was originally thought of as an oddity. However, Landau (1999) makes it clear that PC is more widespread than previously thought. It is therefore necessary that any theory of control be able to account for PC.

An example of PC is given in (1), where the subject of the matrix clause is a subset of the individuals denoting the subject of the embedded clause. The fact that this sentence is a PC construction is highlighted by the use of a collective predicate in the embedded clause. Collective predicates, like *meet*, require a plural subject; therefore, the singular subject of the matrix clause cannot be the sole controller.

(1) $Kenji_i$ decided $[e_{i+}$ to meet at noon$]$

We claim that all control is PC. Verbs that do not allow PC are not control verbs, but are either restructuring or ECM verbs. We further offer a movement-based account of PC similar to the account of obligatory control (OC) given by Hornstein (1999; 2001). However, where Hornstein dispenses with the θ-Criterion, our analysis maintains it as a means of resolving semantic inconsistencies at LF. We propose that when the overt subject raises from the embedded clause, the resultant chain has two θ-roles, in violation of the θ-Criterion. This violation is resolved by a mechanism we call Chain-Splitting, which splits the chain into two smaller chains such that each resultant chain contains only one θ-role.

Before turning to the main claims of this paper, we give a brief overview of the domain of control that we deal with. We also look at the problems with PRO within current minimalist theory and discuss the alternative to PRO proposed by Hornstein (1999, 2001). In section 2 we claim that true control always has the potential for PC. Section 3 gives our analysis of PC as movement. This analysis involves a chain with two distinct theta-roles, which results in a violation of the

[1] For further discussion of PC, see Petter (1998) and Wurmbrand (2001).

theta-criterion at LF where chains are evaluated. The semantic inconsistency is resolved using a repair mechanism, resulting in the potential for PC.

1. Control, PRO and Movement

Control refers to "a relation of referential dependency between an unexpressed subject (the controlled element) and an expressed or unexpressed constituent (the controller). The referential properties of the controlled element…are determined by those of the controller" (Bresnan 1982: 372). In this section we will consider some relevant types of control and will classify these types. We will also discuss several problems with the view that PRO is the covert element in control structures.

1.1. A Classification of Control

Strict identity between the controller and controllee is standardly referred to as OC (or as exhaustive control, by Landau (1999)). When strict identity between the controller and the controllee fails to hold, it is viewed as non-OC (NOC).
     Due to the lack of strict identity between the controller and the controllee in PC examples, such as (2), we classify PC as a type of NOC (following Wurmbrand (2000) but contra Landau (1999)). Note that these labels are for expository purposes only, since we claim that all control is potentially PC. Furthermore, contra Landau (1999), we do not make a distinction between split control and PC. Split control, as in (3), involves control of the covert embedded subject that is split between two matrix arguments. We propose that split control is merely a specific instantiation of PC. This is clear when the scenario in (4) is considered.

(2)   Susan$_i$ wants e_{i+} to kiss in the library.
(3)   John$_i$ persuaded Mary$_j$ e_{i+j} to kiss in the library.
(4)   John was discussing with Bill where he should kiss his girlfriend. John couldn't decide whether to kiss in the library or in the parlour. **Bill persuaded John$_i$ e_{i+} to kiss in the library.**

    The bold-faced sentence in the scenario in (4) has the same syntax as (3) but the control relations are different. This is easily explained if we assume that the control sentences in (3) and (4) are both instances of PC.

1.2. Problems with PRO

The empty category in control structures is traditionally assumed to be PRO. But it is not clear how well motivated PRO is within the Minimalist Program. Within GB the distribution of PRO was accounted for by the binding theory, where PRO was considered a pronominal anaphor. Since pronouns and anaphors have contradictory requirements with regard to governing domains, a pronominal anaphor, like PRO,

must be ungoverned (Chomsky 1986). Within the Minimalist Program, we can no longer appeal to the notion of government to account for the distribution of PRO. Chomsky and Lasnik (1993) propose that Case theory determines the distribution of PRO.[2] Specifically, PRO has "null" Case. However, only PRO is capable of bearing null Case and Infl that checks null Case cannot check any other kind of case. PRO and null Case thus only ever occur together and, as noted by Hornstein (1999, 2001), account for each other only by stipulation.

Another empirical problem with PRO involves accounting for its interpretation. The generalization that was accepted by Chomsky (1981) was Rosenbaum's (1967) MDP, which stated that PRO was controlled by the minimal c-commanding DP. However, Manzini and Roussou (2000) claim that it is not clear how the MDP can be reduced to an independently needed principle.[3]

Due to the problems with PRO within the current theory, authors like Hornstein (1999; 2001) and Manzini and Roussou (2000) have proposed alternative accounts. We adopt Hornstein's proposal, which we now outline.

1.3. Hornstein's (1999, 2001) Alternative to PRO

Hornstein's theory of control is based on the idea that the subject of an infinitival in a control construction is actually a DP trace (or a copy) left by movement. To derive control constructions he redefines theta theory, claiming that thematic roles are features assigned by verbs to DPs. θ-features are able to trigger movement and more than one θ-feature may be associated with the same DP (several features may be checked by the same DP through the course of the derivation). The sentence in (5) is therefore derived as follows:

(5) $John_i$ hopes t_i to leave.

John first merges with *leave* checking the theta-feature on the verb. John then moves to the subject position of the infinitive clause and checks the D feature on INFL. John then moves to the *v*P of the higher clause and checks the θ-feature of *hopes*. Finally, *John* moves to the subject position of *hopes* and checks the D feature and case feature.

This derivation accounts for the fact that *John* is the controller of the infinitive clause. It also does not require PRO or any additional account of the distribution or interpretation of the empty category; the empty category is a DP trace and is therefore equivalent to *John*. This account is also in line with Minimalist theory. The Minimalist framework has independent reasons for positing features and

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[2] This was first proposed by Bouchard (1984). Note that Chomsky and Lasnik's (1993) account differs slightly from Bouchard's.
[3] Other empirical problems include accounting for backward control in languages like Tsez (Polinsky & Potsdam, 2002) and Romanian (Alboiu, 2003).

feature-driven movement. We therefore are able to derive the above control construction without the need of any *ad hoc* stipulations.

What is perhaps problematic is that, for Hornstein, raising, as exemplified in (6), and control now look quite similar.

(6)   John$_i$ seems t_i to have won the prize.

Hornstein maintains a distinction between these two kinds of constructions under a movement analysis as follows. In (6), *John* bears only one theta-role, which is assigned by the embedded verb. In (5), John bears two theta-roles, one assigned by the embedded verb and one assigned by the matrix verb. Hornstein is thus able to maintain a difference between these different constructions. However, to do so it is necessary that he dispense with the θ-Criterion since in (5) one DP has been assigned more than one theta-role. In section 3 we will propose a modification to Hornstein's approach that makes use of the θ-Criterion.

2.   Partial and OC Verbs

The previous section points to a distinction between PC and OC. In this section we will show that in actuality, all control verbs are PC verbs. Verbs that are traditionally thought of as OC verbs are instead either ECM or restructuring verbs.

2.1.   Intransitive Control Verbs

According to Landau (1999), only modal, aspectual and implicative verbs are OC verbs. These verbs do not allow a PC reading. This is clear in (7) where we show that these verbs cannot occur with embedded collective predicates. Neither can they occur with the collective adverb *together* in the embedded clause because this element requires a plural antecedent. Since these verbs require strict identity between the matrix subject and the embedded subject, and since the matrix subject is singular, collective predicates are not licensed in the embedded clause.

(7)   *John must/started to/managed to meet at 9:00 am.

While Landau (1999) claims that these verbs are OC verbs, Wurmbrand (2000, 2001) analyzes them as restructuring verbs that form a single complex predicate. For Wurmbrand they have the structure in (8).

(8)   *John [$_{VP}$ managed [$_{VP}$ to meet at 9]

The analysis of these verbs as restructuring verbs explains why a strict identity must hold between the subjects of the two verbs. There is actually only a single

subject position for the two verbs. In (8) there is no embedded subject position. Instead, *John* is the subject of a single complex predicate.

Following Wurmbrand's analysis of these verbs, we treat these constructions as monoclausal. They are therefore not control verbs. This means that, whether PRO or a movement analysis is adopted to account for control, these verbs will not need to be taken into account as part of the control class. They are accounted for without the use of empty categories.

All other intransitive control verbs are non-OC verbs and allow a PC interpretation. An example is given in (9).

(9)   John decided to meet at 9.

2.2.   Transitive Control Verbs

Most transitive control verbs allow a PC interpretation:

(10)   John reminded Mary to meet in the lobby.

However, there is a set of verbs traditionally classified as control verbs, which does not allow a PC reading. We will call this group of verbs the *order*-class.

(11)   *Mary ordered/permitted/required John to go to the opera together.

This fact is potentially problematic for the generalization that all control verbs in principle allow PC. In this section we show that this class of verbs is best thought of as ECM rather than control, based on the following three lines of evidence. First, we argue that the availability of non-thematic embedded subjects in this class of verbs is not consistent with a control analysis. Second, we show that this class of verbs patterns with established ECM verbs with respect to the active/passive distinction. Third, we show that the embedded subject with this class of verbs is not θ-marked by the matrix verb. This is unexpected under a control analysis, but not under an ECM analysis.

Consider the following examples containing standard ECM verbs:

(12)   Arsalan expects there to be chocolate available at CLA conferences.

In example (12), the embedded subject is an expletive. Expletive subjects are not available for standard control cases, however:

(13)   *Arsalan persuaded there to be chocolate available at CLA conferences.

Observe the following example that shows that embedded expletive subjects are available for the *order*-class of verbs:

(14)   Arsalan ordered there to be chocolate available at CLA conferences.

The order-class of verbs patterns with ECM verbs in allowing embedded expletive subjects. This contrasts with control verbs, which do not allow such subjects.

      The second way in which the *order*-class of verbs patterns with ECM concerns active-passive alternations in the embedded clause.[4] Looking first at a standard ECM construction, we observe that changing the embedded clause from active to passive voice does not affect the meaning of the sentence.[5]

(15)   The doctor expects the ophthalmologist to examine the patient.
      =The doctor expects the patient to be examined by the ophthalmologist.

Both sentences in (15) are truth-conditionally equivalent. Any difference in meaning is due to a change in topichood of the object brought about by passivization (see fn. 5). Turning to standard control verbs, we observe that synonymy between the active and passive forms of the embedded clause does not hold:

(16)   The doctor persuaded the ophthalmologist to examine the patient.
      ≠The doctor persuaded the patient to be examined by the ophthalmologist.

In the first sentence in (16), the matrix subject affects the state of mind of the embedded logical subject to the exclusion of the embedded logical object. In the second sentence in (16), the opposite situation holds - the matrix subject affects the state of mind of the embedded logical object to the exclusion of the embedded logical subject. In other words, the two sentences in (16) are not truth-conditionally equivalent. Consider now the *order*-class of verbs:

(17)   The doctor ordered the ophthalmologist to examine the patient.
      =The doctor ordered the patient to be examined by the ophthalmologist.

Although the two sentences in (17) appear not to be synonymous, we show that they indeed are. Consider these two sentences again in the following context:

(18)   A patient has been seeing things, and is being treated by a psychologist, but with no luck. The doctor re-examined the patient's history and determined that he should see an ophthalmologist, instead.

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[4] Many of the diagnostics presented here are discussed in detail in Postal (1974).
[5] The information structure such as topic and focus changes between the active and the passive sentences, but this is unrelated to the whether the matrix verb is ECM or control. Passivization has the effect of affording the logical object of the sentence more prominence, regardless of the superordinate syntactic environment.

Given the context in example (18), it is perfectly acceptable to utter *the doctor ordered the patient to be examined by the ophthalmologist (not by the psychologist)* with the meaning that the order was not actually given to the patient, but to the ophthalmologist. Since the DP *the patient* is the topic of the previous discourse, it is natural to use the passive voice in the embedded clause here.[6]

     The final way in which verbs of the *order*-class pattern with ECM in contrast to control concerns the θ-marking properties of the verb. We have already seen that both *order*, example (12) and ECM, example (14) can take an embedded expletive subject, which indicates that the matrix verb does not assign a θ-role to the embedded subject. Consider further the following example:

(19)   Kenji expects/ordered/*persuaded the floor to be swept before noon.

Example (19) shows that ECM and *order* do not θ-mark the embedded subject, since Kenji does hold an expectation of the floor, nor did he give an order to the floor. The verb *persuade*, however, does require that the matrix subject act directly on the embedded subject, and is, hence, θ-marked by it.

     In this section we have reviewed three lines of evidence to support our claim that verbs such as *order*, *permit* and *require* are actually ECM rather than control verbs: *order*-type verbs can take embedded expletive subjects, *order*-type verbs maintain synonymy between active and passive voice, and *order*-type verbs do not θ-mark the embedded subject. Based on these three lines of evidence, we conclude that *order*-type verbs are ECM verbs, not control verbs.[7]

2.3.   Summary

We have seen that intransitive control verbs (*want*, *expect* etc.) and transitive control verbs (*persuade*, *ask*, etc.) all allow PC. Restructuring verbs, including implicatives, aspectuals and modals are not control verbs as there is no embedded subject position available (Wurmbrand, 2001). Consequently PC effects are not available with these verbs. Also, ECM verbs, which include *order*-type verbs, do

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[6] Readers may still find a difference in meaning here. We argue that *order*-verbs have an implicit matrix recipient (in grey font), whose identity is determined contextually. In the absence of a context, the recipient is identified by the closest appropriate DP:
   i.   Mary ordered (the ophthatmologist) the ophthamologist to examine the patient.
   ii. Mary ordered (the patient) the patient to be examined by the ophthamologist.
   iii. Mary ordered (John) John to sweep the floor.
   iv. Mary ordered (John/*the floor) the floor to be swept by John.

[7] The reader may notice that idiom tests seem to point against an ECM analysis of *order*-verbs.
   i) *John ordered the cat to be out of the bag.
Elsewhere we argue that i) is not ungrammatical, but rather pragmatically ill-formed (Barrie & Pittman, in press). Consider the following:
   ii) Mary ordered tabs to be kept on John.
In short, we argue that ii) succeeds where i) fails because having tabs kept on someone is an event that one can have ordered to come about, whereas the cat being out of the bag is not.

not show PC effects. The descriptive generalization to be gleaned from these observations, which we further sharpen in the next section, is that all control verbs allow PC. Verbs that do not allow PC are either restructuring verbs or ECM.
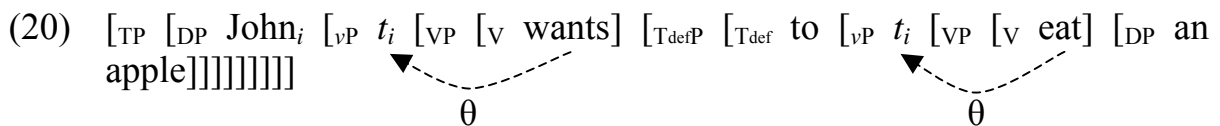
In the next section we develop a movement analysis of control that accounts for PC effects.

3.   Towards a Movement Analysis of PC

3.1.   Introduction

Hornstein (1999, 2001) develops a movement analysis of OC. For non-OC contexts, he suggests that the embedded controllee is identified by *pro*, although he doesn't explicitly address PC contexts. Since *pro* is not generally available in English, it is preferable to advance an analysis that does not rely on it. Instead, we propose that PC can be explained by movement, as well. Culicover & Jackendoff (2001, 2003) and Landau (2003) point out that the lack of identity between the controller and controllee in PC environments is challenging to such an analysis. Our analysis posits a mechanism of chain splitting that allows individual members of a chain to re-interpret themselves depending on the semantic requirements in the sentence. The details of this analysis are the subject of this section.

Recall that all forms of control have the potential for PC and that control involves two distinct θ-positions. This is in contrast to raising and ECM environments where only one θ-position is involved. In example (20), we show the derivation we adopt for a typical control structure. We follow the architecture for clause structure as set out in Chomsky (1995, 2000, 2001a, 2001b).

(20)   [$_{TP}$ [$_{DP}$ John$_i$ [$_{vP}$ t_i [$_{VP}$ [$_v$ wants] [$_{TdefP}$ [$_{Tdef}$ to [$_{vP}$ t_i [$_{VP}$ [$_v$ eat] [$_{DP}$ an apple]]]]]]]]]]
           θ   θ

In (20), the DP *John* is merged in [Spec, *v*P] and is assigned a θ-role by the embedded verb *eat*. This DP then raises to the matrix subject position where it receives an additional θ-role by the matrix verb want. It then raises to [Spec., TP] for Case and EPP. Crucially for our analysis, the DP *John* receives two θ-roles.

Consider now raising and ECM structures. Raising is similar to (20), except that, since raising verbs do not assign a θ-role, the raised DP only possesses one θ-role by the end of the derivation – the one assigned by the embedded verb. ECM does not entail overt raising of the subject to the matrix clause, so again, only one θ-role is involved in ECM. We can now sharpen the descriptive generalization made in the previous section as follows: Control involves a raised DP with more than one θ-role. It is precisely the presence of more than one θ-role that will motivate the process of Chain Splitting we propose next.

Example (20) illustrates subject control, where the embedded subject raises to the matrix subject position. We now turn to our analysis for object control. Traditional motivation for this movement is for Case and EPP. Chomsky (2001a, 2001b) proposes that all Case and feature checking is accomplished by a probe-goal relation and that overt movement takes place only to satisfy an as of yet poorly understood EPP feature. Under this approach, it is unclear how to motivate raising of the embedded subject to the matrix object position for object control. Bošković (1997) uses binding facts to argue that the embedded subject of at least ECM constructions raises to the matrix clause (Bošković, 1997: 3; Lasnik, 1997):

(21)   John proved Mary and Jane to be innocent during each other's trials.

In (21), the embedded subject *Mary and Jane* must raise to the matrix clause to properly bind the anaphor in the matrix adjunct *during each other's trials*. The following example shows that raising must also take place in control constructions.

(22)   Peter persuaded John and Susan to be quiet just before the start of each other's recitals.

In (22), an interpretation in which the adjunct appears in the matrix clause is aided by the modifer *just*. In other words, the more pragmatically salient interpretation is that it was just before the start of each other's recitals that Peter persuaded John and Susan to be quiet. Thus the DP controller must appear in the matrix clause.[8] This, of course, is the general assumption under a PRO theory of control.[9]

3.2.   Chain-Splitting

It is at this point that we depart from Hornstein's analysis of Control as movement in that we propose to retain the θ-Criterion. The θ-Criterion states that no DP can possess more than one θ-role. In order to maintain a movement analysis of control, Hornstein was obliged to dispense with this stipulation since control clearly involves more than one θ-role. Rather than dispensing with the θ-Criterion, we propose that a chain in violation of the θ-Criterion must split into separate chains such that there is no longer any violation of this constraint. Consider the following example:

(23)   John$_i$ decided t_i to go to the opera together.

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[8] Note that it may not be until LF under the assumption that evaluation of Condition A of the Binding Theory takes place at LF (Chomsky, 1993; Lasnik, 1997; Fox, 2000).
[9] Scope reconstruction effects (Fox, 2002) offer empirical evidence that the controller originates in the embedded clause as explained in Pittman & Barrie (2003).

At LF, *John* and the unpronounced copy *t* have distinct θ-roles, in violation of the θ-Criterion. A mechanism of chain-splitting splits the chain into two members:

(24) John$_i$ decided t_i to go to the opera together.

At this point, the lower copy (t_i in (24)) must be reinterpreted to satisfy LF requirements. Although the chain between the raised DP and the copy is now split, the lower copy still retains its identity. Pragmatics and the presence of the collective adverb *together*, force the addition of a semantic plural feature [SEM PLURAL]. Landau (1999) proposes a similar process in which a semantic plural feature is assigned to PRO in the embedded clause under the same circumstances. The lower unpronounced copy, then, has the LF interpretation of "John and others." Note that the syntactic properties of the copy are not changed, however.

Control is summarized as follows. A DP merges into subject position of a non-finite verb and is assigned a θ-role by this verb. The DP then raises to the matrix clause and is assigned a θ-role by the matrix verb. This chain violates the θ-Criterion and Chain-Splitting is invoked as a repair strategy. Chain-Splitting divides the chain into two units such that each new chain contains only one θ-role. The lower unpronounced copy is re-interpreted to satisfy other LF constraints, such the addition of the feature [SEM PLURAL] from the discourse or pragmatics.

In this section, we have outlined the machinery necessary to accommodate a movement-based analysis of PC. In the next section, we discuss some predictions that the mechanism of chain-splitting makes.

3.3. Consequences and Predictions

The mechanism of chain-splitting introduced in section 3.2. has the potential to be quite powerful. As such, we must ensure that it does not over-generate. First, since chain-splitting is only invoked when the θ-Criterion is violated, in other words, when a single DP is assigned more than one θ-role, we need only concern ourselves with A-chains. Passives are ruled out as the subject θ-role is absorbed and only one θ-role is assigned to the raised DP. Consequently, PC effects are absent with passive structures:

(25) *John was re-united. (cf. John and Mary were re-united.)

A consequence of the analysis outlined here is that semantic features other than [SEM PLURAL] might come into play. We discuss the feature [FEMALE], where the predicate *have a baby* can take only female subjects:

(26) *John tried to have a baby.
(27) ??John decided to have a baby.

We have found a difference in judgment for these two sentences for many speakers. The control structure in example (27) forces Chain-Splitting to occur; however, this does not happen in example (26). When the chain splits in example (27), the lower unpronounced copy can get reinterpreted with the semantic feature [FEMALE]. The reason that example (27) is not perfect, we suspect, is because there is still a semantic feature [MALE] on the DP *John*, which causes a conflict.[10]

4. Summary

We have proposed to extend Hornstein's movement-based analysis of control to include PC. We have further argued that all control is potentially PC, and that the few cases of OC that Landau (1999) presents – implicatives, modals and aspectuals are not control predicates.[11] We follow Wurmbrand (2001) and assume that these verbs are restructuring verbs and contain only one syntactic subject position when embedded under another verb. Another class of OC predicates we discussed was the *order*-class of verbs. We determined that such verbs are actually ECM verbs and not control verbs. Having removed all putative cases of OC, we concluded that all control has the potential for PC. In order to maintain a movement-analysis of control, we assumed that the θ-Criterion is active at LF. When a DP moves from the embedded clause to the matrix clause in a control structure, it is assigned a θ-role in each clause, violating the θ-Criterion. We posit a mechanism, Chain-Splitting, that splits the chain such that each resultant chain contains only one θ-role. Once the chain is split into two smaller chains, each one functions independently. In PC environments, the lower unpronounced chain is reinterpreted to include a semantic plural feature [SEM PLURAL]. Semantic reinterpretation at LF is argued to happen only when chain-splitting is licit. Chain-Splitting happens only to avoid a violation of the θ-Criterion. The problem of over-generation is avoided if these restrictions are maintained on Chain-Splitting. Finally, we tentatively suggested that semantic features other than [SEM PLURAL] might be eligible to participate in LF reinterpretation after Chain-Splitting.

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[10] This argument is still tentative because not all predicates such as *have a baby* pattern as in (26) and (27). The following pair of sentences seem (to many speakers) to be equally unacceptable:

    (i)   *John tried to give birth at home.
    (ii)   *?John decided to give birth at home.

[11] Recall that Landau (1999) calls this set of predicates exhaustive control verbs.

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